Notes and reminders

• This is due on Mar 19, by 6:30 pm. No late work will be accepted. (This is also the final due date for all late work.)
• You must submit your work electronically via Canvas.
• No collaboration of any kind is permitted. You are, though, free to use your notes and any other reference materials you like.
• Please submit questions to linguist130a-win1920-staff@lists.stanford.edu. Questions sent to individual instructors will not be answered.

1 Monotonicity

Here is a possible (though not necessarily empirically correct) definition of the phrasal quantificational determiner \[a minority of\]:

\[[a minority of] = \{ (A, B) : \frac{|A \cap B|}{|A|} \leq \frac{1}{2}\}\]

Diagnose the first (restriction) argument as upward, downward, or nonmonotone, and explain why this holds using \[[a minority of\]. (Note: this isn’t a question about your intuitions, but rather about what we are predicting with \[[a minority of\].)

2 Quantifiers and negation

Many people have the intuition that most is true “above 60% and below 100%”. In our terms, that would lead to the following denotation:

\[[most] = (\lambda f (\lambda g ( T \text{ if } 0.6 < \frac{|\{w : f(w) = g(w) = T\}|}{|\{w : f(w) = T\}|} < 1, \text{ else } F )))\]

The issue: what happens when such meanings are negated? Your tasks:

i. Substitute the above lambda expression into the following and perform all possible lambda application steps:

\[\lambda x \left( \left( [most]([Simpsons]) \right)(\lambda y \left( ([\text{tease}](y))(x) \right) \right)\]
ii. Apply the following negation function to the meaning you obtained above and perform all lambda application steps:
\[ \lambda f \ (\lambda z (F \ if \ f \ (z) = T, \ else \ T)) \]

iii. Is the function you derived in (ii) true of an entity that teased all of the Simpsons? Your answer here can be a simple “yes” or “no”. You needn’t offer an opinion on whether this outcome is desirable.

3 RSA implicatures

Here is a simple reference game:

<table>
<thead>
<tr>
<th></th>
<th>r₁</th>
<th>r₂</th>
<th>r₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘hat’</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>‘glasses’</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>‘mustache’</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

(a) [·]  (b) P  (c) C

The basic RSA model can be said to predict that a pragmatic listener will draw a particular conversational implicature given this reference game. Here is the table of conditional probabilities representing that listener (with \( \alpha = 1 \)):

<table>
<thead>
<tr>
<th></th>
<th>r₁</th>
<th>r₂</th>
<th>r₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘hat’</td>
<td>0.75</td>
<td>0.25</td>
<td>0</td>
</tr>
<tr>
<td>‘glasses’</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>‘mustache’</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

First, say what that implicature is and how it is manifested in this table of conditional probabilities. Second, what is the effect on this implicature of changing the prior to \( P(r₁) = 0.1 \) and \( P(r₂) = P(r₃) = 0.45 \)? Provide the pragmatic listener table of conditional probabilities for this scenario and make use of it in giving your answer.

4 Presuppositional determiner

Give a functional denotation for the presuppositional determiner *neither* as used in *Neither parent smokes*. Use the meaning for *both* from the ‘Presupposition’ handout as a model.
5 Partial functions

The following is a partial function over functions defined over the universe \{\text{\textdegree}, \text{\textcircled{3}}, \text{\textcircled{2}}, \text{\textcircled{6}}\}:

\[
\begin{align*}
\left[ \begin{array}{c}
\text{\textdegree} \\ \text{\textcircled{3}} \\ \text{\textcircled{2}} \\ \text{\textcircled{6}} \\
\end{array} \right] & \rightarrow \text{\textcircled{3}} \\
\left[ \begin{array}{c}
\text{\textcircled{3}} \\ \text{\textcircled{2}} \\ \text{\textcircled{6}} \\
\end{array} \right] & \rightarrow \text{\textcircled{6}} \\
\left[ \begin{array}{c}
\text{\textcircled{2}} \\ \text{\textcircled{6}} \\
\end{array} \right] & \rightarrow \text{\textcircled{2}} \\
\left[ \begin{array}{c}
\text{\textcircled{6}} \\
\end{array} \right] & \rightarrow \text{\textcircled{6}} \\
\end{align*}
\]

Give the value of the above function for the following separate inputs:

i. \[ \left[ \begin{array}{c}
\text{\textcircled{6}} \\
\end{array} \right] \rightarrow \text{\textcircled{6}} \]

ii. \[ \left[ \begin{array}{c}
\text{\textcircled{2}} \\
\text{\textcircled{6}} \\
\end{array} \right] \rightarrow \text{\textcircled{2}} \]

6 every and presuppositionality

On Assignment 4, you gave a Gricean explanation for why it is generally odd for a speaker to say \textit{every} \textit{A B} if they know that \([A]\) is not true of any entities. An alternative analysis would be that \textit{every} actually \textit{presupposes} that \([A]\) is true of at least one entity. Your tasks:

i. Formulate this presuppositional \textit{every} as a partial quantificational determiner meaning (same kind of meaning as, e.g., \textit{both}).

ii. Articulate what this analysis predicts about the monotonicity properties of \textit{every}, and explain why it makes these predictions using a technical argument (same format as in question 1 above).
7 What kind of meaning is this? [2 points]

The handout ‘Diagnosing different kinds of meaning’ provides a flow-chart for classifying meanings as variously at-issue, conventionally implicated, presupposed, or conversationally implicated. Use that framework to classify meaning $p$ as expressed in (Z).

(Z) The zoo has few pandas.

$p =$ the zoo has more than zero pandas

Section 3 of the handout provides model answers. Your own answer could adopt the same format, and we’re looking for a similar level of explanation about the relevant examples.

8 Illocutionary effects [2 points]

In *Speaking of Crime*, Solan and Tiersma observe that people in police custody often perform the speech act of invoking their right to counsel very indirectly, with utterances like “Maybe I need a lawyer”. Your task: using the properties of illocutionary force given in section 3.1 of the ‘Speech acts’ handout, give two reasons why people in custody might behave in this way. (There are a number of sensible reasons that connect with the illocutionary force properties. You can just pick two. We expect each reason to take 2–4 sentences to describe.)

9 Swearing and the FCC [3 points]

Provide two cogent linguistic or cognitive arguments in favor of the position that swears like the F-word should be subject to different legal restrictions than other kinds of speech. (2–4 sentences per argument; the arguments might not be persuasive to you, but they should make sense!)

10 Extra credit: Social meaning and RSA [up to 1 point]

Consider the basic setup of Burnett’s (2019)\(^1\) social meaning game. At the barbecue, the listener’s prior belief $\Pr(\cdot)$ about Obama’s persona is specified below, and Obama wants to convey the Cool guy persona.

<table>
<thead>
<tr>
<th></th>
<th>Stern leader</th>
<th>Cool guy</th>
<th>Asshole</th>
<th>Doofus</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Pr(\cdot)$</td>
<td>0.3</td>
<td>0.2</td>
<td>0.3</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Burnett’s “truth-conditional” meanings of the two variants *-ing* and *-in’* are specified here:

<table>
<thead>
<tr>
<th></th>
<th>Stern leader</th>
<th>Cool guy</th>
<th>Asshole</th>
<th>Doofus</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>-ing</em></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><em>-in’</em></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

We can then treat this as a reference game (discussed in the ‘Introduction to the Rational Speech Acts model’ handout). We follow Burnett in assuming $\alpha = 6$ and no message costs. The speaker probabilities are as follows ($\pi$ is the variable for persona):

<table>
<thead>
<tr>
<th>Persona</th>
<th>$P_S(m \mid \pi)$</th>
<th>-ing</th>
<th>-in'</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stern leader</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cool guy</td>
<td>0.308</td>
<td>0.692</td>
<td></td>
</tr>
<tr>
<td>Asshole</td>
<td>0.311</td>
<td>0.689</td>
<td></td>
</tr>
<tr>
<td>Doofus</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

In class, we discussed how this model makes problematic predictions about the uses of -ing/-in' in the long term. There we assumed that after hearing -ing/-in', the literal listener’s probabilities become the new prior for the next instance of -ing/-in’. Here, we assume instead that after hearing -ing/-in’, it is the pragmatic listener’s probabilities (shown below) that become the new prior.

<table>
<thead>
<tr>
<th>$P_L(\pi \mid m)$</th>
<th>Stern leader</th>
<th>Cool guy</th>
<th>Asshole</th>
<th>Doofus</th>
</tr>
</thead>
<tbody>
<tr>
<td>-ing</td>
<td>0.659</td>
<td>0.136</td>
<td>0.205</td>
<td>0</td>
</tr>
<tr>
<td>-in'</td>
<td>0</td>
<td>0.254</td>
<td>0.379</td>
<td>0.367</td>
</tr>
</tbody>
</table>

For concreteness, let us suppose that Obama chooses the -in’ variant for the first instance of an ING form he wants to produce. According to our assumption, $P_L(\pi \mid -in')$ becomes the new prior of the reference game for the second instance of ING, i.e., we now consider the following reference game:

<table>
<thead>
<tr>
<th>Persona</th>
<th>Stern leader</th>
<th>Cool guy</th>
<th>Asshole</th>
<th>Doofus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pr(·)</td>
<td>0</td>
<td>0.254</td>
<td>0.379</td>
<td>0.367</td>
</tr>
<tr>
<td>[-ing]</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>[-in']</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Your task is to show that even under this assumption, the model still makes problematic predictions for uses of ING in the long run.

i. What are the speaker probabilities? (Assume $\alpha = 6$ and no message costs. Round the numbers to 2 digits. If you need to normalize a row where all the numbers are 0, just assume the result is a row where all the numbers are equal and add up to 1.) In particular, how likely is Obama to choose in’ if he wants to convey the Cool guy persona, i.e., what is $P_S(-in' \mid \text{Cool guy})$?

ii. What are the pragmatic listener’s probabilities if Obama uses -ing? Round the numbers to 2 digits. You only need to show the row that corresponds to $P_L(\pi \mid -ing)$.

iii. Suppose these probabilities again become the new prior for the third instance of ING, i.e., use the probabilities you provided in part ii as the new prior in the reference game. What are the speaker probabilities (same assumptions as in part i)? In particular, how likely is that Obama will choose in’ if he wants to convey the Cool guy persona?

iv. What does the model predict about Obama’s uses of -ing/-in’ in the long run (assuming that Obama still wants to convey the Cool guy persona)?