

Building Verb Meanings

Malka Rappaport-Hovav & Beth Levin (1998)
*The Projection of Arguments: Lexical and Compositional
Factors.* Miriam Butt and Wilhelm Geuder (eds.), CSLI
Publications.

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Martha Palmer

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Building Verb Meanings - Regular Polysemy?

■ *whistle*

- ❑ Kim whistled.
 - ❑ Kim whistled a tune.
 - ❑ Kim whistled a warning.
 - ❑ Kim whistled me a warning.
 - ❑ Kim whistled her appreciation.
 - ❑ Kim whistled to the dog to come.
 - ❑ The bullet whistled through the air.
 - ❑ The air whistled with bullets.
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Regular Polysemy?

- *sweep*

- Terry swept.
 - Terry swept the floor.
 - Terry swept the crumbs into the corner.
 - Terry swept the leaves off the sidewalk.
 - Terry swept the floor clean.
 - Terry swept the leaves into a pile.
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Regular Polysemy?

■ *sweep*

- Terry swept. **ACTIVITY**
- Terry swept the floor.
- *Terry swept the crumbs.
- Terry swept the crumbs into the corner. **CH-LOC**
- Terry swept the leaves off the sidewalk. **CH-LOC**
- Terry swept the floor clean. **CH-STATE**
- Terry swept the leaves into a pile. **CREATION**

Regular Polysemy?

- *sweep, wipe*

- ?Terry wiped. **ACTIVITY**
- Terry wiped the table.
- *Terry wiped the crumbs.
- Terry wiped the crumbs into the sink. **CH-LOC**
- Terry wiped the crumbs off the table. **CH-LOC**
- Terry wiped the slate clean. **CH-STATE**
- ?Terry wiped the crumbs into a pile. **CREATION**

Regular Polysemy?

■ *run*

- Pat ran.
 - Pat ran to the beach.
 - Pat ran herself ragged.
 - Pat ran her shoes to shreds.
 - Pat ran clear of the falling rocks.
 - The coach ran the athletes around the track.
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Regular Polysemy?

■ *run*

- ❑ Pat ran. **ACTIVITY**
 - ❑ Pat ran to the beach. **DIRECTED-MOTION/GOAL**
 - ❑ Pat ran herself ragged. **CH-STATE**
 - ❑ Pat ran her shoes to shreds. **CH-STATE**
 - ❑ Pat ran clear of the falling rocks. **CH-LOC**
 - ❑ The coach ran the athletes around the track. **CH-LOC**
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These phenomena suggest...

- There are principles that govern variation in verb meaning
 - Cross-linguistic variation suggests they are linguistic in nature -> parametric variation
 - Verbs of **SURFACE CONTACT** permit a wider range of argument expression than **CHANGE OF STATE** verbs.
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Manner verbs

- **Surface-contact:** *sweep, rub, wipe*
 - Distinguished by manner of contact
 - Do not imply change of state of surface
 - **Manner of motion:** *run, skip, jump*
 - Distinguished by manner of motion
 - No inherent achieved location - *Pat runs.*
 - **Sound emission:** *whistle, grunt, rumble*
 - Distinguished by manner of sound
 - Can be extended to change-of-location
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Result verbs

- **Change-of-state: *break, dry, widen***
 - Lexicalize an achieved state
 - Denote bringing about of state
 - Nature of causing activity unspecified
 - **Directed motion: *come, go, arrive***
 - Lexicalize an achieved location
 - Manner of motion unspecified
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Result verbs are more constrained

- *The clumsy child broke his fingers to the bone.
 - *The clumsy child broke the beauty out of the vase.
 - *Kelly broke the dishes off the table.
 - *Kelly broke the dishes into a pile.
 - *The jetsetters went themselves ragged.
 - *The runner went his shoes to shreds.
 - *The pedestrian went clear of the oncoming car.
 - *The coach went the athletes around the track.
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Lexical aspectual classification

- Manner verbs are activities (*sweep*)
[X ACT]

- Result verbs are achievements (*arrive*)
[BECOME [X <STATE>]]

or accomplishments (*dry*)

[[X ACT] CAUSE [BECOME [Y <STATE>]]]

Regular polysemy must be monotonic

- If verb meanings are constructed monotonically*
 - Activities can become accomplishments
 - Accomplishments canNOT become activities
 - It would require eliminating the resulting state
- **“Semantic bleaching”* isn't monotonic
 - *The news broke, the baby fell asleep*
 - Idiosyncratic, not structural

Basic elements of verb meaning

■ Structural

(semantic structure (Grimshaw93), LCS primitives)

- ❑ Grammatically relevant
- ❑ Defines class membership
- ❑ Also called “event structure”

■ Idiosyncratic

(semantic content (Grimshaw), manner/constants)

- ❑ Specific to verb
 - ❑ Distinguishes it from other class members
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Lexical aspectual classification

- Manner verbs are activities (*sweep*)

[X ACT <manner>]

[X ACT <sweep>]

- Result verbs are achievements (*arrive*)

[BECOME [X <STATE>]]

[BECOME [X <arrived>]]

or accomplishments (*dry*)

[[X ACT <manner>] CAUSE [BECOME [Y <STATE>]]]

[[X ACT <manner>] CAUSE [BECOME [Y < dry >]]]

Event structure templates

- *Sweep* as an activity.

[X ACT <manner>]

[X ACT <sweep>]

- *Sweep* as an accomplishment

[[X ACT <manner>]

CAUSE [BECOME [Y <STATE>]]]

[[X ACT <manner>]

CAUSE [BECOME [Y <PLACE>]]]

Event structure templates

- Activities

[X ACT <MANNER>]

- States

[X <STATE>]

- Achievements

[BECOME [X <STATE>]]

- Accomplishments

[[X ACT <MANNER>]

CAUSE [BECOME [Y <STATE>]]]

[X CAUSE [BECOME [Y <STATE>]]]

Canonical realization rules

- Manner verbs -> [X ACT <MANNER>]
 - *jog, run, creak, whistle*
 - Instrument verbs -> [X ACT <INSTRUMENT>]
 - *brush, hammer, saw, shovel*
 - Placeable object -> [X CAUSE [BECOME [Y WITH <THING>]]]
 - *butter, oil, paper, tile, wax*
 - Place -> [X CAUSE [BECOME [Y <PLACE>]]]
 - *Bag, box, cage, crate, garage, pocket*
 - Internally caused state -> [X <STATE>]
 - *Bloom, blossom, decay, flower, rot, rust, sprout*
 - Externally caused state ->
 - [[X ACT <MANNER>] CAUSE [BECOME [Y <STATE>]]]
 - *Break, dry, harden, melt, open*
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A verb's lexical entry

- Name contributed by the constant (idiosyncratic) + meaning (event structure)
 - Verb lexicalizes the constant
 - Constant is associated with an activity event by the canonical realization rule for manner verbs.
 - Thus *sweep* is an activity verb
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Building the meaning

- participants associated with the constant



- variables in the event template structure
(structure)

- Extra Participants >

- Licensed by constant
(content)

Two types of participants, structure and content:
1) licensed by constant AND event template
2) licensed by constant

Accounting for variations

- **Template Augmentation:** Event structure templates may be freely augmented up to other possible templates in the basic inventory of event structure templates.



Well-formedness conditions

- **Subevent Identification Condition:** Each subevent in the event structure must be identified by a lexical head (e.g., a V, an A, or a P) in the syntax.
 - **Argument Realization Condition:**
 - There must be an argument XP in the syntax for each structure participant in the event structure.
 - Each argument XP in the syntax must be associated with an identified subevent in the event structure.
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An example: *sweep*

- Phil swept the floor.
 - Predicate: *sweep*
 - Structural participant: Actor = Phil
 - Constant participant is recoverable: Patient=Floor
 - Phil swept.
 - Predicate: *sweep*
 - Structural participant: Actor = Phil
 - Constant participant is recoverable:
Prototypical Patient =Floor
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Application of conditions

- Externally caused state , ex. *break*
 - Causer -> X
 - Entity that changes state, Y
- **[[X ACT <MANNER>]
CAUSE [BECOME [Y <STATE>]]]**
- Argument Realization Condition satisfied
 - Subject and object both mapped,
 - A structural participant for each subevent
- *Tracy broke
- What about the intransitive? Only 1 argument.
 - Zero morpheme for Agent (reflexive), same event

Augmenting Templates: *sweep*

- Basic meaning -> [X ACT <*sweep*> Y]

- Augmentations

[[X ACT <*sweep*> Y]

CAUSE [BECOME [Y <STATE>]]]

- Phil swept the floor clean.
- *Phil swept the floor clean for an hour.
- Phil almost swept the floor clean.
- Phil almost swept the floor.
- *Phil swept clean. Y cannot be omitted.

Augmenting Templates: *sweep*

- Basic meaning -> [X ACT <sweep> Y]

- Augmentations

[[X ACT <sweep> Y]

CAUSE [BECOME [Z <place>]]]

- Phil swept the crumbs into the corner.
- *Phil swept into the corner.

(no arg realizing second subevent)

- *Phil swept the crumbs.

(ditto, or doesn't map to Y)

Augmenting Templates - *break*

- Basic meaning

[CAUSE X [BECOME [Y <STATE>]]]

(No further augmentation is possible.)

- *Kelly broke the dishes off the table./valueless.
 - Kelly broke the dishes to pieces.
 - Further specification, not augmentation
 - Is template augmentation lexical or interpretive (construction grammar)?
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Augmenting Templates – spray/load

- John sprayed paint on the wall.
[CAUSE John [BECOME [paint <STATE>]]]
 - John sprayed the wall with paint.
[CAUSE John [BECOME [wall <STATE>]]]
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Augmenting Templates - *arrive*

- Basic meaning -> [BECOME [X <PLACE>]]

(external causes can't be added)

- The train arrived.
- *The conductor arrived the train.
- The letter came.
- *The mailman came the letter.
- The mailman brought the letter.

[CAUSE X [BECOME [Y <PLACE>]]]

Contrast with

- Internally caused state , ex. *blossom*
 - Causer -> X
 - Entity that changes state, also X
 - Systematic ambiguity
 - The amaryllis blossomed for ten days. STATE **ACTIVITY?**
 - The amaryllis blossomed in a day **ACHIEVEMENT**
 - Two representations
 - [X <STATE>] - be-in-a-state
 - [BECOME [X <STATE>]] –change-into-a-state
 - No additional subevent, no additional argument needed
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Summary

- Building blocks for verb representations
 - Accounts for aspectual characteristics and regular polysemy
 - Is this fundamentally different from a predicate-argument structure representation with features?
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