Partitioning Structural and Conceptual Meaning in Verb Semantics

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Roots IV, NYU June 29- July 2
### Type A Meaning: “Skeleton”

Structured hierarchical representation of abstract meanings directly correlated with linguistic generalizations about verbal patterning, and which underwrite the generativity of meaning.

### Type B Meaning: “Flesh and Blood”

Conceptually rich information that provides detailed expression to highly specific named events, inert with respect to the syn-sem computation.
Different Architectures

- Endoskeletal approaches (Levin and Rappaport 2005) (Lexical Structure architectures)
- Exoskeletal approaches (Borer 2005) (Harley 1995, and other versions of DM are also in this category)
- Parallel Unification approaches (Ramchand 2008; Jackendoff 1997)
Different Architectures

- Endoskeletal approaches (Levin and Rappaport 2005) (Lexical Structure architectures)
- Exoskeletal approaches (Borer 2005) (Harley 1995, and other versions of DM are also in this category)
- Parallel Unification approaches (Ramchand 2008; Jackendoff 1997)

I want to address a question in this talk that is independent of choice of framework, but is urgent for all generative approaches to word meaning.
Burning Questions for Today

Structural Meaning vs. Conceptual Meaning
What aspects of meaning constitute the skeletal component of verbal meaning, and what should be relegated to the conceptual component? I will call this The Partition Question.
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Why does it matter?
(from Rappaport-Hovav and Levin 2008)
Externally Caused Verbs $\rightarrow$

$[x \text{[ACT]} \text{CAUSE} [y \text{BECOME} <\text{RESULT STATE}>]]$

(e.g. break, dry, harden, melt, open ... )
An Example of Partitioning

(from Rappaport-Hovav and Levin 2008)
Externally Caused Verbs $\rightarrow$

$[ x \text{ [ACT] CAUSE } [ y \text{ BECOME } < \text{RESULT STATE} > ] ]$

(e.g. break, dry, harden, melt, open ...)
(from Rappaport-Hovav and Levin 2008)
Externally Caused Verbs →
[ x [ACT] CAUSE [ y BECOME < RESULT STATE >] ]
(e.g. break, dry, harden, melt, open . . . )
Type A Meaning: ACT; CAUSE; BECOME; RESULT
(from Rappaport-Hovav and Levin 2008)
Externally Caused Verbs $\rightarrow$
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**Type A Meaning:** ACT; CAUSE; BECOME; RESULT

**Type B Meaning:** break, dry, harden, melt, open
A  The Partition Problem: What goes in the Type A box, and what goes in the Type B box?

B  The Linking Problem: what is the architectural relationship between Type A and Type B?
The lexicalization constraint

A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier. (Rappaport-Hovav and Levin 2008)
The Linking Question: Some Proposals

The lexicalization constraint
A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier. (Rappaport-Hovav and Levin 2008)

This essentially gives rise to Manner-Result complementarity, given the event structures that Levin and Rappaport-Hovav assume.
"In English, most words are morphologically simple as there is no developed notion of stem: thus, manner/result complementarity is manifested in words. In contrast, in languages in which verbs are productively formed from stems and affixes, manner/result complementarity holds of the pieces of words, rather than the words themselves."
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(Rappaport-Hovav and Levin 2008)

But given the existence of synthetic morphology, why should the lexicalization constraint hold at all?
"In summary, we have identified result verbs as verbs which lexicalize scalar change and manner verbs as verbs which lexicalize non-scalar change (and, specifically, complex change)." R-H and L 2008, pg 11
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**Type A Meaning**: SCALAR CHANGE vs. NON-SCALAR CHANGE

**Type B Meaning**: verbal distinctions such as *manner vs. instrument information* in the non-scalar class; verbal distinctions such as *spatial vs. property path* in the scalar class.
"In summary, we have identified result verbs as verbs which lexicalize scalar change and manner verbs as verbs which lexicalize non-scalar change (and, specifically, complex change)." R-H and L 2008, pg 11

**Type A Meaning:** CHANGE vs NO CHANGE

**Type B Meaning:** verbal distinctions such as *scalar vs. non-scalar* in the change class; verbal distinctions such as *location vs. property* in the non-change class.
Levin and Rappaport-Hovav think of the lexicalization constraint as a constraint on the complexity of lexical items—conceptual content/root can only attach to one part of the event structure template because it has an inherent ontological categorization which would only be consistent with one such position.
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But scalar vs. non-scalar distinction could fall out of the system, not because of a stipulation about simplicity, but because CHANGE is a unique component of a dynamic verb for which scalar vs. non-scalar conceptual instantiations are in complementary distribution.
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The point is that the nature of the generalization about possible lexical verbs depends on the precise details of what we consider to be part of the Type A syn-sem templates, and what we consider to be Type B.
### More Patterns: Verb-Framed vs. Satellite Framed

(After Talmy)

<table>
<thead>
<tr>
<th>Language Type</th>
<th>Verb Root</th>
<th>Satellite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romance</td>
<td>Motion + Path</td>
<td></td>
</tr>
<tr>
<td>Semitic</td>
<td></td>
<td>∅</td>
</tr>
<tr>
<td>Polynesian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nez Perce</td>
<td></td>
<td>Manner</td>
</tr>
<tr>
<td>Caddo</td>
<td></td>
<td>(Figure/ )Ground [Patient]</td>
</tr>
<tr>
<td>Indo-European (not Romance)</td>
<td>Motion + Cause</td>
<td>Path</td>
</tr>
<tr>
<td>Chinese</td>
<td>Motion + Manner</td>
<td></td>
</tr>
<tr>
<td>Atsugewi</td>
<td>Motion + Figure</td>
<td>a. Path + Ground</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Cause</td>
</tr>
</tbody>
</table>
Verb-Framed vs. Satellite Framed seen from an Event Template Perspective
Verb-Framed vs. Satellite Framed seen from an Event Template Perspective

A Typical English Verb:  
\[
[ \text{y MOVE}_{\text{NON-SCALAR}} ] \ ( [ \text{y ALONG-DIRECTED-PATH} ] ) \\
| \\
\text{bounce}
\]

(PP Adjunct possible)
A Typical English Verb:

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A Typical Spanish Verb:

\[ y \text{ MOVE}_{\text{SCALAR}} \text{ ALONG DIRECTED PATH} \]

\[ \text{entrar} \]
Verb-Framed vs. Satellite Framed seen from an Event Template Perspective

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| bounce | (PP Adjunct possible) |

**A Typical Spanish Verb:**
\[ y \text{ MOVE}_{\text{SCALAR}} \text{ ALONG DIRECTED PATH} \]

| entrar |

**Spanish:** Verbs can lexicalize **SCALAR CHANGE** in the form of directed motion plus **PATH**.

**English:** Allows the Spanish option (**enter**), but also allows non-scalar changes to be composed with **PATHS** to give directed path descriptions (**bounce under the bridge**).
So is MOTION a primitive of Type A meaning, or does it belong to Type B?
So is \textit{MOTION} a primitive of \textbf{Type A} meaning, or does it belong to \textbf{Type B}?

\textit{A Typical English Verb}:

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For R-H and L (2008), it is Type B, both directed motion and change of state are instantiations of the abstract notion of scalar change. If the pattern above represents a true generalization, then we might expect Spanish to have no non-scalar property change verbs. Could this be the source of the inability of Spanish to construct adjectival resultatives?
Type A Meaning: Categorization (little v and eventiveness), Cause, Different kinds of External Argument Relationships (the flavours of Voice), result (the Fient head). (Everything that is in the functional part of the clause)

Type B Meaning: Everything else that doesn’t come from a functional head.
Labelled Hierarchical Structure

XP

X  YP

Y  ZP

Z  WP
Labelled Hierarchical Structure

XP
  /  \
X    YP
  /  \
Y    ZP
  /  \
Z    WP

TRANSUDCER
Type A vs. Type B

Labelled Hierarchical Structure

XP
  / 
 /   
X   YP
  /   
Y   ZP
  /   
Z   WP

Type B Meaning
PLUS

Type A Meaning

Ramchand (University of Tromsø) Structural Meaning vs. Conceptual Meaning ROOTS IV 15 / 33
Type A is where the action is for us linguists, because this is the type of meaning that is relevant to the syntax and *Type A representations are crucial for stating purely linguistic generalizations concerning argument structure and verbal behaviours.*
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*But what underwrites the Type A vs. Type B distinction?*

If you are lexicalist, then meaning is partitioned within the Lexicon, and only Type A is seen by syntax.

Or, If you believe in the autonomy of syntax (as in Marantz and Wood 2014), you must say that it is a result of some kind of internal structuring in cognition.
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If you are a constructivist, then Type A meanings must come from the interpretation of structure.
Early versions of DM placed the root at the bottom of the tree, and in principle any functional structure could be built on top of it.

Other versions allow roots to adjoin to various other functional heads, essentially mimicking the R-H & L system.

The assumption of one point of attachment basically enforces the ‘single link’ assumption in most DM implementations, just as in the lexicalist implementation of R-H & L.
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For R-H & L, this follows from the idea that each root has an ontological categorization drawn from a fixed set of types including state, result state, thing, stuff, surface/container, manner, instrument. Manner roots modify ACT, while result roots are arguments of BECOME.
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For R-H & L, this follows from the idea that each root has an ontological categorization drawn from a fixed set of types including state, result state, thing, stuff, surface/container, manner, instrument. Manner roots modify \textit{ACT}, while result roots are arguments of \textit{BECOME}.

For DM, it follows from assumptions about how the root attaches to structure.
The Linking Question is not the same as the Partition Question.

But the former is urgently dependent on the latter.
(The Partition Question is also independent of whether you think the partition is Lexicon-internal, cognition-internal, or is correlated with the distinction between the syn-sem hierarchy and multi-associational cognitive structure.)
Question: What are the labels and relations of Type A meaning?
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Answer: A first step is understanding the granularity and level of abstraction of the terms over which linguistic generalizations about verb meaning can be stated.
Just as morphology studies syncretisms as a way of understanding the interface between syntactic representations and form, we should take polysemies of meaning seriously in studying the interface between syntactic representations and meaning.
Polysemy

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It is well known that polysemy can have facilitory effects on lexical access (see Baayen 2010 on contextual diversity), as opposed to the inhibitory effects of genuine ambiguity. This argues that there is a coherence to polysemous lexical items, and they should be given a unified representation.
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Working Hypothesis: Synchronic Polysemies are built on Underlying Structural Unities (SPUSU)
Butt’s Generalization (Butt 2003, Butt and Lahiri 2013)

Unlike auxiliaries which may become grammaticalized over time to have a purely functional use, light verbs always have a diachronically stable corresponding full or ‘heavy’ version in all the languages in which they are found.
Butt’s Generalization (Butt 2003, Butt and Lahiri 2013)

Unlike auxiliaries which may become grammaticalized over time to have a purely functional use, light verbs always have a diachronically stable corresponding full or ‘heavy’ version in all the languages in which they are found.

Light verbs are thought of as functional items, while the heavy versions are roots. But then we lose the connection between the two types of use.
Piñango et al. (2014), Wittenberg et al. (2014), Wittenberg and Snedeker (2013)

- Production priming (Wittenberg and Snedeker in prep), and electrophysical evidence (Wittenberg et al) support the view that their syntactic structure does not differ from that of the the associated non-light constructions.
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- Even though light verb constructions are more frequent than their non-light counterparts and have higher cloze probabilities, they induce increased reaction times in a cross-modal priming task at roughly 300ms downstream of their occurrence in a sentence (Pinango, Mack and Jackendoff to appear), and produced sustained negativities in ERPs (Wittenberg et al 2014) compared to standard verb object combinations. The effects are similar in timing and nature to those reported for aspectual coercion. (Widespread negativity from about 500ms to 900ms).
Light verbs pose unique challenges to theories of argument structure.
The Light Verb Challenge

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Construction grammar analyses of light verbs as in Goldberg (2003) say that these constructions are stored as linguistic units. Since these constructions as a whole are very frequent, if anything, CG predicts they will be easier to process than their heavy counterparts at point of access. However, the reaction time data at the point of lexical access (assumed to be an early effect as in Embick et al 2001) shows no differences between light verbs and their heavy counterparts. With respect to ERP, one might expect a modulation of the N400 signature, but the experimental findings show no such effects either.
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- The structural similarity of the processing of the light and heavy versions of the same verb also pose challenges for exoskeletal accounts, where the two versions correspond to rather different syntactic structures and derivations.
The Limits of Lightness

Semantics of Structure (SoS) Conjecture on the Limits of Lightness

The meanings of a light verb and its corresponding heavy alternant are in a subset superset relation in their conceptual semantics, the light version being a proper subset of the heavy. Only non-syntactic, or conceptual information is systematically negotiable within the same lexical item. Anything that is present in the heavy version but not in the light must therefore be a species of Type B meaning. In the limit, a light verb can only be as light as the structural semantics corresponding to the Type A meaning of the pair.
In an examination of light verb constructions in English, I identified the following components of meaning that were present in both the heavy and light versions of the verb in question.

<table>
<thead>
<tr>
<th>Subevents</th>
<th>Deixis</th>
<th>Experiencer</th>
</tr>
</thead>
<tbody>
<tr>
<td>give</td>
<td>INIT, PROC, RES</td>
<td>→</td>
</tr>
<tr>
<td>take</td>
<td>INIT, PROC, RES</td>
<td>←</td>
</tr>
<tr>
<td>make</td>
<td>INIT, PROC, RES</td>
<td>↔</td>
</tr>
<tr>
<td>have&lt;sub&gt;dyn&lt;/sub&gt;</td>
<td>INIT, PROC</td>
<td>←</td>
</tr>
<tr>
<td>do</td>
<td>INIT, PROC</td>
<td>↔</td>
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A similar pattern repeats itself in an examination of the light verb constructions found in Bengali and Persian (see Ramchand 2014 for details). To summarize the conclusions of that study, taking the ‘SoS Conjecture on the Limits of Lightness’ as correct, we get the following:
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(Potential) Type A:
- Event template information involving lexicalization of cause and result
- The semantic selection of Experiencer subjects.
- Durativity vs. Transition
- Point of view Deixis for the causal chain.

(Definitely) Type B:
- Motion and Physical Transition
- Recipient/Beneficiary expression
- Physical Manners and Instruments
# What Light Verbs Tell Us

<table>
<thead>
<tr>
<th>Syn-Sem</th>
<th>Lexical Encyclopedic Identifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>- manners of causation</td>
</tr>
<tr>
<td>non change vs. change</td>
<td>(instruments, degree of volitionality)</td>
</tr>
<tr>
<td>non scalar vs. scalar change</td>
<td>- specific properties and state descriptions</td>
</tr>
<tr>
<td>types of dynamicity generally</td>
<td>- manners of change</td>
</tr>
<tr>
<td>source of scale</td>
<td>types of scalar changes</td>
</tr>
<tr>
<td>result of change</td>
<td>(properties, ordered locations)</td>
</tr>
<tr>
<td>start and end of scalar path</td>
<td>specific properties, locations for</td>
</tr>
</tbody>
</table>

Ramchand (University of Tromsø)
Question 1: Why is it possible to remove Type B fleshy meanings from some verbs and not others?
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Question 2: Why is it so easy to subtract physical motion in space and physical transfer from a light verb’s semantics? Indeed, even from the evidence of other phenomena, why is it so easy to conflate with motion?
What if motion, location and transfer in space are cognitive defaults that don’t appear in these lexical items Type B information at all, but are added as conceptual defaults? Light verbs would then be those items that have no, or minimal lexical encyclopedic content to begin with.
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<table>
<thead>
<tr>
<th>Syn-Sem</th>
<th>Cognitive Defaults</th>
<th>LI-Specific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>caused positional transfer</td>
<td></td>
</tr>
<tr>
<td>non change vs. change</td>
<td>locations</td>
<td></td>
</tr>
<tr>
<td>non scalar vs. scalar change</td>
<td>-manners of change</td>
<td></td>
</tr>
<tr>
<td>multivariate vs. bivariate transition</td>
<td>change of location</td>
<td></td>
</tr>
<tr>
<td>source of scale</td>
<td></td>
<td>EVERY</td>
</tr>
<tr>
<td>result of change</td>
<td></td>
<td>THING</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ELSE</td>
</tr>
</tbody>
</table>
I emphasized and highlighted a number of issues that arise if one takes \textbf{The Partition Problem} of word meaning seriously.

I conjectured that polysemy and the fact of polysemous lexical items be given explicit treatment in our models if we are to understand the working of the syn-sem system with respect to words with conceptual content.

I presented some results from one subcase of polysemy: the verbal polysemy involved in light verb use

I concluded with the speculation that light verbs are skeletal items that can also appear in ‘root-less’ structures because of cognitive defaults

That conclusion involves a substantive claim about the abstractness of the narrow linguistic computation and mutually constraining effects at the interface with cognition. Does it make predictions? And how would we test them psychologically?

