Pronoun Interpretation

1. Hard Constraints on Coreference
2. Pronoun Interpretation and Processing
3. Preferences for Coreference
## Number Agreement

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
<th>Unspecified</th>
</tr>
</thead>
<tbody>
<tr>
<td>she, her, he,</td>
<td>we, us,</td>
<td>you</td>
</tr>
<tr>
<td>him, his, it</td>
<td>they, them</td>
<td></td>
</tr>
</tbody>
</table>

(1) a. John has a new Acura. It is red.

b. John has three new Acuras. They are red.

c. * John has a new Acura. They are red.

d. * John has three new Acuras. It is red.
## Person and Case Agreement

<table>
<thead>
<tr>
<th></th>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominative</td>
<td>I, we</td>
<td>you</td>
<td>he, she, they</td>
</tr>
<tr>
<td>Accusative</td>
<td>me, us</td>
<td>you</td>
<td>him, her, them</td>
</tr>
<tr>
<td>Genitive</td>
<td>my, our</td>
<td>your</td>
<td>his, her, their</td>
</tr>
</tbody>
</table>

(2) a. You and I have Acuras. We love them.
    b. John and Mary have Acuras. They love them.
    c. * John and Mary have Acuras. We love them. (where \textit{We}=John and Mary)
    d. * You and I have Acuras. They love them. (where \textit{They}=You and I)
Gender Agreement

<table>
<thead>
<tr>
<th>masculine</th>
<th>feminine</th>
<th>nonpersonal</th>
</tr>
</thead>
<tbody>
<tr>
<td>he, him, his</td>
<td>she, her</td>
<td>it</td>
</tr>
</tbody>
</table>

(3) a. John has an Acura. He is attractive.  
(he=John, not the Acura)

b. John has an Acura. It is attractive.  
(it=the Acura, not John)
(4) a. John bought himself a new Acura.
   \[\text{[himself=John]}\]
b. John bought him a new Acura.
   \[\text{[him} \neq \text{John]}\]
c. John said that Bill bought him a new Acura. \[\text{[him} \neq \text{Bill]}\]
d. John said that Bill bought himself a new Acura. \[\text{[himself=Bill]}\]
e. He said that he bought John a new Acura. \[\text{[He} \neq \text{John}; \text{he} \neq \text{John]}\]

Rule (oversimplistic): A reflexive corefers with the subject of the most immediate clause that contains it (ex. 4a), whereas a nonreflexive cannot corefer with this subject (ex. 4b); cf. w.r.t. a nonimmediate clause in (4c) and (4d). A full noun phrase (John) cannot corefer with the subject of the most immediate clause nor with a higher-level subject (ex. 4e).
Syntactic Constraints

No ‘accidental’ coreference:


    b. John wanted a new car. He bought him a new Acura. [he=John; him≠John]

Exceptions:

(6) a. John set the pamphlets about Acuras next to himself. [himself=John]

    b. John set the pamphlets about Acuras next to him. [him=John]
Selectional Restrictions

Linguistic Knowledge:

(7) John parked his Acura in the garage. He had driven it around for hours.

World Knowledge:

(8) John parked his Acura in the garage. It is incredibly messy, with old bike and car parts lying around everywhere.

(9) John parked his Acura in downtown Beverly Hills. It is incredibly messy, with old bike and car parts lying around everywhere.
(10) a. John went to Bob’s party, and parked next to a beautiful Acura Integra.

b. He went inside and talked to Bob for more than an hour.

c. Bob told him that he recently got engaged.

d. ?? He also said that he bought it yesterday.

d.’ He also said that he bought the Acura yesterday.
(11)  a. Terry really goofs sometimes.

       b. Yesterday was a beautiful day and he was excited about trying out his new sailboat.

       c. He wanted Tony to join him on a sailing expedition.

       d. He called him at 6AM.

       e. He was sick and furious at being woken up so early.
Recency

(12) John has an Integra.
    Bill has a Legend.
    Mary likes to drive it.
(13) a. John went to the Acura dealership with Bill. He bought an Integra.

b. Bill went to the Acura dealership with John. He bought an Integra.

c. John and Bill went to the Acura dealership. He bought an Integra.
(14) John needed a car to get to his new job.
    He decided that he wanted something sporty.
    Bill went to the Acura dealership with him.
    He bought an Integra.
(15) Mary went with Sue to the Acura dealership.
    Sally went with her to the Mazda dealership.
Verb Semantics

(16) a. John telephoned Bill. He lost the pamphlet on Acuras.

b. John criticized Bill. He lost the pamphlet on Acuras.

(17) a. John seized the Acura pamphlet from Bill. He loves reading about cars.

b. John passed the Acura pamphlet to Bill. He loves reading about cars.

(18) a. The car dealer admired John. He knows Acuras inside and out.

b. The car dealer impressed John. He knows Acuras inside and out.
(19) a. He has been acting quite odd.  
\((He=\text{John})\)

b. He called up Mike yesterday.

c. John wanted to meet him quite urgently.

c’. He wanted to meet him quite urgently.
(20) John hit Bill. Mary told him to go home.  
[ him = John ]

(21) Bill was hit by John. Mary told him to go home. [ him = Bill ]

(22) The city council denied the demonstrators a permit because
    a. they feared violence.
    b. they advocated violence.

(23) a. The green Whitierleaf is most commonly found near the wild rose.
    b. The wild violet is found near it too.
More Data

Role of (Relative) Salience:

(24) a. John loves cars.
    b. He especially loves reading about them.
    c. He seized an Acura pamphlet from Terry.
    d. He liked the pamphlet a lot, and was mad when John took it away.

Role of Gender:

    b. He especially loves reading about them.
    c. He seized an Acura pamphlet from Terry.
    d. She liked the pamphlet a lot, and was mad when John took it away.