Argument Structure for the 21st Century

What Do We Know?

Gillian Ramchand

The Relevance and Interest of Argument Structure

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- The interesting thing is that verbs select, or require, nominal satellites, as part and parcel of the described eventuality.
- Argument structure is the study of the relationships that trigger the composition of nominal projections with verbal projections, key part of the engine of meaning building in natural language.

Simple Examples

The verb *like* expresses the fact of a positive emotional relationship existing between a 'liker' and the thing/person 'liked'.

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The verb *build* conjures up the situation in which the wielder of some initiating force(s), the 'builder', brings into gradual existence the artefactual object y, the 'buildee'.

x build y

Dowtyian Scepticism (1991)

Is there anything of specific linguistic interest here?
Shouldn't we just assume that verbal lexical items are merely listed with this idiosyncratic information in form of 'likers' and 'likees', 'builders' and 'buildees' ? With nothing of generality except those patterns that come from our general cognitive tendencies and predilections wrt individuating and distinguishing events?

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I read Dowty (1991) and his famous list of proto-role factors as a version of this view: There are a different set of roles, specific to each verbal lexical item in a language. However, there are cognitive tendencies underpinning the choices lexicalized by verbs in languages. These feed lexicalization, and are not part of the online linguistic computation.
This makes argument structure a memorized 'black box' , the internal workings of which the rest of syntax can safely ignore.

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- While the conceptual content of verbal meaning clearly needs to be *memorized* and stored in language's Lexicon, the co-occurrence with nominal satellites is much less fixed and much more variable than the implementational device of a memorized subcat frame would suggest.
- Argument structure patterns and generalizations share something of the procedural or rule governed character of syntax. Memorized 'frames' are neither descriptively nor explanatorily adequate.

NOT Thematic Roles

Beth Levin and Malka Rappaport Hovav (2005) summarise the history and state of the art of argument structure concluding that traditional thematic hierarchies and role lists do not work consistently, but that:
However, they argue that *some* apparent thematic hierarchy effects arise because "*embedding relations among arguments in an event structure are always respected in argument realization, with more embedded arguments receiving less prominent syntactic realizations*" (pg 183).

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Most specialists now favour an extremely reduced, more event oriented set of roles for structurally licensed positions in the clause either in addition to, or completely supplanting traditional theta role labels (Grimshaw 1990, Jackendoff 1990, Baker 1997)(Levin and Rappaport Hovav 1995, Pustejovsky 1995) Croft 1998).

State of the Art: External Argument Generalization

It appears that hierarchies underpinning event participancy feed syntactic operations and behaviours (e.g.deep 'subject´ properties) across languages. Thus, when there is more than one event participant, languages universally choose the 'Agent' argument as the external argument over the 'Theme' or 'Patient' if both are to be expressed as DPs.
However, 'Agent' is a crude cover term for what is in fact a somewhat more diverse choice of semantic roles, even when one confines oneself to dynamic (non-stative) transitive verbs.

(1) a. John broke the window. *(Intentional) Agent*
b. The strong winds broke the window. *Inanimate Cause*
c. The iron key opened the old rusty lock. *Instrument*
d. The stone hit the floor. *Moving Object*

State of the Art: External Argument Generalization

External Argument Generalization
In dynamic eventualities (those that express some sort of change), a *causing* participant (one whose existence directly or indirectly, deliberately or inadvertently, is asserted to bring about the change in question) is hierarchically privileged in the event description, and this includes both inanimate and abstract causes, facilitators like instruments, and even inanimate objects conceptualised as 'prime movers'.

State of the Art: Internal Argument Generalization

Internal arguments too hold a semantically privileged position with respect to certain kinds of event entailments (Tenny 1987, Tenny 1994). If we consider the SPRAY-LOAD alternation, we can see that the choice of Object alternates, and where the argument that 'measures out' the event co-varies with that choice (Jackendoff 1996, Tenny 1994).

(2) a. John loaded the hay on the truck.
b. John loaded the truck with hay.

In (2-a) , 'the hay' needs to be used up for the event to be complete, whereas in (2-b) , 'the truck' must be completely loaded for the event to be complete.

State of the Art: Internal Argument Generalization

Classic data from Verkuyl (1972), Verkuyl (1993) (cf. also Krifka 1987 for a semantic treatment) shows that in an interesting subclass of cases, the boundedness of a direct object carries over directly to the boundedness of the corresponding event.

(3) a. John ate porridge (for hours/*in an hour)
b. John ate the sandwich (?for hours/in an hour)

Correlations like these have given rise to syntactic theories which exploit features like [+telic] (van Hout 2000, Kratzer 2004) or [+quantity] (Borer 2005) which are checked at some aspectual projection, bounding the event, and often at the same time being associated with accusative case.

Scalar Structure and Paths of Change

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As Hay et al. (1999) and Ramchand (1997) point out, the case of creation/consumption verbs is simply a special case of the material extent of the Object contributing the measuring scale that is homomorphic with the event.

The property of scalar change is common to the path notion more generally, whether it is derived from the Object as in the case of creation/consumption, whether they come from the scale that can be inferred from a gradable adjective, or whether it is a more obvious physical path as contributed explicitly by a PP with a motion verb.

But Undergoers of Change do not necessarily 'measure out the event'

As one can easily demonstrate, the mere existence of an UNDERGOER does not necessarily imply telicity, as the English examples in (4) show.

(4)
a. The chocolate melted for hours. *atelic*
b. John melted the chocolate for hours. *atelic*
c. John pushed the cart for hours. *atelic*
d. John pushed the cart to the store in an hour. *telic*

‘ Internal ´ Arguments in a Dynamic Eventuality

The following role types make good, canonical objects in English.

(5)
a. John rolled **the cart**. *Undergoer (spatial path)*
b. John melted **the chocolate**. *Undergoer (property path)*
c. John rolled **the cart** over. *Undergoer-Resultee*
d. John destroyed **the cart**. *Undergoer-Resultee*
e. John walked **the West Highland Way**. *Path*
f. John ate **the apple**. *Path*
g. John passed **two pleasant hours** in Mary’s company last night. *Measure*

Event Participation and the Internal Argument

Internal Argument Generalization
In dynamic eventualities (those that express some sort of change), a participant that is defined in relation to the *path of change* portion of the event structure, including undergoers, result holders, measures and path descriptors, are privileged with respect to the Object position.

State of the Art: Event Structure Decomposition

The **State vs. Event distinction** is very prominent in English and comes with a robust list of criterial behaviours, revolving around the different ways in which these two categories interact with tense. I illustrate with the present tense here.
(There are other diagnostics: (i) overlapping interpretation in discourse chaining (Bohnemeyer and Swift 2004) (ii) present tense interpretation under epistemic *must* (Ramchand 2014b) (iii) selection by certain matrix verbs such as *turn out* (Hallman 2010); (iv) universal readings under the perfect auxiliary (Portner 2003))

(6) a. John likes mangoes. *State (holds now)*
b. ?John runs the race. *Event (habitual/planned future/vivid-past)*

Subtypes of Complex Dynamic Events

(7) a. Culminated processes(process + culmination) ≈ accomplishments (e.g.*run a mile*)
b. processes ≈ activities (e.g.*run*)
c. culminations ≈ achievements (e.g.*hiccup*)
d. (neither process nor culmination) ≈ states (e.g.*exist*)

Taking the core difference between dynamic eventualities and states as our starting point, the minimal dynamic eventuality is one that characterises most purely a simple event of dynamicity/change/process as opposed to the description of a static state of affairs. Let us simply represent these as two primitively different kinds of eventuality and notate them as e_d and e_s in what follows.

Internal Causational Complexity is Constrained

It is well known in the literature, that in the building of complex causatives, indirect causes give rise to causational expressions that are more likely to be biclausal and less likely to be 'lexical' or mono clausal (Shibatani 1973). With respect to the addition of result, the data also suggest that only one such delimitation per event is possible (Simpson 1983, Tenny 1994 on the unique delimitation condition).

Thus, the typology we see can be created by augmenting the dynamic core event with either a causally upstream state or causally downstream state, but no further.

STATIVE EVENT: e_s

DYNAMIC EVENT: e_d

CAUSED DYNAMIC EVENT: $e_s \rightarrow e_d$

DYNAMIC EVENT WITH RESULT: $e_d \rightarrow e_s$

CAUSED DYNAMIC EVENT WITH RESULT: $e_s \rightarrow (e_d \rightarrow e_s)$

Morphosyntactic Generalizations Concerning Event Structure Complexity

Event Complexity Generalizations:
The causing event, when it can be seen to be explicitly added, always adds morphology or participants that is hierarchically *above* the core dynamic event; result events are always added *below* the core dynamic event. Thus, the CAUSE head when it is invoked in the syntax is always on top of the main V (Pylkkänen 1999, Folli and Harley 2006), and the result projection when added is always downstream of the main V (Hoekstra 1988).

Argument Structure and Aktionsart Generalizations in Lockstep

- The CAUSE event is associated, when it exists, with an *external* argument,
- The result predicate either introduces a new *internal* argument or is constrained to modify it (Levin and Rappaport Hovav 1995).
- Arguments of changing properties can be either *internal* or *external* depending on what other arguments are present
- Both argument structure and event structure of monoclausal verbal projections are constrained to express no more than one independent path of change.

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Hierarchical representation of argument positions correlates with the hierarchical position of the subevent they are related to.

Summary

•Function-argument composition and abstraction over higher types allows more freedom than we actually see in the verbal domain.
•Similarly, the constructivist system of introducing arguments via functional heads does not per se derive the ordering, without further specification.
•The substantive constraints are a matter for the empirical record, and we have now figured a lot of these patterns out.We now need to create theories that build these in.
The substantive constraints can be coded as:
(i) the way in which the hierarchical syntactic representation maps to semantic relations, and
(ii) the nature of the primitive semantic relations involved.

Primitive Semantic Relations, or 'Types of Semantic Glue'

(8) **Ramchand's 2008 (Recursive) Semantic Glue**

(i) "Leads to/Cause " ($\longrightarrow$) *Subevental embedding*

(ii) 'Predication' *Merge of DP specifier*

(iii) Event identification (conjunction) *Merge of XP complement*

The event structure hierarchies and participant relation hierarchies track each other quite directly, and follow from a single decompositional structure, utilizing (i) and (iii), plus *generalized property predication* (ii).

Consequences

Returning to the general architectural question of memorization versus generative devices:

Thematic roles are not listed and memorized as part of verbal lexical entries; we need just the detailed event descriptions to be memorized. Connections to nominal projections come from general principles of property predication that are available to link participants to situational descriptions.

Real world knowledge tells you what kinds of participants can reasonably hold which kinds of properties.

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- Yes : Structured representations with reliable entailments concerning participancy in subevents
- Yes : Theorizing about how verbal memorized forms systematically determine or match those structured representations.
- Yes: Explicit study of how morphosyntactic devices systematically change the syntactic representation and modulate how the event structures are used in different construcgtions

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