Predicative noun phrases, and the reality of neutrality

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1 Introduction

1.1 The problem

Sentences containing predicative complements provide some of the best known examples of coordination of unlike categories in the literature, since no fewer than three kinds of categories can appear in predicative positions: adjective phrases (APs), prepositional phrases (PPs), and noun phrases (NPs). These three categories allow for three kinds of unlike coordination (ignoring coordinations of more than two items): AP with PP; PP with NP, and NP with AP. Sag et al. (1985) show examples of all three kinds, some of which are shown in (1):

(1) (from Sag et al. 1985, (2), (3))

a. Pat is either **[stupid]$_{AP}$** or **[a liar]$_{NP}$**.
b. Pat is **[a Republican]$_{NP}$** and **[proud of it]$_{AP}$**.
c. That was **[a rude remark]$_{NP}$** and **[in very bad taste]$_{PP}$**.
d. Sandy is either **[a lunatic]$_{NP}$** or **[under the influence of drugs]$_{PP}$**.
e. Pat is either **[asleep]$_{AP}$** or **[at the office]$_{PP}$**.

Attested examples of NP-PP and NP-AP coordinations can be found on the Internet, by searching for "mixed-wh" interrogatives like those in (2):

(2) Mixed-wh attestations from the Internet

a. **[Who]$_{NP}$** and **[Where]$_{PP}$** Are Our Children with Cochlear Implants?
b. In the case of Saul's replacement, Samuel knows **[where]$_{PP}$** and **[whose son]$_{NP}$** the new king will be, but he does not know which one of the sons of Jesse.
c. As long as I am distracted by **[how]$_{AP}$** or **[what]$_{NP}$** I should be, or **[how]$_{AP}$** or **[what]$_{NP}$** she should be, or **[how]$_{AP}$** or **[what]$_{NP}$** the marriage or relationship should be, I will not be able to see her, or myself, clearly, nor will I be able to see anything as it truly is.

1.2 Two analyses

In a type-logical framework, there are at least two ways of describing the unlike coordinations seen above. One way is simply to say that *be* can take more than one type of complement. For instance, the lexical entry for be would indicate that it can take

either an NP, AP, or PP argument. I will refer to this as the "copula accommodates" (CA) analysis. Morrill (1994, p. 167) gives such an analysis. Under such an analysis, *be* might have a lexical entry as in (3). Here, Pr is an atomic category of type $\langle e,t\rangle$, given to predicative APs and PPs (following a suggestion in Carpenter 1997, p. 197); the conjunction constructor indicates that *be* has both categories shown here, and can be used both ways at once. The semantic term is an ordered pair of terms, the first corresponding to the VP/Pr category, and the second, to the VP/NP category.

(3) *be*: (VP/Pr)∧(VP/NP): $\langle \lambda P \lambda x.P(x), \lambda x \lambda y.(x = y)\rangle$

However, the more popular analysis has been to say that *be* selects only for a certain semantic type (specifically, $\langle e,t\rangle$) as its complement, and that APs, PPs and noun phrases all have (or can have) this semantic type, an idea that goes back at least to Williams (1983), and is also promoted in Partee (1986). I will refer to this as the "noun phrase accommodates" (NPA) analysis. Under this analysis, *be* would have a lexical entry like that in (4):

(4) *be*: VP/Pr: $\lambda P \lambda x.P(x)$

Why is the NPA analysis the favored one? The main reason is the claim that semantic and category neutrality does not occur; that is, that if an expression has more than one category and semantic term, then it must be ambiguous (see for example, Bayer 1996, Heylen 1996). If a lexical entry such as (3) is allowed, then there is no theoretical obstacle to writing a single lexical entry for (to take a well-known example) *can*, and licensing this famously ungrammatical sentence:

(5) (from Pullum & Zwicky 1986)

*I can tuna for a living and get a new job tomorrow if I want.

Rather than sort out which expressions are ambiguous and which can have category and semantic neutrality, it is easier to say that different semantics implies ambiguity. The CA analysis allows this stance to be maintained.

Interestingly enough, however, the NPA analysis does not eliminate category and semantic neutrality. With a new type available for NPs, new possibilities for neutrality are opened up. If predicative NPs now have a different type from referential NPs (i.e., those of type *e;* for example, *Kim*) and quantificational NPs (those of type $\langle\langle e, t\rangle, t\rangle$, for example, *every cat*), it is reasonable to ask if an NP ever needs to have more than one of these types at once—in other words, whether neutrality among NPs exists. As it turns out, the answer is yes.

2 Neutrality and noun phrases

The three possible categories for noun phrases are summed up in (6). With these three categorial possibilities for noun phrases, there are three binary possibilities for neutrality:

NP((NP(S), Pr(NP, and Pr((NP(S). These possibilities will be explored in sections 3.1-3.3.

(6) Possible categories for noun phrases

a. NP (referential; type *e*)
b. Pr (predicative, type $\langle e, t\rangle$)
c. NP⇑S (quantificational, type $\langle\langle e, t\rangle, t\rangle$)

2.1 Examination: NP∧(NP⇑S) neutrality

In fact, little needs to be said about NP∧(NP⇑S) neutrality. First, the category NP∧(NP⇑S) will be available to any NP, since NP⇑S is derivable from NP. Second, even though this neutrality is automatically available to any NP, there does not seem to be a linguistic need for it. The most common way for a category of form A∧B to be used is for it to be the argument to a coordination of functors, one with category C/A, and the other with category C/B. In this case, therefore, it might seem that neutrality would be required if an intensional verb such as *seek*, of category VP/(NP⇑S), is coordinated with an extensional verb such as *find*, of category VP/NP. However, since VP/(NP⇑S) is derivable from VP/NP, neutrality is not necessary even here.

2.2 Examination: NP∧Pr neutrality

Cases of NP∧Pr neutrality exist, as shown in **(7**):

(7) a. He wishes he could <u>be</u> or <u>meet</u> {<u>Tiger Woods / that man</u>}.
VP/Pr VP/NP NP∧Pr
b. That woman neither <u>is</u> nor <u>is impersonating</u> <u>Eva Peron</u>.
VP/Pr VP/NP NP∧Pr
(slightly modified from a sentence from Robert Levine, p.c.)

The VP in (7a) can be derived if Tiger Woods has the category and term as in (8); similar remarks hold for *Eva Peron* in (7b).

(8) *Tiger Woods*: NP∧Pr: $\langle \mathbf{tw'}, \lambda x.(x = \mathbf{tw'})\rangle$

Before finishing with NP∧Pr neutrality, some suggestive evidence involving *wh* words will be noted. If the phrase *be or meet* has category VP/(NP∧Pr), then interrogative and relative *who* will need to be recategorized in the lexicon to license the items in (9):

(9) a. Who does Kim want to <u>be</u> or <u>meet</u>?
VP/Pr VP/NP

b. the person who Kim wanted to be or meet
VP/Pr VP/NP

In order for *who* to be able to combine with these phrases, it will have to have categories as given in (10). Although this necessity does not prove that NP∧Pr neutrality exists for noun phrases, it does show that it exists in argument categories for *who,* and thus increases the plausibility of such a neutrality for noun phrases.

(10) Categories for interrogative and relative *who*

a. (nonembedded) interrogative: $S_w/(S_{inv}/(NP\wedge Pr))$
b. relative: $(N\backslash N)/(S/(NP\wedge Pr))$

Also, free relative clauses suggested suggest NP∧Pr neutrality for noun phrases. Consider the sentences in (11).

(11) a. I'll meet whoever you want me to be.
VP/NP VP/Pr
b. I'll be whoever you want me to meet.
VP/Pr VP/NP
c. I'll meet whoever you want me to meet.
VP/NP VP/NP
d. I'll be whoever you want me to be.
VP/Pr VP/Pr

In (11a), *whoever* needs to have category NP/(S/Pr); (11b), Pr/(S/NP); in (11c), NP/(S/NP); and in (11d), Pr/(S/Pr). As with free relative where, having four entries for whoever misses a generalization, and disregards the free-relative "matching effect" observed by Bresnan and Grimshaw (1978). It is overall more plausible to assign *whoever* the category (NP∧Pr)/(S/(NP∧Pr)), which increases the plausibility of NP∧Pr neutrality in noun phrases.

Overall, then, NP∧Pr neutrality has been found not only in actual noun phrases, but also in the gap categories for *wh* words.

2.3 Examination: (NP⇑S)∧Pr neutrality

(NP⇑S)∧Pr neutrality can be found when a verb taking an NP⇑S complement is coordinated with a verb taking a Pr complement. Such a sentence is constructed in (12), with the intensional verb *sought* and *became*:

(12) a. Kim sought and then became Robin.
VP/(NP⇑S) VP/Pr (NP⇑S)∧Pr
b. Kim sought and then became a celebrity.

VP/(NP⇑S) VP/Pr (NP⇑S)∧Pr

Sentence (12a) can be derived if *Robin* has category and term as in (13a); sentence (12b) can be derived if *a celebrity* has category and term as in (13b):

(13) a. *Robin*: (NP⇑S)∧Pr: ⟨λ*P*.*P*(**robin′**), λ*x*.(*x* = **robin′**)⟩

b. *a celebrity*: (NP⇑S)∧Pr: ⟨**some**(**celebrity′**), **celebrity′**⟩

Interestingly, (NP⇑S)∧Pr neutrality can also occur when a VP/Pr is coordinated with a VP/NP. In (14), a VP/Pr (*be*) is coordinated with a VP/NP (*meet*), just as in (7a). However, instead of the NP∧Pr *Tiger Woods*, the argument is the (NP⇑S)∧Pr *a celebrity*. Since NP∧Pr is not derivable from (NP⇑S)∧Pr, *a celebrity* will have to remain a (NP⇑S)∧Pr, with the same semantics as shown above, while *be* and *meet* are strengthened to VP/((NP⇑S)∧Pr).

(14) John wishes he could <u>be</u> or <u>meet</u> <u>a celebrity</u>.
VP/Pr VP/NP (NP⇑S)∧Pr

3 Lexical rules

Now that the necessity of NP∧Pr and (NP⇑S)∧Pr neutrality has been seen, it is time to provide a means for noun phrases to have these categories. This will be done via lexical rules.

3.1 Lexical rules relating NP and Pr

A referential-to-predicative lexical rule adapted from Carpenter (1995) is shown in (15). This operation is given the name *ident* in Partee (1986, p. 121); Carpenter (1997) notes that it is also known as Quining (p. 100). Ignoring the $ for a moment, this rule states that if the lexicon contains the triple ⟨*phon*$_i$, NP, α⟩, it will also contain the triple ⟨*phon*$_i$, Pr, λ*y*.(*y* = α)⟩. The crucial part is the identical subscript on the input and output phonologies, which will allow derivation of *phon*: NP∧Pr. I will call such a lexical rule a NEUTRALITY-PRODUCING lexical rule. The $ indicates that (15) actually a family of lexical rules, applying not only to lexical items such as *Tiger Woods*, but also to any word with ultimate result category NP, such as determiners. Sample applications of this lexical rule are given in (16).

(15) **Referential-to-predicative lexical rule**

(adapted from Carpenter 1995, (178))

phon$_i$: NP$: α ⇒ *phon*$_i$: Pr$: λx_1…λx_nλ*y*.(*y* = α(x_1)…(x_n))

(16) **Referential-to-predicative lexical rule applied to *Tiger Woods* and *that***

(a) *Tiger Woods*: NP: **tw′** ⇒ *Tiger Woods*: Pr: $\lambda y.(y = \mathbf{tw'})$

(b) *that*: NP/N: **that′** ⇒ *that*: Pr/N: $\lambda P_1 \lambda y.(y = \mathbf{that'}(P_1))$

3.2 Lexical rules relating NP⇑S and Pr

A quantificational-to-predicative lexical rule, modeled on the *BE* operation in Partee (1986), is shown in (17). Again ignoring the $, this rule states that if the lexicon contains the triple $\langle phon_i$, NP⇑S, $\alpha\rangle$, it will also contain the triple $\langle phon_i$, Pr, $\lambda y.\alpha(\lambda z.(y = z))\rangle$. Again, the identical subscript on the input and output phonologies indicates that this is a neutrality-producing lexical rule. As before, the $ indicates a family of lexical rules, applying not only to lexical items such as *everyone*, but also to any word with ultimate result category NP⇑S, such as determiners. Sample applications of this lexical rule are given in (18).

(17) **Quantificational-to-predicative lexical rule**

(modeled on *BE* operation in Partee 1986)
$phon_i$: (NP⇑S)$: $\alpha \Rightarrow phon_i$: Pr$: $\lambda x_1 \ldots \lambda x_n \lambda y.\alpha(x_1)\ldots(x_n)(\lambda z.(y = z))$

(18) **Quantificational-to-predicative lexical rule applied to article *a(n)***

a(n): (NP⇑S)/N: **some** ⇒ *a(n)*: Pr/N: $\lambda P_1.\mathbf{some}(P_1)(\lambda z.(y = z))$

4 Conclusions

We have seen that whether one chooses a "copula accommodates" or a "noun phrase" accommodates analysis to account for unlike coordination involving the copula, neutrality cannot be avoided. In the former case, one admits it immediately, in assigning *be* the category (VP/Pr)∧(VP/NP); in the latter case, the neutrality shows up in coordinations of the copula with other verbs, requiring that noun phrases have the categories NP∧Pr and (NP⇑S)∧Pr. One cannot escape the reality of neutrality, and the difficult task of distinguishing it from ambiguity must now be faced.

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