A Presuppositional Semantics for Plural:
Sauerland (2003) and Sauerland et al. (2005)

1. Some Heretofore Unquestioned Assumptions

Since our initial handout, we’ve assumed the following key ideas regarding the semantics of plural marking.

(1) **Key Ideas in Our Semantics for Plurals**

- Plural marking is semantically interpreted on NPs.
- Plural marking is interpreted as ‘∗’, which takes an NP extension and returns that extension closed under the ‘+’.
- Singular NPs are neither morpho-syntactically nor semantically ‘marked’. The extension of a singular NP is the same as that of the basic lexical item / root. (Thus, lexical items / roots only predicate of atomic entities…)
- Plural NPs, however, are both morpho-syntactically and semantically ‘marked’. They contain morpho-syntactic structure not found in singular NPs, and their meaning is defined in terms of the meaning of a singular NP.

In his work on plurals, Uli Sauerland has developed a novel alternative to this network of ideas. It has the following key ingredients.

(2) **Key Ideas in a ‘Presuppositional’ Treatment of Plurality (Sauerland 2003)**

- Plural and singular marking is *not* semantically interpreted on NPs; plural marking on NPs is merely due to Agreement. (Rather, plural is interpreted on ‘φPs’).
- Plural and singular marking are interpreted as type <ee> identity functions, which introduce certain presuppositions regarding their complements.
- **Plural DPs** are semantically ‘unmarked’. Their meaning is essentially that of the basic lexical item / root.
- **Singular DPs** are semantically marked. Their meaning is strictly stronger than that of plural DPs (as it contains additional presuppositions not found with plurals).

*In these notes, we’ll lay out the details of Sauerland’s system, as well as the arguments he puts forth for this kind of a treatment…*
2. Some Initial Puzzles

To build our way towards Sauerland’s analysis, we’ll start off with a few puzzles surrounding the distribution and interpretation of the feature ‘[PLURAL]’.

2.1 The Semantics of [PLURAL] with Pronouns

As is well known, the feature plural can appear with pronouns (3a). One common view regarding the structure of such pronouns is the syntactic representation in (3b).

(3) Plural Pronouns and their Featural Composition (Heim & Kratzer 1998: 244)

a. they, them, their …

b. DP

[ PLURAL ] pro₁

Now, ever since Cooper (1983), it has been common to think of pronominal features (such as gender, person and number) as having the semantics of restricted identity functions, as in (3).

(4) Presuppositional Semantics of Pronominal Features (Heim & Kratzer 1998: 244)

a. [[ FEMININE ]] = [ λx. x is a female : x ]

b. [[ MASCULINE ]] = [ λx. x is a male : x ]

Thus, if we assume that a pronoun like “he” has the structure in (5a), we predict that it can only be interpreted relative to a variable assignment where its index is mapped to a male entity, and so we predict that the pronoun can only be used to refer to male entities (5b,c)

(5) Compositional Semantics of Pronouns

a. DP

[ MASCULINE ] pro₁

b. [[ DP ]]^{g(1→Dave)} = [[ MASCULINE ]]^{g(1→Dave)} ([[ pro₁ ]]^{g(1→Dave)})

= [ λx. x is a male : x ](Dave)

= Dave

c. [[ DP ]]^{g(1→Sue)} = CRASH!

Because [[ pro₁ ]]^{g(1→Sue)} is not in the domain of [[MASCULINE]]
If we extend this perspective to the feature [PLURAL] in (3b), we are naturally lead to a semantics like that in (6) below.

(6) Presuppositional Semantics for Plural

\[
[[ \text{PLURAL} ]] \quad = \quad [ \lambda x. x \in (\mathcal{D} - \mathcal{D}) : x ]
\]

*Function that is defined for x iff x is a non-atomic entity in \( \mathcal{D} \), and returns x when defined.*

This treatment of the pronominal ‘[PLURAL]’-feature, however, raises the following question:

(7) Key Question

- What is the relationship between the feature [PLURAL] in pronouns, and the ‘plural feature’ that we assume is interpreted on NPs?
- They certainly seem to be the same feature morpho-syntactically…
- But, then why (how) do they have such wildly different interpretations?...
- *Is it at all possible to have a uniform semantics for PLURAL?*

Observation:

- If we assume the syntactic representation in (3b), where the feature [PLURAL] is sister to a type e null pronoun, it seems rather hopeless to extend our semantics for plural NPs to plural pronouns…
- If we assume that plural NPs are such that [PLURAL] is interpreted on the type <et> NP, it seems rather hopeless to extend our semantics for plural pronouns to plural DPs/NPs

*Clearly, something’s got to give…*  
*Sauerland proposes that we revise our assumptions regarding plural DPs…*

2.1.1 Sauerland’s Semantics for Plural and Singular Pronouns

Before we come to Sauerland’s proposals for DPs, though, let us consider his relatively novel presuppositional semantics for pronouns.

- In (6), we propose that the feature [PLURAL] introduces a presupposition that the referent of the pronoun is a plurality…
- Sauerland proposes that the feature [PLURAL] is actually semantically empty, and that it is the feature [SINGULAR] that introduces the relevant presuppositions.
A Novel Semantics for Singular and Plural (Sauerland 2003, Sauerland et al 2005)

a. \[ [[ \text{PLURAL} ]] = [ \lambda x : x ] \]
b. \[ [[ \text{SINGULAR} ]] = [ \lambda x. x \in D : x ] \]

Under this semantics, the feature [PL] is an unrestricted type \(<ee>\) identity function, whereas [SG] introduces the presupposition that the referent of the pronoun is atomic.

Trivial Predictions

a. Singular pronouns cannot be used to refer to pluralities (since such an entity would not be in the domain of [[ SINGULAR ]])
b. Plural pronouns can be used to refer to pluralities (since such an entity would fall within the domain of [[ PLURAL ]])
d. Singular pronouns can be used to refer to atomic entities (since they fall within the domain of [[SINGULAR ]])

Obvious Question

Why can’t a plural pronoun be used to refer to an atomic individual?

The answer to (10) is actually rather simple, as the principle in (11) has been familiar to semanticists since the work of Heim (1991).

Maximize Presuppositions (Sauerland 2003)

“Of two lexical items, that lead to the same truth conditions in all cases where both their presuppositions are satisfied, the item with the stronger presuppositions must be used.”

• Suppose that we have two sentences S1 and S2, which are structurally identical, except that S1 contains lexical item L1 where S2 contains lexical item L2.

\[ S1 = [ \ldots L1 \ldots ] ; \quad S2 = [ \ldots L2 \ldots ] \]

• Suppose that S1 and S2 are both true.

• Suppose that the presuppositions of L1 are stronger than the presuppositions of L2.

(that is, L1 introduces a superset of the presuppositions introduced by L2)

• You can only felicitously use S1 (the sentence containing the stronger presuppositions)
(12) **How ‘Maximize Presuppositions’ Works to Answer Question (10)**

- Suppose that the sentence in (a) were interpreted relative to a context where the index ‘1’ is mapped to Seth Cable.
  a.  
     (i)  \textit{They}$_1$ have a beard.
     (ii) [ [ PLURAL pro$_1$ ] have a beard ]
  
- The structures in (a) come out as T in our semantics, but so do the structures in (b).
  b.  
     (i)  \textit{He}$_1$ has a beard.
     (ii) [ [ SINGULAR pro$_1$ ] have a beard ]

- Structures (a) and (b) are exactly identical, except that (a) contains SINGULAR while (b) contains PLURAL.

- *Moreover, under our semantics in (8), SINGULAR introduces more presuppositions than PLURAL*
  
  - Plural doesn’t introduce \textit{any} presuppositions, whereas singular introduces the presupposition that the referent of the pronoun is atomic.

- Therefore, Maximize Presuppositions (11) requires that only the sentences in (b) can be used felicitously in this context…

Thus, when augmented with ‘Maximize Presuppositions’, Sauerland’s semantics in (8) indeed predicts that only plural pronouns can refer to pluralities, and only singular pronouns can refer to atomic entities….

\textit{But, we’re still left with the question of how any of this relates to plural NPs and DPs…}

2.2 **The Presence of [PLURAL] with Conjunctions**

A second puzzle to get us started concerns the number Agreement found with conjunctions of singular DPs, as in (13).

(13) **Conjunctions of Singular DPs are Plural**

a. Dave is / *are nice.

b. Bill is / *are nice.

c. Dave and Bill are / *is nice.

---

1 For the purposes of this exercise, we will ignore the gender features on the pronoun.
Formal linguists have long been fascinated with the question in (14).

(14) **Key Question Regarding the Features of Conjunctions:**

Where does the plural number in (13c) ‘come from’?

- It’s not a feature of either of the two conjuncts…
- So what is the nature of the mechanism that ‘inspects’ the two singular conjuncts and then ‘inserts’ the plural feature up at the top of the conjunction?

*Sauerland shows that a rather simple syntactic answer to (14) paves the way to an answer to the ‘key question’ in (7)…*

---

3. **The Analysis of Plural in Conjunctions**

We usually think of $\phi$-features like number and gender as always being ‘sub-features’ of some head, such as D or T… *but suppose we revise that view…*

(15) **The $\phi$P**

- $\phi$-features like number head their own projection, called a ‘$\phi$P’
- $\phi$Ps take two kinds of complements: DPs and ConjPs

a. **The Two Possible Kinds of $\phi$Ps**

(i) 

```
    φP
   /\       \     
  φ   DP       
 /   \       /  \ 
 {SING} {the} {NP} {books}
   \     \     
   Λ     Λ     
  SING PLUR D NP
```

(ii) 

```
    φP
   /\       \   
  φ   ConjP   
 /   \      
 {SING} {Dave and Bill} 
   \      
   Λ      
  SING PLUR
```

- $\phi$-features are only semantically interpreted in the $\phi$P; the $\phi$-features on D and N are uninterpretable $\phi$-features that undergo Agreement with the $\phi$-head in $\phi$P

(So, in our semantic discussion, we’ll ignore the structural presence of $\phi$ on D and N) (We’ll also ignore any other features in $\phi$ besides SINGULAR or PLURAL)
So, what accounts for the presence of PLUR on conjunctions of singular DPs?....

(16) **The Theory of Plural in Conjunctions**

- Due to the presence of uninterpretable $\phi$ in T, the subject of a sentence must always be dominated by a $\phi P$.
- Thus, the structure of a sentence like (a) must be that in (b).

a. Dave and Bill are nice.

b. 

```
  TP
 /   \\
\phiP   TP
   \   \\
   \phi PLURAL
   \    \\
   ConjP
   \  \\
   are nice.
   Dave and Bill
```

- Given our semantics for PLURAL in (8a), this structure will clearly be interpretable.
- But, consider the ill-formed structure in (c) below

c. 

```
  TP
 /   \\
\phiP   TP
   \   \\
   \phi SINGULAR
   \    \\
   ConjP
   \  \\
   is nice.
   Dave and Bill
```

- Given our semantics for SINGULAR in (8b), this structure will clearly not be interpretable.
  - The ConjP *Dave and Bill* will still be interpreted as ‘Dave+Bill’
  - But since the plurality ‘Dave+Bill’ is not an element in $D$ (i.e., an atom), it will not be in the domain of $[[\text{SINGULAR}]]$
  - Therefore, the $\phi P$ cannot be interpreted.

(17) **Interesting Prediction**

- Suppose that a ConjP can receive a ‘special’ interpretation as an atomic entity, like “bangers and mash” being interpreted as the (atomic) dish.
- Our account then predicts that it should be possible for such a ConjP to surface with singular number, which does seem to be correct.

a. Bangers and mash is / *are my favorite British dish.
4. The Analysis of Plural Definites

The analysis in (16) points the way to a novel treatment of plural definites. Let us begin, though by considering the simple case below.

(18) Basic Fact: Names Referring to Atoms Must be Singular

John is / * are nice.

(19) The Simple Explanation

• First, the structure in (a) below is interpretable, since [[John]] is in the domain of [[SINGULAR]].

a. $\phi P \rightarrow TP \rightarrow \phi$  $\rightarrow \phi P$  $\rightarrow TP$  $\rightarrow \phi$  $\rightarrow \phi P$  $\rightarrow TP$

SINGULAR  $\rightarrow$  DP  $\rightarrow$  is nice  $\rightarrow$  TP  $\rightarrow$  TP  $\rightarrow$  John

• Secondly, while the structure in (b) is interpretable, it will be ruled out by Maximize Presuppositions (compare to the case with pronouns in (12))

b. $\phi P \rightarrow TP \rightarrow \phi$  $\rightarrow \phi P$  $\rightarrow TP$  $\rightarrow \phi$  $\rightarrow \phi P$  $\rightarrow TP$

PLURAL  $\rightarrow$  DP  $\rightarrow$  are nice.  $\rightarrow$  TP  $\rightarrow$  TP  $\rightarrow$  John

Now, to begin developing our theory of plural definites, let us adopt the following view regarding the semantics of NPs.

(20) The Extensions of Ns are Always ‘Cumulative’

• In our theory, [PLURAL] is never interpreted on Ns.
• Thus, presence of [PLURAL] cannot be responsible for the closure of Ns under ‘+’ when they are plural marked.
• Thus, let us assume that all Ns (even singular marked NPs) are closed under ‘+’.
• We can implement this by assuming that all Ns are packaged with ‘*’ in the lexicon.

a. $[[ \text{boy} ]] = \ast \{ x : x \text{ is a boy} \}$
Basic Fact About Plurality and Definites to be Explained

- When we use the definite description “the boy(s)” to refer to an (atomic) boy, we use a singular definite.
- When we use the definite description “the boy(s)” to refer to a plurality of boys, we use a plural definite.

Case 1: Use of Plural Definite Description “The Boys” to Refer to a Plurality

- Given our semantics for “the”, the only time a definite DP will refer to a plurality is when the extension of the NP contains more than one entity.

- Thus, suppose that [[ boy ]] = *{ x : x is a boy } = { Dave, Frank, Dave+Frank }

- Thus, [[ the boy ]] = MAX( { Dave, Frank, Dave+Frank } ) = Dave+Frank

- Thus, the structure ‘[ SINGULAR [ the boy ] ]’ will not be interpretable.

- Thus, only the structure ‘[ PLURAL [ the boy ] ]’ can be used to refer to the maximal element in the set of boys.

Case 2: Use of Singular Definite Description “The Boy” to Refer to Atomic Entity

- Given our semantics for “the”, the only time a definite DP will refer to an atomic entity is when the extension of the NP contains exactly one entity.

- Thus, suppose that [[ boy ]] = *{ x : x is a boy } = { Dave }

- Thus, [[ the boy ]] = MAX( { Dave } ) = Dave

- Thus, the structure in (a) below will be interpretable.

a.

```
TP
  φP
  SINGULAR
  The boy
```

- The structure in (b) will also be interpretable, but will be ruled out by Maximize Presuppositions

b.

```
TP
  φP
  PLURAL
  The boy
```

is nice.
5. Quantificational DPs and Plurality

We’ve seen that the presuppositional semantics in (8) can provide an interesting account of the distribution of number features with type $e$ DPs such as proper names and definites…

... but these cases are relatively easy, since the DP is of type $e$...
... what about cases where the plural/singular DP is of some other type?...

5.1 Plurals and Numerals

(24) Fact to be Explained

A DP containing a numeral modifier (one, two, three, etc.) must be plural.

a. Two boys are / * is nice.

(25) Starting Problem

How do we interpret [PLURAL] and [SINGULAR] on a DP like “two boys”, which is not of type $e$?

\[
\begin{array}{c}
\phi P \\
\phi < e, e > \\
\text{DP} < et, t > \\
two boys
\end{array}
\]

(26) Sauerland’s Solution

Let’s suppose that QR can apply to repair the type mismatch, as follows.

Structure Repaired Through QR

\[
\begin{array}{c}
\phi P \\
\phi < e, e > \\
t_{1} e \\
are nice
\end{array}
\]
(27) **First Key Intermediate Observation**

The extension of structure (a) below is a function that is only defined for atomic entities.

a. \[
\begin{array}{c}
\text{TP}_2 \\
1 \\
\phi \langle \text{e} , \text{e} \rangle \\
\phi \text{P} \\
f_1 \text{e} \\
\text{TP}_3 \\
\text{TP}_4 \\
is \text{nice}
\end{array}
\]

- Given our rule of PA, the extension of TP\textsubscript{2} is the following
  - \[[ TP_2 ]]^g = \lambda x : [[ TP_3 ]]^{g(1\rightarrow x)}
- This function takes an entity x and returns \[[ TP_3 ]]^{g(1\rightarrow x)}
- However, if x is not an atomic entity, \[[ \phi \text{P} ]]^{g(1\rightarrow x)} will not be interpretable, and so \[[ \text{TP}_3 ]\]^{g(1\rightarrow x)} will not be defined.
- Thus, the function \[ \lambda x : [[ \text{TP}_3 ]]^{g(1\rightarrow x)} \] is only defined for atomic entities.

(28) **Second Key Intermediate Observation**

The extension of “two boys” must take as argument a function that is defined for non-atomic entities.

- Given our semantics for “boy” in (20), “two boy(s)” has the extension in (a) below.
  a. \[[ \text{two boy(s)} ]] = \lambda Q . \exists y . y \in \{ x : x \text{ is a boy} \} \& | \{ z : z \leq y \& \text{AT}(z) \} | \geq 2 \& Q(y) = \text{T}
- Thus, [[two boy(s)]] takes an <et> function Q as argument and returns T iff there exists a group of two boys y such that Q(y) = T.
- Thus, if Q is defined only for atomic entities, then [[two boys]](Q) is necessarily false (and thus might be perceived to be semantically anomalous).

**Side-Note:**
In our earlier, ‘*'-operator' semantics for plural, the impossibility of “two boy is nice” is also the result of a contradiction created by the phrase “two boy”…
(29) **Putting the Observations Together**

- Clearly, the LF structure in (a) below is interpretable.
  
  o After all, [[PLURAL]] is assumed simply to be the identity function on entities, and so the semantic computation for (a) is no different from a ‘classic’ analysis where the ‘ϕP’ is absent…

  
  a.
  
  \[
  \begin{array}{c}
  \text{DP} \\
  \text{Two boy} \\
  \text{TP}_1 \\
  \text{TP}_2 \\
  \text{TP}_3 \\
  \text{TP}_4 \\
  \varphi P \\
  \phi \\
  t_1 \\
  \text{are nice}
  \end{array}
  \]

- However, the LF structure in (b) will be semantically anomalous.

  o As noted in (27), the extension of TP₂ is only defined for atomic entities.
  o Thus, as noted in (28), the extension of “two boys” cannot (consistently) take [[TP₂]] as argument, and so semantic anomaly results.

  
  b.
  
  \[
  \begin{array}{c}
  \text{DP} \\
  \text{Two boy} \\
  \text{TP}_1 \\
  \text{TP}_2 \\
  \text{TP}_3 \\
  \text{TP}_4 \\
  \varphi P \\
  \phi \\
  t_1 \\
  \text{are nice}
  \end{array}
  \]

- **THE KEY RESULT:** A DP containing a numeral modifier must be plural.
5.2 Indefinite Plurals

With the ideas above in place, let us examine what this system predicts for the semantic effects of number with indefinites.

- First, it’s clear that this account predicts that the LF of (30a) will be (30b), while the LF of (31a) will be (31b).
- But what does our semantics predict regarding the meaning / use of these sentences?

(30) Singular Indefinites

a. Some boy is nice.

b. \[\text{DP}
\begin{array}{l}
\text{Some boy} \\
\hline
\end{array}
\begin{array}{l}
\text{TP}_{1}
\hline
\end{array}
\begin{array}{l}
\text{TP}_{2}
\hline
\end{array}
\begin{array}{l}
\text{TP}_{3}
\hline
\end{array}
\begin{array}{l}
\phi P
\hline
\end{array}
\begin{array}{l}
\phi
\hline
\end{array}
\begin{array}{l}
t_{1}
\hline
\end{array}
\begin{array}{l}
\text{are nice}
\hline
\end{array}
\end{array}
\]
SINGULAR

(31) Plural Indefinites

a. Some boys are nice.

b. \[\text{DP}
\begin{array}{l}
\text{Some boy} \\
\hline
\end{array}
\begin{array}{l}
\text{TP}_{1}
\hline
\end{array}
\begin{array}{l}
\text{TP}_{2}
\hline
\end{array}
\begin{array}{l}
\text{TP}_{3}
\hline
\end{array}
\begin{array}{l}
\phi P
\hline
\end{array}
\begin{array}{l}
\phi
\hline
\end{array}
\begin{array}{l}
t_{1}
\hline
\end{array}
\begin{array}{l}
\text{are nice}
\hline
\end{array}
\end{array}
\]
PLURAL

(32) Situation 1: Exactly One Boy is Nice

a. Fact 1: Sentence/LF (31) is true (trivial)

b. Fact 2: Sentence/LF (30) is true

- \[\text{[[ (30b) ]] = There is an } x \in \{ x : x \text{ is a boy } \} \& \text{[[TP}_{2}]](x) = T}
- \text{[[TP}_{2}]] \text{ in (30b) is defined for atomic entities, so (30b) will come out as true.}
(33) **First ‘Counterintuitive’ Consequence**
In a situation where one boy is nice, both the sentence “some boy is nice” and “some boys are nice” are true.

(34) **Some Discussion**

a. **Question:** Shouldn’t ‘Maximize Presuppositions’ rule out the use of (31) in a situation where exactly one boy is nice?

b. **Answer:**
- It’s not entirely clear from the statement in (11) how we use ‘Maximize Presuppositions’ in quantificational sentences.
- As we’ll see, Sauerland (2003) and Sauerland et al. (2005) propose a solution to (33) that relies upon a special principle distinct from ‘Maximize Presuppositions’ (as defined in (11)).

c. **Question:** Isn’t our earlier, ‘non-presuppositional’ theory of plurality also subject to the counterintuitive consequence in (33)?

d. **Answer:**
- **YES!** And, for that reason, I think we might be justified in putting off a ‘solution’ to (33)…
- … However, Sauerland does develop his own unique solution to this problem, which is worth discussing…

(35) **Situation 2: More than One Boy is Nice**

a. **Fact 1:** Sentence/LF (31) is true (trivial)

b. **Face 2:** Sentence/LF (30) is true

- Given that “is nice” is inherently distributive, any situation where more than one boy is nice is one where single, atomic boys are nice.

(34) **Second ‘Counterintuitive’ Consequence**
In a situation where more than one boy is nice, both the sentence “some boy is nice” and “some boys are nice” are true.

(35) **Some Discussion**

a. **Question:** Shouldn’t the solution to (34) involve some kind of Gricean reasoning? The fact that (30) seems ‘wrong’ in a situation where more than one boy is nice seems like a kind of scalar implicature…

b. **Answer:** YES! But, telling such a story is tricky, since in our account sentences (30) and (31) are *logically equivalent*…
(36) Some Discussion

a. Question: Again, isn’t our earlier ‘non-presuppositional theory of plurality also subject to this counterintuitive consequence?

b. Answer: YES! And, again, for that reason, we might be justified in leaving off an explanation of (34)?...
… But Sauerland does develop a solution to this puzzle…

As with our earlier theory of plurality, special problems also arise regarding plurality with negative indefinites...

• First, it’s clear that this account predicts that the LF of (37a) will be (37b), while the LF of (38a) will be (38b).
• But what does our semantics predict regarding the meaning / use of these sentences?

(37) Singular Negative Indefinites

a. No boy is nice.

b. 

\[
\begin{array}{c}
\text{No boy} \\
\text{TP}_1 \\
\text{DP}
\end{array}
\]

\[
\begin{array}{c}
\phi \\
\text{TP}_3 \\
\phi
\end{array}
\]

\[
\begin{array}{c}
t_1 \\
\text{TP}_4 \\
\text{are nice}
\end{array}
\]

SINGULAR

(38) Plural Negative Indefinites

a. No boys are nice.

b. 

\[
\begin{array}{c}
\text{No boy} \\
\text{TP}_1 \\
\text{DP}
\end{array}
\]

\[
\begin{array}{c}
\phi \\
\text{TP}_3 \\
\phi
\end{array}
\]

\[
\begin{array}{c}
t_1 \\
\text{TP}_4 \\
\text{are nice}
\end{array}
\]

PLURAL
Situation 1: There is exactly one boy that is nice.

a. Fact 1: Sentence/LF (37) is false
   - After all, there is an entity \( y \) in \( \{ x : x \text{ is a boy} \} \) which is nice. Moreover, since this entity \( y \) is atomic, \( \lfloor \text{TP}_2 \rfloor \) is defined for \( y \), and so \( \lfloor \text{TP}_2 \rfloor (y) = T \).

b. Fact 2: Sentence/LF (38) is false
   - After all, \( \lfloor \text{PLURAL} \rfloor \) is simply the identity function. Thus, \( \lfloor \text{TP}_2 \rfloor \) is again defined for atomic entities, and so there is an entity \( y \) in \( \{ x : x \text{ is a boy} \} \) such that \( \lfloor \text{TP}_2 \rfloor (y) = T \).

Observation
Our presuppositional theory of number marking correctly predicts that the sentences in (37) and (38) are false as long as a single boy is nice.

Situation 2: There is no (atomic) boy that is nice.

a. Fact 1: Sentence/LF (38) is true (trivial)

b. Fact 2: Sentence/LF (37) is true (trivial)

Some Discussion

a. Question:
   - We’ve just seen that both (37) and (38) are true in a situation where no (atomic) boy is nice.
   - So, shouldn’t ‘Maximize Presuppositions’ rule out the use of plural (38) in such a situation?

b. Answer:
   - Again, it’s not at all clear from (11) how ‘Maximize Presuppositions’ should be applied in cases like (37) and (38).
   - As we’ll see, Sauerland (2003) and Sauerland et al. (2005) develop a theory of plural indefinites that would indeed allow plural (38) to be used in situations where singular (37) is true…
What We’ve Seen for Indefinites and Number

- Our presuppositional semantics for number correctly predicts that for **negative indefinites**, number does not have an effect upon the truth (or definedness) conditions of the sentence.
  - That is, the account predicts that the following two sentences will be true and defined in the same situations:
    
    | (i)  | No boys are nice. | (ii) | No boy is nice. |

- Moreover, our semantics for number also predicts that this holds for **non-negative indefinites**.
  - That is, our account predicts that the following two sentences will also be true and defined in the same situations.
    
    | (i)  | Some boys are nice. | (ii) | Some boy is nice. |

- While this seems to be an incorrect result for non-negative indefinites:
  - This result also holds for our earlier, ‘*-operator’ theory of plurals
  - Sauerland (2003) and Sauerland et al. (2005) propose a solution, which we will review later.

5.3 Universal Quantification

One last interesting case to consider is that of universal quantification. Sauerland (2003) notes that a classic semantics for “every” presents an interesting problem for his analysis.

To see this, let us first note the following fact regarding universal statements...

Background Fact Regarding Presuppositions in Universal Statements

Suppose that the predicate [[XP]] is defined only for entities with property P. It follows, then, that [[ every NP XP ]] will only be T if every entity in [[NP]] has property P.

- Under a classic semantics, the T-conditions for “every NP XP” will be as in (a)
  a.  

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[[ Every NP XP ]]</td>
<td>For all x, if <a href="x">[NP]</a> =T, then <a href="x">[XP]</a> = T</td>
</tr>
</tbody>
</table>

- Thus, if “Every NP XP” is T, it must be that [[XP]] is true of every entity in [[NP]].
- Thus, it must be that [[XP]] is defined for every entity in [[NP]].
- Thus it must be that every entity in [[NP]] has property P.
Now, clearly, given our proposals above, the LF of a sentence like (45a) will be that in (45b).

(45) **The Structure of Universal Quantification**

a. Every boy is nice.

b. 

```
Every boy 1
           TP2
          TP3
phiP
  phi
      t1
   are nice
   SINGULAR
```

(46) **The Problem**

- Recall that in the system developed here, the extension of an NP like “boy” is *always* closed under sum formation.

a. `[[ boy ]] = *\{ x : x is a boy \}`

- Thus, it follows that if there is ever more than one boy, the extension of `[[boy]]` will contain non-atomic entities.
- But, recall that `[[TP_2]]` is only defined for atomic entities (27)
- Thus, given the fact in (44), it follows that LF (45b) will only be true if every entity in the extension of `[[boy]]` is atomic.
- Thus, it follows that if there is ever more than one boy, (45a,b) will come out as false.

Sauerland (2003) proposes a solution to (46) that makes use of some independent proposals regarding the *exact* syntax and semantics of “every”...

(47) **Background Assumption Regarding the Syntax/Semantics of “Every”**

We’re used to thinking of “every” as a single D. However, there is some (cross-linguistic) reason to view it as actually having the underlying structure in (a) (Matthewson 2001), where “DIST” has the semantics in (b).

a. “every NP” = `[[ DIST [ the [ NP ] ] ]`

b. `[[ DIST ]] = [ \lambda x : [ \lambda P : For all y \leq x and AT(y), P(y) = T ] ] ]`
If we adopt the analysis in (47), (45b) will be predicted to have the T-conditions in (48) below.

(48) **Truth-Conditions of (45b), as Predicted by (47)**

\[
[[ [[ every boy ] TP_2 ]] =
[[ [[ DIST [ the [ boy ] ] TP_2 ]] =
[[ DIST [ the [ boy ] ] ]] ( [[TP_2]] ) =
[[DIST]] ( [[the boy]] ) ( [[TP_2]] ) =

[ λx : [ λP : For all y ≤ x and AT(y), P(y) = T ] ] ( [[the boy]] ) ( [[TP_2]] ) =

For all y ≤ x and AT( [[the boy]] ), [[TP_2]](y) = T =

For all y ≤ x and AT( MAX(*{ x : x is a boy } ), [[TP_2]](y) = T

‘every atomic entity y in MAX(*{ x : x is a boy } is such that [[TP_2]](y) = T’

(49) **Key Observation**

- Under our semantics in (47)/(48), “every boy” ends up quantifying over atomic entities (basically, all the atoms in *{ x : x is a boy } )
- Clearly, [[TP_2]] is defined for every atomic boy.
- Thus, we no longer predict that “every boy is nice” will be false whenever there is more than one boy.

(50) **Outstanding Problem**

- Note that DPs headed by “every” must be singular
  a. Every (boy / * boys) ( is / * are ) coming over.
- How does this fact follow from Sauerland’s account? Should it follow from ‘Maximize Presuppositions’? How?
  o Note also that this fact won’t obviously follow from the theory of plural indefinites to be developed below…

6. **The Problems Surrounding Singular and Plural Indefinites**

As noted above, the ‘presuppositional theory’ of number marking developed here shares with our earlier ‘*-operator theory’ the funny property in (51).
Semantic Vacuity of Number Marking on Indefinites

The following two sentences will be defined and true in exactly the same situations.

a. Some boy is in the room.  
   b. Some boys are in the room.

This also holds for the following two sentences, but also seems to be correct in this case:

   c. No boy is in the room.  
   d. No boys are in the room.

We need a theory that accomplishes the two goals in (52).

Two Goals a Solution to (51) Must Achieve

a. It must predict that sentences like (51a) are felicitous only when exactly one boy is in the room, and that sentences like (51b) are felicitous only when more than one boy is in the room.

b. It must do so while also predicting that (51c,d) are felt to be equivalent, and are both felt to be false if there is a single boy in the room.

Sauerland (2003) and Sauerland et al. (2005) provide two different solutions for (51).

- The account offered by Sauerland (2003) can be put aside…(see Sauerland et al. 2005)

- The account offered by Sauerland et al. (2005) is more complex, and in some ways less satisfying, but its worth considering how it works…

The account in Sauerland et al. (2005) is based upon the following (rather complex) condition.

The Behavior of Presuppositions in the Scope of Existentials

“Maximize Presupposition applies to the scope of an existential if this strengthens the entire utterance.” (Sauerland et al 2005: 423)

As it is stated, the condition above is rather unclear…

- After all, what does it mean for “Maximize Presupposition” to “apply to the scope of an existential”?

However, when one looks carefully at how the condition is used, it is clear that what the authors have in mind is a condition that can be stated as follows.
Presupposition Strengthening in the Scope of Existentials

- Consider the two structures in (a) and (b) below (where INDEF is an ‘indefinite determiner’, which for the moment we can take to be some and no).

a. \[ [ \text{INDEF NP XP} ] \]
b. \[ [ \text{INDEF NP YP} ] \]

- Suppose it is the case that \([\text{YP}]\) contains stronger presuppositions than \([\text{XP}]\). (That is, that \([\text{YP}]\) is defined for less entities than \([\text{XP}]\))
- Now, consider the structure below, where we’ve ‘added’ to \([\text{XP}]\) the presupposition that its arguments don’t satisfy the presuppositions of \([\text{YP}]\).

\[ [ \text{INDEF NP } \lambda x . x \text{ is not in the domain of } [\text{YP}] : [\text{XP}](x) ] \]

- **THE CONDITION:**
  If (c) is a stronger statement than (a), then interpret (a) as if it were (c).

This condition is rather complex… we’ll get a better sense of its content by seeing how it applies to provide a solution to the puzzle in (51).

To begin, consider the LFs in (55) below…

**The LFs of Singular and Plural Indefinites**

a. \[
\begin{array}{c}
\text{DP} \\
Some \text{ boy} \\
\end{array} \quad \text{TP}_{1a} \quad \begin{array}{c}
\text{TP}_{2a} \\
\phi P \\
\phi \\
\end{array} \quad \text{TP}_{3a} \\
\text{TP}_{4a} \\
\text{PLURAL} \\
\end{array} \]

b. \[
\begin{array}{c}
\text{DP} \\
Some \text{ boy} \\
\end{array} \quad \text{TP}_{1b} \quad \begin{array}{c}
\text{TP}_{2b} \\
\phi P \\
\phi \\
\end{array} \quad \text{TP}_{3b} \\
\text{TP}_{4b} \\
\text{SINGULAR} \\
\end{array} \]

is in the room

are in the room
Given our semantics in (8), it is clear that $[[\text{TP}_{2b}]]$ has stronger presuppositions than $[[\text{TP}_{2a}]]$.

- Now, consider the formulae in (56), where (56a) is the interpretation of LF (55a), and (56b) is the result of ‘adding to $[[\text{TP}_{2a}]]$’ the presupposition that its argument do not satisfy the presuppositions of $[[\text{TP}_{2b}]]$.

$$\begin{align*}
\text{(56) The Crucial Formulae of Comparison} \\
a. & \quad [[\text{some}\}} (*\{ x : x \text{ is a boy } \}) ( [ \lambda x : x \text{ is in the room}] ) \\
b. & \quad [[\text{some}\}} (*\{ x : x \text{ is a boy } \}) \\
& \quad ( [ \lambda x . x \text{ is not in the domain of } [[\text{TP}_{2b}]] : x \text{ is in the room } ] ) = \\
& \quad [[\text{some}\}} (*\{ x : x \text{ is a boy } \}) ( [ \lambda x . x \text{ is not atomic : x is in the room } ] )
\end{align*}$$

(57) Key Observation

The formula in (56b) is stronger than that in (56a).
- If there is are multiple boys in the room, then both formulae are true.
- But, there is only a single boy in the room, then only (56a) is true…

(58) Key Result

Given the facts in (55) – (57), our condition in (54) demands that we interpret LF (55a) as having the T-conditions in (56b).

Thus, our condition in (54) predicts that sentence (59a) will be interpreted as having the T-conditions in (59b), while sentence (59c) will be interpreted as having the T-conditions in (59d).

(59) The Enriched Interpretations Predicted by Our Account

a. Some boy is in the room.
b. There is an $x \in *\{ x : x \text{ is a boy } \}$ such that (x is atomic) and x is in the room.
c. Some boys are in the room.
d. There is an $x \in *\{ x : x \text{ is a boy } \}$ such that (x is non-atomic) and x is in the room.

(60) Prediction 1: Restriction on the Use of Singular Indefinites

A singular indefinite cannot be used in cases where a plural indefinite would be true.

- Suppose there exist multiple boys in the room.
- Thus, sentence (59a) and (59c) are both true.
- However, under its ‘enriched’ interpretation, (59c) is stronger than (59a).
- Therefore, Maxim of Quantity requires us to assert (59c).
Side-Note:
As desired, the anomaly of using (59a) in a situation where multiple boys are in the room is a result of a scalar implicature.

(61) **Prediction 2: Restriction on the Use of Plural Indefinites**

A plural indefinite cannot be used in cases where only a single entity in the restriction of the indefinite satisfies the scope.

- Suppose that there is only a single boy in the room.
- Thus, there is no *non-atomic* element of ∗{ x : x is a boy } that is in the room.
- Thus, *under its enriched interpretation*, (59c) is false in this situation.

Thus far, we’ve seen that the (admittedly strange) condition in (53)/(54) satisfies goal (52a). But what about goal (52b), which concerns sentences with negative indefinites.

(56) **The Crucial Observation**

Consider the formulae in (a) and (b), where (b) is the formulae we obtain by adding to ‘adding to [[TP\textsubscript{2a}]]’ the presupposition that its argument do not satisfy the presuppositions of [[TP\textsubscript{2b}]]:

a. \[
[[ \text{no} ]] ( ∗\{ x : x \text{ is a boy } \} ) ( [ λx : x \text{ is in the room} ] )
\]

b. \[
[[ \text{no} ]] ( ∗\{ x : x \text{ is a boy } \})
( [ λx . x \text{ is not in the domain of } [[\text{TP}\textsubscript{2b}]] : x \text{ is in the room } ] ) =
[[ \text{no} ]] ( ∗\{ x : x \text{ is a boy } \} ) ( [ λx . x \text{ is not atomic } : x \text{ is in the room } ] )
\]

In this case, formula (56b) is not stronger than (56a).

- Since a non-atomic entity x is in the room iff all the atoms in x are in the room, (56b) will be true iff there is no singular or plural boy in the room.

- Thus, (56a) and (56b) are still logically equivalent.

We find, then, that our condition in (53)/(54) will not lead to the interpretation of (57a) being ‘enriched’, and so both (57a) and (57b) are still predicted to be interpreted as equivalent.

(57) **Negative Indefinites Predicted to be Equivalent**

a. No boy is in the room.        b. No boys are in the room.
Thus, we find that the condition in (53)/(54) indeed provides a solution to the puzzle in (51)…

(But there are other, perhaps more intuitive solutions on the market...)
(For more on this puzzle take a look at Spector (2007) or Farkas & De Swart 2010)...

7. Evidence for the Presuppositional Theory

In the preceding sections, we’ve laid out the key ideas behind Sauerland’s ‘presuppositional semantics’ for PLURAL…

…but what evidence is there that this approach is the correct one?...

7.1 One Initial Argument: A Unified Semantics for Plural

First, let us note that the semantics proposed here indeed unifies the semantics of number in pronouns and in DPs.

7.2 Emergence of the Unmarked = Emergence of the Plural

- In the ‘presuppositional semantics’ developed here, a plural pronoun can in principle be used to refer to a singular, atomic entity.

- Such use of plural pronouns, however, is ‘blocked’ by the existence of the more specific, singular form.

- It follows, then, that if there were any reason why use of a singular pronoun should be ‘blocked’, it should suddenly become possible to use the plural pronoun to refer to an atomic entity.

- Sauerland (2003) and Sauerland et al. (2005) claim that there are two main types of cases where such ‘emergence of the unmarked plural’ can be seen.

(58) Polite Second Person Forms Tend to be Plural

Throughout the world, ‘polite’ forms of second person pronouns tend to be plural in their surface morpho-syntax.

- Suppose that many languages observe a pragmatic ‘convention’ that, in contexts of politeness, singular 2\textsuperscript{nd} forms are not to be used.

  - Why such a convention would exist is left unexplained.

- Thus, in such contexts, singular 2\textsuperscript{nd} person pronouns do not ‘compete’ with 2\textsuperscript{nd} plural pronouns, and so nothing serves to ‘block’ use of 2\textsuperscript{nd} plurals to refer to atomic entities
Note:

- In analyses where [PLURAL] requires that the referent of the pronoun be non-atomic, it is more difficult to explain the pattern in (58).

- One must assume both that 2\textsuperscript{nd} singular forms are disfavored (for some reason), and that there is some reinterpretation of [PLURAL] which allows plural pronouns to refer to single, atomic entities.

(59) **Singular ‘They’ in English**

Every normal native English speaker accepts discourses like the following, where the pronoun “they” is used to refer to some single, atomic (yet unknown) entity.

a. Someone\textsubscript{1} was in my room. They\textsubscript{1} made a huge mess.

We might understand such cases as instances of ‘emergence of the unmarked plural’.

- In a discourse like (58a), a singular pronoun such as “he” or “she” would not be appropriate, because the gender of the referent of the pronoun is not known.

- Moreover, use of “it” would be inappropriate, because the referent is known to be human.

- Thus, since use of any singular 3\textsuperscript{rd} person pronoun is independently ruled out, nothing serves to ‘block’ use of a 3\textsuperscript{rd} plural to refer to the atomic entity in question.

7.3 **Presuppositions with Bound Pronouns**

Consider the contrast between sentences (60a) and (60b) below.

(60) **An Interesting Difference in Presupposition**

a. Every boy invited his sister. b. Every boy invited his sisters.

- Sentence (60a) seems to presuppose that every boy had exactly one sister.

- Sentence (60b), however doesn’t presuppose that every boy had more than one sister. It allows that some boys had just one sister, while some had more than one.

Interestingly, exactly this contrast is predicted by Sauerland’s semantics.

To see this, let us begin by laying out the background assumption in (61)…
(61) **Background Assumption Regarding the Possessive Phrase**

\[
[[\text{his}_i\text{ sister}]]^g = \text{MAX} \{ x : x \text{ is a sister to } g(i) \}
\]

With this assumption in place, now consider the LF structures in (62). For purposes of simplicity, we will ignore the number features of the quantificational subject…

(62) **The LFs of the Sentences in (60)**

a. 

```
TP\_1a
  DP
    \text{Every boy} 1
    \text{TP\_2a}
    \text{TP\_3a}
    t_1
    VP
      V \text{ invited}
    \phi P
      \text{SINGULAR}
    \text{DP} \text{ his}\_i\text{ sister}
```

b. 

```
TP\_1b
  DP
    \text{Every boy} 1
    \text{TP\_2b}
    \text{TP\_3b}
    t_1
    VP
      V \text{ invited}
    \phi P
      \text{PLURAL}
    \text{DP} \text{ his}\_i\text{ sister}
```

(63) **Crucial Fact 1**

The function \([[ \text{TP}\_2a ]]\) is defined only for entities that have exactly one sister.

- Note that \([[ \text{TP}\_2a ]]^g = \lambda x : [[ \text{TP}\_3a ]]^{g(1 \rightarrow x)}
- However, for any entity x, \([[ \text{TP}\_3a ]]^{g(1 \rightarrow x)}\) is only defined if \([[\phi P]]^{g(1 \rightarrow x)}\) is defined
- However, for any entity x, \([[\phi P]]^{g(1 \rightarrow x)}\) will only be defined if \([[\text{his}\_i\text{ sister}]]^{g(1 \rightarrow x)}\) is atomic
Key Consequence of (63)

- Recall the following fact from (44):
  
  Suppose that the predicate [[XP]] is defined only for entities with property P. It follows, then, that [[ every NP XP ]] will only be T if every entity in [[NP]] has property P.

- Combining this with the fact in (63), it follows that (62) will only be true if every boy has exactly one sister.

Crucial Fact 2

The function [[ TP_{2b} ]] is defined for entities that have one sister, or multiple sister.

- After all, [PLURAL] doesn’t really introduce any presuppositions. Thus, in (62b), [[ϕP]_{g(1→x)}] will be defined for any x (as long as x has sisters…)

Key Consequence of (64)

Sentence (60a) does not presuppose that every boy has more than one sister. It is fully consistent with some boys having only one sister.

Some Experimental Evidence that the Plural is Semantically ‘Unmarked’

A central idea in the proposals made above is that the tendency for adult English speakers to answer ‘no’ to sentences like (66) is due to a complex pragmatic computation, sketched out in (53)-(61).

(66)  
   a. Does a dog have tails?  
   b. Does a girl have noses?  
   c. Does a boy have tongues?

Sauerland et al. (2005) provide some experimental evidence in support for this key idea. The first comes from a study of children’s comprehension of these questions.

Background Fact

Children below age 5 show non-adult behavior in many tasks assessing pragmatic competence (particularly relating to scalar implicatures).
Prediction of ‘Presuppositional Semantics’ for Child Performance

- If the adult tendency to interpret sentences like (66) as having the enriched readings in (a) – rather than their ‘literal’ meaning in (b) – is due to a complex pragmatic computation…

- And, if children below age 5 have difficulties with such computations…

- Then, perhaps such children will interpret these questions with only their ‘literal’ interpretations in (b), and so will tend to answer them affirmatively.

(a) Enriched Interpretations of (66)

(i) Does a dog have more than one tail?
(ii) Does a girl have more than one nose?
(iii) Does a boy have more than one tongue?

(b) ‘Literal’ Interpretations of (66)

(i) Does a dog have a least one tail?
(ii) Does a girl have at least one nose?
(iii) Does a boy have at least one tongue?

Experiment

(a) Subjects:
14 monolingual children between the ages of 3;4 and 5;9

(b) Task
- Each child was asked 13 yes-or-no questions (in a standard ‘puppet’ set-up)
- Each question was taken from the list of test items or the list of controls

(c) Test Items
The test items were questions like those in (66) which (i) receive a ‘no’ answer under a ‘pragmatically enriched’ adult interpretation, but (ii) receive a ‘yes’ answer under their ‘literal’ interpretation

(d) Control Items
The control items were questions that received ‘no’ answers under either their ‘enriched’ or their ‘literal’ interpretations.

- Example: Does a fish have legs?
(70) **Result: Children Behave as Predicted**

a. **Test Items**
   Children gave (non-adult) ‘yes’ answer 96% of the time

b. **Control Items**
   Children gave correct ‘no’ answer 97% of the time.

Thus, we find that children indeed have difficulty assigning questions like those in (66) the ‘enriched’ interpretations in (68a), which is consistent with the notion that such interpretations arise as a result of a complex ‘pragmatic’ computation…

_Sauerland et al. (2005) claim that further evidence for this notion can be found in an experimental study of adult English speakers…_

(71) **Background Fact**

Although a ‘no’ answer to questions like (a) require that speakers assign them a pragmatically enriched interpretation, a ‘no’ answer to questions like (b) follow from their literal meaning.

a. (i) Does a dog have tails?
   (ii) Does a girl have noses?
   (iii) Does a boy have tongues?

b. (i) Does a dog have two tails?
   (ii) Does a girl have two noses?
   (iii) Does a boy have two tongues?

(72) **Prediction of ‘Presuppositional Semantics’ for Adult Performance**

- If the adult interpretation of sentences like (71a), whereby they receive ‘no’ answers, indeed involves additional pragmatic computations…

- Then we might expect that such sentences are ‘harder’ for speakers to interpret…

- Thus, we might expect that their reading times will be longer than for sentences like those in (71b), and they might occasionally receive non-adult “yes” answers…
(73) **Experiment**

a. **Subjects:**
43 monolingual UMass undergrads

b. **Task**
- Each participant was shown 40 yes/no questions on computer screen
- Each participant answered the questions by pressing a key
- Response times were measured.

c. **Test Items**
The test items were questions like those in (66) which (i) receive a ‘no’ answer under a ‘pragmatically enriched’ adult interpretation, but (ii) receive a ‘yes’ answer under their ‘literal’ interpretation

d. **Control Items**
The control items were either (A) questions that received ‘no’ answers under either their enriched or literal interpretations (i), or (B) questions that received ‘yes’ answers under either their enriched or literal interpretations (ii)-(iii)

(i) Does a dog have two tails?  
(ii) Does a goat have horns?  
(iii) Does a got have two horns?

(74) **Result: Adults Behave as Predicted**

a. **Test Items**
- Adults gave non-adult “yes” answer ~15% of the time.
- The response times for such questions were 19.6 milliseconds slower (statistically significant) than similar questions containing numerals.

b. **Control Items**
- Adults gave non-adult “yes” answer <5% of the time.
- As stated above, the response times for such questions were significantly faster than for the test questions…

(75) **Complication**

- It was also found that there was no significant difference in reading time between sentences like (73dii) and (73diii).
- But, the presuppositional theory predicts that (73dii) still requires the ‘complex pragmatic computation’, while (73diii) does not…

(76) **Idea**
Perhaps the longer reading times of sentences like those in (66) is due to the fact that their enriched interpretation receives a different answer than their literal interpretation?...
Let’s close out these notes by mentioning a few general, outstanding questions for this line of approach…

(77) **Plural Number on Predicative NPs**

- Recall that our ‘*-operator’ semantics for [PLURAL] was founded upon an analysis of sentences like those below.

  a.  
      [ Dave and Tom ] are **boys**.

- It’s rather unclear how the plural number of the predicative NP “boys” in (a) can be analyzed in Sauerland’s presuppositional semantics.

- Note that sentences like the following show that this number is not simply a matter of subject agreement.

  b.  
      (i)  
      [ Dave and Tom ] are **a great team**.  
      (ii) [ Dave and Tom ] both think that they are **a lion**.

(78) **The Disconnect Between Morphological and Semantic Markedness**

- Under this semantics, singular number is semantically contentful; indeed, it is more contentful than plural number.

- However, morphologists and semanticists have long had reason to suppose that plural morphology is more ‘marked’ than singular morphology.

  - Indeed, there are a number of works where number features are argued to be *privative*, and so therefore there is no ‘[SINGULAR]’ feature at all.

- *How can the evidence for the morphological markedness of [PLURAL] be reconciled with the evidence here for its semantic unmarkedness?*...