Contrastive Focus and Paycheck Pronouns

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1 Overview

Syntacticians and semanticists alike represent pronouns as having indices, as shown in (1):

(1)   He$_1$ likes Fabergé eggs.

Semanticists often assume that part of the interpretation process is assigning referents for each of these numbers[1]. This is achieved via an assignment function that attaches to the interpretation function. For instance, in (2), the assignment function returns Vladimir Putin for the index 1:

(2) $[\![$**He$_1$ likes Fabergé eggs.**$]\!]^{[1\rightarrow\text{Vladimir Putin}]}$ is true iff
       Vladimir Putin likes Fabergé eggs.

In this case, the assignment comes from the context of utterance. For instance, the speaker of (2) could be pointing to a picture of Putin. This type of pronoun is known as a referential pronoun.

   Some pronouns are assigned referents not by the context, but by another element in the syntax, as shown in (3). These are called bound pronouns.

(3)   Every Russian man thinks he$_1$ likes Fabergé eggs.

Although bound pronouns are locally precisely the same, syntactically and semantically, as referential pronouns, their special interpretation is achieved by a rule that changes the assignment function. This rule – called the Predicate Abstraction Rule by Heim & Kratzer (1998) – sets the assignment for the index in question to a variable linked to a quantifier:

(4)   [Every Russian man] λx . x thinks $[\![$**he$_1$ likes Fabergé eggs**$]\!]^{[1\rightarrow x]}$

The embedded sentence (in bold) is interpreted relative to an assignment function that maps the index 1 to the variable x. This variable is in turn bound by a λ operator, and the resulting function combines with the quantifier *every Russian man*. The resulting meaning is one where the subject of the matrix sentence – the thinker – co-varies with the subject of the embedded sentence – the liker of Fabergé eggs.

   There is a third type of pronoun, first noticed by Geach (1962) in his discussion of the wider class he calls *pronouns of laziness*. This type of pronoun got its own name at the fifth regional meeting of the Chicago Linguistics Society in a talk by Lauri Karttunen. Karttunen (1969) presented the following example of what are now called *paycheck pronouns*:

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[1] See Büring (2005) for a great introduction to syntactic and semantic binding theory.

(5)   The man who gave his paycheck to his wife was wiser than the man [who]$_x$
       gave <u>it</u> to his mistress. (it = x's paycheck)

Cooper (1979) provides the following similar example, showing that such pronouns
can exhibit co-varying interpretation as well:

(6)   John gave his paycheck to his mistress.
       [Everyone else]$_x$ put <u>it</u> in the bank. (it = x's paycheck)

The underlined pronouns *it* above are linked to the meaning of the DPs in brackets,
but they are not do not co-refer or co-vary with the DPs. Instead, they seem to refer
to or co-vary with a related individual (i.e., not x, but x's paycheck).

   Most theories of paycheck pronouns assume that – unlike bound and referen-
tial pronouns, which are locally identical syntactically and semantically – paycheck
pronouns have a different syntax and/or semantics from other pronouns (see Kart-
tunen (1969); Partee (1970); Partee (1975); Jacobson (1977); Jacobson (1980); Ja-
cobson (2000); Cooper (1979); Engdahl (1986); Heim (1990); Elbourne (2005)).
Although theories differ on the mechanics (employing either ellipsis, anaphora, or
other methods), they basically agree that, at some level, paycheck pronouns have
a complex meaning, akin to a phrase containing a pronoun. For (5) and (6), this
phrase might be *their paycheck*.

   One technical implementation of this type of proposal (involving anaphora in-
stead of ellipsis) is shown in (7):

(7)   [Everyone else] λx . $[\![t_1 \textbf{ put } [f_2 \ pro_1] \textbf{ in the bank}]\!]^{[1\rightarrow x, \ 2\rightarrow\lambda y \ . \ y\text{'s paycheck}]}$

The word *it* in this sentence actually contains two pronouns – f, which refers to
the relation holding between an employee and their paycheck, and pro, which is a
pronoun bound by the subject of the sentence, *everyone else*. The assumption is that
the utterance of *his paycheck* in a previous sentence makes the paycheck relation
salient enough to be picked up by a referential pronoun – f above.

   The goal of this paper is to instead analyze paycheck pronouns in the same
way as referential and bound pronouns. All three types will be locally identical
syntactically and semantically. I will argue that all paycheck pronouns occur in
phrases that contrast with previous material. Independently motivated machinery,
relying on existing theories of focus structure, will explain the behavior of (all)
pronouns in contrastive contexts. In this end, the new analysis will be both more
parsimonious and more empirically adequate than existing theories of paycheck
anaphora.

2   Some New Empirical Evidence

This section presents some new evidence against the traditional theories of pay-
check pronouns. First, cases involving weak crossover will cast doubt on whether
paycheck pronouns actually contain a bound variable. Second, I will argue that
paycheck interpretations invariably involve contrastive focus – an observation un-
noticed (and uncaptured) by previous proposals.

2.1 Weak Crossover

As mentioned above, traditional analyses of paycheck pronouns take them to have a complex meaning akin to the meaning of a phrase like *their paycheck*. This is consistent with the fact that in traditional examples, the pronoun can be replaced by such a phrase:

(8) a. John deposited his paycheck in the credit union. Everyone else deposited it in the bank. (after Jacobson (1977); Jacobson (1980); Jacobson (2000))

  b. ≈ John deposited his paycheck in the credit union. Everyone else deposited their paycheck in the bank.

The meaning of the paycheck pronoun is supposedly mediated by the binding between a a higher quantifier and a variable inside the meaning of the pronoun: x's paycheck. However (contra Jacobson (1977); Jacobson (1980); Jacobson (2000)), I will show in this section that paycheck pronouns can appear in places where this supposed variable cannot be bound (due to weak crossover).

   Weak crossover (henceforth WCO) is the name given to the phenomenon – illustrated in (9) – whereby an item may only bind pronouns it c-commands in its base position, not any derived positions. The sentence in (9-a) is ruled out (with the binding indicated) due to the fact that *whom* does not c-command the pronoun *his* in its base position (indicated by the trace) – even though it comes to c-command the pronoun in its surface position. Similarly, (9-b) (with the binding indicated) is out since the quantifier *every boy* does not c-command the pronoun *his* in its base position – even though (in many theories) the quantifier raises to c-command the pronoun before the level of interpretation.

(9) a. ??Whom$_i$ does his$_i$ mother loves t_i?
   b. ??His$_j$ mother loves [every boy]$_j$

If paycheck pronouns truly contain a bound pronoun, they too should be ruled out in WCO environments.

   However, there are counterexamples to this prediction, as shown in (10) - (12). Each case presents a question followed by two different answers to this question: an answer using a paycheck pronoun in the (a) sentences and an answer using a full definite description in the (b) sentences. In each case, the (b) sentence is out due to WCO, while the (a) sentence sounds fine:

(10) Q: Which man at the surgery clinic is happier?

   a. The man whose surgery cured him is happier than the man$_j$ whom$_j$ it paralyzed t_j for life.

   b. ??The man whose surgery cured him is happier than the man$_j$ whom$_j$ his$_j$ surgery paralyzed t_j for life.

(11) Q: What languages are the agents' orders in?

   a. Jones's orders are in German, but they are in French for everyone else.

   b. ??Jones's orders are in German, but his/their orders are in French for everyone else.

(12)   Q: Where is each convict's serial number?

    a.   Valjean's serial number is tattooed on the back of his hand, but it's tattooed on everyone else's palm.

    b. ??Valjean's serial number is tattooed on the back of his hand, but his number is tattooed on everyone else's palm.

Take (10-b), for instance. Here, *whom* does not c-command the pronoun *his* from its base position (indicated by the trace). Therefore, the sentence is ruled out due to WCO. If the paycheck pronoun *it* in (10-a) truly contained a bound pronoun akin to the one in (10-b), this sentence would be ruled out as well. However, the version with the paycheck pronoun sounds fine. Similarly, (11-a) and (12-a) sound better than (11-b) and (12-b), for parallel reasons.

    The pattern is that the paycheck pronoun, which supposedly has a bound variable in it, is fine even in crossover cases, but when there is an overt bound variable, the sentences sound odd under the intended readings. This is a problem for traditional analyses of paycheck pronouns.

2.2 Contrast

Another flaw in the standard analyses is that they ignore the fact that paycheck pronouns only appear where intonation and context support a contrastive interpretation. The intonation of the two clauses of a paycheck example must support them being contrastive to one another. For instance, (8-a) must be pronounced as in (13) (where all-caps represents stress). The pronunciations in (14) are aberrant and do not lend themselves to a paycheck interpretation.

(13)   John deposited his paycheck in the BANK. Everyone else deposited it in the CREDIT UNION.

(14)   a. ??John DEPOSITED his paycheck in the bank. Everyone else deposited it in the CREDIT UNION.

    b. ??John deposited HIS paycheck in the bank. Everyone else deposited it in the CREDIT UNION.

    c. ??John deposited his PAYCHECK in the bank. Everyone else deposited it in the CREDIT UNION.

    d. ??John deposited his paycheck in the BANK. Everyone else DEPOSITED it in the credit union.

    e. ??John deposited his paycheck in the BANK. Everyone else deposited IT in the credit union.

    The content, structure, and tense of paycheck sentences also must support some sort of contrast. For instance, the paycheck example in (15-a), which sets up a very natural contrast between *Thursday* and *Friday*, sounds fine. The example in (15-b) sounds odd, though, since it is much less natural to contrast *Thursday* with *on his foot*. To the extent that this contrast is possible – for instance, suppose foot surgeries only occur on Fridays – the example improves.

(15)   a.   The man who had his surgery on Thursday was happier than the man who had it on Friday.

b. ??The man who had his surgery on Thursday was happier than the man
　　　　　　who had it on his foot.

Similarly, consider the two cases in (16). The example in (16-a), where the two
sentences exhibit parallel syntax sounds better than the related example in (16-b),
where the syntax is not parallel:

(16)　　a.　John finished his exam in two minutes. Everyone else worked on it
　　　　　　for over an hour.
　　　　b.　John finished his exam in two minutes. ?It kept everyone else working
　　　　　　for over an hour.

Last, the tense and aspect play a role, as well. The example in (17) sounds odd due
to the fact that the first sentence is generic, while the second is episodic:

(17)　　John deposits his paycheck in the bank. ??Everybody else showed it to me
　　　　an hour ago.

　　　Together, the examples in this section suggest that there is an important con-
nection between contrast and paycheck pronouns. This connection is not explained
by previous analyses, which effectively overgenerate on these examples: without
further restriction, those theories predict that the sentences ruled out due to a lack
of contrast should be fine.

3　Contrastive Focus

This new data suggests that the behavior of pronouns (in general) in contrastive
contexts will be directly relevant to a theory of paycheck pronouns. Therefore,
before presenting my analysis of paycheck pronouns, I will first explore how non-
paycheck pronouns work in contrasting phrases.

3.1　Contrasting phrases

Rooth (1992) proposes that every phrase α containing (syntactic) focus has two
semantic values: an ordinary semantic value, which matches the traditional con-
ception of a semantic value, and a focus semantic value, which represents the set of
focus alternatives to α. He represents the ordinary semantic value of α as $[\![\alpha]\!]^o$ and
the focus semantic value as $[\![\alpha]\!]^f$. For instance the focus semantic value for the NP
[American$_F$ farmer] in Rooth's example in (18) might be as in (19):

(18)　　An American$_F$ farmer met a Canadian$_F$ farmer.

(19)　　$[\![\textbf{American}_F\ \textbf{farmer}]\!]^f =$
　　　　$\left\{ \begin{array}{l} \text{American farmer,} \\ \text{Canadian farmer,} \\ \text{Mexican farmer,} \\ \text{Bulgarian farmer,} \\ \text{Somali farmer, \dots} \end{array} \right\}$

Given this background, Rooth makes the following observation concerning two contrasting phrases (such as those in (18)):

(20)   *Contrasting Phrases.* If a phrase α contrasts with a phrase β, α must be a focus alternative of β (and vice versa).

For instance, the NPs *American$_F$ farmer* and *Canadian$_F$ farmer* in (19) contrast and, assuming they both have the focus alternatives in (19), each is a focus alternative to the other.

Rooth fleshes out this idea theoretically in terms of his presuppositional $\sim$ operator, whose definition is given in (21):

(21) $[\![\alpha \sim P]\!]^o$
         a.   presupposes that P is a subset of $[\![\alpha]\!]^f$,
         b.   presupposes that $[\![\alpha]\!]^o$ is an element of P, and
         c.   denotes $[\![\alpha]\!]^o$.

Here is one syntactic tree that enforces this constraint (simplified slightly from Rooth's analysis):

(22)
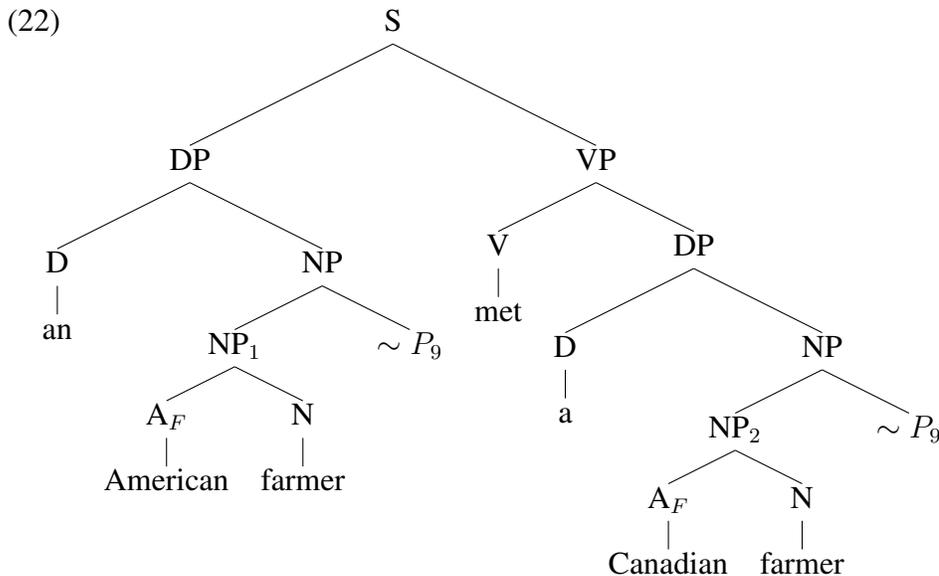
In (22), the structure $\sim P_9$ appears next to both NP$_1$ and NP$_2$. According to the definition of Rooth's $\sim$ operator, the set P_9 contains the ordinary semantic values of both NP$_1$ and NP$_2$. Furthermore, P_9 is a subset of the focus semantic values for both these NP's. Thus, they each must be focus alternatives to one another.

3.2   Anaphora in Contrastive Focus

For reasons independent of paycheck pronouns, the $\sim$ operator must allow for pronouns inside of the focused phrase. In addition, pronouns are constrained in interesting ways by such a contrastive environment. For instance, consider the sentence in (23):

(23)   The [car John BOUGHT] was much nicer than the [car he SOLD].

Assuming that the two bracketed phrases in (23) contrast with one another – as implied by the intonation indicated – the pronoun *he* must denote John. The two phrases cannot contrast without this constraint on the meaning of the pronoun.

   Although he does not discuss such cases, I believe Rooth's system can handle them almost unaltered. For instance, consider the structure in (24) for (23):

(24)
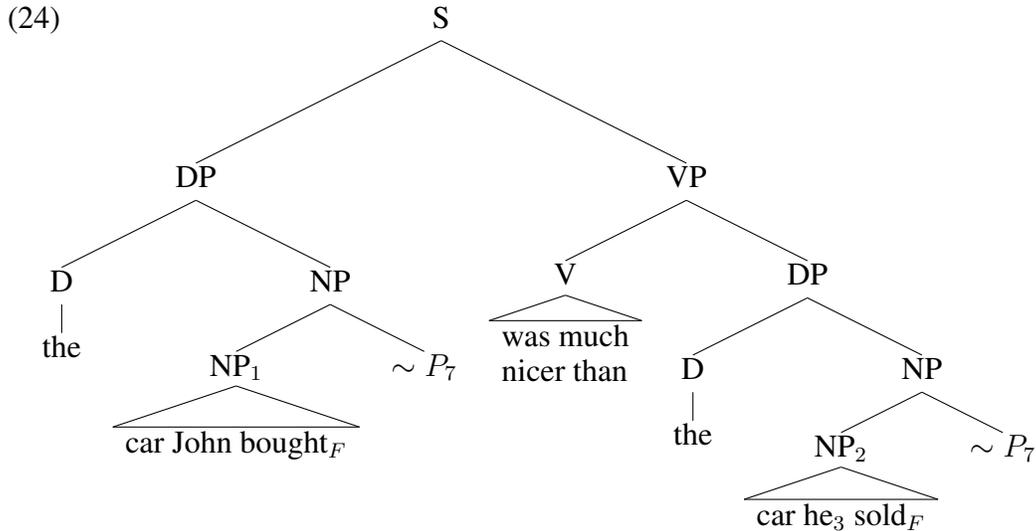
The first $\sim$ operator presupposes that P_7 is a subset of $[\![\textbf{car John bought}_F]\!]^f$. This means that P_7 contains only phrases of the form *car John X-ed* for relevant values of X. But, the second $\sim$ operator presupposes that P_7 must contain $[\![\textbf{car he}_3\ \textbf{sold}]\!]^o$. The only way to reconcile these constraints is if the assignment function g used to interpret NP$_2$ is such that $g(3) =$ John (and therefore he_3 denotes John).

   In order to make this analysis more perspicuous, though, I propose the following clarification of Rooth's definition of $\sim$ given earlier in (21-c):

(25)   a. $[\![\alpha \sim P]\!]^{o,h}$ presupposes that there is a minimal variant g of the assignment function h, such that
             (i) P is a subset of $[\![\alpha]\!]^{f,g}$ and
             (ii) $[\![\alpha]\!]^{o,g}$ is an element of P.
         b.   If such a g exists, $[\![\alpha \sim P]\!]^{o,h}$ denotes $[\![\alpha]\!]^{o,g}$.

In (24), the effect of this definition is to presuppose that the assignment function used to interpret NP$_2$ maps the index 3 to John.

4   Focus in Paycheck Sentences
With this understanding of non-paycheck pronouns in contrastive environments in place, we can now use the same machinery to analyze paycheck pronouns.
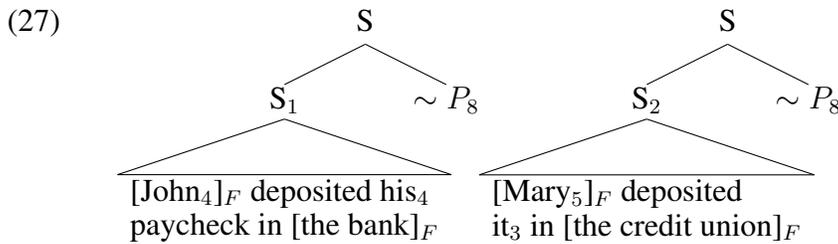
4.1 Simple Paycheck Example

The example in (8-a), repeated in (26) is slightly more complex than (24) in that there are two contrasting elements: the subject of the sentence and the object of the preposition *it*:

(26) $John_F$ deposited his paycheck in [the bank]$_F$. [Everyone else]$_F$ deposited it in [the credit union]$_F$.

A more nuanced analysis would distinguish these as a Topic and a Focus (see Büring (1997)), but for our purposes, we can just treat them as two areas of variation for the focus alternatives.

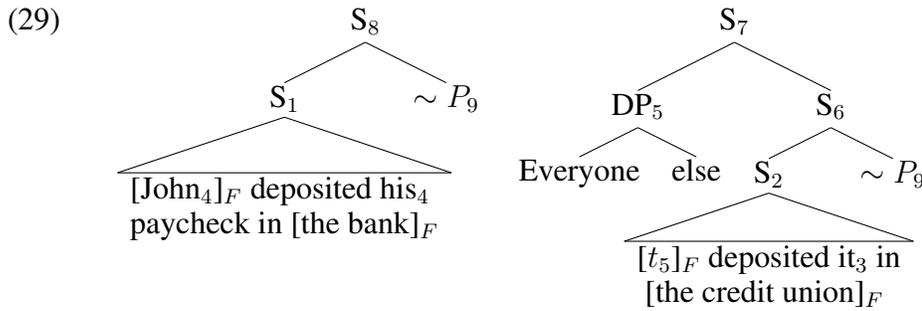Before we analyze this full sentence, consider the following simplified version of (26):

(27)

$$
\begin{array}{cc}
S & S \\
S_1 \quad \sim P_8 & S_2 \quad \sim P_8 \\
\end{array}
$$

[John$_4$]$_F$ deposited his$_4$ paycheck in [the bank]$_F$ [Mary$_5$]$_F$ deposited it$_3$ in [the credit union]$_F$

A possible set of focus alternatives for S_1 is given in (28) (the notation paycheck$_X$ represents the individual that is the paycheck of employee X):

(28)
$$
\left\{
\begin{array}{lll}
\text{Bill} & \text{deposited paycheck}_{Bill} & \text{in the credit union,} \\
\text{Bill} & \text{deposited paycheck}_{Bill} & \text{in the bank,} \\
\text{John} & \text{deposited paycheck}_{John} & \text{in the credit union,} \\
\text{John} & \text{deposited paycheck}_{John} & \text{in the bank,} \\
\text{Mary} & \text{deposited paycheck}_{Mary} & \text{in the credit union,} \\
\text{Mary} & \text{deposited paycheck}_{Mary} & \text{in the bank,} \ldots \\
\end{array}
\right\}
$$

Notice that due to the co-indexing in S_1, each alternative in the set above specifies what one employee did with their own paycheck – so, what Bill did with paycheck$_{Bill}$ and what Mary did with paycheck$_{Mary}$, and not, e.g., what Mary did with paycheck$_{Bill}$. In order for the sentence *Mary deposited it$_3$ in the bank* to be a focus alternative of S_1, therefore, the assignment function g used to evaluate *Mary deposited it$_3$ in the bank* must satisfy the condition that $g(3)$ = paycheck$_{Mary}$. In this way, $\sim$ forces it_3 to denote paycheck$_{Mary}$ and not anything else. This explains the paycheck pronoun without any additional machinery.

4.2 Embedded $\sim$ Operator

Turning to the version of the sentence including the quantifier *everyone else*, an analysis requires the proper scope relations, namely those shown in (29):

(29)

$$S_8$$
$$S_1 \qquad \sim P_9$$
$$[\text{John}_4]_F \text{ deposited his}_4 \text{ paycheck in [the bank]}_F$$

$$S_7$$
$$DP_5 \qquad S_6$$
$$\text{Everyone \quad else} \quad S_2 \qquad \sim P_9$$
$$[t_5]_F \text{ deposited it}_3 \text{ in [the credit union]}_F$$

Assuming that the focus alternatives to S_1 are the same as in the previous example, a very similar effect is achieved.[2] Given our definitions above and evaluated using an assignment function h, the calculation of the meaning of S_7 in (29) proceeds as follows:

1. Predicate Abstraction dictates that S_6 be calculated using an assignment function h' just like h only where $h'(5) = x$ (where x is a variable bound by a λ operator in the metalanguage).
2. Our definition of $\sim$ presupposes that there is a minimal variant of h', call it g, such that $[\![S_2]\!]^{o,g}$ is an element of (28).
3. It is this function g that is used to calculate the meaning of S_2, and therefore it_3 comes to denote the paycheck of employee $g(5)$.

In this manner, the more complex version also yields the correct meaning for the paycheck pronoun.

At this point, though, we should examine two possible 'minimal variants' of g: one shifts the value for index 5 so that $g(5)$ is the employee who earns the paycheck stored in $g(3)$, and the other shifts the value for index 3 so that $g(3)$ is the paycheck for the employee stored in $g(5)$. There are two reasons to prefer this latter shift, though: first, any shift of index 5 would lead to vacuous lambda binding, since the value of $h'(5)$ is the variable x, bound by the higher λ operator; second, there is no way to figure out which paycheck should be stored in $g(3)$ – this information is simply not recoverable from the context. Therefore, in order for S_2 to be a member of (28), the index 3 must return x's paycheck.

The meaning of S_7 in (29) comes out something like (30):

(30) For every employee x other than John, presuppose x has a paycheck y and assert that x deposited y in the credit union.

This is a bit of a complicated derivation, so let me present one perspicuous way to conceive of it. Consider the following strategy for determining if S_7 is true or false: take each employee other than John in turn, and check the truth of the statement where the employee's name replaces *everyone else* (cf. the similar process outlined in Krifka (2001)). This boils down to several simpler calculations, namely the meanings of the following sentences:

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[2]Notice that I must assume syntactic focus remains on the trace position of the moved quantified phrase *everyone else* – a slightly unorthodox assumption. However, in a copy theory of movement, it would not be that odd for focus to remain *in situ*. Alternatively, formulations of focus theory in terms of givenness instead of focus (Schwarzschild 1999)) would not run into this problem.

(31)   a.   Mary$_5$ [[t_5 put it$_3$ in the credit union] $\sim P_9$]
        b.   Bill$_5$ [[t_5 put it$_3$ in the credit union] $\sim P_9$]
        c.   Fred$_5$ [[t_5 put it$_3$ in the credit union] $\sim P_9$]
        d.   etc.

The quantified sentence is true if each of these unquantified sentences is true; and there is no difficulty in determining the focus constraints on the simpler sentences, which are parallel to the simple case in Section 4.1.

     The analysis of (29) – where the $\sim$ operator takes scope below a quantifier – is analogous to what happens when other presupposition triggers scope below a quantifier. Consider, for instance, the following sentence, where a possessive definite description *his sister* scopes below the quantifier *every boy*:

(32)   [Every boy]$_2$ called his$_2$ sister.

Assuming that phrases of the form x*'s sister* presuppose that x has one salient sister, this sentence yields a different presupposition for each 'value' of *every boy* being considered. In the end, the meaning of the phrase comes out as (33) or (34), exactly parallel to the case above:

(33)   For each boy x, presuppose that x has a salient sister y and assert that x called y.

(34)   a.   Johnny called Johnny's sister, and
        b.   Billy called Billy's sister, and
        c.   Freddy called Freddy's sister, and
        d.   etc.

Thus, the analysis above where the presuppositional operator $\sim$ scopes below a quantifier is not unprecedented.

4.3   Comparative Case

Next consider the structure in (36) for (5), repeated in (35):

(35)   The man who gave his paycheck to his wife was wiser than the man who gave it to his mistress.

(36)
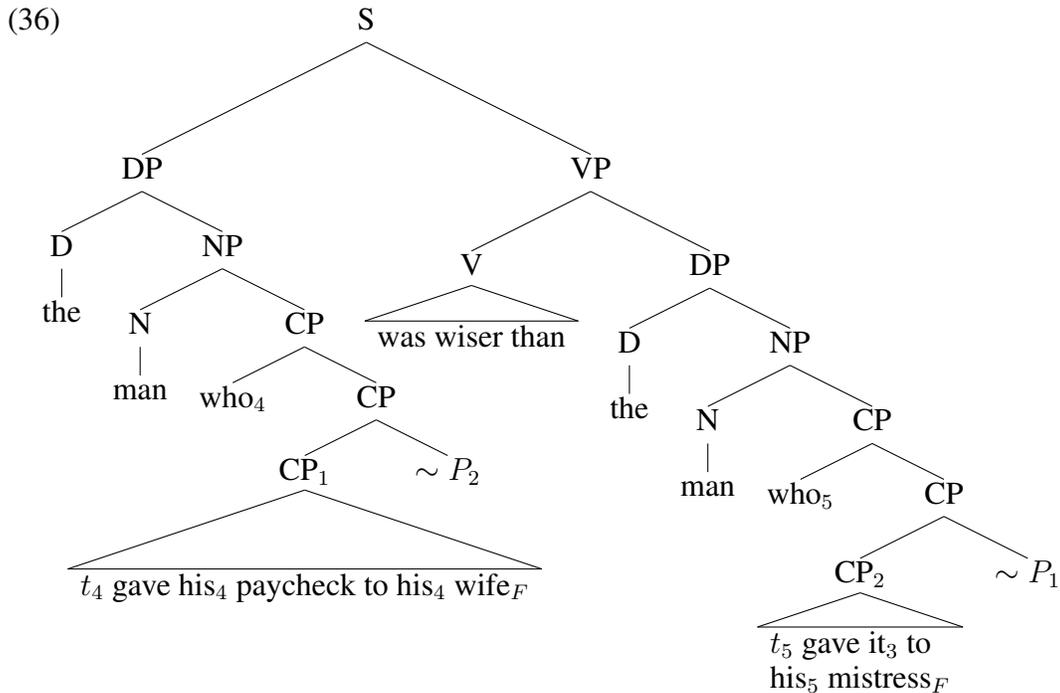
A possible set of focus alternatives for CP_1 above is given in (37):

(37)
$$\left\{ \begin{array}{l} x \text{ gave } x\text{'s paycheck to } x\text{'s wife,} \\ x \text{ gave } x\text{'s paycheck to } x\text{'s mistress,} \\ x \text{ gave } x\text{'s paycheck to } x\text{'s landlord,} \\ x \text{ gave } x\text{'s paycheck to } x\text{'s son,} \ldots \end{array} \right\}$$

Notice again that due to the bound pronoun his_4 in CP_1, the object being given in each of these alternatives is the paycheck belonging to the subject of the relative clause.

Here the $\sim$ operator presupposes that the assignment function g used to interpret $[\![t_5 \textbf{ gave it}_3 \textbf{ to his}_5 \textbf{ mistress}_F]\!]^{o,g}$ must map the index 3 to the paycheck of the individual index 5 maps to. So, if index 5 ends up mapping to Fred Jones, for instance, then index 3 must map to Fred Jone's paycheck in order for the phrase to be one of the focus alternatives of CP_1. Once more, this correctly derives the meaning of the paycheck pronoun in the sentence.

5 Bach-Peters sentences

Jacobson (1977); Jacobson (1980) analyzes Bach-Peters sentences (Karttunen 1971) as involving paycheck pronouns. Examples of these sentences are given in (38):

(38)   (After Jacobson (2000))
   a.   The man who loved her (most) kissed the woman who wrote to him.
   b.   Every man who loved her kissed the woman who wrote to him.
   c.   A man who loved her kissed the woman who wrote to him.

Jacobson argues that the first pronoun in the sentences above (namely, *her*) is a paycheck pronoun, and therefore the sentences can be explained in the same way that paycheck cases are. The only difference in a Bach-Peters sentence is the fact that the anaphora is backwards, with the "antecedent" coming after the pronoun itself. This is not so strange in such an environment, though, as shown in (39), which gives non-paycheck pronoun parallels to the sentences in (38):

(39)   a.   The man who loved her (most) kissed Mary.
            b.   Every man who loved her kissed Mary.
            c.   A man who loved her kissed Mary.

The analysis presented herein can handle these cases as well. Take, for instance, the structure in (40) for (38-b). This structure assumes that the phrases *loved her* and *kissed the woman who wrote to him* are interpreted contrastively. Thus, the $\sim$ operator ensures that the assignment function g used to evaluated S_3 assigns to index 5 the woman who loves the man $g(1)$.

(40)

[Tree diagram for structure (40):]

- S
  - DP
    - D: every
    - NP
      - N: man
      - CP
        - C: who
        - S
          - λ_1
          - S
            - S
              - S_3: t_1 loved$_F$ her$_2$
              - $\sim P_8$
  - S
    - λ_4
    - S
      - S_5: t_4 kissed$_F$ the woman who wrote to him$_4$
      - $\sim P_8$

Jacobson uses potential cases of WCO in Bach-Peters sentences to argue for an analysis where paycheck pronouns effectively contain a bound pronoun.[3] For instance, consider the following attempted Bach-Peters sentence:

(41)   ??Every man who$_1$ she loved t_1 kissed his wife. (out under a Bach-Peters/paycheck interpretation)

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[3]Technically, this is not the case in Jacobson's variable-free system, but an analogous situation holds.

Jacobson argues that the pronoun *she* is ruled out due to WCO: basically, *who*$_1$, the potential binder for *she*'s internal bound pronoun, does not c-command *she* from its base position. According to Jacobson, this is what rules the sentence out. However, as we have seen above, WCO does not always seem to rule out paycheck pronouns. Contra Jacobson, then, I propose that this sentence is ruled out simply because the phrases involved are not parallel enough to contrast: *she loved* cannot contrast with *kissed his wife* due to their disparate syntax and the fact that one is stative and the other eventive.

6 Conclusion

This paper has argued that independently motivated constraints on contrastive phrases allow us to capture paycheck pronouns with the same local mechanism as referential and bound pronouns. Focus constraints on pronouns in contrasting phrases derive the correct interpretations in all examples from the literature, including Bach-Peters sentences. In addition, the new analysis explains how some paycheck pronouns can exist in WCO environments and how no paycheck pronouns can exist in non-contrasting environments.

This research leaves open many questions, but one salient question is whether all forms of anaphora be captured this way. Tantalizingly, some cases of donkey anaphora, another exotic type of pronoun, appear to allow a quite similar analysis using contrast:

(42) a. Every man who owns$_F$ a donkey, beats$_F$ it.
      b. If a man owns$_F$ a donkey, he beats$_F$ it.

These two cases do indeed seem parallel to the paycheck cases above, exhibiting contrastive focus in the precisely the same way. However, there are other donkey anaphora cases that do not seem so amenable to this approach. For instance, (43) does not appear to involve contrastive focus, and yet the donkey pronoun interpretation of *it* is quite salient:

(43) If a man owns a donkey, it brings him great wealth.

So, the approach does not seem possible for all donkey anaphora cases.

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