Argument Structure
Marantz, 5/28/03

What do we use argument structure to account for?:

A. "Phonology": Word order, case marking, and agreement patterns for DPs identified by their semantic roles.

B. "Syntax": Passivization patterns, c-command patterns (quantifier/pronominal binding, anaphor binding, Principle B & C effects), constituency tests

C. "Interpretation": Adverbial modification (of, e.g., subevents), logical relations between sentences

D. Alternations in the syntactic expression of arguments with the "same" verb; "possible verb meanings"

(1) What are arguments?

a. distinction between arguments and "adjuncts" or event modifiers
b. distinction between internal and external arguments

(2) Applicative constructions allow adjuncts to be expressed grammatically in the same way as external arguments and internal arguments. In Bantu, Austronesian, etc., "adjunct" benefactives, locatives, instrumentals may appear as subjects and/or objects.

(3) Causative constructions appear to allow external arguments to be expressed grammatically in the same way as internal arguments. Often, "causee" is expressed as direct object.

(4) Possibly: no categorical distinctions in the relation of semantics of arguments (loosely described in terms of semantic or thematic roles) to status as external vs. internal arguments vs. adjuncts. Thematic hierarchies, matching between semantic and syntactic embeddings, non-categorical generalizations… these could account for apparent generalizations such as, given a verb with an agent and a theme, the agent must be the subject. Continua rather than categorical distinctions (external vs. internal, adjunct vs. argument).

(5) Or: crucial break is argument vs. adjunct; distinction among arguments not "semantic" in the structural semantics sense
Argument structure, e.g., 'verb'(agent, theme, goal)
adjuncts like instrumentals or benefactives would stand outside these structures

(6) Or: all "participants" in the event, including benefactives, instrumentals, locatives, etc. are more or less the same semantically; essentially argument/adjunct distinction is a question of argument linking

There an event, e, and 'stabbing'(e), and agent(e, x), and patient(e, y), and location(e, z), and instrument(e, w), and benefactive(e, v)….

(7) Or: all "participants" in the event are really arguments; adjunct PPs are added to the argument structure of verbs in a way similar to that of applicative arguments.

(8) Or [What I'll argue for]: one or two internal arguments are internal to the event semantics and help construct the event. External arguments and adjuncts are essentially event modifiers. One can relate an individual to an event with a head that puts the individual in the specifier position, creating an "external argument" in the classic sense, or one can relate the individual to an event with the event in specifier position, creating a classic Prepositional Phrase containing the individual.

(9) Dowty verb classes:

NOTE: States have names; they don't represent a primitive predicate. Activity DO, inchoative BECOME, and causative CAUSE are primitive predicates. A verb "name" can be the name of a state. For verbs that do not name states, the verbs must name either event participants or event modifiers or entire argument structures (see Generative Semantics in which lexical insertion replaces subtrees).

NOTE: The calculus of argument structures is about VPs, essentially, not "verbs" by themselves. Vendler classes also are classes of VP meaning, not of verb meanings.

NOTE: Because CAUSE is a relation between eventualities of any sort, one can derive complex embeddings and recursion that have no "names" within the classification system given.

I. States (simple predicates

Statives 'red'(e)
Causative Statives
[phi CAUSE psi] (state causes state)
John's being here frightens Mary

II. Activities (DO plus manner, essentially)

Simple activities DO(e)
Agentive Stative Causatives DO(e) CAUSE 'state'(e,…)
He houses his car in the garage.

III. Achievements (BECOME, essentially)

Simple achievements BECOME ('state'(e,…))
John discovered the solution,
Inchoation of Activity BECOME (DO (e))
not lexicalized in English
Inchoation of Accomplishment BECOME(phi), where phi is accomplishment

IV. Accomplishments (eventuality CAUSE achievement, essentially)

Non-agentive Accomplishments BECOME (phi) CAUSE BECOME (psi)
The door's opening causes the lamp to fall down.
Non-Intentional Agentive Accomplishments DO (e) CAUSE (BECOME psi)
John broke the window (not necessarily intentionally)
Agentive Accomplishment with Secondary Agent DO(x) CAUSE (DO (y))
John forced bill to speak
Intentional Agentive Accomplishment DO (x, [DO (x) CAUSE phi])
John murdered Bill. (John acted such that John's action caused Bill to become dead).

(10) Levin representations:

NOTE: Essentially the same as Dowty in that States are basic and verbs can "name" States (the "constant" named by the verb can be a state).

Constants in < > brackets. "Manner" constants are event modifiers.

a. [x $ACT_{<MANNER>}$] activity
b. [x <STATE>] state
c. [BECOME [x <STATE>]] achievement
d. [[x $ACT_{<MANNER>}$] CAUSE [BECOME [y <STATE>]]] accomplishment

(11) Semelfactive verbs "verbs that can describe instantaneous events that do not involve a change of state, such as *beep, blink, cough,* and *tap*."

Behave with activity verbs. Thus "aspect" in one sense isn't directly relevant for semantics/syntax mapping.

(12) a. beeped John crazy.
b. beeped his way out of the room.
c. beeped the door open.

(13) "there are one argument semelfactives , such as *wink*, and two argument semelfactives, such as *hit*; again the number of arguments selected must reflect the nature of the constant associated with these verbs."

(14) But, "simple" activity verbs with one or two arguments (*run* vs. *sweep*) and semelfactives (also given the representation of simple activity verbs) behave alike on a variety of tests:

resultative constructions of all stripes
- He beeped/swept/ran me away
- He beeped/swept/ran me out of the room
- He beeped/swept/ran his way to the top
- He beeped/swept/ran himself ragged

out-prefixation
- He out-beeped me
- He out-hit me
- He out-ran me
- He out-swept me

(15) a. Leslie swept the floor.
b. [x $ACT_{<SWEEP>}$ y]

(16) How exactly does the object of simple activity verbs get integrated into the semantics of the event?

(17) Achievements (here, unaccusative change of states) and accomplishments (here, causatives of achievements) pattern together against the (transitive and intransitive) activity verbs.

a. *The clumsy child broke the beauty out of the vase.
b. *The clumsy child out-broke the clumsy cat.

Crucial contrast: verbs whose constants name manners and don't necessarily embed a change of state vs. verbs whose constants name an end-state and/or necessarily embed a change of state (= verbs without "inner subjects" vs. verbs with "inner subjects")

Kratzer:

(17) Voice head relates an agent to the event built by the VP.

(18) Semantic asymmetry between internal and external arguments, from that well-known semanticist, Marantz (84).

(19) Connected to the *Aspects* distinction: "Selection" vs. subcategorization.

(20) Direct object:
sometimes obligatory
sometimes "creates event"

(21) External Argument:
never obligatory (in some sense – see passive, nominalizations)
never creates event

(22) the destruction/destroying of the city
if no Voice and thus no agent, where does the agentive meaning come from?

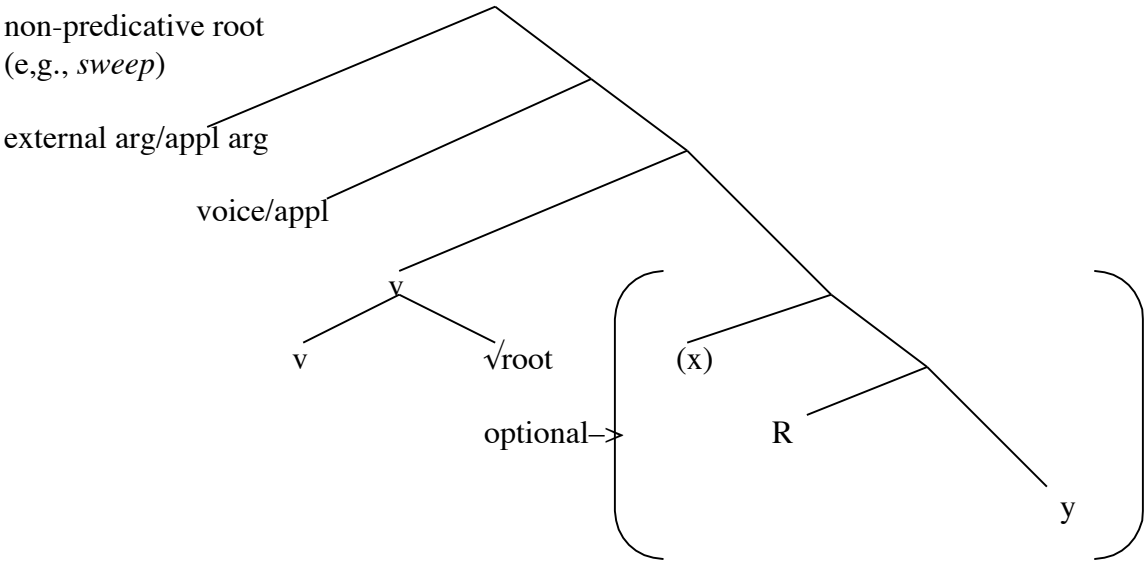
(23) Let's imagine a world in which "arguments" (DP s, and perhaps also propositions (CP s) may be either internal to the event or external to the event.

(24) In an achievement or accomplishment, as defined by Levin, there's an internal argument that's the subject of the state.

(25) How do any other internal arguments get into the event structure?

(26) Argument structure is syntactic:
a. the roots that identify (name) the open class "lexical" categories A, N, V are not themselves members of these categories
b. all "lexical" categories decompose into roots and functional heads (little a, n, v) that create nouns, verbs, and adjectives
c. the syntactically constructed meanings are completely distinct from the meanings of roots

(27) Structure of the (transitive) vP <u>without an inner subject</u>:



On voice and the position of applicative heads, see Pylkkänen (2002 et al)
NOTE: Causative semantics would be a product of little v and the structure embedded under little v. Agentive semantics can arise via agentive manner adverbial reading of root. An agent is merged into syntax via the voice head, but voiceless structures can be agentive if the root implies an agent.

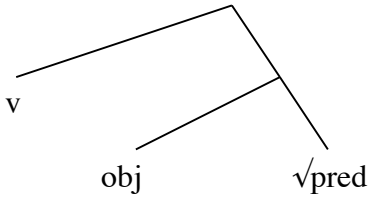
(28) Is there a difference between the "truncated" passive (a) and the nominalization (b) in terms of the source/presence of an agent?

a. The project was destroyed.
b. the destruction of the project

Compare "grow," which lacks agentive semantics in its root. Here, the agentive reading in (c) is lost in the nominalization (d).

c. These plants were grown in a greenhouse.
d. the growth of plants

(29) when the object is an argument (=inner subject) of the (predicative) root:



----with head-raising of the predicative root to little v, as in *open*

(30) The little v's come in at least two "flavors," eventive and stative.
For Dowty and Levin, STATEs don't require little v's because argument structures are not syntactic objects. So, Levin can claim that her STATE semantics is the semantics for a big V verb.

(31) Whether we wish to distinguish, syntactically, between a causative little v and an active "activity" little v is an open question. Activity little v's that merge with "manner" roots always may participate in the structure in (29), where some non-root predicate replaces the root in that tree (see a, b). This suggests that the causative meaning itself may be the by-product of a syntactic configuration without a specifically causative head in the syntax.

a. John ran (himself [ragged]).
b. John swept (his way [out of the room])

(32) On this view, following now both Kratzer and Levin, the subjects and objects of verbs are generally not arguments of the root, the sole exception being the case of the object as "inner subject" of a predicative root.

(33) Possible root meanings:
a. stuff (mass matter, entities…)
b. manners (e.g., agentive manner, manner of motion…)
c. states

(34) The degree of predictability between the meaning of a root and the various "frames" it might occupy (including whether it may attach equally to v, a, and n) is a matter for investigation.

(35) What might this kind of decomposition do for us?

a. Explains possible verb meanings (Hale/Keyser-style)? In particular, we'll see why external arguments of all sorts (including benefactives) can't be the objects of verbs.

b. Explains apparent alternations in argument structures? Some apparent alternations involve the same root and the different possible syntactic complement structures to little v. Some involve a simple alternation between types of little v and voice (causative/inchoative).

c. Relates argument structure to morphology? Each extra-root morpheme in a verb must find a syntactic position; thus, since argument structure is syntactic, morphology necessarily correlates with argument structure.

(36) With Levin (interpreted loosely), agree that if the root (her "constant") doesn't name a predicate, then the argument structure associated with the root is only implicated by the root semantics and not "projected" by the root in the sense of (29), with a predicative root.

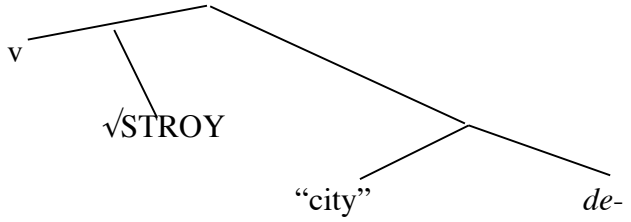
If roots never implicate relations between events and entities, as in high applicatives, then all objects that are not inner subjects must be part of low applicative constructions, i.e., relations between the object and some other entity as in (27). There's no place for "merger" within a relation R (v mergers with the relation, not with either argument). So the connection between the root and one of the entities in the relation would be indirect. Therefore, there's no essential difference between "kick" and "knee" (the leg in "kick" is like the knee in "knee" – neither are directly represented by root) (or any difference among "shelve, saddle, kick, knee, sing…"). That is, pace Hale and Keyser, the root that names (identifies) the verb isn't ever an incorporated argument of the verb (languages may have object incorporation, but that would be distinct from "saddle" and "knee" verbs in English).

So, all objects that are not inner subjects (or high applicatives) fall into the low applicative structure, v embedding a Relation, in (27).

(37) In an important sense, the roots that appear in (29) would be the only verb roots with obligatory objects – which would be the subjects of the corresponding unaccusatives. If a verb were truly obligatorily transitive, it would need to be bi-morphemic, including also a "manner" component that would require an external argument. However, if we assume that a verb with two roots would be a compound or involve what looks like incorporation and if we assume that only roots name manners, then if a verb takes an obligatory subject and an obligatory object, the root must name a manner that implies an external argument and the object must be associated with a functional head, e.g., a predicative particle (as in *de-stroy*).

(38) a. John destroyed the project. b. *The project destroyed.
c. John's destruction of the project

(39) Thus, STROY is a manner root that incorporates a particle, spelled out *de-*, that takes an "inner subject" as the direct object of the syntactically derived verb "destroy."



(40) So, other verbs containing the same root should imply external arguments:
a. construct John's construction of the building
b. instruct John's instruction of the children
c. obstruct John's obstruction of justice
d. restructure

(41) And, other verbs with prefix de- should have inner subjects:
a. descend (unaccusative)
b. demote
c. decline (unaccusative)
d. detain

(42) NOTATION: Since all the objects under discussion will be inner subjects or the higher or lower objects of low applicative constructions, to avoid drawing the same tree over and over in the following, I'll write:
the inner subject as OBJ
the higher object of the low applicative as obj (or [e])
the lower object as *obj* (or *[e]*) and
a predicate as <u>pred</u>.

(43) From Bruening (2001) and others, we know that the dative alternation in English looks like the following, as a first approximation:

a. give A BOOK <u>to John</u>
b. give john R *a book*

Frozen quantifier scope in the double object construction together with "frozen" quantifier/variable binding relations as compared to the *to*-dative alternate points to a strictly asymmetrical low applicative structure for the double object structure (43b) and a "small clause" (resultative) structure for the dative (43a).

(44) NOTE: Nothing will automatically generate the dative alternation with a "manner" root (*kick, present, hand…* – "give" itself might be a functional head). Participation in the alternation, then, is a generalization over roots. Participation in the structure in (43a) would be evidence for a learner that the root semantics might be compatible with (43b), but there is no syntactic connection between the structures.

(45) Bruening and others show the connection between the dative alternation and the spray/load type alternations. (The constructions pattern together with respect to frozen scope and binding asymmetries.)

a. spray WATER on the floor
b. spray the floor with(=R) *water*

(46) As Hale and Keyser emphasize, "spray" refers to a manner of motion and so references the theme argument (and thus implies a theme). The structure in (45a) thus can also be unaccusative, with the inner subject raising to become the subject of the sentence.

c. The water sprayed from the hose.

(47) "smear," on the other hand is an agentive manner, which implies an external argument and prevents, ceteris paribus, unaccusativity

a. smear MUD on the floor
b. smear the floor with(=R) *mud*
c. *The mud smeared from the shoes.

(48) a. fill THE GLASS [full] (root is predicate, with head-movement to v)
b. fill the glass with(=R) *water*
c. *fill WATER into the glass
d, Water filled the glass. [From the structure in a.]
e. fill [e] R *the glass*

For (48c), how formal an account do we need to say that "fill" as a manner in (48b) implicates the goal and thus can't modify an event about the change of state of a theme?

(49) Is "saddle" like "fill"?
a. saddle THE HORSE saddle ????
b. saddle the horse with(=R) *a blanket*
c. saddle [e] R *the horse*

Let's suppose that the root semantics of "saddle" – that accounts for the interpretation in the root nominalization "a saddle" – is of an entity, and that this prevents the PRED use of the root, ceteris paribus. If (49a) is thus prohibited, then we explain as well the lack of an unaccusative, "*The horse saddled," which is generally available when the root names a PRED in such a construction.

(50) a. sing
b. sing [e] R *a song*
c. sing john R *a song*
d. *sing john R *[e]* *I sang John yesterday. [meaning, "for John"]

Where a full low applicative construction (50c) alternates with a single object (50b) and no object (50a), a low applicative with a null theme (50d) is bad. One might then argue that the lower argument of the low applicative construction must always be overt IN ENGLISH (languages that allow Dative objects seem to allow an unexpressed lower argument of a low applicative construction).

(51) a. I lectured John every day.
b. I lectured every day.
c. I talked to John every day.
d. *I talked to every day.

(52) NOTE: a null higher argument of the low applicative cannot prevent passivization of the lower argument (as in "a song was sung" from (50b)).

a. A song was sung yesterday.
b. Everyone was talked with after the demonstration.
c. The desk was danced on during the party.

(53) Note

a. smear the floor with *mud* and
b. smear [e] R *the floor*

have the goal in different structural locations.

(54) This structural approach says very little about the benefactive alternation:
a. bake john R *a cake*
b. bake [e] R *a cake* (baking so that something happens to the cake)
c. [bake [e] R *a cake*] for John (benefactive is **external argument**)

That "baking" as an activity can lead to creation and thus to a possible interpretation of the low applicative construction in (54a) would not be represented structurally in the single object structures in (54b,c).

(55) Decomposing to the root and making argument structure syntactic explains why external arguments aren't objects, except in high applicative constructions (not available in English, as explained by Pylkkänen 2002) and causative constructions (that embed voiceP under causative v, also systematically unavailable in a language like English). An external argument is an argument semantically related to an event, i.e., a vP, and so must stand outside the vP.

(56) So, external arguments may be merged with the help of a Voice-like head "above" the event to which it relates an individual. In a left-right, top-down theory of syntactic computation (Phillips, Richards), the external argument is merged before the event in a crucial sense.

Or, the external argument may be merged with the help of a P-like head "below" the event to which it relates the individual. In a left-right, top-down theory of syntactic computation, the external argument is merged after the event.

(57) Pesetsky's work on "cascade" syntax shows that external arguments merged below the event display behavior indicating that they are c-commanded both by internal arguments of the event and by any external arguments merged before them.

a. Mary kissed every child on his birthday.
b. John baked each cake for its purchaser.
c. John baked a cake for every child on his birthday.
d. A cake was baked for every child by his father.

(58) What are the "Big Points" of today's class?:

a. From Kratzer's work, and others', we can conclude that external arguments share properties with "adjuncts" as opposed to arguments that are internal to the event constructed by vP.

b. From Levin's work, and others', we can conclude that when we identify verbs by their "names" (roots), direct objects of verbs merged via a "Relation" (low applicative construction) are largely irrelevant for classifying a verb according to its alternations and/or "aspectual" behavior. That is, internal arguments that aren't "subjects" of states within the vP are not arguments of the verb per se.

c. Grammatically, direct objecthood is only indirectly related to argument structure. Generally speaking, the closest DP to the little v will be the grammatical object (get structural Accusative, or Nominative, if there's no external argument). This DP could be the higher or lower element in a low applicative Relation, the inner subject of a state, the external argument of a vP embedded in a causative construction, etc.

d. External arguments are uniformly projected via a head that relates an argument to a vP. The syntax of external arguments will differ depending on whether the argument is merged above or below the vP.

(59) Traditional external arguments (agents, causes, experiencers) are special in a way that's not entirely understood (at least by me).

a. Although external arguments are "optional" in general, in some sense, they are obligatorily merged in certain environments (why does "passive" require "passive morphology" in English – shouldn't simple failure to include agent-merging Voice with a vP yield a structure in which the underlying object becomes subject?).

b. Roots seem to be able to implicate/imply agents (cf. *destroy*). Roots don't seem to implicate external argument locations, benefactives or instrumentals in the same way.

test: presence of argument interpretation in nominals made from the same root?

c. Why is voice different from high applicative heads? For example, voice closes off the "field" above vP, not allowing high applicatives above agentive voice.

(60) Subject psych predicates and other statives (with the exception of object psych predicates) don't tell us much about the internal structure of vP

a. know [e] R *the answer* (this should be equivalent structurally to "have the answer," and so [e] should be related to the external argument – there are many possibilities here, including allowing something like PRO as [e] and treating this as a type of control structure.)

b. rest [E] <u>on the table</u> (it's tempting to provide either a raising (unaccusative) or control analysis to the empty argument position in such structures)

(61) Backwards binding in object psych constructions suggest that there is an element below (or at the same level as) the object that gets related to the subject in some way:

a. Stories about each other always delight the men.

b. delight the men R *[e]* (where [e] is the "delight" whose subject matter is the external argument

(62) Alternations in argument structure associated with a single root fall into the following classes:

a. alternative complements to a little v merged with the root (see the examples above, including the dative and benefactive alternations, the spray/load alternation, etc.)

b. an alternation involving a root as a Pred between having a causative or "inchoative" little v and voice. This alternation must be completely productive for any root that appears in the structure (29).

c. other alternations involving voice or elements above little v, such as passive, reflexive and "non-lexical" causative constructions. These also must be completely productive and regular.

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