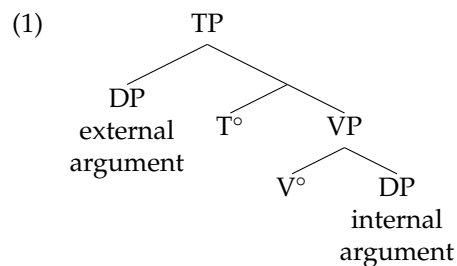


V14: Severing the external argument

Course in Semantics · Ling 531 / 731
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1 External arguments

The notion that subjects and objects are syntactically asymmetric is not new. As far as argument structure goes, Williams (1981) points out that every verb must have one argument that needs to be generated externally to VP, in [Spec, TP] (or IP). He called this the **external argument**. The ‘object’ argument (or the subject of an unaccusative) is the **internal argument**.



After Fukui and Speas (1986) and Koopman and Sportiche (1988), it became clear that every argument originated inside the VP. If the external argument is inside the VP, it's not external to it anymore. Do we even need the notion of **external argument** if that's the case? If we drop the concept, how do we account for the observed asymmetries?

2 External arguments aren't verb arguments

Around the same time, Marantz (1984) went the other way: He suggests that external argument is *not an argument of the verb* at all.

What?

Marantz noticed that, besides the usual syntactic asymmetries, there is a semantic one. If you change the internal argument, you can change the meaning of the verb itself. Not just in a figurative sense (like *throw an idea out there*), but truly change the nature of the event, and the thematic relations it would entail.

- (2) Some verbs whose sense changes as the object does:

verb	object	meaning of the verb
<i>throw</i>	<i>a ball</i>	launch a projectile with the arm
<i>throw</i>	<i>a party</i>	host an event
<i>throw</i>	<i>a game</i>	purposefully lose
<i>throw</i>	<i>support behind a candidate</i>	align the object
<i>throw</i>	<i>a fit</i>	undergo a state
<i>take</i>	<i>a book from the shelf</i>	remove
<i>take</i>	<i>a bus to the movies</i>	use as a vehicle
<i>take</i>	<i>a nap/dump/trip</i>	conduct an activity
<i>take</i>	<i>Bill to the movies</i>	have as company
<i>take</i>	<i>notes/a letter in shorthand</i>	write down
<i>take</i>	<i>ten minutes to get dressed</i>	require

This fact involves a major asymmetry: Changing the internal argument can change the verb's sense, but changing the external argument does not.

Marantz's conclusion is that external arguments don't affect the verb meaning because they aren't actually arguments of the verb. Which might sound bonkers, at first. But by this point in the course, you're used to that.

Grimshaw (1990) counters that the fact that the external argument composes last should suffice to derive (??), without Marantz's drastic measures. The internal argument is plugged in first, and can affect the denotation first. The external argument can't change what the internal argument has already wrought, akin to an idiom chunk.

But Kratzer (1996) argues that the key fact in (??) is that the VP is not a frozen idiom chunk. She uses *kill* as an example. You can work out different meanings based on different internal arguments. But no matter what, you can use any time interval as an internal argument of *kill* to get a meaning of wasting that interval by filling it with activities.

If we take the ambiguity approach, we have several different *kill* verbs (as we would *throw* verbs and *take* verbs), each of which has selectional restrictions based on its denotation. You can only waste time intervals by filling them with activities.

(3) $\lambda x \in D_e. \lambda y \in D_e. \lambda e \in D_s. \text{kill}(x)(y)(e)$, only if x is a time interval

$f: D_e \rightarrow D_{est}$

$\forall x \in D_e \ \& \ x \in \{ z \mid z \text{ is a time interval} \}$

$f(x) = g: D_e \rightarrow D_{st}$

$\forall y \in D_e, g(y) = h: D_s \rightarrow D_t$

$\forall e \in D_s, h(e) = 1$ iff e is an event of y wasting x by filling it with activities

The problem with this approach is that it doesn't derive the asymmetry. There is no reason we can't place such restriction on the external argument, or any other argument of the verb, as in (??).

(4) $\lambda x \in D_e. \lambda y \in D_e. \lambda e \in D_s. \text{kill}(x)(y)(e)$, only if y has some property

$f: D_e \rightarrow D_{est}$
 $\forall x \in D_e,$
 $f(x) = g: D_e \rightarrow D_{st}$
 $\forall y \in D_e \ \& \ y \in \{ z \mid z \text{ is a time interval} \}$
 $g(y) = h: D_s \rightarrow D_t$
 $\forall e \in D_s, h(e) = 1$ iff e is an event of y wasting x by
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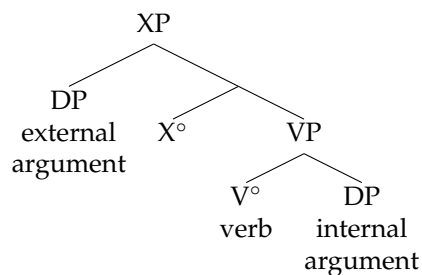
If we took the vagueness approach (which Marantz supports), there is only one *kill* morpheme, but its internal arguments shape the predicate. But this encounters the same problem: Any restriction we place in the denotation on an internal argument, we should be able to place on any other argument instead.

So the semantics of restricting meanings doesn't give us the tools to derive the asymmetry. This leads us back to the idea that the external argument is not an argument of the verb, because the asymmetry becomes natural. Sure, we can place a thematic restriction on any argument of the verb... but we can't place it on something that isn't an argument of the verb.

But wait: If the external argument is not actually an argument of the verb, where does it come from?¹

What we know about syntax is that an argument needs to be put in the specifier or complement position of some head. That makes sense. But what is this head? And where is it?

The second question seems easy to answer: It's right above VP. The external argument can move out of that position, and that keeps the facts that led to the VP-internal subject.



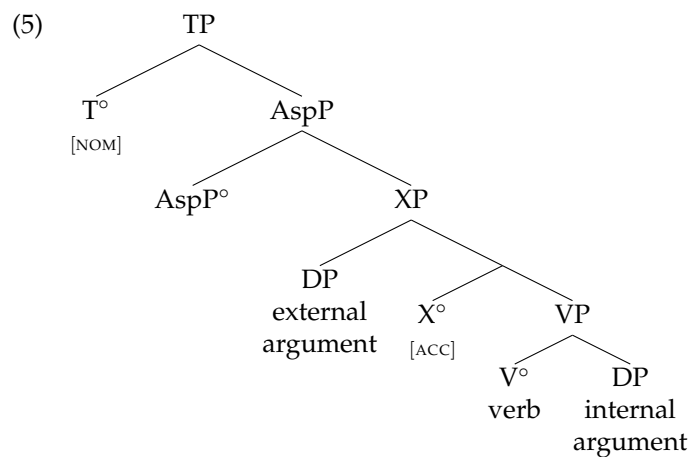
X° needs to be a functional head, because it assigns case.

What? Case? But I thought we didn't care about case! We can still care about syntax when it helps us. If X° is responsible for introducing this external argument, then when there's no external argument, there's no X° . Remember

¹And why do we still call it the 'external argument'? I don't know why. But we will keep using the term, even as we sever it.

Burzio's generalization?² Recast in terms of external/internal arguments, it reads: Internal arguments only get accusative case when there's an external argument. Any time there's an external argument, there's an X° head that introduced it. So put another way, internal arguments only get accusative case when there's an X° . Every time internal arguments get accusative case, there's an X° . This generalization is easily derived if X° is assigning accusative case.

Syntax lumps nominative and accusative together as **Structural Case**. Structural cases are purely syntactic and have no meaning. They are assigned by functional heads: Nominative case is assigned by T° . Accusative case, by our X° .

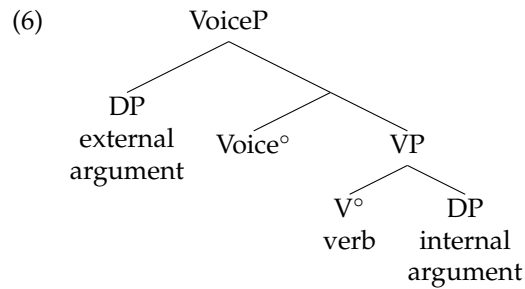


Since X° assigns accusative case, accusative case is structural case, and structural case is assigned by functional heads, we can conclude that X° is a functional head.

3 The Voice head

Kratzer calls this head Voice° . As in, it plays a crucial role in determining argument structure. (Chomsky 1995 calls a similar head v° .)

²Burzio's generalization: Verbs assign accusative case only if they assign a theta-role to their subject.



There are different Voice heads. At least two: One for ‘active’ heads that introduces an argument and assigns accusative case (??). And one for ‘non-active’ heads that just clarifies the event argument (??).

Let’s say the first introduces an agent, and call it Agent. Agent is basically a thematic role. It relates an individual to an event.

$$(7) \quad \llbracket \text{Agent} \rrbracket = \lambda x \in D_e \lambda e \in D_s. \text{agent}(x)(e) : \langle e, \langle s, t \rangle \rangle$$

$$\llbracket \text{Agent} \rrbracket = f : D_e \times D_s \rightarrow D_t$$

$$\forall \langle x, e \rangle \in D_e \times D_s, f(\langle x, e \rangle) = 1 \text{ iff } x \text{ is the agent of } e$$

The second, call it NoAgent. It just says that e is an event. (Question: Would it be better to define it as ruling out any agent?)

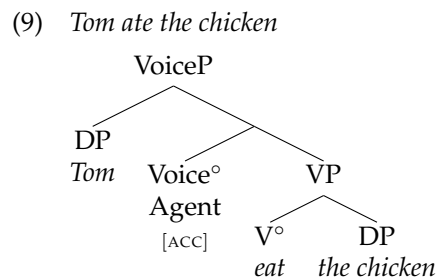
$$(8) \quad \llbracket \text{NoAgent} \rrbracket = \lambda e \in D_s. e \text{ is an event}$$

$$\llbracket \text{NoAgent} \rrbracket = f : D_s \rightarrow D_t$$

$$\forall e \in D_s, f(e) = 1 \text{ if and only if } e \text{ is an event}$$

So what does the composition look like?

To start with, the external argument is not an argument of the verb. It is an argument of the Voice° head.



The transitive verb *eat* now has two arguments again: The object, and the event. It looks like an unaccusative. The result is 1 if and only if e is an event of x getting eaten. There is no eater involved, yet.

- (10) $\llbracket eat \rrbracket = \lambda x \in D_e. \lambda e \in D_s. eat(x)(e) : \langle e, \langle s, t \rangle \rangle$
 $\llbracket eat \rrbracket = f : D_e \rightarrow D_{st}$
 $\forall x \in D_e, f(x) = g : D_s \rightarrow D_t$
 $\forall e \in D_s, g(e) = 1$ iff e is an event of x getting eaten

We plug in the object/internal argument, and now VP denotes a property of events: the set of events where a chicken gets eaten.

- (11) $\llbracket VP \rrbracket =$
- $$\begin{array}{c} \mathbf{FA} : \langle s, t \rangle \\ \lambda e_s. eat(\iota x [chicken(x)])(e) \\ \swarrow \quad \searrow \\ \mathbf{LT} : \langle e, st \rangle \quad \mathbf{FA} : e \\ \lambda x_e \lambda e_s. eat(x)(e) \quad \iota x [chicken(x)] \end{array}$$

It is in the nature of eating that any eating event will have an eater. So semantically we don't need to specify an agent role. Syntactically, though, we need to specify one, because the agent is not an argument of the verb. But we hit a snag: Type-wise, this can't compose.

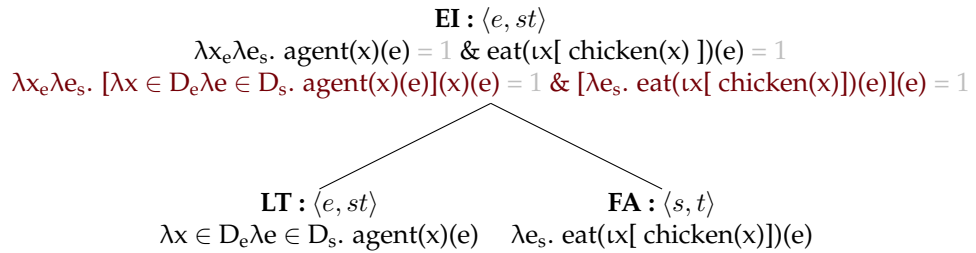
- (12)
- $$\begin{array}{c} ? \\ \swarrow \quad \searrow \\ \mathbf{LT} : \langle e, \langle s, t \rangle \rangle \quad \mathbf{FA} : \langle s, t \rangle \\ \lambda x_e. \lambda e_s. agent(x)(e) \quad \lambda e_s. eat(\iota x [chicken(x)])(e) \end{array}$$

Or can we? Kratzer defines a new kind of conjunction, called **Event Identification**. In terms of set theory, it involves range (or codomain) restriction. The Agent function has D_e as its domain, and D_{st} as its range. The VP denotation is in D_{st} . Event Identification has the VP modify the output of the Agent function, which it can do because it's the same type (as the range). It looks like we're tacking on an argument, but we're not; we're specifying the *Agent function* by giving it an event it can introduce the agent to.

- (13) **Event Identification (EI)**
 If α is a branching node and $\{ \beta, \gamma \}$ is the set of its daughters, and if $\llbracket \beta \rrbracket \in D_{e,st}$ and $\llbracket \gamma \rrbracket \in D_{st}$, then for any assignment a ,
 $\llbracket \alpha \rrbracket^a = \lambda x \in D_e. \lambda e \in D_s. \llbracket \beta \rrbracket^a(x)(e) = 1 \ \& \ \llbracket \gamma \rrbracket^a(e) = 1$

Through EI, we can compose these to get a relation of type $\langle e, st \rangle$.

- (14) $\llbracket \text{Voice}^\circ VP \rrbracket =$



What kind of account is this? Essentially, Kratzer finds that internal arguments are Davidsonian and external arguments are Neo-Davidsonian. That is, internal arguments are semantic arguments of the event predicate introduced by the verb at V° , while external ones are actually semantic arguments of the thematic predicate Agent, which is introduced by Voice $^\circ$.

(see V12 for the debate that this finding addresses)

This account makes a clear prediction in line with Burzio's Generalization: Any verbal predicate without Voice $^\circ$ will not have accusative case.