Vacuous and Non-Vacuous Behaviors of the Present Tense

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The Phenomenon

Individuals

# JFK and Joe Kennedy are tall.

# My uncles are blond.

# John and Bill are both very handsome. (Mittwoch, 2008)

Intervals

2012 and 2016 are leap years.

The even-numbered days this week are school days.

Every Tuesday this month I fast. (Sauerland, 2002)
Semantic Types

Individuals: $e$
Truth Values: $t$
( Worlds: $w$)
Intervals: $i/t$

Time

Past   Future
Tense as Presuppositional

\[
[\text{PRESENT}] = \lambda t : t \supseteq t_0.t
\]
\[
[\text{PAST}] = \lambda t : t < t_0.t
\]

Tree representation:

- John
  - asleep
    - \text{T}
      - i
      - \text{PRESENT}
        - \text{PRESENT}
          - \langle i, i \rangle
          - i
    - \text{PRESENT}
      - \text{PRESENT}
        - \text{PRESENT}
          - \langle i, \langle e, t \rangle \rangle
Tense as Presuppositional

\[ \text{[PRESENT]} = \lambda t : t \supseteq t_0.t \]
\[ \text{[PAST]} = \lambda t : t < t_0.t \]

\[
\begin{array}{c}
\exists t \\
\text{John} \\
e \\
T \\
i < i, <e, t>> \\
\text{PRESENT} \\
< i, i> \quad i \\
\end{array}
\]
Every Tuesday this month I fast. (Sauerland, 2002)
2012 and 2016 are leap years.
The even-numbered days this week are school days.

\[
\begin{align*}
\text{[PRESENT]} &= \lambda t.t \\
\text{[PAST]} &= \lambda t : t < t_0.t
\end{align*}
\]
The Present Tense is Vacuous

\[ \neg \exists t \text{ Asleep}(\text{John}, t) \]
The Present Tense is Vacuous

(Sauerland, 2002)

\[ \text{[John is asleep]} \neq \exists t \text{ Asleep}(\text{John}, t) \]

\[ \langle \text{PRESENT, PAST} \rangle \]

\[ \emptyset \quad t < t_0 \]

Maxim: Make your contribution presuppose as much as possible.
The Present Tense is Vacuous

(Sauerland, 2002)

\[ [\text{John is asleep}] \neq \exists t \ \text{Asleep}(\text{John}, t) \]

\[
\langle \text{PRESENT}, \text{PAST} \rangle
\]

\[ \emptyset \quad t < t_0 \]

Maxim: Make your contribution presuppose as much as possible.

\[ [\text{John is asleep}] = \exists t \ \frac{\text{Alive}(\text{John}, t)}{\neg(t < t_0)} \]

Antipresupposition
Non-Vacuous Behavior

# JFK and Joe Kennedy are tall.

# My uncles are blond.

# John and Bill are both very handsome. (Mittwoch, 2008)
I-Level and S-Level Predicates

(Carlson, 1977; Chierchia, 1995; Kratzer, 1995)

I-Level

tall
blond
handsome

S-Level

asleep
available
drunk
I-Level and S-Level Predicates

I-Level Properties

\[ P: \quad \forall x [\exists t_1 [P(x, t_1)] \rightarrow \forall t_2 [\text{Alive}(x, t_2) \rightarrow P(x, t_2)]] \]

S-Level Properties

\[ P: \quad \forall x [\exists t_1 [P(x, t_1)] \rightarrow \neg \forall t_2 [\text{Alive}(x, t_2) \rightarrow P(x, t_2)]] \]
John was blond. $\sim$ John is no longer alive.
Lifetime Inference (Musan, 1997)

John was blond. \(\sim\) John is no longer alive.

1. Speaker utters “John was blond.”
2. ”John is blond” would have been more informative/relevant.
3. Speaker is trying to be maximally informative.
4. Speaker must not believe John is still blond.
5. By the semantics of “blond,” if John were alive, he would be blond.
6. John must not be alive.
Inferences About Lifetimes

<table>
<thead>
<tr>
<th></th>
<th>Past</th>
<th>Present</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I-Level</strong></td>
<td>“John was blond.”</td>
<td>“John is blond.”</td>
</tr>
<tr>
<td></td>
<td>$\sim \text{Lifetime Inference}$</td>
<td>$\rightarrow$ John is no longer alive.</td>
</tr>
<tr>
<td><strong>S-Level</strong></td>
<td>“John was asleep.”</td>
<td>“John is asleep.”</td>
</tr>
<tr>
<td></td>
<td>$\rightarrow$ John was alive.</td>
<td>$\rightarrow$ John is alive.</td>
</tr>
</tbody>
</table>
Inferences About Lifetimes

\[
\text{\text{[blond]} = \lambda t.\lambda x. x \text{ is blond at } t \text{ and } x \text{ is alive at } t}
\]

\[
\text{\text{[asleep]} = \lambda t.\lambda x. x \text{ is asleep at } t \text{ and } x \text{ is alive at } t}
\]
Individual Lifetime Parameter

John is dead. \[ [\text{John}] = j_t \quad t < t_0 \]

Bill is alive. \[ [\text{Bill}] = b_t \quad t \supseteq t_0 \]
Individual Lifetime Parameter

John is dead. \[ [\text{John}] = j_t \quad t < t_0 \]

Bill is alive. \[ [\text{Bill}] = b_t \quad t \supseteq t_0 \]

“Mary was a WWII nurse.” \[ [\text{Mary}] = m_t \quad t \supseteq 1939-1945 \]
John is dead. \[ [\text{John}] = j_t \quad t < t_0 \]

Bill is alive. \[ [\text{Bill}] = b_t \quad t \supseteq t_0 \]

“Mary was a WWII nurse.” \[ [\text{Mary}] = m_t \quad t \supseteq 1939-1945 \]

“Fred is asleep.” \[ [\text{Fred}] = f_t \quad t \supseteq t_0 \]

“Sam was blonde.” \[ [\text{Sam}] = s_t \quad t < t_0 \]
Maximize Presupposition

(Heim, 1991; Percus, 2006; Sauerland, 2008; Singh, 2011; Schlenker, 2012)

The/a sun was shining. (Hawkins, 1991)
Both/all of John’s eyes are blue. (Percus, 2006)
John knows/thinks that Paris is in France. (Singh, 2011)
Maximize Presupposition

(Heim, 1991; Percus, 2006; Sauerland, 2008; Singh, 2011; Schlenker, 2012)

The/#a sun was shining. (Hawkins, 1991)
Both/#all of John’s eyes are blue. (Percus, 2006)
John knows/#thinks that Paris is in France. (Singh, 2011)

Maxim: Make your contribution presuppose as much as possible.
Local MP

(Percus, 2006; Singh, 2011)

Everyone with exactly two students assigned the same exercise to both/all of his students.

If John has exactly two students and he assigned the same exercise to both/all of them, then I’m sure he’ll be happy.

Mary believes that John has exactly two students and that he assigned the same exercise to both/all of them.
Local MP

(Percus, 2006; Singh, 2011)

Everyone with exactly two students assigned the same exercise to both/all of his students.

If John has exactly two students and he assigned the same exercise to both/all of them, then I’m sure he’ll be happy.

Mary believes that John has exactly two students and that he assigned the same exercise to both/all of them.

Maximize Presupposition (MP):

\[
\text{MP}_{\text{ALT}} \left( \frac{[s \ldots X \ldots]}{\text{P}([s \ldots X \ldots])} \right) = \frac{[s \ldots X \ldots]}{\text{P}([s \ldots X \ldots])} \land \forall Y \in \text{ALT}(X)[\neg \text{P}([s \ldots Y \ldots])],
\]

where:

i. ALT(X) = \{Y: [s \ldots Y \ldots] presupposes more than [s \ldots X \ldots]\}

ii. P(S) = presupposition(s) of S
“John is asleep.”

\[[\text{PRESENT}] = \frac{\lambda t.t}{\emptyset}, \ [\text{PAST}] = \frac{\lambda t.t}{t < t_0}\]

\(\text{ALT(PRESENT)} = \{\text{PAST}\}\)

1. \(\text{MP}_{\{\text{PAST}\}}([[\text{Asleep}][[\text{PRESENT}](t)]][[\text{John}]]))\)
2. \(\text{MP}_{\{\text{PAST}\}}(\exists t[[\lambda t.\lambda x.x \text{ is asleep at } t \land x \text{ is alive at } t][[\lambda t.t](t)](j))]\)
3. \(\text{MP}_{\{\text{PAST}\}}(\exists t[[\lambda t.\lambda x.x \text{ is asleep at } t \land x \text{ is alive at } t](t)](j))\)
4. \(\text{MP}_{\{\text{PAST}\}}(\exists t[\lambda x.x \text{ is asleep at } t \land x \text{ is alive at } t](j))\)
5. \(\text{MP}_{\{\text{PAST}\}}(\exists j \text{ is asleep at } t \land j \text{ is alive at } t)\)
6. \(\exists t \quad j \text{ is asleep at } t \land j \text{ is alive at } t\)
7. \(\lor \land \forall Y \in \{\text{PAST}\}[\neg P(\text{John be.Y asleep})]\)
8. \(\exists t \quad j \text{ is asleep at } t \land j \text{ is alive at } t\)
9. \(\lor \land \neg (t < t_0)\)
10. \(\exists t \quad j \text{ is asleep at } t \land j \text{ is alive at } t\)
11. \(\neg (t < t_0)\)
“John is asleep.”

1. \( \text{MP}_{\text{PAST}}([\text{John is asleep}]) \)
   
   : 

5. \( \text{MP}_{\text{PAST}} \left( \exists t \frac{j \text{ is asleep at } t \land j \text{ is alive at } t}{\emptyset} \right) \)
   
   : 

9. \( \exists t \frac{j \text{ is asleep at } t \land j \text{ is alive at } t}{\neg (t < t_0)} \)
Distributivity

(Link, 1987; Lasersohn, 1998; i.a.)

John and Bill are tall.
My uncles are blond.
All the dogs are asleep.

\[ [D] = \lambda S. \lambda P. \forall x \in S[P(S)], \]
where \( S \) is the set of entities denoted by the plural or conjoined nominal
“John and Bill are tall.”

1. $[[D][[\text{John and Bill}]])([[\text{tall}]][[\text{PRESENT}](t)))]$

2. $[[\lambda S.\lambda P.\forall x \in S[P(x)](\{j, b\})][[\lambda t.\lambda x. x \text{ is tall at } t \text{ and } x \text{ is alive at } t](t)) ]$

3. $[[\lambda P.\forall x \in \{j, b\}[P(x)]](\lambda x.\exists t[ x \text{ is tall at } t \text{ and } x \text{ is alive at } t])$

4. $\exists t_1[j \text{ is tall at } t \text{ and } j \text{ is alive at } t]$

5. $\exists t_2[b \text{ is tall at } t \text{ and } b \text{ is alive at } t]$

∅
Scope Ambiguity

\[
\text{D(MP(\ldots\)))}
\]

\[
\text{MP}\left(\exists t_1[j \text{ is tall at } t \text{ and } j \text{ is alive at } t]\right) \land \text{MP}\left(\exists t_2[b \text{ is tall at } t \text{ and } b \text{ is alive at } t]\right)
\]

\[
\text{MP(D(\ldots\)))}
\]

\[
\text{MP}\left(\exists t_1[j \text{ is tall at } t \text{ and } j \text{ is alive at } t]\right) \land \text{MP}\left(\exists t_2[b \text{ is tall at } t \text{ and } b \text{ is alive at } t]\right)
\]
Scope Ambiguity

\[ D(MP(\text{John and Bill} \ldots )): \]
1. \( \forall x \in \{j, b\}[MP[\ldots x \ldots ]] \)
2. \( MP[\ldots j \ldots ] \land MP[\ldots b \ldots ] \)
3. \( [\ldots j \ldots ] \land [\ldots b \ldots ] \land \neg t_j < t_0 \land \neg t_b < t_0 \)

\[ MP(D(\text{John and Bill} \ldots )): \]
1. \( MP[\forall x \in \{j, b\}[\ldots x \ldots ]] \)
2. \( MP[[\ldots j \ldots ] \land [\ldots b \ldots ]] \)
3. \( [\ldots j \ldots ] \land [\ldots b \ldots ] \land \neg (t_j < t_0 \land t_b < t_0) \)
Scope Ambiguity

$D(MP(John \text{ and } Bill \ldots ))$: 

$\rightarrow$ John is alive and Bill is alive.

$MP(D(John \text{ and } Bill \ldots ))$:  

$\rightarrow$ John and Bill can’t both be dead.
Scope Ambiguity

D(MP(2012 and 2016 . . . )):
1. \(\forall x \in \{2012, 2016\}[MP[\ldots \times \ldots]]\)
2. \(MP[\ldots 2012 \ldots] \land MP[\ldots 2016 \ldots]\)
3. \([\ldots 2012 \ldots] \land [\ldots 2016 \ldots]\)
   \(\neg 2012 < t_0 \land \neg 2016 < t_0\)

MP(D(2012 and 2016 . . . )):
1. \(MP[\forall x \in \{2012, 2016\}[\ldots \times \ldots]]\)
2. \(MP[\ldots 2012 \ldots] \land [\ldots 2016 \ldots]\)
3. \([\ldots 2012 \ldots] \land [\ldots 2016 \ldots]\)
   \(\neg (2012 < t_0 \land 2016 < t_0)\)
Scope Ambiguity

D(MP(2012 and 2016 ...)):

→ 2012 is present and 2016 is present.

MP(D(2012 and 2016 ...)):

→ 2012 and 2016 can’t both be present.
Scope Ambiguity

Individual

\( \text{D(MP(\ldots))} \)

\#John and Bill are tall.

\( \text{MP(D(\ldots))} \)

John and Bill are tall.

Interval

\#2012 and 2016 are leap years.

\( 2012 \land 2016 \)

2012 and 2016 are leap years.
Lifetime Parameter Updates

\[ D(MP(\ldots)) \quad MP(D(\ldots)) \]

Individual

Interval

0 \quad 0

Maxim: Make your contribution presuppose as much as possible.
Lifetime Parameter Updates

\[ D(MP(\ldots)) \]

\[ MP(D(\ldots)) \]

Individual

\[ t_0 \]

\[ 2 \]

Interval

\[ 0 \]

\[ 0 \]
Strongest Meaning Hypothesis

- Winter (2001): Plural predication
- Chierchia, et al. (2008): Exhaustification
Strongest Update Hypothesis

If a sentence is ambiguous between two or more interpretations resulting in different numbers of individual lifetime parameter updates, the interpretation resulting in the greatest number of updates is preferred.
Lifetime Parameter Updates

\[
D(MP(\ldots)) \quad MP(D(\ldots))
\]

**Individual**
- JFK and Joe Kennedy are tall.
- My uncles are blond.
- John and Bill are both very handsome.
  (Mittwoch, 2008)

**Interval**
- 2012 and 2016 are leap years.
- The even-numbered days this week are school days.
- Every Tuesday this month I fast. (Sauerland, 2002)
Summary

- Systematic difference between contexts in which present is vacuous and those in which it is non-vacuous
  - Traditional theory & Sauerland’s (2002) vacuous present fail to account for both
- Apparent irreconcilability can be resolved by:
  - Admitting a formal realization of the distinction between individuals and intervals
  - Assuming a covert operator analysis of distributivity and presupposition maximization with scope ambiguity
  - Positing disambiguation based on a preferential interpretation principle sensitive to the difference
Questions

- MP as mobile grammatical operator vs. utterance-level maxim

- Intervals > Events > Individuals
  - “2012 and 2016 are leap years.”
  - ?“The 87th and 88th Annual Meetings are in snowy climates.”
  - #“JFK and Joe Kennedy are tall.”

- Covert aspectual operators? (Thomas, 2012; i.a.)
  - Futurate (“The Red Sox play the Yankees tomorrow.”)
  - Habitual (“Every Christmas I go to California.”)
  - [Calendrical? (“Next Friday is a holiday.”; “2016 is a leap year.”)]
Thank you!

Uli Sauerland
Isabelle Charnavel
Chrissy Zlogar
References


