The Tree Grows: Introducing voiceP/vP

15 - 25 February
OUR ROADMAP

• Internal vs external arguments
• The morphosyntactic function of $v/voice$
• The semantic function of $v/voice$
  • A detour through some semantic formalism
• Special $v$ heads and a return to ditransitives
Remember when I said...

...Carnie is preparing us for things to come by introducing this null V head.
Where We’re Headed

Cherlon cooked a fantastic meal.

v has two functions:
• It assigns accusative case to the object
  • The syntactic job
• It provides a home - via its specifier - for the verb’s external argument
  • The semantic job

NOTE: In Kratzer 1996, there are trees in which the direct object occupies the specifier of VP. We’ll get to that.

The subject is no longer an argument of the verb. WHOA!
The Subject-Object Asymmetry

- Marantz (1984): The entire predicate (not just the verb) assigns a θ-role to the subject. The meaning/properties of the object influence the meaning of the verb, which, in turn, determines the semantic properties of the subject.
  - The object is assigned its theta role by the verb. The subject is assigned its theta role by the entire predicate.
  1. a. throw support behind a candidate   d. throw a party   2. a. take a book from the shelf   d. take an aspirin
     b. throw a baseball   e. throw a fit   b. take a bus to New York   e. take a letter in
     c. throw a boxing match (take a dive) c. take a nap
  3. a. kill a cockroach   d. kill a bottle (empty it)
     b. kill a conversation   e. kill an audience (wow them)
     c. kill an evening watching TV (Kratzer 1996, EX 6-8)

- Kratzer argues that we need another syntactic position for the subject. Why? How many arguments does a verb have?

- From a syntactic perspective, we’re used to thinking about a verb’s arguments as the DPs/CPs/PPs that the verbs subcategorizes for.

- From a semantic perspective, verbs refer to events and in order to derive the meaning of a verb, the event that the verb refers to is part of the verb’s meaning.
  - So, verbs take an argument that is an event. [We’ll come back to this.]
  - Objects are now “internal” arguments and subjects are “external” arguments.

- The semantic function of ν is to “introduce” the external argument to the event encoded in the VP.
Burzio’s Generalization

• There’s not a one-to-one mapping between case, grammatical relations, and thematic roles.
  • We’ve seen this mismatch with passives
  • Another mismatch is found with unaccusatives

• Burzio’s Generalization: If a verb assigns accusative case, then it assigns an external θ-role.
  • No semantic subject θ-role → no accusative Case
  • In technical terms: When a verb phrase combines with a head that introduces an external argument, that head assigns accusative case to the internal argument of the verb.

• In b/d there’s only an internal argument, and the internal argument surfaces in subject position.

1. a. She fired me.  b. I was fired.  (from Burzio 2000)
   c. They broke the window. (EX26)  d. The window broke. (EX 2)
Unergatives have an underlying semantic subject. e.g. *Mary slept.*

Unaccusatives have an underlying semantic object.

Some verbs alternate between being transitive and intransitive.

- *Mary froze the popsicles.*
- *The popsicles froze.* *Popsicles* is the semantic object. Why do we think this?

In transitive sentences, resultatives modify objects, not subjects.

- *John hammered the metal flat.* The metal is flat as a consequence of being hammered.
- *John hammered the metal sweaty.* John is sweaty as a result of hammering metal.
- Passives allow for a resultative to modify the semantic object/syntactic subject.

*The metal was hammered flat.*

Resultatives are also allowed with the syntactic subject of some intransitives...

*The popsicles froze solid.*

...But not with others.

*Mary slept rejuvenated.* (On the interpretation that Mary is rejuvenated as a consequence of sleeping.)

*The popsicles* is a semantic object - just like *the metal* in the passive.

In some languages, auxiliary selection distinguishes unaccusatives and unergatives

**Unaccusative - *be***

*Italian*

a. Maria è arrivata
   Maria *is* arrived-fem.sg. ‘Maria has arrived.’

*German*

b. Die Maria *ist* angekommen
   the Maria *is* arrived
   ‘Maria has arrived.’

**Unergative - *have***

*Italian*

c. Maria *ha* telefonato
   Maria *has* telephoned
   'Maria has telephoned.’

*German*

b. Die Maria *hat* telefoniert
   the Maria *has* telephoned
   ‘Maria has telephoned.’

Burzio’s Generalization
Encoded in the Tree Structure

There is a semantic subject/ an external theta role.
The semantic subject is merged (starts off in) in the specifier of $v$.
$v$ assigns Accusative case to the direct object.

...BUT WHY is the semantic subject merged in the specifier of $vP$???

Cherlon cooked a fantastic meal.

$V$ moves to $v$.
We’ll get to that in a bit.
WE HAVE TO LEARN A LITTLE SEMANTICS

There is some...
How to Represent Verb Meanings: We bought your slippers in Marrakesh.

\[ \lambda x \lambda y \lambda e [ \text{buy}(x)(y)(e) ] \]

- There is some variable \( x \) and some variable \( y \) and some variable \( e \)...
- Such that...
- \( x \) is bought and \( y \) does the buying and \( e \) is the event in which the buying happened

- Buying slippers from a street vendor in Marrakesh in June 1995 is not the same event as buying slippers from a friend whose home you are visiting in December 1994.

\[ \lambda x \lambda y \lambda e [ \text{buying}(e) \& \text{Theme}(x)(e) \& \text{Agent}(y)(e) ] \]

- There is some variable \( x \) and some variable \( y \) and some variable \( e \)...
- Such that...
- There is an event \( e \) in which buying occurred and \( x \) is the theme of that event and \( y \) is the agent of that event.

Severing the external argument from its verb

\[ \lambda x \lambda e [ \text{buy}(x)(e) ] \text{ or } \lambda x \lambda e [ \text{buying}(e) \& \text{Theme}(x)(e) ] \]

- Figure 1: The verb has three arguments.
  - \( x \): the thing that was bought
  - \( y \): the agent of the buying
  - \( e \): the event in which the buying happened

- Figure 2: The verb has one argument.
  - \( e \): the event in which the buying happened
  - The theme and the agent are added separately

What Kratzer argues for:
- The verb has two arguments
  - \( e \): the event of buying
  - \( x \): the thing that was bought
REMEMBER: Kratzer is building on earlier work which shows a subject-object asymmetry. She takes it further and argues that the subject (and its theta role) are external to the meaning of the verb.

1. a. throw support behind a candidate   d. throw a party   
   b. throw a baseball           e. throw a fit    
   c. throw a boxing match (take a dive) 

2. a. take a book from the shelf   d. take an aspirin   
   b. take a bus to New York   e. take a letter in shorthand  
   c. take a nap  

3. a. kill a cockroach   d. kill a bottle (empty it)  
   b. kill a conversation   e. kill an audience (wow them)  
   c. kill an evening watching TV  
   (Kratzer 1996, EX 6-8)
Is the head that introduces the external argument lexical or functional?

A detour through Malagasy.

- **Hung 1988**: The agent is introduced by the prefix -an that resides in a V head that is higher than the V head which hosts the verb.

- -an does two things:
  - Introduces the subject argument.
  - Assigns case to the object - ny lamba ‘the clothes’.

- For Hung, the external argument introducing head is a V - it’s lexical.

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**Head Movement**: V→V→T

- *sasa* picks up *an* and takes *an* along to I, where *m* lives.
- It’s a syntax progressive. 😊

**Phrasal Movement**: The subject starts in the specifier of the higher VP and moves Spec,IP (what we know as TP).

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- Functional heads have some job in the syntactic structure, but they may or may not actually have overtly realized material in them.
- The functional heads we’ve seen up to this point are C,T, and D.

\[ (15) \text{M+an+sasa ny lamba (amin ny savony) Rasoa.}
\text{wash+active the clothes with the soap Rasoa}
\text{‘Rasoa washes the clothes (with the soap).’} \]
Kratzer argues that external argument-introducing head is functional - not lexical. *It’s not a V.*

**The theory argument:** Structural vs lexical case. Structural case is assigned by functional heads.

- **Structural case:** The normal/expected case. E.g. - nominative on subjects and accusative on objects.
  - The functional head I/T assigns nominative.

- **Lexical case:** Cases that are determined by specific lexical items. E.g. - Prepositions in lots of languages - German, Russian, Icelandic - determine the case of their objects.
  - The lexical preposition assigns case to its object.

**The head that assigns accusative (a structural case) to the object should be functional.**

Fortunately, at the time, there was a functional head hanging around just waiting to be given more work to do.

There’s another argument presented based on gerunds.
Enter $\mu$

- Johnson 1991 (the same Johnson whose chapters we read): Objects move to the specifier of VP and are assigned (accusative) case by $\mu$.
  - The verb moves and adjoins to $\mu$.
  - Only NPs (DPs) move to Spec,VP. Therefore, they precede adverbs and other complements of verbs.
    - Mittie fed the dog quickly.
    - *Mittie fed quickly the dog.
    - Mikey visited his parents quietly.
    - *Mikey visited quietly his parents.
    - Gary told Sam to leave.
    - *Gary told to leave Sam. (EX 20)

For Johnson, $\mu$’s sole function is case assignment.

- More syntax history: At the time, it was assumed that case was assigned in a very local configuration. Now, it is assumed that the case-assigning head and the DP can be farther away in the structure.
  - We’ll get to this...

For Kratzer, $\mu$ has another role...

“Having acquired semantic content, $\mu$ deserves a meaningful name. I will call it VOICE.” (p. 120)

- Kratzer assumes that since the external argument is an argument of the verb and is generated in Spec,VoiceP, the direct object is generated in Spec,VP, since it is an argument of the verb.
- Johnson moves the object from the complement of V to Spec,VP. Kratzer starts the object in Spec,VP.
Kratzer’s VoiceP is generally referred to as vP. It’s sometimes handy to posit both VoiceP and vP.

E.g. There is one way of thinking about passives in which the agent occupies Spec,vP - just as in actives - and by overtly or silently occupies Voice.

μ died a long time ago. (But Kyle Johnson is very much alive!)

There are many v’s. Kratzer actually suggests that there might be more than one Voice head – e.g. an active voice head and a stative voice head. (p.123)

In the Carnie chapters, we’ve seen \( V_{\text{active}} \) and \( V_{\text{passive}} \). Same idea.

Some syntacticians/semanticists place the direct object in Spec,VP and others position it as the sister to V. Unless a particular point is being made about word order and object positions, either way works.

We will soon see that case can be assigned over greater distances than we thought.

The external argument starts in Spec,vP.

The verb (V) moves to v. This makes the verb close to T so that T and V can communicate about tense information. [Heads like to be close to each other when they talk. 😊]
The verb ‘buy’ from Kratzer’s perspective.

The meaning of a VP headed by the verb ‘buy’ is derived by supplying an Event argument (e) and a Theme argument (x).

Since the meaning of the subject is determined by the meaning of the verb plus its object, the meaning of the subject can’t actually be specified.

**NOTE:** In the semantics world, the term “argument” is used differently than we’ve seen. Arguments are used to encode the elements/items that give a particular word/phrase meaning.

1. \( \text{buy} = \lambda x \lambda e \left[ \text{buy}(x)(e) \right] \) or \( \lambda x \lambda e \left[ \text{buying}(x) \land \text{Theme}(x)(e) \right] \) (Kratzer 1996, Figure 3)

‘Buy’ has two arguments - the thing which was bought and the event in which the buying happened.

2. a. I bought a new set of fancy dishes. = I volitionally engaged in the activity of paying for new dishes.
   b. I bought his alibi. = I, perhaps passively, accepted the story. I didn’t actually do anything.

The argument which surfaces as the subject is “external” to the meaning of the verb. The object is the verb’s “internal” argument.

A more technical description of unaccusatives and unergatives:

- Unaccusatives have an internal argument.
- Unergatives have an external argument.
How do things work semantically?

**Computing Cherlon bought wine**

Events are \( e \) and entities are \( x \).

\( \lambda x \lambda e. \text{bought}(x)(e) \). *bought* has two arguments. \( \lambda x \) is its internal argument and \( \lambda e \) is the event.

\( \lambda e. \text{bought}(\text{wine})(e) \). When *bought* and *wine* combine, *wine* saturates the internal argument slot. \( \lambda x \) disappears because it now has a meaning.

\( \lambda x \lambda e. \text{agent}(x)(e) \). \( \nu \) also has two arguments. \( \lambda x \) is the agent and \( \lambda e \) is the event.

- This is what \( \nu \) “means” semantically.

\( \lambda x \lambda e. \text{bought}(\text{wine})(e) \) & (agent)(x)(e). The event argument unifies the event encoded in the VP and the agent of the event.

  - The \( \nu' \) is a conjunction of sorts in which both conjuncts have an event argument. The formula means, “There was an event of buying wine and there is some agent of that event.”

\( \lambda x \lambda e. \text{bought}(\text{wine})(e) \) & (agent)(Cherlon)(e). *Cherlon* saturates the \( \lambda x \) argument slot and we get:

  \( \lambda e. \text{bought}(\text{wine})(e) \) & (agent)(Cherlon)(e)

  - There is an event in which wine is bought and Cherlon is the agent of buying wine in that event.

  - The event variable is valued by the context higher in the tree. [If you’re interested, see the Tense slide at the end, but this is beyond our present purpose.]
The Compositional Operations

- **Functional Application:** This is the normal way of composing meaning. There is an open argument slot and the sister node saturates (provides the content for) that slot.

- **Passing Up:** When node doesn’t have a sister, then the meaning of that node travels up to the next highest node.

- **Event Identification:** This operation combines the external argument with the event denoted in the VP.
  - There is an agent and that agent is the agent of the event described in the VP.
  - “Event Identification makes it possible to chain together various conditions for the event described by a sentence.” (p.122)
Mapping the event argument to real-world events

- This sentence has multiple interpretations - collective, cumulative, and distributive.

1. Three architects designed four buildings.

- In both the collective and cumulative, the total number of buildings designed is four.
- **Collective**: all three of the architects collaboratively design all four buildings.
- **Cumulative**: it is underspecified as to how many architects design each building. Perhaps one architect designed three buildings and the other two designed one building or all three architects collaborated on one building and each of them individually designed the remaining three buildings.
- **Distributive**: there are twelve buildings; each architect designs four buildings.

- The events that the collective, cumulative, and distributive interpretations map to are independent of the meaning delivered by the combination of the verb and the object.
- In the collective interpretation, we need one event in which all three architects design four buildings. In the distributive interpretation, we need three events in which each architect designs four buildings. The cumulative interpretation is more complicated; we don’t know how many events there are. We just know that some subset of architects designed some subset of buildings.
- **Whatever the event is, it supplies the value for the event argument within the TP projection.**

See Kratzer’s chapters *The Event Argument and the Semantics of Verbs* posted on the Semantics Archive for much more detailed discussion of quantifying over events. [http://semanticsarchive.net/Archive/GU1NWM4Z/](http://semanticsarchive.net/Archive/GU1NWM4Z/)
Voice was proposed in order to build into the syntax the semantic observation that verbs have an asymmetric relationship with their objects versus their subjects.

- Objects have a closer relationship with the verb and the compositional meaning of the verb plus its object select for the subject.
  - The subject is external to the meaning of the verb.

Voice builds on μ, which was proposed (by a syntactician) as the accusative case-assigner.

In contemporary theory, Kratzer’s voice is generally represented as ν and voice is used to encode other kinds of information, (it’s sometimes used in passives).
1. The professor wore a new necklace.
2. Cherlon refused to eat pulverized bacon in Sweden.
3. The exhausted athletes slept.
4. The popsicles froze.
5. Many contemporary chefs believe people prefer locally-grown food.
6. Mary claims that she saw John steal food.
7. Icelandic chefs appear to attend exquisite culinary schools.
8. The drug money was hidden in the dessert.
9. What do most citizens understand the Constitution of the United States to elaborate?
10. The front-runner seemed to expect to win the primary.
11. Which customers that ordered expensive dishes left sizeable tips?
12. The positions that require graduate degrees do not pay enough money.
13. The actors made the claim that they did not receive sufficient accolades.
THE UTILITY OF $\nu$

*It’s totally gonna get us out of a jam…*
Case 101

- Very generally: Case is a system of marking nouns for various type of structural/lexical relationships.

- Of course, this is an over-simplification. There are many more cases in the world’s languages. • Dative, Locative, Genitive, Partitive, Essive, Vocative, etc.

- AND, erg-abs systems tend to be much more complicated than this categorization suggests. • So do nom-acc systems
**Chukchi**

**Transitive**

ətləg-ə ən-in l’ulqəl rə-gtəkwannen.  
father-erg 3sg-poss face.abs cause-freeze  
‘Father suffered frost-bite on his face.’

**Intransitive**

ətləg-ən l’o-nə-gtəkwatg’e  
father-abs face-cause-freeze3sg  
‘Father got face frost-bitten.’

**West Greenlandic**

Oli sinippoq.  
Oli.abs sleep.ind.intr.3sg  
‘Oli sleeps.’

Oli-p neqi nerivaa.  
Oli-erg meat.abs eat.ind.3sg.3sg  
‘Oli eats meat.’ (Butt, Ch. 6)

OH SO SIMPLE... the canonical ergative-absolutive pattern
But things aren’t always so simple...

Most ergative languages have some kind of split, as we saw in Hindi-Urdu.

1. Rahul kitaab parh-taa thaa
   Rahul.masc. book.fem read-hab.masc.sg be.past.masc.sg
   ‘Rahul used to read (a/the) book.’

2. Rahul-ne kitaab parh-ii thii
   ‘Rahul had read the book.’ [Bhatt 2005, EX 2]
   ▶ Pfv = perfective aspect

But...there’s a pattern here that we find elsewhere...


Ling 216 ~ Winter 2016 ~ Cherlon Ussery
“Normal” v’s and “Special” v’s

In both the Dat-Nom Icelandic sentence and the Erg-Abs Gujarati sentence, the verb agrees with the nom/abs object, not with the dat/erg subject.

Icelandic
1. a. Við lásum bókina.
   we.Nom read.1pl book.the.Acc
   ‘We read the book.’ (Sigurðsson 1996, Ex 14)
   --Normal v: assigns accusative to the object

   b. Einum málfræðingi líkuðu þessar hugmyndir.
      one.Dat linguist.Dat liked.3pl these.Nom ideas.Nom.pl
      ‘One linguist liked these ideas.’ (Sigurðsson and Holmberg 2008, EX 1)
      --Special v: assigns dative to the subject

   NOTE: These non-Nominatives really are subjects, not topicalized objects. Many syntacticians have illustrated this point.

Gujarati
2. a. Sudha away-i.
   Sudha(fem).Abs came-fem
   ‘Sudha came.’
   --Normal v: there’s no object for v to assign case to

   b. Sudha-e radio khəriddy-o.
   Sudha(fem)-Erg radio(masc).Abs bought-masc
   ‘Sudha bought a radio.’ (Woolford 2006, EX 38c/39)
   --Special v: assigns ergative to the subject
AND: special v’s are super useful with those pesky Ditransitives

*English*
The students gave their professor a necklace.

*Icelandic*
Ég sendi Hildi fiskinn
‘I sent Hildur the fish.’

Having a special v is *really* useful!

No more tri-branching!!!
But first...a really big-picture look at Larson 1988

- Lots of ditransitives alternate between V-DP-DP and V-DP-PP. In both alternations it seems like both objects get a theta role from the verb. We’ll see...not really...


- In the DP-DP structure, there’s an asymmetry between the two objects.

c. I showed Mary herself.     d. *I showed herself Mary.

- The reflexive has to be c-commanded by its antecedent. [More on Binding Theory next time!]

(4) a.  

\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP1} \\
\text{NP2}
\end{array}
\]

b.  

\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP2}
\end{array}
\]

• If NP1=Mary and NP2=herself, both structures in (4) are wrong.
• In (4a), NP1 and NP2 mutually c-command each other, so (d) is unexplained.
• In (4b), the antecedent is c-commanded by the reflexive. Also bad!

(6) a.  

\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP1} \\
\text{PP} \\
\text{P} \\
\text{NP2}
\end{array}
\]

b.  

\[
\begin{array}{c}
\text{VP} \\
\text{V} \\
\text{NP1} \\
\text{P} \\
\text{NP2}
\end{array}
\]

• The NP-PP structure is better accommodated.
• NP1 asymmetrically c-commands NP2 in (6a).
• **SIDEBAR**: Various definitions of c-command have been proposed throughout the years. On one view, NP1 asymmetrically c-commands NP2 in (6b) because NP2 is contained in a maximal projection that fails to contain NP1.

Maybe we have the right structure for the DP-PP variant, but definitely not the DP-DP variant.
Larson will build on this structure...

- NP1 c-commands NP2.

- The indirect object will get its theta role from the verb.

- In the previous structures, either both objects get their theta roles from the verb or the direct object does (by virtue of being sister to the verb.)

- Larson draws a parallel between subjects being “less important” to verb meanings than direct objects and argues that direct objects are less important than indirect objects.

(9) a. Beethoven gave the Fifth Symphony to the world.
   b. Beethoven gave the Fifth Symphony to his patron.
• The verb raises via head movement to an empty V position for word order and to assign case to the direct object.

• Under the assumptions at the time, the verb can’t assign case the DP in its specifier (even though T/I assigned case to its specifier).
  • The conditions governing which case gets assigned where have been a perpetual issue in syntax...

\[ \text{DP-PP} \]
• “Dative shift” (Larson’s term for this structure) is like a passive in that an object is “promoted” to subject position.
• As you might suspect, there was uproar about this analogy...
English
The students gave their professor a necklace.

Icelandic
Ég sendi Hildi fiskinn
‘I sent Hildur the fish.’

English: V → v(dat) → v(acc)
Icelandic: V → v(dat) → v(acc) → T
(Negation comes after the verb, just like we saw in French.)

- On this proposal, we still get the right c-command and we don’t need to move the indirect object.
- BUT, the direct object is sister to the verb and the indirect object is farther away, counter to Larson’s proposal that the i.o. and the verb combine first.
- AND...the head that assigns case to the object is really far away. Even if the d.o. moves to Spec,VP, the dative still intervenes between v[acc] and the direct object.
Some syntacticians argue that the little v ditransitive structure actually explains another phenomenon...

**Greek**

a. Tha mu to stilune
   fut cl.Gen.sg.1 cl.Acc.sg.3.neut send.3.pl
   ‘They will send it to me.’

b. Tha su to stilune
   fut cl.Gen.sg.2 cl.Acc.sg.3.masc send.3pl
   ‘They will send him to you.’

c. *Tha su me sistisune
   fut cl.Gen..sg.2 cl.Acc.sg.1 introduce.3.pl
   ‘They will introduce me to you.’

d. *Tha tu se stilune
   fut cl.Gen.masc.sg.3 cl.Acc.sg.2 send.3pl
   ‘They will send you to him.’

The Person Case Constraint (PCC) is found in a variety of languages.

In ditransitives, some languages restrict the person combinations of the direct and indirect object.

In Greek, the direct object clitic cannot be first or second person.

Analyses of PCC effects (in general, not just particular to Greek) generally argue that because the dative/genitive DP and the head that assigns that case intervene between (the normal) v and the accusative, something goes awry with the relationship between v and the direct object.

As a result, the direct object is not allowed to have 1st/2nd person features.

We’ll talk about this in Case and Agreement!

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The BIG Picture: Little v Rocks!!
What about the DP-PP structure?

Kyle presented the ball to Satoshi.

Larson’s basic idea persists.

(13) a. John sent a letter to Mary.

b. 

This is a “small-clause” -esque proposal, in which the indirect object and the direct object are both born inside the PP.

Case on the indirect object comes from the Prep.

- No v-dat

Case on the direct object comes from normal little v.

PRACTICE

1. The professor gave her students fun sentences.
2. The culinary student baked fancy desserts for her guests.
3. The culinary student baked her dinner guests fancy desserts.
4. The postal carrier put numerous packages on the porch.
5. The demanding patron told the bellhop where to put the luggage. [one of our faves 😊]
Addendum: Tense and the Event Argument (from Kratzer 1996)

- $\nu$ has to be higher than VP because its role is to relate the agent to the event denoted in the VP.
- $\nu$ has to be lower than Tense. Kratzer proposes that the role of tense is to "existentially quantify" the event argument.
- Kratzer proposes the meaning in (31) for tense. (The * is used in semantics for tense. (The * is used in semantics)

\[
\lambda_{<s,t>} \exists e [ P(e) \land \text{past}(e) ]
\]  

(31) \text{past} - * = \lambda_{<s,t>} \exists e [ P(e) \land \text{past}(e) ]

- There is some proposition, $\lambda P$, and there exists at least one event, $\exists e$, such that the proposition encodes the event and the event happened in the past.

- Tense combines with VoiceP and the meaning of VoiceP saturates $\lambda P$.
- $\lambda' = \exists e.\text{feed (the dog)(e)} \land (\text{agent})(\text{Mittie})(e) \land \text{past(e)} <s,t>$
  - There is at least one event of feeding the dog and of which Mittie is the agent and which happened in the past.

- At this point, the real-world situation that maps to the sentence saturates $\exists e$ and we end up with the meaning of the sentence.
- TP is our truth value.
REFERENCES


