On predication

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Abstract

This paper discusses copula constructions in English, German, and Danish and argues that a uniform analysis of all copula constructions is inappropriate. I provide evidence from German that there should be a raising variant of the copula in addition to an identificational copula. A unary schema is provided that maps referential NPs that can be used as arguments onto predicational NPs. Data from Danish shows that predicational NPs can be subjects in specificational structures. An account for such specificational structures is provided and the different behaviour of predicational and specificational structures with regard to question tags is explained. A similar contrast can be found in German left dislocation structures, which follows from the assumptions made in this paper.

A modified treatment of complex predicate formation allows for a reduction of selectional features (that is abolishing of XCOMP or VCOMP) and for a uniform treatment of predicational phrases in copula constructions and resultative secondary predicates. This yields an account for constituent order variants that remained unexplained by earlier analyses.

1 The Phenomena

Research on copula structures has a long tradition (see Mikkelsen, To appear for an overview). One important question is the question of how many copulas are needed for the observable syntactic patterns and the respective meanings that can be expressed. I follow recent research in assuming that there are basically three types of copula constructions, two of which are order variants of each other (Section 1.1). Section 1.2 discusses V2 languages like Danish and German and compares English and Danish to German, which has rather free constituent order in general. Section 1.3 shows that one of the copula constructions is a raising construction and Section 1.4 discusses the formation of predicate complexes.

1.1 Equational, Predicational, and Specificational Constructions

Recent research on predication distinguishes three types of copula structures: equational, predicational, and specificational structures (Mikkelsen, To appear). In equational structures two expressions of the same type are equated. Examples of this type are given in (1):

(1) a. Cicero is Tully.
b. That must be her.

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In (1a) two proper nouns are equated: that is, it is expressed that the referents of the two referential NPs are identical. Similarly, two pronouns are equated in (1b).

Mikkelsen gives the following examples for predicational constructions:

(2) a. Harvey/my brother/the guest of honor/she/everyone/noone was [happy].
b. Sylvia is [from Seattle].
c. Sylvia is [an architect].
d. Sylvia is [the architect on that project].
e. Sylvia is [my friend].
f. Sylvia is [mayor of Seattle].

As the examples show, the predicate complement can be an AP, PP, NP or a noun with a complement. Mikkelsen claims that (2f) is an instance of an $\overline{\text{N}}$ predicate (NP in her terminology), but the class of such predicates is smaller: It is basically nouns with their complements, but without modifiers:

(3) * He is new mayor of Seattle.

In English there seems to be a uniqueness restriction on determinerless predication. Sentences like those in (4) are ungrammatical:

(4) * He is sanator/teacher.

In comparison, the equivalents of (4) are possible in German:

(5) Er ist Lehrer.
he is teacher
'He is a teacher.'

As Mikkelsen (2005, p. 70–72) points out, question tags agree with the subject in predicational constructions in gender as they do in non-predicational structures:

(6) a. The guest of honor was happy, wasn't she/he/*it?
b. The guest of honor spoke after dinner, didn't she/he/*it?

Apart from equational and predicative constructions a third type is identified in the literature. Mikkelsen gives the following example for what she calls a specificational construction:

(7) a. The director of *Anatomy of a Murder* is Otto Preminger, isn't it?
b. The director of *Anatomy of a Murder*, that's Otto Preminger.

Here the post-copular NP is a proper name, that is, clearly referential. The pre-copular constituent contributes the predication. Interestingly, the pronoun *it* is used in question tags and the pronoun *that* in left dislocation structures. This test shows that the subject in (7) is not referential, but rather predicational. Specificational structures can be regarded as a variant of predicational structures with the predicational NP realized in pre-copula position.

While predicational structures are possible with verbs like *consider*, specificational and equational structures require the copula to be present (Rothstein, 1995, p. 32):

(8) a. I consider [Sylvia my best friend]. (predicational)
b. I consider [my best friend *(to be) Sylvia]. (specificational)
c. I believe [that/her *(to be) Sylvia]. (equational)

1.2 German, English, Danish: Specificational Constructions, Question Tags, and Left Dislocation

Evidence from question tags was used to argue for a special type of copula construction in English: Specificational constructions. The situation is more complicated in a language like Danish: Danish is a V2 language, so the orders with a predicative element in pre-copula position could be derived by fronting the predicate rather than the subject of a canonical predicational construction. However, there is a test that helps to identify which element is the subject: The negation attaches to the VP. For subordinate and main clauses we get the following structures:

(9) a. subject negation verb complements (subordinate)
b. verb subject negation complements (main clause, V1)

A V2 clause is derived from (9b) by fronting one constituent. Given this background we can show that Danish also has specificational structures in which the subject of the clause is the predicate. Since the post-negation position in (10b) is filled by *Max*, *Vinderen* has to be extracted from the pre-negation position and hence, it has to be the subject of the clause.

(10) a. Max$_i$ er _$_i$ ikke vinderen, er han vel. (Max= Subj, vinderen = Comp)
Max is not winner.DEF is he not
'Max is not the winner.'
b. Vinderen$_i$ er _$_i$ ikke Max, er det vel. (Max= Comp, vinderen = Subj)
winner.DEF is not Max is it not
c. Vinderen$_i$ er Max ikke _$_i$, er han vel. (Max= Subj, vinderen = Comp)
winner.DEF is Max not is he not

Interestingly, this corresponds to the question tags used in the sentences.

German differs from both English and Danish in another dimension: It is a language with rather free constituent order, so a test like the position of negation cannot be used for German. However, predicative elements can still be distinguished from referential ones: In left dislocation structures *das* is used for predicational elements and the genus agreeing *der*/*die*/*das* for referential elements.

(11) a. Klug / ein Mörder, das / *der ist Peter. (predicational)
smart a murderer that that is Peter
'Peter is smart / a murderer.'

b. Ja, aber Peter, der ist ein Mörder / nicht Klaus.
Yes, but Peter that is a murderer not Klaus
'Yes, but Peter is a murderer / not Klaus.' (predicational/equational)

So, there is evidence for a predication/equation difference in German, but not for a predication/specification distinction.

1.3 Raising

The predicative copula is usually analyzed as a raising predicate that does not contribute semantically, except for tense information in the case of finite forms of the copula (Paul, 1919, p. 41). One property of raising verbs is that they are not sensitive to the type of their arguments, for instance they allow for expletive subjects, which is – of course – compatible with the fact that they do not assign semantic roles to their arguments. An example for an adjective that allows for an expletive subject is *laut* ('loud'):

(12) In der Mensa ist es laut.
in the commons is it.EXPL loud
'It is loud in the commons.'

The adjective *laut* also has a non-expletive version, and (12) is actually ambiguous between the expletive and the non-expletive reading. With the expletive predicate, (12) means that the people, machines, or whatever, in the commons are loud, whereas in the non-expletive reading the *es* ('it') could refer to a child.

German is a language that has subjectless verbs and adjectives. Müller (2002, p. 72–73) discusses the following examples:[1]

(13) a. weil schulfrei ist
because school.free is
'because there is no school.'

b. weil ihm schlecht ist
weil him.DAT bad is
'because he is sick'

c. Für dich ist immer offen.
for you is always open
'It is always open for you.'

Again such data is consistent with a raising analysis that raises the subject of an embedded predicate if there is one but does not rule out embedded predicates that do not have a subject at all.

1.4 Predicate Complex Formation

Certain verbs form a predicate complex in languages like German, Dutch, Persian, and Hindi. The arguments of the verbs that are involved in complex formation can

[1] (13c) is quoted from Haider, 1986, p. 18.

be scrambled according to the general rules of the respective language. In addition parts of the predicate complex can be fronted while arguments of the fronted heads may be left behind. Adjuncts in pre-complex position can scope over different elements of the predicate complex. An industrial-strength overview of the phenomenon in German can be found in Bech, 1955. Bech coined the term coherent construction for verbal complexes. Analyses of the data in the framework of HPSG can be found in Hinrichs and Nakazawa, 1994; Kiss, 1995; Bouma and van Noord, 1998; Meurers, 2000; Kathol, 2000; Müller, 2002. Müller (2002) extended the verb complex analysis to verb adjective combinations. Since the focus of this paper is predicational constructions, I exclusively discuss copula constructions and other predicational structures here.

As within coherent combinations of verbs, different scopings can also be observed in copula constructions:

(14) weil ihr der Mann immer treu sein wollte.
because her.DAT the man.NOM always faithful be wanted.to
'because the man always wanted to be faithful to her.'
'because the man wanted to be always faithful to her.'

The sentence in (14) has the two readings that are indicated in the translation, but here the situation is less clear since the two readings may be due to the ambiguity between the modification of the copula and the modal. However, there are sentences like (15) where the adjective is fronted together with the adverbial.

(15) Immer treu wollte er ihr sein.
always faithful wanted.to he.NOM her.DAT be
'He wanted to be faithful to her forever.'

Due to the existence of such sentences, the possibility of adverbs modifying adjectives directly cannot be ruled out in general. Note furthermore, that the sentence in (15) is not ambiguous.

What is clear, however, is that the phrase *ihr immer treu* in (14) and (16) cannot be a closed AP in the wide scope reading since then the scoping of the adverb over a predicate outside the domain of the AP could not be explained.

(16) weil der Mann ihr immer treu sein wollte.
because the man.NOM her.DAT always faithful be wanted.to
'because the man always wanted to be faithful to her.'
'because the man wanted to be faithful to her forever.'

The example in (14) also shows that the subject of the adjective, which is also the subject of the modal, can appear between the adjective and its complement. The alternative order in (16) is also possible. See also den Besten, 1985, p. 60 on this point.

The examples discussed so far show that copula constructions with adjectives fulfill the criteria for so-called coherent constructions: Adjuncts can scope over predicates in the predicate complex, predicates can be fronted without their arguments, arguments of several heads can be scrambled with respect to each other.

However, there are also examples that are reminiscent of incoherent constructions: In (17) the adjectives are not adjacent to the copula but intraposed in the Mittelfeld:

(17) a. Sie wuchsen in einem gesellschaftlichen Klima auf, das *freier*
they grew in a social climate PART(up) that freer
in Deutschland nie *war*.[2]
in Germany never was
'They grew up in a social climate that was freer than ever in Germany.'

b. daß *ausschlaggebend für die Interpretation abgeleiteter Verben* bestimmte
that decisive for the interpretation derived verbs certain
semantische Interpretationsmuster *sind*, die sich [...][3]
semantic interpretation.models are which self
'that certain semantic interpretation models that are [...] are decisive for the interpretation of derived verbs.'

Due to space limitations the discussion of the data remains sketchy here, but a thorough discussion of the data can be found in Müller, 2002, Chapter 2.1.9.

In 2002, I focussed on adjectival predication, but of course the copula can be combined with predicative NPs and PPs as well. In contrast to adjectival predication, predicative NPs and PPs do not enter the predicate complex in the sense that the noun or preposition forms a complex with the copula. Instead nouns and prepositions that are used predicatively have to form full phrases and hence can be intraposed (that is, scrambled) (Müller, 1999, p. 173).

Resultative constructions with adjectival predicates behave similarly to copula constructions. Partial fronting and scrambling of arguments is allowed. However, PPs can be predicates in resultative constructions as well. Resultative constructions with PPs resemble incoherent constructions, while resultative constructions with adjectives allow for coherent constructions.

This section showed that predicative constructions can take part in cluster formation (primary and resultative predication with adjectives) but that there are also cases in which no complex formation takes place (primary predication with NPs and PPs, and resultative predication with PPs). An analysis should provide a unified account of these phenomena.

2 Previous Accounts

This section discusses previous proposals in the literature. I start with a lexical rule-based proposal to predication, continue with van Eynde's non-raising approach, and finish the section with a discussion of my earlier treatment of primary and secondary adjectival predication.

[2] taz, 01.07.1995, p. 10.

[3] In the main text of Kaufmann, 1995, *Konzeptuelle Grundlagen semantischer Dekompositionsstrukturen*, p. 162.

2.1 Pollard and Sag 1994 and Sag and Ginzburg 2000

Pollard and Sag (1994, p. 360) sketch the lexical rule in (18) that takes nouns as used in normal referential NPs like *a teacher* in (19a) and maps them onto another lexical item that can be used predicatively like in (19b).

(18) $\text{N}[-\text{PRD}, \text{SUBJ}\ \langle\rangle]:[\text{RESTRICTION}\ \{\boxed{2}\}]_{\boxed{1}} \mapsto \text{N}[+\text{PRD}, \text{SUBJ}\ \left\langle\ \text{XP}_{\boxed{1}}\ \right\rangle]:\boxed{2}$

(19) a. A teacher laughs.
b. John is a teacher.

Ginzburg and Sag (2000, p. 409) give the following variant of the rule in (18):

(20) Singular Predicative Noun Lexical Rule:

$$\begin{bmatrix} \text{SS}|\text{LOC}|\text{CAT}|\text{HEAD}\ n \\ \text{ARG-ST}\ \langle\ \boxed{1}\ \rangle \oplus \boxed{A} \\ lx \end{bmatrix} \Longrightarrow_{LR} \begin{bmatrix} \text{SS}|\text{LOC}|\text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{AGR}|\text{NUM}\ sg \\ \text{PRED}\ + \end{bmatrix} \\ \text{SPR} & \langle\ \boxed{1}\ \rangle \\ \text{SUBJ} & \langle\ \boxed{2}\ \rangle \end{bmatrix} \\ \text{ARG-ST}\ \langle\ \boxed{2}, \boxed{1}\ \rangle \oplus \boxed{A} \\ word \end{bmatrix}$$

The lexical rule in (18) adds a subject to the valence features of the noun and by doing so makes it parallel to predicative adjectives. The copula and verbs like *seem* and *consider* are treated as raising verbs that raise the element in SUBJ and make it their own subject or – in the case of *consider* – object. Such a raising analysis of the copula and verbs like *consider* is also assumed by other researchers working on different languages (see for instance Müller, 2002, Chapter 2.2.7–8).

Pollard and Sag suggest that the element in the set of restrictions of the noun in the input of the rule is represented as the main semantic contribution of the resulting noun. So the contribution of *teacher* in (19b) is *teacher'*(1), while it is 1|{*teacher'*(1)} for (19a).[4] As Pollard and Sag point out, this analysis does not extend to proper nouns like those in (1a) for semantic reasons. Like most researchers Pollard and Sag (1987, p. 66) distinguish between the *be* of predication and the *be* of identity, and hence the lexical rule does not have to account for cases with two proper names or two pronouns.

As Kasper (1995) pointed out in unpublished work[5], the lexical rule-based analysis fails for examples that contain modifiers in the predicative phrase:

(21) He is a good candidate.

The classical analysis of adjuncts assumes that nominal modifiers attach to an $\overline{\text{N}}$ and identify their referential index with the referential index of the noun. But if the

[4] The curly brackets around 2 in the input are missing in Pollard and Sag's version of the lexical rule.

[5] See also Gerbl, 2007, p. 241.

semantic contribution of *candidate* is a predicate rather than an index, modification cannot apply as usual.[6]

2.2 Van Eynde 2008

Van Eynde suggests the following alternative to the raising analysis: Lexical items for *seems* as in (22a) are constrained by (23) and items like *consider* in (22b) are constrained by (24).

(22) a. John seems a nice guy.
b. Bob considers his brother a genius.

(23) a1-pred-lex ⇒

$$\left[\begin{array}{l}\text{ARG-ST}\left\langle \text{NP}_{\boxed{1}}\text{ (, PP}_{\boxed{2}}\text{), Z}_{\boxed{3}}\right\rangle \\ \text{SS|LOC|CONT|NUCL}\left[\begin{array}{l}\text{EXPERIENCER}\quad \boxed{2} \\ \text{SOA-ARG|NUCL}\left[\begin{array}{ll}\text{INST} & \boxed{3}\ \textit{index} \\ \text{THEME} & \boxed{1}\ \textit{index} \\ \multicolumn{2}{l}{\textit{coref-rel}}\end{array}\right] \\ \textit{exp-soa-rel}\end{array}\right]\end{array}\right]$$

(24) a2-pred-lex ⇒

$$\left[\begin{array}{l}\text{ARG-ST}\left\langle \text{NP, NP}_{\boxed{2}}\text{, Z}_{\boxed{3}}\right\rangle \\ \text{SS|LOC|CONT|NUCL}\left[\begin{array}{l}\text{SOA-ARG|NUCL}\left[\begin{array}{ll}\text{INST} & \boxed{3}\ \textit{index} \\ \text{THEME} & \boxed{2}\ \textit{index} \\ \multicolumn{2}{l}{\textit{coref-rel}}\end{array}\right] \\ \textit{soa-rel}\end{array}\right]\end{array}\right]$$

By assuming these lexical entries van Eynde can analyze the sentences in (22) with normal nouns without having to assume a separate predicative lexical item for the predicative usage of the noun.

Van Eynde assumes that all predicate selectors contribute such semantic information and explicitly includes the copula *be* here. He argues that the dative of judgment depends on the copula, which he takes as evidence for its relational status:

(25) Es ist mir zu kalt.
it is me.DAT too cold
'It is too cold for me.'

Traditionally it is said that this dative depends on the *zu* (How this is captured in HPSG is a different question. The analysis is not trivial since dative and *zu* can be discontinuous). Note, however, that van Eynde would be forced to assume empty

[6]This may not be an issue if an MRS semantics (Copestake et al., 2005) is assumed. However, one would have to be willing to claim that the type of the index of *candidate* is not changed by the predication lexical rule.

copulas in prenominal position if he were to apply his argument to the following data:

(26) a. bis auf das mir zu kalte Ziel Spitzbergen
until on the me.DAT too cold goal Spitsbergen
'except for the goal Spitsbergen, which is too cold for me'

b. die mir zu warme Book-Unterseite
the me.DAT too warm bottom.of.the.Book
'the bottom of the Book, which is too warm for me'

Here we have *mir zu warme* and *mir zu kalte*, with *zu* present but in a prenominal context in which copulas are never present.

There are examples of copula constructions with a dative without a degree word like *zu* ('to') or *genug* ('enough') being present:

(27) Du bist mir ja ein schöner Vorsitzender!
you.NOM are me.DAT PART a nice chair
'You are a nice chair to me.'

Such sentences are used to express that the speaker thinks that the addressee does not have all properties that are usually assigned to the predicative noun. Such datives should be handled as scopal modifiers that encapsulate the meaning of the predication similar to the way suggested by van Eynde in (23).

Another example of datives in copula constructions is shown in (28):

(28) Er war dem König ein treuer Diener.
he.NOM was the king.DAT a faithful servant
'He was a loyal servant of the king.'

I would argue that such datives are adjuncts as well. They are of the type we see in (29):

(29) Er bemalt dem König den Tisch.
he.NOM paints the king.DAT the table.ACC
'He paints the table for the king.'

The verb *bemalen* ('paint') is a transitive verb and the dative is a modifier that can be used to express the benefactive/malefactive of the event (Wegener, 1985).[7]

Van Eynde's analysis works for the given examples, but the argumentation against the raising analysis is not convincing. In addition, the identity analysis faces several problems.

The first problem is that pronouns and proper names cannot be used as predicates in such constructions:

(30) a. * He seems him.

b. * He seems John Malkovich.

[7]Since such datives interact with the dative passive, they are probably licensed by a lexical rule that adds the dative to the argument list of a verb.

Here the copula has to be used:

(31) a. He seems to be him.
b. He seems to be John Malkovich.

The same is true for gerunds and infinitives:

(32) a. * The greatest pleasure on earth seems eating oysters ....
b. * His main worry now seems to get rid of his detractors.
c. The greatest pleasure on earth seems to be eating oysters ....
d. His main worry now seems to be to get rid of his detractors.

This difference is captured by an analysis that treats *seem* as a raising verb and assumes that there is an equational copula *be*. Since *seem* does require a predicative phrase as complement, gerunds and infinitives are excluded and since the identity copula can be combined with gerunds and infinitives, examples like (32c,d) are well-formed.

Secondly, there seems to be no way to account for the differences in question tags and pronouns in left dislocation structures that were discussed in Section 1.1.

In addition there is a very general problem of the analysis: It does not extend to predicates with an expletive subject (12) or predicates that do not have a subject at all (13). In both cases there is nothing present that could be "coreferential" with the adjectival predicate.

Van Eynde (presentation at HPSG 2009) suggests that the THEME role of the *coref-rel*' is optionally filled: that is, in the case of expletives there is no index linked to THEME. He argues that this is parallel to cases like (33):

(33) a. He eats pizza.
b. He eats.

In (33b) the object of *eats* remains implicit. Note that this analysis introduces a disjunction in the lexical item for the copula, namely a disjunction between referential and expletive indices of the subject NP. In addition one would need another disjunction that accounts for the fact that the subject can be missing altogether. Therefore one would have to have three versions of the copula: one for clauses with referential subjects, one for clauses with expletive subjects, and one for clauses without subject. The big problem for such a proposal is that it has to be ensured that the right copula is used with the right embedded predicate. For instance it is impossible to use (13b) with a subject:

(34) * weil der Mann ihm schlecht ist
because the man.NOM him.DAT sick is

Similarly, expletives are impossible in normal prediative constructions:

(35) Es ist klug.
it is smart
'He/she is smart.'

(35) does not have a reading in which nobody is smart or there is generic smartness. The *es* has to be referential and it has to refer to something that has neuter gender as for instance *Mädchen* ('girl') or *Bürschlein* ('boy'). This means that the subject of the copula has to be expletive if and only if the embedded predicate allows for an expletive. It can be missing if and only if the embedded predicate does not require a subject. This is best captured by a raising analysis.

2.3 Müller 2002

Some authors have suggested using a special valence feature called XCOMP or VCOMP for the selection of an argument that enters predicate complex formation (Chung, 1993; Rentier, 1994; Müller, 1997; Kathol, 1998). Müller (2002, p. 103) extended the verb complex analysis of other authors to copula constructions and resultative secondary predicates. He gave the following lexical item for the copula:

(36) *sein* (predicative copula, according to Müller (2002, p. 103)):

$$\left[\begin{array}{l} \textsc{subcat}\ \boxed{1} \oplus \boxed{2} \\ \textsc{xcomp}\ \left\langle \begin{array}{l} \textsc{adj}[\textsc{mod}\ \textit{none},\ \textsc{prd}\ +,\ \textsc{subj}\ \boxed{1},\ \textsc{subcat}\ \boxed{2}, \\ \quad \textsc{xcomp}\ \langle\rangle,\ \textsc{lex}\ +] \end{array} \right\rangle \end{array}\right]$$

The copula raises both the subject, if there is one (1), and other arguments of the embedded adjective (2). The predicative adjective is required to be LEX+. Therefore it forms a complex with the copula directly and all its arguments are raised.

The problem with this lexical item is that it specifically selects a predicative adjective. Müller selected all verbs that take part in complex formation via XCOMP, but those that were realized as full phrases – that is in so-called incoherent constructions – were selected via SUBCAT. The problem that results from this treatment is that two lexical items for the predicative copula are needed, one that selects NP and PP predicates and one for adjectival predicates. Similarly the lexical rule for resultative predication selects the result predicate via XCOMP. Since both PPs and adjectives can function as the result predicate in German but only structures with adjectives fulfill the criteria for coherent constructions, a more general treatment of the facts is desirable.

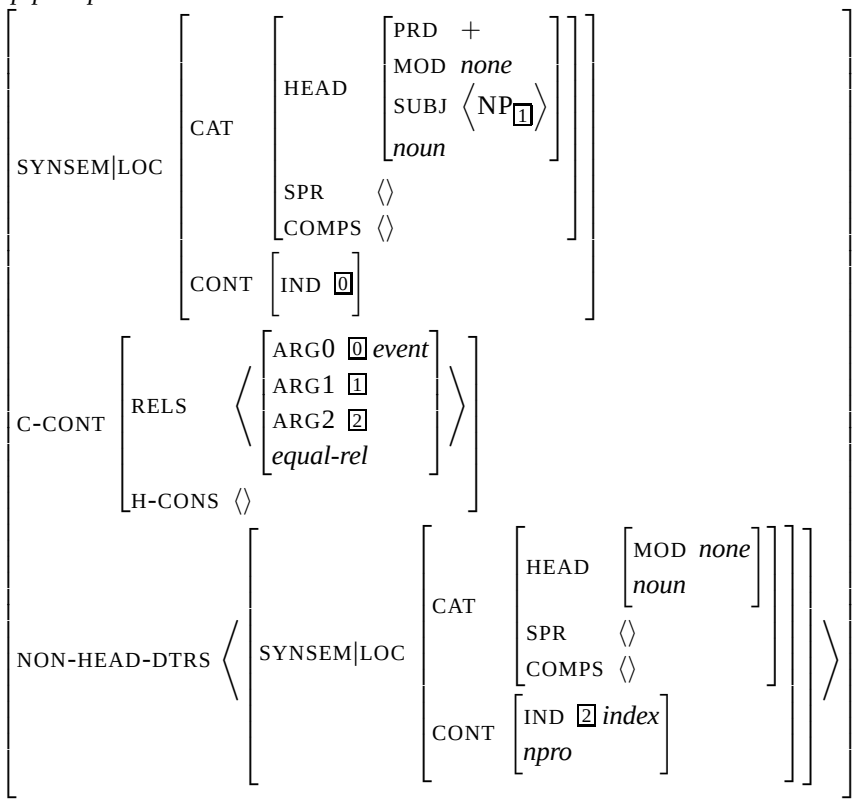
3 The Analysis

As was discussed in Section 2.1, lexical rule-based approaches to predicative NPs have a problem with the semantic type of predicative nouns. NP internally the nouns behave like normal nouns, only the complete NP has a predicative function. The problem can be solved by assuming Schema 1 instead of the lexical rule in (20).[8] This unary projection applies to a full NP and licenses the predicative NP

[8] Gerbl (2007, p. 241–242) independently suggested a similar solution. See also Partee, 1987.

Schema 1 (Predicative NP Projection Schema)

np-pred-phrase ⇒



(PRD+) with an appropriate SUBJ value. The referential index of the subject NP (1) is related to the referential index of the daughter NP (2). The relation is introduced constructionally via C-CONT (see Copestake, Flickinger, Pollard and Sag, 2005 on semantic composition and C-CONT). The unary branching rule cannot apply to its output since the daughter NP has to have an IND value of type *index* and the resulting sign has an IND value of type *event*.

I assume that SUBJ is not a valence feature (Pollard, 1996; Kiss, 1992). In configurational languages like Danish and English the subject is mapped to SPR for those heads which allow direct combination with their subject. For non-configurational languages the subject of finite verbs is mapped to the COMPS list and the one of non-finite verbs is mapped to SUBJ, since it is never combined with the verb directly.

Note that in this analysis there is still ambiguity between NPs that can function as complements and NPs that can function as predicates – something that van Eynde criticized – but the ambiguity is reduced considerably since it is only present at the NP level and not for all nominal projections. So there is no predicative version of *good candidate*.

The analysis changes the semantic type of an NP and its syntactic properties. It is interesting to note that a similar analysis is necessary for temporal NPs: As

Flickinger (2008, p. 91–92) points out, it is not just simple NPs that can act as modifiers of verbs. The time nouns can be embedded inside of a more complex NP, as (37) shows.

(37) a. Kim disappears those days.
b. Kim disappears some of those days.

Therefore a treatment in which the time noun has a MOD value that allows it to modify a verb is not appropriate. Further evidence for an analysis as unary projection is provided by parallel German examples:

(38) a. Er arbeitete den größten Teil der Nacht.
he worked the.ACC largest part of.the.GEN night
'He worked almost all night.'
b. Er arbeitete die halbe Nacht.
he worked the.ACC half.ACC night
'He worked half of the night.'

In (38a) the time expression *der Nacht* is genitive but the whole NP is accusative. This accusative is called a semantic case. It is connected to the function of the NP and is not assigned by the verb. It is clear from data like (38a) that an analysis like the one suggested by Müller (2007, p. 226) that assigns both function (i.e. MOD value) and case lexically cannot explain the data in (38a). Hence we have evidence from another area of grammar that type shifting phrasal schemata are needed.

In addition to the unary branching schema one would keep the lexical rule for sentences with determinerless predication like (2f). The noun *mayor* is mapped to a predicative version. This predicative version can be combined with its arguments but since the index is of the wrong type it cannot be combined with adjuncts.

Turning to the lexical item for the copula, I suggest the following for German: This lexical entry is similar to the one suggested by Müller (2002, p. 103) in that

(39) Entry for the predicative copula for German:

$$\begin{bmatrix} \text{ARG-ST } \boxed{1} \oplus \boxed{2} \oplus \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRD} & + \\ \text{SUBJ} & \boxed{1} \end{bmatrix} \\ \text{COMPS} & \boxed{2} \\ \text{CONT} & \begin{bmatrix} \text{IND} & \boxed{3} \\ \text{LTOP} & \boxed{4} \end{bmatrix} \end{bmatrix} \right\rangle \\ \text{CONT} \quad \begin{bmatrix} \text{IND} & \boxed{3} \\ \text{LTOP} & \boxed{4} \end{bmatrix} \\ \text{RELS} \quad \langle\rangle \end{bmatrix}$$

both the elements of SUBJ and of COMPS of the embedded predicate are raised to the ARG-ST list of the copula. The elements at the COMPS list of the embedded predicate are raised in addition to the elements in SUBJ since German forms a verbal complex and predicative constructions like copula constructions and resultative

constructions take part in complex formation. The formation of verbal complexes is analyzed via argument attraction (Hinrichs and Nakazawa, 1994; Kiss, 1995).

Note that nothing is said about the actual members of the lists. It is therefore possible to handle the cases in (40) as well as the subjectless examples that were given in (13).

(40) a. weil er auf seinen Sohn stolz ist
because he.NOM on his son proud is
'because he is proud of his son'

b. weil er klug ist
because he.NOM smart is
'because he is smart'

In the analysis of (40a), 1 contains the subject (*er*) and 2 the PP (*auf seinen Sohn*). In the analysis of (40b), 1 contains the subject (*er*) and 2 is the empty list. In the analysis of (13b), 1 is the empty list and 2 contains the dative object *ihm* ('him'). In the analysis of (13a), both 1 and 2 are the empty list.

The same lexical item can be used for English if one assumes that head-complement phrases require their non-head daughter to be saturated. If this assumption is made, it follows that the COMPS list of the predicative argument (2) has to be the empty list if this argument is used in a head-complement phrase. Hence, nothing but the subject is raised from the predicative element. German and Dutch differ from English and Danish in allowing complex formation (see Section 3.1). When predicate complexes are formed, 2 can be non-empty, since the predicate complex schema does not impose any restrictions on the length of the COMPS list of its non-head daughter.

The copula does not contribute semantically, hence the RELS list is empty. The INDEX value is shared with that of the embedded predicate. The copula enters inflectional lexical rules and these rules introduce relations that provide information about tense. The arguments of the respective relations are of type *event*.[9] Therefore, the INDEX value of the copula in (39) is *event* and hence the INDEX value of the embedded predicate has to be of type *event* as well. The requirement that the predicative element is of type *event* will play an important role in Section 3.4 on raising nouns in English.

3.1 Raising and Complex Formation

There is another important aspect regarding the lexical item in (39): The predicate is selected via COMPS rather than VCOMP or XCOMP (see Section 2.3). With a uniform selection of verbal complements via COMPS it is possible to treat optionally coherent verbs like *versuchen* with one lexical item (Kiss, 1995, p. 178). The control verb does not specify whether it forms a verbal complex with the embedded verb or not. It does not mention the LEX value of the embedded verbal element.

[9] *event* is to be understood as the most general type referring to situations. The only thing that is important here is that the type differs from the type used to refer to objects.

Because of this we can analyze examples with a predicate complex as in (41a) and examples like (41b) with so-called intraposition:

(41) a. Karl hat das Buch nicht [zu lesen versucht].
Karl has the book not to read tried
'Karl did not try to read the book.'

b. Karl hat [das Buch zu lesen] nicht versucht.
Karl has the book to read not tried
'Karl did not try to read the book.'

In comparison verbs like *scheinen* ('to seem') or modals, that obligatorily construct coherently, select a verbal complement that is LEX+. Consequently they do not allow for intraposition of a VP complement, but require complex formation.

Müller (2002, p. 112) criticized Kiss's analysis of optional coherence because it also licences unwanted structures like (42) and hence results in spurious ambiguities.

(42) weil Karl das Buch [[dem Mann zu geben] verspricht].
because Karl the book the man to give promises
'because Karl promises to give the book to the man.'

In (42) *versprechen* is combined with a partly saturated verbal projection *dem Mann zu geben* and the non-saturated argument *das Buch* is raised and combined with *dem Mann zu geben verspricht* in a later step. However, this structure is excluded if arguments are required to be saturated and elements of the predicate complex are required to be LEX +.[10] Hence, I assume the Schemata 2 and 3.

Schema 2 (Head-Complement-Schema)
head-complement-phrase ⇒

$$\left[\begin{array}{l} \text{SYNSEM}|\text{LOC}|\text{CAT}|\text{COMPS } \boxed{1} \oplus \boxed{3} \\ \text{HEAD-DTR}|\text{CAT}|\text{COMPS } \boxed{1} \oplus \langle\, \boxed{2} \,\rangle \oplus \boxed{3} \\ \text{NON-HEAD-DTRS} \left\langle \left[\begin{array}{l} \text{SYNSEM } \boxed{2} \left[\begin{array}{l} \text{LOC}|\text{CAT}|\text{COMPS } \langle\rangle \\ \text{LEX } - \end{array}\right] \end{array}\right] \right\rangle \end{array}\right]$$

Schema 2 shows the version of the schema for languages with free constituent order. In languages like English, that have a strict order, $\boxed{3}$ is the empty list (Müller, In Preparation). With the new treatment of predicate selection via COMPS, it is not required that predicative PPs or NPs are part of the predicate complex as was suggested by Müller (2002) for PPs in resultative constructions. Instead they can be analyzed as head-complement structures.

Returning to the copula, it allows the embedding of fully saturated phrases like predicative NPs and PPs but also allows for the formation of a predicate complex

[10] This is a simplification, since I assume that the so-called Third Construction is also an instance of predicate complex formation. Schema 3 has to be refined in order to allow non-lexical material in the complex if the conditions of the Third Construction are met. See Müller, 1999 for details.

Schema 3 (Predicate Complex Schema)
head-cluster-phrase ⇒

$$\begin{bmatrix} \text{SYNSEM} & \left[\text{LOC}|\text{CAT}|\text{COMPS } \boxed{1}\right] \\ \text{HEAD-DTR} & \left[\text{SYNSEM}|\text{LOC}|\text{CAT}|\text{COMPS } \boxed{1} \oplus \langle\, \boxed{2} \,\rangle\right] \\ \text{NONHEAD-DTRS} & \langle\, [\ \text{SYNSEM } \boxed{2} \ [\ \text{LEX} + \ ]\ ] \,\rangle \end{bmatrix}$$

consisting of adjective and copula. Since coherence is optional we can explain so-called focus movement of adjectives as in (17), something that was noted by Müller (2002, p. 69) but not treated in his analysis.

3.2 German, English, Danish: Specificational Constructions, Question Tags, and Left Dislocation

The difference between specificational and predicational structures is best captured by generalizing the German lexical item for the copula: Instead of using the append operator (⊕) to concatenate two lists as in (39), the more general version of the copula uses the shuffle operator (◯):

(43) Entry for the Danish and English predicational and specificational copula:

$$\begin{bmatrix} \text{ARG-ST} & (\boxed{1} \oplus \boxed{2}) \bigcirc \left\langle \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRD} & + \\ \text{SUBJ} & \boxed{1} \end{bmatrix} \\ \text{COMPS} & \boxed{2} \end{bmatrix} \right\rangle \end{bmatrix}$$

Since English and Danish do not form predicate complexes there is just the Head-Complement Schema, which requires complements to be fully saturated. Hence $\boxed{2}$ is the empty list. $\boxed{1}$ is a list containing exactly one element, since neither English nor Danish allows for subjectless constructions. Shuffle combines the elements of two lists in any order provided the order of the elements in the respective lists is preserved. In the example above we have a trivial case: Two lists with exactly one element are shuffled. The result is that the predicative argument is ordered first or last. The lexical item for the copula gets inflected and the first element of the ARG-ST list is mapped to SPR and the rest of the list to COMPS.

Gerbl (2007, p. 102, 190–191) pointed out that there are additional constraints regarding extraction of or extraction out of the post-copular phrase in specificational structures. These can be formalized by an additional implicational constraint with a complex antecedent, which is not given here due to space limitations.

3.3 Raising and Nonlocal Dependencies

The treatment of raising in (39) differs in an interesting way from the characterization of raising as it is given in Ginzburg and Sag (2000, p. 22). Ginzburg and Sag assume the following constraint:

(44) [ARG-ST ⟨ [LOC $\boxed{1}$], [SUBJ ⟨ [LOC $\boxed{1}$]⟩] ⟩]

This version of raising differs from earlier proposals in that only LOCAL values are shared instead of whole *synsem* objects. The reason for this treatment is that one would get problems with the lexical SLASH amalgamation that was suggested by Bouma et al. (2001): if the whole *synsem* object was shared there would be SLASH amalgamation in the subject and in the phrase from which the subject is raised, an unwelcome result (Ginzburg and Sag, 2000, p. 21, fn. 8). So if one were to assume an amalgamation account of nonlocal dependencies for German, one would be forced to use a relational constraint that walks through lists and produces a copy of the list that contains elements that share the LOCAL values with the elements of the list from which they are raised. Note that assuming a disjunction that refers to the arity of the SUBJ list is not sufficient for German since complements are raised as well and the number of elements on the COMPS list is restricted by performance factors only (Müller, 2004, p. 220).

Rather than complicating the analysis of raising, I will drop the amalgamation analysis and return to an analysis that introduces nonlocal dependencies in syntax (through a trace or a unary branching projection).[11] As Bouma, Malouf and Sag (2001, p. 29) point out, the amalgamation analysis is not necessary to account for extraction path marking phenomena. If adjuncts are registered at a head (either in an adjunct as dependents analysis or via a mechanism of the kind suggested by Levine and Hukari (2006, Chapter 3.7.2)), a pathway marking element can attach to the head and check its INHER|SLASH value and the SLASH values that are contributed by the elements in the COMPS list and the SLASH values of the registered adjuncts.

3.4 Predicative Raising-Nouns

Doug Arnold brought the following kind of predicative noun phrases to my attention:

(45) a. He is a dead cert/a certainty to win.
b. This is a cinch to prise off.

These nouns are raising nouns and can only be used predicatively:

(46) a. * A dead cert/a certainty to win came into the room.
b. * A cinch to prise off came into the room.

I assume the lexical entry in (47) for a noun like *cert*. This noun is similar to normal nouns in that its semantic contribution is a referential index with person and number features and in that it takes a determiner as specifier that has to agree with the noun in number. The noun takes as its complement a VP and raises the missing specifier of this VP (the subject) to its own SUBJ list. The referential index of the noun is linked to the first argument of the relation that is contributed by the noun and the semantic contribution of the VP is linked to the second argument.

[11] See Bender, 2002, Müller, To appear, and Sag, Wasow and Bender, 2003, p. 463–464 for arguments that empty elements actually simplify grammatical descriptions.

(47) *cert*:

$$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{PRD} & + \\ \text{SUBJ} & \langle \boxed{1} \rangle \\ & \textit{noun} \end{bmatrix} \\ \text{SPR} & \left\langle \text{DET}[\text{NUM } \boxed{2}] \right\rangle \\ \text{COMPS} & \left\langle \text{VP}[\text{SPR } \langle \boxed{1} \rangle]\text{:}\boxed{3} \right\rangle \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} \text{IND } \boxed{4} & \begin{bmatrix} \text{PER} & 3 \\ \text{NUM } \boxed{2} & \textit{sg} \\ & \textit{index} \end{bmatrix} \end{bmatrix} \\ \text{RELS} & \left\langle \begin{bmatrix} \text{ARG0 } \boxed{4} \\ \text{ARG1 } \boxed{3} \\ \textit{cert} \end{bmatrix} \right\rangle \end{bmatrix}$$

Since the noun is specified to be PRD+, all projections of this noun are excluded in positions in which non-predicative NPs are required and hence sentences like (46) are ruled out.

After combination of this lexical item with the VP complement, the determiner, and possibly some adjuncts, the resulting phrase can function as the daughter in the Predicative NP Projection Schema. It is then projected to an NP that has an index of type *event*. The resulting NP is compatible with the requirement of the copula that the predicative argument has to have an index of type *event*.

One thing is missing to make the analysis of sentence like (45) complete: The Predication Schema does not identify the HEAD value of the non-head daughter with the HEAD value of the mother. After all it usually applies to non-predicative NPs and hence, sharing of the HEAD values would cause conflicts in these cases. Therefore the SUBJ value of the raising noun NP is not identified with the SUBJ value in the mother node. This has to be stated explicitly for the cases under discussion:

(48)
$$\begin{bmatrix} \text{NON-HEAD-DTRS} \langle [\ \text{SYNSEM|LOC|CAT|HEAD|PRD} + \ ] \rangle \\ \textit{np-pred-phrase} \end{bmatrix} \Rightarrow$$
$$\begin{bmatrix} \text{SYNSEM|LOC|CAT|HEAD|SUBJ } \boxed{1} \\ \text{NON-HEAD-DTRS} \left\langle [\ \text{SYNSEM|LOC|CAT|HEAD|SUBJ } \boxed{1}\ ] \right\rangle \end{bmatrix}$$

The constraint in (48) is the only stipulative part of the analysis, but I see no other way to acount for this data if one does not want to employ several semantic features for external and internal content of phrases as was done by Kasper (1995).

4 Conclusion

This paper provided the basic building blocks for predicational and specificational constructions. An entry for the equational copula was not given, but I consider this trivial.

I have shown that the arguments provided by van Eynde for an identity analysis without raising are not convincing. In addition, in his analysis there are problems with pronouns in predication structures, the analysis cannot account for question

tags and pronouns in left dislocation structures, and the analysis does not extend to subjectless constructions.

I suggest returning to a raising analysis of predication that raises the complete value of SUBJ of the embedded predicate rather than identifying LOCAL values of raised subjects. The predication lexical rule was recoded as a unary branching immediate dominance schema, which allows the inclusion of modifiers in the NP. In addition it was suggested to dispense with the XCOMP feature and to return to a COMPS-based analysis in which predicative and non-predicative arguments are selected uniformly via COMPS. This makes it possible to treat the various predication structures as optionally coherent constructions.

The analysis has been implemented in the TRALE system as part of grammar fragments of German and Danish. These grammars share a core grammar with grammars for Persian, Mandarin Chinese, and Maltese. The respective grammars can be downloaded at http://hpsg.fu-berlin.de/Software/.

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