Lexical Representations

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Semantics

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Overview

1. Introduction
2. Agentivity
3. Change of state & Causation
4. Motion
5. Homework examples
6. Experiencers
Outline

1. Introduction
2. Agentivity
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Lexical semantics

1. Relatedness of predicates with different parts of speech

verbs/adjectives

a. the soup is cool.
b. the soup cooled.

2. Preposition choice: John had a glass. He ...

   1. ... gave it to/?with/?from Mary.
   2. ... received it ?to/?with/from Mary.
   3. ... broke it ?to/with/from a hammer.
   4. ... broke it against a hammer.
Semantic generalizations behind valence (syntactic frames)

verb classes

John

a. loaded the truck with hay.
b. sprayed the wall with paint.
c. smeared the trap with honey.

John

a. loaded hay onto the truck.
b. sprayed paint onto the wall.
c. smeared honey onto the trap.
Linking theory: predicting subj and obj

Animate Subject factors [strong Agentivity]
1. A has volition. (A murdered P)
2. A has control over involvement in an event or state. (A caught P)
3. A is willful initiator of event or state (A grasped P)
4. A has consciousness, sentience, perception. (A saw P)

Other Subject factors [weak Agentivity]
5. A is initiator, instigator, or causer of event (A dried P)
6. A is source of force directed at another entity. (A attracted P)
7. A moves, coming into contact with a stationary entity. (A hit P)
8. A moves or is located relative to an entity which is stationary (figure/ground) (F hovered over G)
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do (be do be do)

The primitive `do` exists primarily to distinguish primitive processes from primitive states.

**process v. state**

<table>
<thead>
<tr>
<th></th>
<th>the branch is strong</th>
<th>the branch fell</th>
<th>the branch swayed</th>
<th>the flag fluttered</th>
</tr>
</thead>
<tbody>
<tr>
<td>state</td>
<td></td>
<td><code>STRONG(b)</code></td>
<td><code>do(b, [FALL(b)])</code></td>
<td><code>do(f, [FLUTTER(f)])</code></td>
</tr>
<tr>
<td>process</td>
<td></td>
<td><code>do(b, [SWAY(b)])</code></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DO

1. Volition/ intension of x to do y
2. John jumped.
3. DO(J, [do(J, [JUMP(X)])])
4. John fell.
5. do(J, [FALL(X)])
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Inchoatives

(a) The glass broke.
(b) BECOME [BROKEN(G)]
(c) The glass cooled.
(d) BECOME [COOL(G)]
(e) The glass melted.
(f) BECOME [MELTED(G)]
Causatives of inchoatives

(a) John broke the glass.
(b) \texttt{DO}(J, \texttt{do}(J) \texttt{CAUSE} \texttt{BECOME} \texttt{BROKEN}(G))
(c) The breeze cooled the glass.
(d) \texttt{do}(B) \texttt{CAUSE} \texttt{BECOME} \texttt{COOL}(G)
(e) The fall broke the glass.
(f) \texttt{F CAUSE} \texttt{BECOME} \texttt{BROKEN}(G)

put type

a. \texttt{x put y on z}
b. \texttt{x CAUSE BE-AT(y, ON(z))}
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Definition of motion pred

A motion predicate entails motion and takes the full range of path phrases:

Path phrases

John walked

\[
\begin{align*}
\text{a. to the store} \\
\text{b. from the house.} \\
\text{c. through the tunnel} \\
\text{d. from the house to the store through the tunnel.}
\end{align*}
\]
Manner of motion verbs

*go, come, run, walk, march, gallop, limp, fly, ...*

**Two analyses**

(a) Causative

\[
\text{do}(x, \text{[RUN}(x)]) \text{ CAUSE} \\
[\text{BECOME} \text{ [BE-AT}(x, y)]]
\]

(b) Motion pred

\[
\text{do}(x, \text{[RUN}(x, \text{TO}(y))]) \\
\text{do}(x, \text{[RUN}(x, \text{F}_{\text{PATH}}(y))])
\]

Analysis (b): Van Valin and LaPolla (1997), rejecting van Valin (1990)
Motion to contact verbs

hit, smack, tap, knock, touch, bang, batter, beat, kick, pound, rap, slap, thump, thwack, whack,…

Two analyses

a. The stick hit (against) the fence.

b. \( \text{GO}(x, [\text{TO}(y)]) \)

c. * The bat hit from the wall to/against/∅ the fence.

d. \( \text{CONTACT}(x, y) \)

Not motion preds by our definition. But DO take a limited range of path phrases always interpreted as goals.
Caused locatedness (*put* type)

*put, insert, place, stand, ...*

* He put the box to the closet. \(\overset{=}{\text{CAUSE}} (\text{BE-AT}(\ldots))\)

**put type**

- **put on** \(x \\overset{\text{CAUSE}}{\rightarrow} [\text{BECOME} [\text{BE-AT}(y, \text{ON}(z))]]\)
- **insert** \(x \\overset{\text{CAUSE}}{\rightarrow} [\text{BECOME} [\text{BE-AT}(y, \text{IN}(z))]]\)
- **stand** \(x \\overset{\text{CAUSE}}{\rightarrow} [\text{BECOME} [\text{BE-AT-STAND}(y, \text{ON}(z))]]\)
Caused motion

kick, push, hit, teleport, bring, ... . A full range of path phrases. Causer ≠ theme. Manner of motion unspecified.

\[
\begin{align*}
\text{John} & \quad \left\{ \begin{array}{l}
\text{a. bumped} \\
\text{b. kicked} \\
\text{c. pushed}
\end{array} \right.
\end{align*}
\]

push type

\[
\begin{align*}
\text{push} & \quad \text{do}(x, [\text{PUSH}(x,y)]) \ \text{CAUSE} \ [\text{GO}(y, F_{\text{PATH}}(z))] \\
\text{kick} & \quad \text{do}(x, [\text{KICK}(x,y)]) \ \text{CAUSE} \ [\text{GO}(y, F_{\text{PATH}}(z))] \\
\text{hit} & \quad \text{do}(x, [\text{CONTACT}(x,y)]) \ \text{CAUSE} \ [\text{GO}(y, F_{\text{PATH}}(z))] \\
\text{bring} & \quad x \ \text{CAUSE} \ [\text{COME}(y, F_{\text{PATH}}(z))] 
\end{align*}
\]
put-type analysis of load/spray verbs

Polysemy account

(a)  x sprayed y on z
(b)  X CAUSE [BECOME [BE-AT(Y, ON(Z))]]
(c)  x sprayed z with y.
(d)  X CAUSE [BECOME [SPRAYED(Z)]]
     BY-MEANS-OF
     X CAUSE [BECOME [BE-AT(Y, ON(Z))]]
The \( y \) on \( z \) meaning of \textit{spray} is the same as the meaning of \textit{put, load}, but these differ in specifying the manner in which the material is moved:

\begin{enumerate}
  \item The song put/?loaded/?sprayed a smile on her face.
  \item John sprayed paint on the truck. \( \nless\) John loaded paint on the truck.
\end{enumerate}

Also, there may be a common primitive in the result states:

\begin{align*}
  x \text{ load } y \text{ on } z & \Rightarrow \\
  \text{DO}(x, [\text{LOAD}(x)]) \text{ CAUSE } [\text{BECOME} [\text{BE-AT}(y, \text{ON}(z))]] \\
  x \text{ load } z \text{ with } y & \Rightarrow \\
  x \text{ CAUSE } [\text{BECOME} [\text{COVERED/FILLED}(z)]] \\
  \text{BY-MEANS-OF} \\
  \text{DO}(x, [\text{LOAD}(x)]) \text{ CAUSE } [\text{BECOME} [\text{BE-AT}(y, \text{ON}(z))]]
\end{align*}
The true distribution of path phrases in English goes far beyond what seems to be sensibly licensed by lexical meanings. (Goldberg 1995) Can NOT be limited to a set of motion preds.

1. The truck rumbled *through the freight yard.* (sound predicate!)
2. John drank his way *through grad school.*
3. Fred sneezed the pepper *off the table.*

Can these all be assimilated to a generalized **CAUSED MOTION CONSTRUCTION**? We would need a notion of **constructional meaning**...
Examples I

(a) Leander swam to the shore.  Manner of motion?
(b) Monica leaped over the wall.  Manner of motion?
(c) Gillian bumped the table.  Class?
(d) Boris laid the hat on the bed.  Class?
(e) The wind dried the washing.  Related forms of dry?
Possible answers

(a) \text{do}(l, [\text{SWIM}(l, [\text{TO}(s)])])

(b) \text{do}(m, [\text{LEAP}(m, [\text{OVER}(w)])])
\text{do}(m, [\text{LEAP}(m)]) \& \text{GO}(m, [\text{OVER}(w)])

Note: not caused motion

(c) \text{BUMP}(g,t) \text{ (preps: into, up against, at)}

(d) b \text{ CAUSE } [\text{BECOME } [\text{BE-AT-LIE}(h, \text{ON}(b))]]

(e) w \text{ CAUSE } [\text{BECOME } [\text{DRY}(w)]]
Examples II

(f) The cliff dripped water. drip related to what basic primitive?

Water dripped from the cliff Motion predicate?

Lucinda wove a wreath from the twigs. Use MAKE primitive?

Lucinda wove the twigs into a wreath. wreath obligatory!

Selena emailed the news to Luke. What’s caused here?

Cheryl wiped the spots from the window.
Possible answers II

Motion pred or caused motion?

(f) \( \text{do}(c, [\text{EMIT}(c, w)]) \land \text{LIQUID}(w) \)

(g) \( \text{do}(c, [\text{EMIT}(c, w)]) \land \text{GO}(w, [\text{FROM}(c)]) \land \text{LIQUID}(w) \)

(h) \( \text{do}(l, [\text{WEAVE}(l, w)]) \land \text{GO}(t, [\text{INTO}(F_{\text{TRANS}}(w))]) \)

(i) \( \text{do}(l, [\text{WEAVE}(l, w)]) \land \text{GO}(w, [\text{FROM}(F_{\text{TRANS}}(t))]) \)

Motion theme becomes \textbf{SUBJ} in (g) and \textbf{OBJ} in (h) and (i).

A component for verbs of making

\[
\text{MAKE}(l, w) \text{ BY-MEANS-OF } \text{do}(l, [\text{WEAVE}(l, t)]) \land \\
\text{GO}(w, [\text{FROM}(F_{\text{TRANS}}(t))])
\]
Some verbs clearly specify the causing activity rather than anything about the motion itself; for other verbs it is less obvious what is specified.

Motion pred or caused motion?

(j) \( \text{do}(s, [\text{EMAIL}(s,n)]) \) \text{CAUSE} [\text{BECOME} [\text{BE-AT}(n,\text{TO}(l))] \\
(k) \( \text{do}(c, [\text{WIPE}(c,w)]) \) \text{CAUSE} [\text{BECOME} \neg [\text{BE-AT}(s,\text{ON}(w))]] \\


Induced action: Two agents

A preliminary solution

a. the pony jumped over the brook.
b. DO(p, [do(p, [JUMP(p, [OVER(b)]))]])
c. Viola jumped the pony over the brook.
d. V CAUSE DO(p, do(p, [JUMP(p, [OVER(b)])]))

But this solution does not make it clear why the path phrase should be obligatory in the induced action construction.

An alternative: put type analysis

v CAUSE [BECOME [BE-AT(p, OVER(b))]]
   BY-MEANS-OF
       v CAUSE DO(p, do(p, [JUMP(p)]))
Bonus: *Viola jumped the pony to the goal post (cf march)
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Subj/obj experiencers

Two kinds of experiencers

a. John knows Mary
   KNOW(J,M)

b. Alice annoys Sue.
   A CAUSE [FEEL(ANNOYED(S))]

c. John fears beans.
   FEEL(FRIGHTENED-OF(J,B))

   B CAUSE [FEEL(FRIGHTENED-OF(J,B))]

e. John likes beans.
   FEEL(LIKE(J,B))

   B CAUSE [FEEL(LIKE(J,B))]

Some feeling preds 1-place, some 2? Maybe not:

Sue is annoyed at/with Alice.
   FEEL(ANNOYED(S,A))

Alice annoys Sue.
   A CAUSE [FEEL(ANNOYED(S,A))]
Chicago: University of Chicago Press.

van Valin, Robert D.  
1990.  
Semantic parameters of split intransitivity.  

*Syntax: Form, Meaning and Function.*  
Cambridge University Press.