Building Verb Meanings

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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.
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.
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.
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**
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.
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
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
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.
Lexical aspectual classification

- Manner verbs are activities *(sweep)*
  \[\text{[X ACT]}\]

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

or accomplishments *(dry)*
\[\text{[[X ACT] CAUSE [BECOME [ Y <STATE>]]]}\]
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
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.
  
  \[ \text{[X ACT <manner> ]} \]
  
  \[ \text{[X ACT <sweep>]} \]

- **Sweep** as an accomplishment
  
  \[ \text{[[X ACT <manner> ]}} \]
  
  \[ \text{CAUSE [BECOME [ Y <STATE>]]]} \]
  
  \[ \text{[[X ACT <manner> ]}} \]
  
  \[ \text{CAUSE [BECOME [ Y <PLACE>]]]} \]
Event structure templates

- Activities
  \[ X \text{ ACT} \langle \text{MANNER} \rangle \]

- States
  \[ X \langle \text{STATE} \rangle \]

- Achievements
  \[ \text{BECOME} [ X \langle \text{STATE} \rangle ] \]

- Accomplishments
  \[ [[ X \text{ ACT} \langle \text{MANNER} \rangle ] \]
  \[ \text{CAUSE} \ [ \text{BECOME} [ Y \langle \text{STATE} \rangle ] ] \]
  \[ [ X \text{ CAUSE} \ [ \text{BECOME} [ Y \langle \text{STATE} \rangle ] ] ] \]
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
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
Building the meaning

- participants associated with the constant
- Extra Participants

- variables in the event template structure
  - 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.
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
Application of conditions

- Externally caused state, ex. *break*
  - Causer -> X
  - Entity that changes state, Y
  - \[ [X \text{ ACT } \langle \text{MANNER} \rangle ] \text{ CAUSE } [\text{BECOME } [ Y \langle \text{STATE} \rangle ]] \]

- 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 -> \([X \text{ ACT } <\text{sweep}> Y]\)
- Augmentations
  \([X \text{ ACT } <\text{sweep}> Y]\)
  \(\text{CAUSE } [\text{BECOME } [Y <\text{STATE}>]]\)
- 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 -> \[X \text{ ACT } <\text{sweep}> Y\]
- Augmentations
  \[[[X \text{ ACT } <\text{sweep}> Y] \\text{ CAUSE } [\text{BECOME } [ Z <\text{place}>]]]\]
- 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
  \[
  \text{[CAUSE X [BECOME [ Y <STATE>]]]}
  \]
  \(\text{(No further augmentation is possible.)}\)
- *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)?
John sprayed paint on the wall.
[CAUSE John [BECOME [ paint <STATE>]]]

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

- Basic meaning -> \[\text{BECOME} \ [ X \ <\text{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.

\[\text{CAUSE X} \ [\text{BECOME} \ [ Y \ <\text{PLACE}>]]\]
Contrast with

- Internally caused state, ex. *blossom*
  - Causer -> X
  - Entity that changes state, also X
- Systematic ambiguity
  - The amaryllis blossomed for ten days. STATE
  - The amaryllis blossomed in a day ACHIEVEMENT
- Two representations
  
  \[ [X \text{ <STATE> }] \] - be-in-a-state

  \[ \text{BECOME} [X \text{ <STATE> }] \] – change-into-a-state
- No additional subevent, no additional argument needed
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?