

Event integration in the English *MEANS* construction:

An RRG analysis

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1. INTRODUCING THE MEANS CONSTRUCTION

(1) He angered Democrats by threatening to veto his own budget.

(2) He also encouraged you to learn by making mistakes.

(3) His own wife survived by clinging to a couple of chairs until she was rescued.

(4) By crafting regional metaphors, geographers can help the public to understand and expand regional choices.

(Corpus of Contemporary American English)

1. ANATOMY OF THE MEANS CONSTRUCTION

main verb
He angered Democrats

|_____MAIN CORE_____|

describes ↓



means verb
by *threatening to veto his own budget.*

|_____MEANS CORE_____|

describes ↓



OUTLINE

- Syntax
 - Syntactic structure of the means construction
- Semantics
 - Previous literature
 - Semantic integration of events
 - Semantic restrictions on each event
 - Representation
- Means in the Interclausal Relations Hierarchy
- Voice and linking: two variants?

2. SYNTACTIC STRUCTURE: PREVIOUS LITERATURE

- Van Valin (2005)
 - Relative position in IRH
 - No explicit syntactic analysis

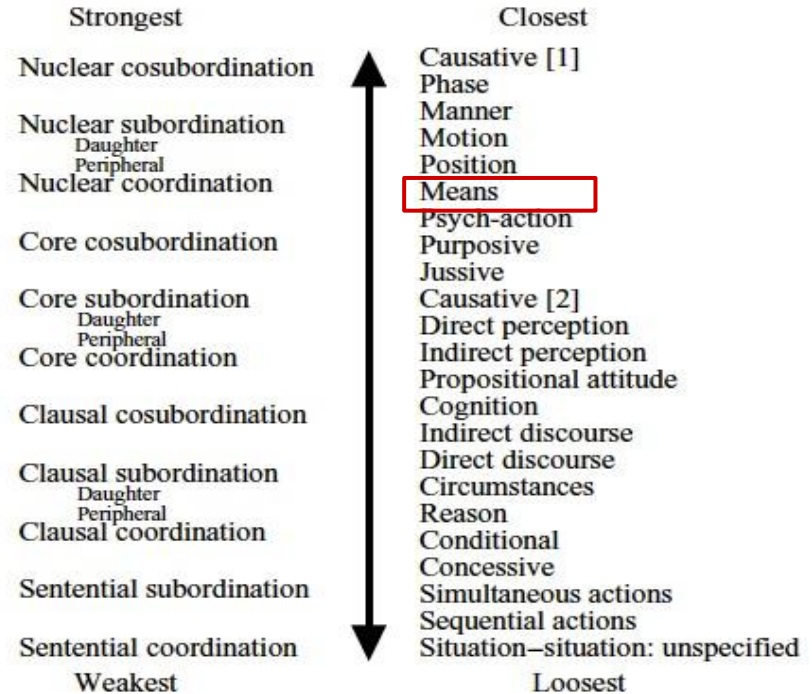
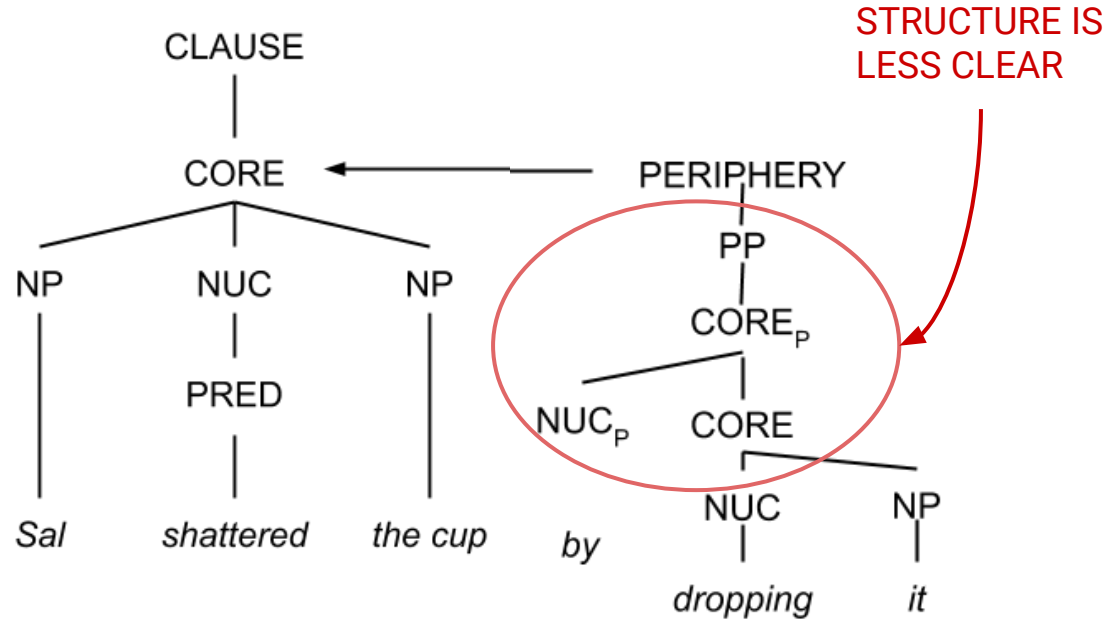


Figure 6.22 *Interclausal relations hierarchy*

2. SYNTACTIC STRUCTURE

- Core peripheral subordination



2. SYNTAX: EVIDENCE FOR CORE PERIPHERAL SUBORDINATION

- I. Means core headed by a preposition (*by*)
→ A hallmark of the core periphery
- II. Ordering freedom of cores
 - (5) a. *By analyzing the bomb*, investigators began to develop its profile.
 - b. Investigators began to develop the bomb's profile *by analyzing it*.
- III. Intervening core periphery elements are fine
 - (6) a. You can do so **this afternoon at 2:00** *by logging on to our Web site*.
 - b. This number was calculated **by the authors** *by dividing the population by 7.5*.

2. SYNTAX: EVIDENCE FOR CORE PERIPHERAL SUBORDINATION

IV. Co-subordinate clauses can each have their own means core:

(7) Sandy studied by reading her notes and will celebrate finishing her exam by burning them.

V. The main core may be non-finite:

(8) Sandy wanted to **study for her exam** by reading her notes.

VI. The means construction is syntactically asymmetrical:

(9) a. Sandy celebrated her graduation by burning her notes in the morning and drinking beer all afternoon. [CLAUSAL COSUBORDINATION]

b. Stuxnet... is known for reportedly **destroying roughly a fifth of Iran's nuclear centrifuges** by causing them to spin out of control.

[CORE COORDINATION]

3. SEMANTICS: PREVIOUS LITERATURE

Van Valin (2005: 206-207)

Means: the means by which an action is carried out

Means LS: $\text{do}'(x, [. . .] \wedge [\text{pred}_2'(x, y)])$

\wedge : a connective meaning 'and simultaneously' (p59)

3. SEMANTICS: PREVIOUS LITERATURE

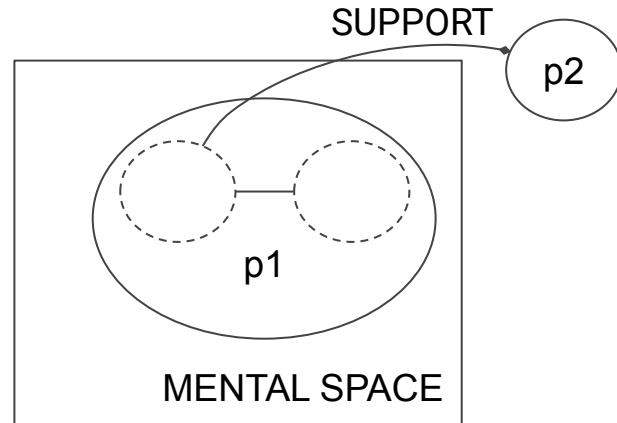
Ohori (2001)

p1 SUPPORT p2: A supportive relation between two predicates:
p1 is anchored (located in a mental model with its own epistemic status)
p2 is not anchored, but is supported by p1

Manner/means (subtype of SUPPORT):

p1: main event p2: means event

p1 SUPPORT p2, where p2 is an elaboration of the subpart of the causal structure of p1



3. SEMANTICS:

VARIANT 1

SPECIFY CAUSE

e.g. The dog **scared** the boy

by barking.

[do' (dog, Ø)] CAUSE [feel' (boy, [afraid'])

do'(dog, bark'(dog))

SPECIFY

[do'(dog, bark'(dog))] CAUSE [feel'(boy, [afraid'])]

- (10) a. The dog **scared** the boy *by barking*. (Causative state)
- b. Max **melted** the ice *by placing it in the sun*. (Causative accomplishment)
- c. The cat **popped** the balloon *by sitting on it*. (Causative achievement)
- d. Sam **flashed** the light *by flicking his wrist back and forth*. (Causative semelfactive)
- e. John **walked** the dog *by riding his bike and tying the leash to his handlebars*.
(Causative activity)
- f. Joe **fed** his daughter vegetables *by hiding them in her spaghetti*.
(Causative active accomplishment)

3. SEMANTICS:

VARIANT 1 SPECIFY CAUSE

RESTRICTIONS: causative main event; underspecified activity as causing event

EVENT INTEGRATION: means event specifies causing event in main event LS

(11) She shocked her relatives

by moving out. (COCA)

[do' (she, Ø)] CAUSE [INGR shocked' (her relatives)]

[do' (she, move.out'(she))]

SPECIFY

Combined LS for (11):

[do' (she, move.out'(she))] CAUSE [INGR shocked' (her relatives)]

Compare to Van Valin (2005)

do' (x, [. . .] \wedge [**pred2'** (x, y)])

?? **do'** (she, [[do' (she, Ø)] CAUSE [INGR shocked' (her relatives)]] \wedge [move out'(she)])

3. SEMANTICS:

VARIANT 2

SPECIFY ACTIVITY

e.g. The kids **danced** *by jumping around*.

(12c) The kids danced

by jumping around.

do'(kids, **dance'**(kids))

|-----|

do'(kids, **jump.around'**(kids))

|-----|



- (12) a. Archy **wrote** *by hurling himself at the typewriter keys one at a time.* (Activity)
b. Bill **wiped** the table *by running his sleeve along the surface.* (Activity)
c. The kids **danced** *by jumping around.*
d. Cohan...**wrote his score** *by whistling the melodies to a copyist.* (Active accomp.)
- (13) a. Sally **began to build** the house by pouring a foundation. (Phase of active accomp.)
b. Sally **began her speech** by quoting MLK. (Phase of implicit active

3. SEMANTICS:

VARIANT 2 SPECIFY ACTIVITY

RESTRICTIONS: main event contains a specific activity predicate with PSA as actor

EVENT INTEGRATION: means event ELABORATES activity predicate in main event

e.g. The kids danced by jumping around.
(12c) The kids danced ELABORATE by jumping around.

Combined LS for (11):

$\text{do}'(\text{kids}, \text{dance}'(\text{kids}))$ ELABORATE $\text{do}'(\text{kids}, \text{jump.around}'(\text{kids}))$
[$\text{do}'(\text{kids}, \text{jump.around}'(\text{kids}))$] ELABORATE [$\text{do}'(\text{kids}, \text{dance}'(\text{kids}))$]
or $\text{do}'(\text{kids}, [\text{jump.around}'(\text{kids})]$ ELABORATE [$\text{dance}'(\text{kids})$])

or $\text{do}'(\text{kids}, \text{dance}'(\text{kids}))$
ELABORATE
 $\text{do}'(\text{kids}, \text{jump.around}'(\text{kids}))$

Compare VV2005 $\text{do}'(x, [. . .] \wedge [\text{pred2}'(x, y)])$

$\text{do}'(\text{kids}, [\text{dance}'(\text{kids})] \wedge [\text{jump.around}'(\text{kids})])_4$

3. SEMANTICS:

VARIANT 3 ADD CAUSE

Semantic restr.: main event contains NO activity predicate with PSA as actor, but is typically part of a larger force-dynamic structure (frame?) in which cause is salient

Event integrat.: means event is the CAUSE of the main event

- (14) a. Mary **learned** French by attending classes.
b. His own wife **survived** by clinging to a couple of chairs until she was rescued.
c. They **stayed warm** by eating bread dipped in cognac.
d. Sancioff **became wealthy** by starting and selling medical-device companies.
e. At least 165 youngsters have **died** by ingesting or aspirating toys since 1980.

E.g. Mary learned French. BECOME **know'**(Mary, French) (Van Valin, 2005: 47)
Mary attended classes. do' (Mary, [attend' (Mary, classes)])

(15a) [do' (Mary, [attend' (Mary, classes)])] CAUSE [BECOME **know'**(Mary, French)]

3. SEMANTICS: COMPLEX CASES

- Complex causal structure, no underspecified activity predicates

(15) Bill wiped the table clean by running his sleeve along the surface.
[[do' (Bill, **wipe'**(Bill, table))] CAUSE [clean'(table)] [do'(Bill, ∅)]CAUSE[**traverse'**(surface, sleeve)]

ELABORATION

- Means clause has a complex causal structure

(16) By making him believe you trust him as a friend, you increase the chances that he really will be.
[do'(you, ∅)]CAUSE[**believe'**(him, trust...)] [do'(you, ∅)]CAUSE[**increase'**(chances...)]

SPECIFY

How can we identify which part of the main event the means event should specify/elaborate?

How can we identify which part of the main event the means event should specify/elaborate?

- A complex series of IF...THEN....ELSE rules to integrate the logical structures

Main Core LS	Periphery Core LS Insertion Rule
if main core LS matches: [...[do'(x,∅)]CAUSE...] _{LSmain}	∅ → [...] _{LSperipheral}
else if main core LS matches: [...[do'(x,[pred _i '(x,y)])...]]...] _{LSmain}	[[pred _i '(x,y)]...] → [[pred _i '(x,y)]...]ELABORATE[...] _{LSperipheral}
else	[...] _{LSmain} → [...] _{LSperipheral} CAUSE [...] _{LSmain}

OR

- The means event provides **more specific information** about a compatible subpart of the main event that involves an action by the actor in the means event.
 - A subpart within the existing event structure
 - The entire existing event
 - A subpart of the larger frame (not profiled by the main clause)
- This then becomes a task of **conceptual unification**: what part of the main event can be conceptually unified with the means event?

3. SEMANTICS: SUMMARY OF EVENT INTEGRATION

<u>Variant</u>	<u>Main event properties</u>	<u>Semantic integration of events</u>
Specify cause	Causally complex, with an underspecified causing event	Means event specifies causing event within the main event LS
Elaborate activity	An activity/accomplishment, or a phase of an event	Means event is an elaboration of the activity or phase
Add cause	Achievement/accomplishment associated with salient force-dynamic structure	Means event adds the cause of the main event

4. MEANS IN THE INTERCLAUSAL RELATIONS HIERARCHY

Van Valin (2005)

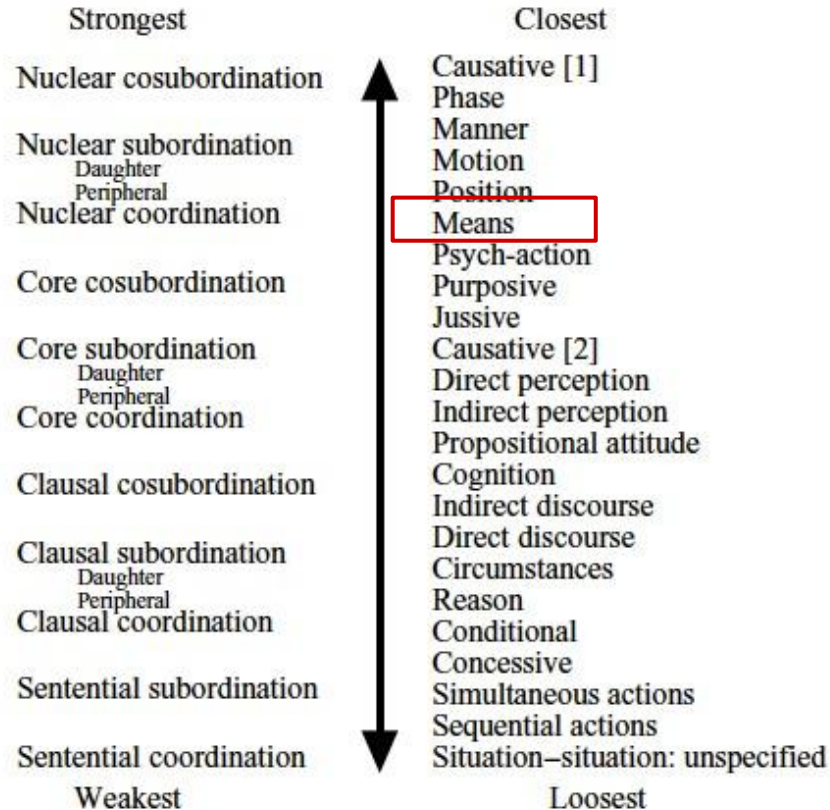


Figure 6.22 *Interclausal relations hierarchy*

4. MEANS IN THE INTERCLAUSAL RELATIONS HIERARCHY

- Main & means are conceptually “facets of a single event”
- But at different granularities of construal
 - closer to a discourse level phenomenon?
- Syntactically:
 - Core peripheral subordination
 - Looser than Psych-action, Causative [2]
 - e.g. *try to X*: core cosubordination
 - e.g. *make X Y*: core cosubordination

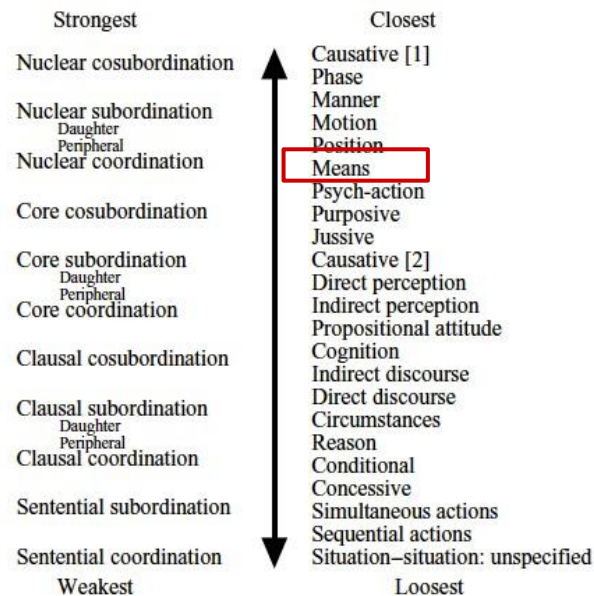


Figure 6.22 Interclausal relations hierarchy

5 VOICE AND LINKING: TWO VARIANTS?

➤ Pivot & controller typically both syntactically determined (PSA)

- (17) a. Sally_i danced by ____i jumping back and forth.
b. Jamie_i broke the plate by ____i hitting it with a hammer.
c. * Jamie broke the plate_i by him hitting ____i with a hammer.
d. * The plate_i was broken by Jamie hitting ____i with a hammer.
e. The authors_i calculated this by ____i dividing the population by 7.5.
f. John_i was punished by ____i being banned from the library.
g. He_i violated his probation by ____i being caught with a loaded gun.

5 VOICE AND LINKING: TWO VARIANTS?

- Sometimes, the controller is semantic (the Actor in the main event), but is not realized due to passive voice

(18) a. This was calculated (by the authors_i) by ____i dividing the population by 7.5.
b. The house was entered by ____j breaking a window.

- Typically in academic and crime report genres.

Main core	Peripheral core	SPOK	FIC	MAG	NEWS	ACAD	TOTAL
Active	Active	14679	6924	39145	24898	52996	138642
Active	Passive	88	92	170	108	240	698
Passive	Passive	43	17	50	45	96	251
Passive	Active	124	72	566	465	3543	4770
TOTAL		14934	7105	39931	25516	56875	144361

- Two constructional variants?
- Or a transformation for stylistic purposes?
 - Syntax generated with active main core then reformulated

SUMMARY

- Syntax: Core peripheral subordination
- 3 major patterns of event integration:
 - Specifying causing event
 - Elaborating activity
 - Adding causing event
- An overall pattern summary:
 - Means core: PSA action
 - Elaborates a compatible event in the Main core
- Interclausal relations hierarchy:
 - Both syntactically and semantically more complex?
- Voice and linking:
 - Two constructional variants?

THANK YOU!

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