Tense as temporal centering

MARIA BITTNER

Abstract

According to an influential theory, English tenses are anaphoric to an aforementioned reference point. This point is sometimes construed as a time (e.g. Reichenbach 1947, Partee 1973, Stone 1997) and sometimes as an event (e.g. Kamp 1979, 1981, Webber 1988). Moreover, some researchers draw semantic parallels between tenses and pronouns (e.g. Partee 1973, 1984, Stone 1997), whereas others draw parallels between tenses and anaphorically anchored (in)definite descriptions (e.g. Webber 1988, Moens and Steedman 1988; see also Kamp and Reyle 1993).

A competing approach views tenses as purely indefinite temporal descriptions, indexically anchored to the speech time but not anaphoric to prior discourse. On this view, tenses introduce new times into discourse. Any relation to aforementioned times or events is a by-product of independent pragmatic processes that establish discourse coherence, because coherence relations may imply temporal relations. For example, causal relations (such as Result or Explanation) imply that the cause event precedes the effect. Parallel relations (such as Elaboration or Contrast) typically imply temporal overlap or proximity, with no particular temporal order (e.g. Lascarides and Asher 1993, Kehler 2002).

In Bittner 2012 (Ch. 3), I draw a new parallel, between grammatical tense systems and grammatical centering systems for nominal discourse reference. I propose that in languages with grammatical tense systems (e.g. Polish, English), verbs have temporal arguments for reference times, in addition to nominal arguments for subjects and objects. Grammatical tense markers saturate the reference time argument with a top-level temporal anaphor. This refers to a time, or the time of an event, that is currently top-ranked in the center of attention or top-ranked in the background. In pronominal argument languages (e.g. Polish, Mandarin Chinese, Kalaallisut), grammatical person markers or features saturate the subject and/or object argument with a top-level nominal anaphor—i.e. a discourse anaphor that refers to an individual (e.g. 3SG, 3PL), or participant in an event (e.g. 1SG, 2SG), that is currently top-ranked center-stage or top-ranked in the background.

Outline

1. English np :: tense parallels
2. Polish verb inflections as centering
3. English tenses as temporal centering
4. Centering as a semantic universal

1 ENGLISH NP :: TENSE PARALLELS

- **INDEFINITENESS :: TENSE** (e.g. Asher & Lascarides 1993, Kehler 1994)
  (N) An indefinite np (e.g. [a . . .]) introduces a new entity into discourse (possibly restricted by a pragmatic coherence relation)
  (1) An indefinite tense (e.g. PST, Fut) introduces a new time into discourse (possibly restricted by a pragmatic coherence relation)
  (1) i. *Al went (PST1) go3 into a florist shop.*
    (ii) *He promised (PST2) promise3) Bea some flowers.*
    (iii) *He picked out (PST4) pick.out3) some roses.*
  (2) *He didn’t buy (PST2 not buy3) anything.*

- **ANCHORED (IN)DEFINITENESS :: TENSE** (e.g. Moens & Steedman 1988, Webber 1988)
  (N) An anchored (in)definite (e.g. np’s) introduces an entity that is anaphorically anchored to a salient antecedent entity.
  (1) An anchored tense (e.g. PSTn1) introduces a time that is anaphorically anchored to a salient antecedent event.

Figure 1. Moens & Steedman 1988 aspectual algebra: \( \langle D_1 \cup D_2, \triangleright, \ast, \ldots \rangle \)

<table>
<thead>
<tr>
<th>Input</th>
<th>Operation</th>
<th>Output</th>
<th>Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>point e</td>
<td>( \triangleright e = s )</td>
<td>consequent state s</td>
<td></td>
</tr>
<tr>
<td>point e</td>
<td>( \ast e = e' )</td>
<td>preparatory process ( e' )</td>
<td></td>
</tr>
</tbody>
</table>

(3) i. *Al went (PST1) go3 into a florist shop1.*
    (ii) *He promised (PST2) promise3) Bea some flowers.*
    (iii) *He asked (PST2 ask3) the lady,12 for some roses.*
  (4) *I went (PST1) go3 into a florist shop.*
    (ii) *He didn’t buy (PST2 not buy3) anything.*

- **PRONOUN :: TENSE** (e.g. Partee 1973, 1984, Stone 1997, Kratzer 1998)
  (N) A pronoun refers to an entity that satisfies the pronoun’s presuppositions abt the relation to the speaker (e.g. I) or an antecedent entity (e.g. he, she, they).
  (T) A tense refers to a time that satisfies the tense’s presuppositions about the relation to the speech time (e.g. PRS) or an antecedent time (e.g. PST, Fut).

(5) i. *Once upon a time1 there was (PST1 be1) an old king1.*
    (ii) *He was (PST1 be3) very rich.*

2
2 POLISH VERB INFLECTIONS AS CENTERING

- Polish Inflections for Topical Subjects

(6) i. Basia\(^7\) is young and pretty.
   Basia\(^7\) jest mloda i ładna.
   Basia/SF\(^7\) be\(_1\)PRS.\(^3\)SG., young/SF and pretty/SF
   (start-up) \([x \; x \; basia]; \; [young(T), \; pretty(T)]\)
   \(<(\emptyset), \; \emptyset)\> \(<(\emptyset), \; \emptyset)\>

ii. She\(^7\) has a boyfriend\(^8\) but …
   Ma chłopca ale …
   have\_1PRS.\(^3\)SG., boyfriend.ACC\(^8\) but …
   \([x \; have.as.boyfriend(T, \; x)]\)
   \(<(\emptyset), \; \emptyset)\>

iii. … she\(^7\) doesn’t want to start a family yet.
   jeszcze niechce zakładać rodziny
   yet not\_want\_1PRS.\(^3\)SG., form\_1-INF family\_GEN
   \([\text{want.start.family}(T)]\)
   \(<(\emptyset), \; \emptyset)\>

iii’. … he\(^7\) doesn’t want to start a family yet.
   jeszcze niechce zakładać rodziny
   he\(^7\) yet not\_want\_1PRS.\(^3\)SG., form\_1-INF family\_GEN
   \([\text{want.start.family}(T)]\)
   \(<(\emptyset), \; \emptyset)\>

- UC\(_0\) with Temporal Centering (UC\(_t\))

  - Discourse referent types
    - type \(a\): \(\delta\) (individuals), \(t\) (times), \(e\) (events), \(s\) (states)
      - var. \(u_2\): \(x\) \(t\) \(e\) \(s\)

  - Perspectives & type-relative anaphors
    - center-stage background
      - \(T \; t \; T \; \tau \; T \; e \; s \; r \; \sigma \; l \; \sigma \; l\)
      - \(\emptyset\), perspective
      - \(\emptyset\), type-relative anaphors

  - Operations on eventualities
    - time-of \(\delta(t)\), central-individual-of \(\gamma(t)\), …

- \(e_0\)-Start-up info-state (due to speech act \(e_0\))

\(\emptyset_0 := \{<(e_0), \; \emptyset)\}\) cf. ‘commonplace effect’, Stalnaker 1978
3 ENGLISH TENSES AS TEMPORAL CENTERING

[The perspective point anchor to the speech act, i.e. TNS
= point is omitted below.]

Figure 1. Moens & Steedman 1988 aspctual algebra: \( \tuple{D_1, D_2, D_3} \)

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OPERATION</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>point e</td>
<td>( \nu e = s )</td>
<td>( \nu_2 )</td>
</tr>
<tr>
<td>point e</td>
<td>( \nu e = e' )</td>
<td>( \nu_2 )</td>
</tr>
</tbody>
</table>

(9) i. \( Al \) went (PST \( \text{go} \)) \( \text{into} \) a florist shop.
ii. He promised (PST \( \text{promisc} \)) \( \text{Bea} \) some flowers.
iii. He asked (PST \( \text{asp} \)) \( \text{the lady} \) for some roses.

(10) i. \( Al \) went (PST \( \text{go} \)) \( \text{into} \) a florist shop.
ii. He didn’t buy (PST \( \text{asp} \)) \( \text{anything} \).

Figure 2. Bach 1986 mereological algebra: \( \tuple{D_1, D_2, D_3} \)

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OPERATION</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>process ( e' )</td>
<td>( \nu e' = s' )</td>
<td>state-equivalent ( s' )</td>
</tr>
<tr>
<td>process ( e' )</td>
<td>( \nu e' = e'' )</td>
<td>point-equivalent ( e'' )</td>
</tr>
</tbody>
</table>

(11) a. \( Al \) is \( \text{[working]} \) \( \text{[leaving]} \)

b. \( Al \) put some \( \text{[nuts]} \) \( \text{[oil]} \) in the salad.

(12) a. \( Al \) did a bit \( \text{of} \) \( \text{[work]} \) \( \text{[leaving]} \).

b. \( Al \) ate a portion \( \text{of} \) \( \text{nuts} \) \( \text{[a nut]} \)

Figure 3. UC aspectual algebra: \( \tuple{D_1, D_2, D_3, D_4, \ldots} \)

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OPERATION</th>
<th>OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>point e</td>
<td>( \nu e = s )</td>
<td>( \nu_2 )</td>
</tr>
<tr>
<td>process ( e' )</td>
<td>( \nu e' = e'' )</td>
<td>( \nu_2 )</td>
</tr>
<tr>
<td>state ( s' )</td>
<td>( \nu s' = e'' )</td>
<td>( \nu_2 )</td>
</tr>
<tr>
<td>state ( s' )</td>
<td>( \nu s' = e'' )</td>
<td>( \nu_2 )</td>
</tr>
</tbody>
</table>

(13) i. \( Al \) played chess (PST \( \text{chess} \)) \( \text{today} \).

ii. He started (PST \( \text{start} \)) \( \text{badly} \) but...

4 CENTERING AS A SEMANTIC UNIVERSAL

Figure 4. Centering TAMP-universals

(7) Grammatical tense (TNS) fills, or pushes down, the verb’s ref. time argument
with a dref anchored to a top-ranked time and/or event \( \langle T, T, \ldots \rangle \).

(8) Grammatical aspect (ASP) fills, or pushes down, the verb’s eventuality arg.
with a dref anchored to a top-ranked state and/or event \( \langle T, T, \ldots \rangle \).

(9) Grammatical mood (MND) fills, or pushes down, the verb’s world argument
with a dref anchored to a top-ranked world and/or event \( \langle T, T, \ldots \rangle \).

(10) Grammatical person (PRN) fills the verb’s subject or object argument with a
dref anchored to a top-ranked individual and/or event \( \langle T, T, \ldots \rangle \).

Based on a language sample consisting of English (T-prominent), Polish (TAPprominent), Mandarin Chinese (AP-prominent), and Kalaallisut (MP-prominent),
I conjecture that every language has at least one prominent TAMP-feature, most languages
have more than one, and no TAMP feature is universally prominent.

REFERENCES

Ch. 1–9 (Universals) available at http://www.rci.rutgers.edu/mbittner
Dekker, P. 1994. Predicate Logic with Anaphora. SALT IV.
SALT XV.
Different Points of View (Bäuerle, R. et al., eds.). Springer: Berlin.
Languages 64:59–64.
Lascarides, A. and N. Asher. 1993. Temporal interpretation, discourse relations,
Partee, B. 1973. Some structural analogies between tenses and pronouns in Eng-


