Events
http://www-rohan.sdsu.edu/~gawron/semantics

Jean Mark Gawron

San Diego State University, Department of Linguistics

2012-01-25 Ling 525
1 NeoDavidsonian representations

2 Event predicates

3 Events and thematic roles

4 Further evidence for events
Outline

1 NeoDavidsonian representations

2 Event predicates

3 Events and thematic roles

4 Further evidence for events
Marcia quickly shoved Clive into the cupboard.
[I am REJECTING the text book’s distinction between “selected argument” and “unselected argument” (LOCATION in 33c and 33d)]

shoving event

\[ \exists e [ \text{SHOVE}(e) \& \text{AGENT}(m, e) \& \text{PATIENT}(c, e) \& \text{INTO}(\text{the cupboard}, e) \& \text{QUICKLY}(e) ] \]
Neodavidsonian event

Marcia took the book from Clive.

\[ \exists e [ \text{TAKE}(e) \& \text{AGENT}(m, e) \& \text{PATIENT}(\text{the book}, e) \& \text{FROM}(c, e) ] \]
Clive broke some clods up roughly with a shovel.

**breaking-up event**

\[ \exists e \left[ \text{BREAK UP}(e) \& \text{AGENT}(c, e) \& \text{PATIENT}(c, e) \& \text{WITH}(y, e) \& \text{ROUGHLY}(e) \right] \]
Quantified NPs, too

Suppose we translate the last example again, treating *some clods* as a quantified NP the way we did in Chapter 3. Then we’d have:

$$
\exists x [\text{CLODS}(x) \&
\exists e [\text{BREAK UP}(e) \& \text{AGENT}(c, e) \&
\text{PATIENT}(x, e) \& \text{WITH}(s, e) \& \text{ROUGHLY}(e)]]
$$

And now also translating *a shovel* as a quantified NP:

$$
\exists y [\text{SHOVEL}(y) \&
\exists x [\text{CLODS}(x) \&
\exists e [\text{BREAK UP}(e) \& \text{AGENT}(c, e) \&
\text{PATIENT}(x, e) \& \text{WITH}(y, e) \& \text{ROUGHLY}(e)]]
$$
A sudden fall

The tree will fall suddenly.

Falling event

\[ \exists e [ \text{FALL}(e) \land \text{PATIENT}(t, e) \land \text{SUDDENLY}(e) ] \]
Marcia saw_{e} [S Clive punch_{e'} John].

seeing event

\[ \exists e, e' [\text{SEE}(e) \& \text{EXPERIENCER}(m, e) \& \text{STIMULUS}(e', e) \& \text{PUNCH}(e') \& \text{AGENT}(c, e') \& \text{PATIENT}(j, e')] \]
Emotion verb: nominalized embedded event

\[ [\text{NP Kennedy's assassination}_e'] \text{ shocked}_e \text{ America.} \]

past shocking event

\[ \exists e', e' [ \text{SHOCK}(e) \& \text{EXPERIENCER}(\text{America, } e) \& \text{STIMULUS}(e', e) \& \text{ASSASSINATION}(e') \& \text{PATIENT}(\text{kennedy, } e') ] \]

The embedded event is nominalized. Other sentences nd the translation of the assassination event we might use.

a. That Kennedy was assassinated shocked America.

b. It shocked America that Kennedy was assassinated.

c. \[ \exists e' [ \text{ASSASSINATION}(e') \& \text{PATIENT}(\text{kennedy, } e') ] \]
Outline

1. NeoDavidsonian representations
2. Event predicates
3. Events and thematic roles
4. Further evidence for events
stealing silently away

a. The Bedouin stole silently away.
c. The Bedouin stole away.  

*steal away* a verb-particle

stealing away event

\[ \exists e, t [ \text{STEAL AWAY}(e) \& \text{AGENT}(\text{the bedouin, } e) \& \text{SILENTLY}(e) ] \]
foul mood

a. John woke up in a foul mood.
b. John was in a foul mood.  
   a. entails b.

\[ \text{in a foul mood a predicate on John!} \]

wakening event

\[ \exists e [ \text{Wake up}(e) \land \text{Agent}(\text{John, } e) \land \text{In-foul-mood}(\text{John}) ] \]
a. Horace leaned heavily on the counter.

b. Horace was on the counter. Does (a) entail (b)?

past leaning event

\[ \exists e, t [ \text{LEAN}(e) \& \text{AGENT}(\text{horace}, e) \& \text{HEAVILY}(e) \& \text{ON}(\text{the-counter}, e) ] \]
Marcia spontaneously combusted.

Does (a) entail (b)?

Does (a) entail (c)?

\[ \exists e \left[ \text{COMBUST} (e) \& \text{PATIENT} (\text{marcia}, e) \& \text{SPONTANEOUSLY} (e) \right] \]
Willing instruction

b. Jones was willing (to instruct Clive). Does (a) entail (b)?
c. Clive was willing (to be instructed by Jones). Does (a) entail (c)?

Instruction event

\[
\exists e \left[\text{INSTRUCT}(e) \& \text{AGENT}(\text{Jones, } e) \& \text{PATIENT}(\text{clive, } e) \& \text{WILLING}(\text{jones, } e) \right]
\]
Willing instruction

a. Clive was willingly instructed by Jones.

a’. Clive was instructed willingly by Jones.

b. Jones was willing (to instruct Clive). Does (a/a’) entail (b)?

c. Clive was willing (to be instructed by Jones). Does (a/a’) entail (c)?

Instruction event

\[ \exists e \left[ \text{INSTRUCT}(e) \land \text{PATIENT}(\text{Clive}, e) \land \text{AGENT}(\text{jones}, e) \land \text{WILLING}(\text{clive}, e) \right] \]
c. Anita interviewed Barry over coffee
b. Anita was over coffee

does (a) entail (b)?
c. Barry was over coffee
does (a) entail (c)?

past leaning away event

\[ \exists e \left[ \text{INTERVIEW}(e) \& \text{PATIENT}(Barry, e) \& \text{AGENT}(Anita, e) \& \text{OVER-COFFEE}(e) \right] \]
Outline

1. NeoDavidsonian representations
2. Event predicates
3. Events and thematic roles
4. Further evidence for events
Brutus stabbed Caesar violently in the back.

a. ⇒ Brutus stabbed Caesar in the back violently.

b. ⇒ Violently Brutus stabbed Caesar in the back.
Diamond entailments I

\[ p \land q \land r \]

\[ p \land q \quad p \land r \quad q \land r \]

\[ p \quad q \quad r \]

\[ T \]
Brutus stabbed Caesar violently in the back

a.  ⇒  Brutus stabbed Caesar violently.
   i.  ⇒  Brutus stabbed Caesar.

b.  ⇒  Brutus stabbed Caesar in the back.
   i.  ⇒  Brutus stabbed Caesar.
Diamond entailments

B stabbed C violently in the back

B stabbed C violently

It was violently in the back

B stabbed C in the back

It was in the back

T
Explaining the entailment patterns

a. B. stabbed C. violently in the back.

b. $[B \text{ stabbed } C](\alpha) \& [\text{violently}] (\alpha) \& [\text{in the back}] (\alpha)$

Both diamond entailments and order entailments are explained!

Let’s call $\alpha$ an event! The meaning of an untensed clause is a property of an event. For example $[\text{Brutus stab Caesar}]$ is the property that’s true of event $e$ if and only if

$$\text{STAB}(e) \& \text{AGENT}(\text{Caesar}, e) \& \text{PATIENT}(\text{Caesar}, e)$$

At least some adverbials are also properties of events. For example, $[\text{violently}]$ is that property that an event $e$ has if and only if

$$\text{VIOLENTLY}(e)$$
In the marketplace

Brutus stabbed Caesar in the marketplace.
∃e[\text{STAB}(e) \& \text{AGENT}(b, e) \& \text{PATIENT}(c, e) \& \text{IN}(\text{the marketplace}, e)]

Brutus did something.
∃e[\text{AGENT}(b, e)]

Brutus did something to Caesar.
∃e[\text{AGENT}(b, e) \& \text{PATIENT}(c, e)]

Something happened to Caesar.
∃e[\text{PATIENT}(c, e)]

There was a stabbing in the marketplace.
∃e[\text{STAB}(e) \& \text{IN}(\text{the marketplace}, e)]

Something happened to Caesar in the marketplace.
∃e[\text{PATIENT}(c, e) \& \text{IN}(\text{the marketplace}, e)]
Outline

1. NeoDavidsonian representations
2. Event predicates
3. Events and thematic roles
4. Further evidence for events
Event verbs: Perception

a. Zabruder saw$_e$ [S Oswald shoot$_{e'}$ Kennedy].
b. Zabruder saw$_e$ [S Kennedy shot$_{e'}$ by Oswald].

Seeing event

$\exists e, e' [\text{SEE}(e) \& \text{EXPERIENCER}(z, e) \& \text{STIMULUS}(e', e) \& \text{SHOOT}(e') \& \text{AGENT}(o, e') \& \text{PATIENT}(k, e') ]$
a. Everything John does is crazy.
b. Most of what happens to Marcia is funny.
c. Clive isn’t going to do anything for Marcia.
d. Something awful is going to happen.

1. $[X \text{ does something}] = \exists e \text{ AGENT}(X, e)$
2. $[\text{Something happens to } Y] = \exists e \text{ PATIENT}(Y, e)$
3. $[\text{Something happened}] = \exists e \ldots$
Quantification over events II

a. Everything John does is crazy.

b. Most of what happens to Marcia is funny.

c. Clive isn’t going to do anything for Marcia.

d. Something awful is going to happen.

1. \( \forall e \ \text{AGENT}(j, e) \rightarrow \text{CRAZY}(e) \)

2. \([\text{MOST} e \ \text{PATIENT}(m, e)] \ \text{FUNNY}(e) \)

3. \( \neg \exists e \ \text{AGENT}(c, e) \ \& \ \text{BEN}(m, e) \)

4. \( \exists e \ \text{AWFUL}(e) \)
Where downward entailment comes from

Since: \( p \Rightarrow q \)
then \( \neg q \Rightarrow \neg p \)

Since: I saw a white dog. \( \Rightarrow \) I saw a dog.
then: I didn’t see a dog \( \Rightarrow \) I didn’t see a white dog.

Since: Clive is going to buy flowers for Marcia
\( \Rightarrow \) Clive is going to do something for Marcia.
then: Clive isn’t going to do anything for Marcia
\( \Rightarrow \) Clive is not going to buy flowers for Marcia.
Our account of diamond entailments thus brings along for free an account of certain entailments under negation, provided they follow the following pattern.

\[
\text{Since } \exists e \ P(e) \land Q(e) \land R(e) \Rightarrow \exists e \ P(e) \land Q(e) \\
\text{then } \neg \exists e \ P(e) \land Q(e) \Rightarrow \neg \exists e \ P(e) \land Q(e) \land R(e)
\]

Since \( \exists e \ [\text{BUY-FLOWERS}(e) \land \text{AGENT}(c, e) \land \text{BEN}(m, e)] \)
\( \Rightarrow \exists e \ [\text{AGENT}(c, e) \land \text{BEN}(m, e)] \)
then \( \neg \exists e \ [\text{AGENT}(c, e) \land \text{BEN}(m, e)] \)
\( \Rightarrow \neg \exists e \ [\text{BUY-FLOWERS}(e) \land \text{AGENT}(c, e) \land \text{BEN}(m, e)] \)
\[ \neg \exists e \left[ \text{AGENT}(c, e) \& \text{BEN}(m, e) \right] \]

\[ \Rightarrow \neg \exists e \left[ \text{BUY-FLOWERS}(e) \& \text{AGENT}(c, e) \& \text{BEN}(m, e) \right] \]

\[ \iff \neg \exists e \left[ \exists x \left[ \text{FLOWER}(x) \& \text{BUY}(e) \& \text{PATIENT}(x, e) \right] \& \text{AGENT}(c, e) \& \text{BEN}(m, e) \right] \]

\[ \Rightarrow \neg \exists e \exists x \left[ \text{PENCIL}(x) \& \text{SHARPEN}(x) \& \text{AGENT}(c, e) \& \text{BEN}(m, e) \& \text{PATIENT}(x, e) \right] \]

\[ \Rightarrow \neg \exists e \left[ \text{SING}(e) \& \text{AGENT}(c, e) \& \text{BEN}(m, e) \right] \]