Levin – English Verb Classes and Alternations: A Preliminary Investigation, 1993.

Levin classes *(Levin, 1993)*

- 3100 verbs, 47 top level classes, 193 second and third level

- Each class has a syntactic signature based on alternations.
  John broke the jar. / The jar broke. / Jars break easily.

  *John cut the bread. / *The bread cut. / Bread cuts easily.*

  *John hit the wall. / *The wall hit. / *Walls hit easily.*

Levin classes *(Levin, 1993)*

- 3100 verbs, 47 top level classes, 193 second and third level

- Each class has a syntactic signature based on alternations.
  *John broke the jar. / The jar broke. / Jars break easily./ *Roy broke at the vase./Sam broke Lee's finger./*Sam broke Lee on the finger.*

  *John cut the bread. / *The bread cut. / Bread cuts easily./ Mary cut at the bread/ Mary cut Bill's arm./ Mary cut Bill on the arm.*

  *John hit the wall. / *The wall hit. / *Walls hit easily./Sam hit at the wall./Sam hit Lee's back./Sam hit Lee on the back.*

Summary of semantic components

- Verb class hierarchy: 3100 verbs, 47 top level classes, 193

- Each class has a syntactic signature based on alternations.
  John broke the jar. / The jar broke. / Jars break easily.
      change-of-state

  *John cut the bread. / *The bread cut. / Bread cuts easily.*
      change-of-state, recognizable action,
      sharp instrument, contact, motion

  *John hit the wall. / *The wall hit. / *Walls hit easily.*
      contact, exertion of force, motion
  *John touched the wall. / *The wall touched. / *Walls touch easily.*
      contact

Summary of syntactic patterning

	Touch	Hit	Cut	break
Conative	No	Yes	Yes	No
Body-part ascension	Yes	Yes	Yes	No
Middle	No	No	Yes	yes

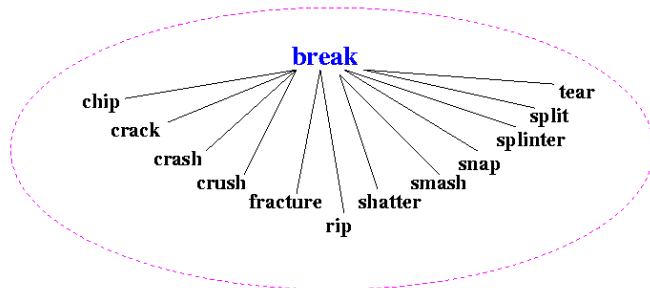Meaning

Common class components markers, not distinguishers

- *cut* [CAUSE] [CHANGE] [MOTION] [CONTACT]
- *break* [CAUSE] [CHANGE]
- *touch* [CONTACT]
- *hit* [MOTION] [CONTACT]

Meaning Components

Break Levin class - *Change-of-state*

Which semantic components are *grammatically* relevant?

- Pinker
  - Set of conceptually interpretable elements
  - Smaller than # of verbs, universal
  - Used by children
  - Have grammatical relevance
  - Distinguish classes that have different sets of lexical rules

Meaning

2

Diathesis Alternations

Alternations:
- Spray / Load
- Hit / Break

Non-alternating:
- Swat / Dash
- Fill / Cover

Spray / Load Alternation

Example:
Mary loaded the hay onto the truck.
Mary loaded the truck with hay.

Mary sprayed the paint onto the wall.
Mary sprayed the wall with paint.

- Levin: theme/location alternation
- Dowty:
  - Analyzed via proto-roles, not e.g. as a theme / location alternation.
  - Direct object analyzed as an Incremental Theme, i.e. either of two non-subject arguments qualifies as incremental theme. This accounts for alternating behavior.

Hit / Break Alternation

John hit the fence with a stick.
John hit the stick against a fence.

John broke the fence with a stick.
John broke the stick against the fence.
- Radical change in meaning associated with *break* but not *hit*.
- Dowty: Explained via proto-roles (change of state for Proto-Patient with break class).

Fill / Cover

Fill / Cover are non-alternating:
Bill filled the tank (with water).
*Bill filled water (into the tank).

Bill covered the ground (with a tarpaulin).
*Bill covered a tarpaulin (over the ground).

- Dowty: Only goal lexicalizes as incremental theme (direct object).

Limitations to Levin Classes

Dang, Kipper & Palmer, ACL98

- Coverage of only half of the verbs (types) in the Penn Treebank (1M words,WSJ)
- Usually only one or two basic senses are covered for each verb
- Confusing sets of alternations
  - Different classes have almost identical "syntactic signatures"
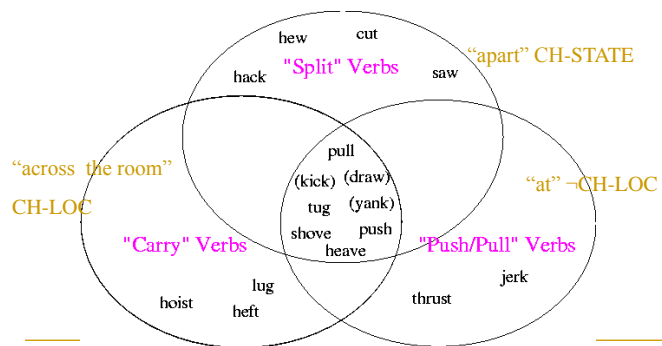 - or worse, contradictory signatures

13

Multiple class listings

- Homonymy or polysemy?
  - *draw a picture, draw water from the well*
- Conflicting alternations?
  - *Carry* verbs disallow the Conative, *(*she carried at the ball),* but include *{push,pull,shove,kick,yank,tug}*
  - also in *Push/pull* class, does take the Conative *(she kicked at the ball)*

14

Intersective Levin Classes

hew   cut
"Split" Verbs   "apart" CH-STATE
hack   saw

"across the room"
CH-LOC

pull
(kick) (draw)
tug (yank)
shove push
heave

"at" ¬CH-LOC

"Carry" Verbs   "Push/Pull" Verbs

jerk

lug
hoist heft   thrust

Dang, Kipper & Palmer, ACL98

15

4