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Lexical Semantics and Argument Realization VI

More on Semantic Determinants of Argument Realization: Evidence from Transitivity

RELATED READING: Blume 1998; L&RH 2005, sections 3.1.1, 4.3; Tsunoda 1985.

1 The starting points

• Results of the investigation of thematic hierarchies (THs):
— Complex event (causative) verbs are special from an argument realization perspective:
The relative semantic prominence of their arguments follows from the geometry of event structure: specifically, from event embedding.
— The structure of event structure leaves unexplained why there are also relative prominence relations between arguments of two-argument simple event verbs.

• Goals of this lecture:
— Examine the contribution of the structure of event structure to argument realization:
Show causation trumps other posited semantic determinants of argument realization, including those figuring in the salience statements sometimes said to underlie THs.
— Use crosslinguistic studies of transitivity as a framework for assessing and prioritizing the relative contribution of other posited semantic determinants of argument realization, specifically transitivity. (This discussion is preliminary and incomplete.)

2 Dowty's (1991) proto-role entailments in argument realization

Dowty's (1991) study of subject and object selection provides a useful starting point as it includes many semantic determinants commonly posited in the literature.

Dowty characterizes the semantic determinants as lexical entailments that a verb imposes on its arguments by virtue of the part they play in the event the verb describes. Building on this idea, he posits two proto-roles, each associated with its own set of lexical entailments. (See L&RH 2005, Section 3.1.1, for an overview and critique.)

The Agent proto-role—or Proto-Agent—includes properties that figure in typical descriptions of the traditional "agent" role; the Patient proto-role—or Proto-Patient—includes properties that figure in descriptions of the "patient" role, with the exception of the aspectual notion "incremental theme".

(1) Contributing properties for the Agent Proto-Role (Dowty 1991:572, (27)):
— volitional involvement in the event or state
— sentience (and/or perception)
— causing an event or change of state in another participant
— movement (relative to the position of another participant)
— (exists independently of the event named by the verb)

(2) Contributing properties for the Patient Proto-Role (Dowty 1991:572, (28)):
— undergoes change of state
— incremental theme
— causally affected by another participant
— stationary relative to movement of another participant
— (does not exist independently of the event, or not at all)

Proto-Agent and Proto-Patient figure in subject and object selection, respectively, so the contributing properties of each one can be seen as semantic determinants of subjecthood and objecthood.

2.1 Dowty's subject and object selection principles

(3) ARGUMENT SELECTION PRINCIPLE: In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of Proto-Agent properties will be lexicalized as the subject of the predicate; the argument having the greatest number of Proto-Patient entailments will be lexicalized as the direct object. (Dowty 1991:576, (31))

(4) COROLLARY 1: If two arguments of a relation have (approximately) equal numbers of entailed Proto-Agent and Proto-Patient properties, then either or both may be lexicalized as the subject (and similarly for objects). (Dowty 1991:576, (32))

(5) COROLLARY 2: With a three-place predicate, the nonsubject argument having the greater number of entailed Proto-patient properties will be lexicalized as the direct object and the nonsubject argument having fewer entailed Proto-Patient properties will be lexicalized as an oblique or prepositional object (and if two nonsubject arguments have approximately equal numbers of entailed P-Patient properties, either or both may be lexicalized as direct object). (Dowty 1991:576, (33))

• AN EXAMPLE: Subject/object selection in *Chris built a house* (Dowty 1991: 577)

(6) a. *Chris* is subject: volition, sentience, causation, movement, independent existence Proto-Agent entailments, but no Proto-Patient entailments.
b. *a house* is object: Proto-Patient entailments of change, causally affected, incremental theme, stationary, dependent existence, but no Proto-Agent entailments.

• One interpretation of Dowty's approach to argument realization:

"the prototype theory says that certain participants in an event are less prone to being seen as agents than others are, but the one seen as an agent is always the subject" (Baker 1997:110).

This interpretation gives insight into context dependence:
Why isn't an instrument or a recipient a subject in the presence of an agent?
Baker (1997:11) attributes this to variability in a given argument's proto-role:
A recipient or an instrument can only be analyzed as Proto-Agent in the absence of an agent.

2.2 Why the proto-role approach to argument realization is inadequate

• Dowty's argument selection principle presuppose transitivity, yet there is systematic variation across languages as to what constitutes the transitive verb class (see section 6).

• Dowty's proposal assumes no priorities among proto-role entailments in argument realization; it is simply the number of entailments that counts. Yet, there is empirical evidence to the contrary.

3 The contribution of event structure to subject and object selection

3.1 Causers are semantically more prominent than entities that change state

The investigation of the structural view of the thematic hierarchy suggests that causers have priority as subjects due to the structure of event structure.

When a two-argument verb has a complex event structure, comprised of one event embedded in a second, an argument of the higher event is less embedded than an argument of the lower event and should be more prominent semantically and, thus, also syntactically.

Causative verbs (e.g., *break*, *kill*) have been attributed a complex event structure (Dowty 1979, McCawley 1971, Morgan 1969, von Stechow 1995, 1996). In this event structure the caused event containing the patient is embedded under CAUSE, which also takes the causer as an argument, justifying the ranking 'causer > patient'.

(7) [[x ACT] CAUSE [BECOME [y <*STATE*>]]]

3.2 Causers have priority in subject selection

Despite Dowty's assumption to the contrary, there is evidence that one Proto-Agent entailment is more important than the others in subject selection and that, concomitantly, event structure contributes as well.

Koenig & Davis argue for priorities among Dowty's Proto-Agent entailments in subject selection:

(8) "... for all verbs that denote causal events, the only proto-agent entailment that we need to consider is whether the participant causally affects another participant in the event. ... Similarly, among non-causative verbs, sentience is sufficient to ensure mapping to subject ... Volitional involvement in the event is also sufficient to ensure mapping to subject position in non-causative verbs. Finally, for all verbs for which being in motion counts as a proto-agent entailment, the NP denoting the moving object is mapped onto subject position."
(Koenig & Davis 2001:82-83)

That is, causation outranks Dowty's other Proto-Agent entailments in subject selection (Davis & Koenig 2000:75-76): if an argument has the causer entailment, it is subject.

EVIDENCE SUPPORTING DAVIS & KOENIG'S PROPOSAL

• In languages with productive morphological causatives, the introduced causer is invariably the causative subject, regardless of the causee's Proto-Agent entailments (e.g., sentience, volition).

(9) a.

Ha-b'dixa	hicxika	oti.
the-joke	laugh.CAUS	I.ACC

'The joke made me laugh.' (Hebrew)

b.

Uutinen	puhu-tt-i	nais-i-a	pitkään.
news.item	talk-CAUS-PAST	woman-PL-PART	long-ILL

'The news made the women talk for a long time.'
(Finnish; Davis & Koenig 2000:75, (26))

• Causation also takes priority over the Proto-Agent entailment, sentience:
a sentient participant is subject only when there is no causer (Dowty 1991).

(10) a. The toddler (*deliberately) feared the lion.
b. The lion (deliberately) frightened the toddler.

• And causation again takes priority over the Proto-Agent entailment, motion:
a moving participant is subject only when there is no causer (Dowty 1991).

(11) a. The train passed/crossed the border.
b. The wind blew the napkin off the table.

• Also relevant is Tsunoda's (1985) observation that accidental killing is as effective as intentional killing: the killer is the causer whether or not the killing is volitional.

WHY SHOULD CAUSATION OUTRANK OTHER PROTO-AGENT ENTAILMENTS?

Causation is the only Proto-Agent entailment corresponding to a notion defined over event structure:
A causer is the least embedded argument in a typical causative event structure.
Supposing that event structure prominence is preserved in argument realization,
the causer would take precedence over any other argument in subject selection.

3.3 The contribution of event structure to object selection

• The same idea could be carried over to Dowty's Proto-Patient entailments and object selection:
Among these entailments, "changes state" outranks the others in determining objecthood.
It may be defined over proposed event structures via depth of embedding or the predicate BECOME.

— A stationary entity cannot be the object in the presence of an entity that changes state.

(12) a. Pat broke the bat against the window.
(window is stationary and does not change state; bat changes state)
b. Pat broke the window with a bat.
(window is stationary, but does change state)

(13) The parade passed the queen's window.
(window is stationary; no argument changes state)

— An entity that changes state has priority in object selection over an entity that is simply affected, but does not necessarily change state.

(14) Pat broke the bat against the window.
(window is causally affected, but may or may not change state; bat changes state)

— Hard to evaluate the place of "incremental theme" as it is hard to separate from a change of state.

• Localist theories conceptualize changes of state as changes of location (Gruber 1965, Jackendoff 1976, 1983), but an entity lexically entailed to undergo a change of state MUST be the direct object, while an entity lexically entailed to undergo movement CAN be an object, but need not be.

EVIDENCE: A moving entity can't be object in the presence of an entity that changes state.

(15) a. Pat broke the window with a bat.
(bat moves, but does not change state; window changes state)

b. Pat broke the bat against the window.
(bat moves and changes state; window may or may not change state)

(16) a. Pat hit the window with a bat.
(bat moves; window may or may not change state)

b. Pat hit the bat against the window.
(bat moves; window may or may not change state)

(17) The waiter filled the glass with water./*The waiter filled water into the glass.
(glass changes state; water moves)

• Object alternations are only found with simple event verbs, presumably, another reflection of the association of entities that change state with objecthood.

4 The limitations of event structure as a predictor of argument realization

The geometry of event structure may be important to subject and object selection, but alone it is inadequate.

Event structure doesn't impose a semantic prominence ranking on the arguments of multi-argument simple event verbs as their arguments are equally embedded:
e.g., *wipe, scratch, want, see, hear, love, hate, have*, ...

Yet, one argument is realized as subject and the other as object/oblique, so not equally prominent.
Need a way of establishing their relative ranking independent of their morphosyntactic realization, which the ranking is supposed to predict.
THE PROBLEM EXEMPLIFIED: RRG's actor-undergoer hierarchy

Reference to event structure must be supplemented by other event-based statements of prominence.

5 Identifying asymmetric relations between arguments

Dowty's contributing properties of proto-roles implicitly point to a way of imposing semantic prominence relations on pairs of arguments.

PAIRING OF ENTAILMENTS: Some Proto-Agent and Proto-Patient properties come in pairs.
(Dowty 1991:574, Croft 1998:37, Koenig & Davis 2001:83, Primus 1999:52-53):

(18) a. Proto-Agent "causing an event or change of state in another participant"
and Proto-Patient "undergoes change of state"

b. Proto-Agent "movement (relative to the position of another participant)"
and Proto-Patient "stationary relative to movement of another participant".

c. Proto-Agent "exists independently of the event named by the verb"
and Proto-Patient "does not exist independently of the event, or not at all".

Also consider and compare Fillmore's (1977) relative "salience" statements from Lecture Notes V.

Paired entailments identify participants in a semantic relation. In each pair the Proto-Patient entailment is dependent on the Proto-Agent entailment. Thus, they reflect an asymmetric relation between event participants, and, thus, implicitly define a ranking of arguments (Primus 1999).

What is the nature of the semantic relation defining the pairings?
Primus (1999:36-37) sees the pairings as entailments of a more general "control" relation;
a similar idea is introduced by Davis & Koenig (2000:73):

> "Finally, note that although it is difficult to provide a unifying characterization for each set of entailments, the ACTOR entailments relate to initiating an event and affecting other participants, while the UNDERGOER entailments typify affected participants. The entailments characteristic of the ACTOR attribute might then reduce to a general entailment roughly paraphrasable as 'has control over the unfolding of the situation'"

A relation of control could help impose a ranking on pairs of arguments and thus determine subject vs. object realization where event structure alone is insufficient.
For more insights into "control" see the notions of causal chain and force recipient in section 7.2.

An empirical domain for studying semantic asymmetries between arguments and their implications for semantic determinants of argument realization: Transitivity.

6 Tsunoda's implicational hierarchy of two-argument verbs

Tsunoda's introduces an implicational hierarchy of the likelihood that various semantic classes of two-argument verbs are transitive across languages.
This hierarchy may be attributed to semantic determinants of argument realization, with the hierarchy reflecting the priorities among them.
Specifically, it will be used to shed light on semantic determinants of objecthood.

Tsunoda's implicational hierarchy of two-argument predicates (1985:388-389):

(19)
- a. Direct effect on patient
  - — Resultative: *kill, break, bend*
  - — Non-resultative: *hit, shoot, kick, eat*
- b. Perception
  - — Patient more attained: *see, hear, find*
  - — Patient less attained: *listen, look*
- c. Pursuit: *search, wait, await*
- d. Knowledge: *know, understand, remember, forget*
- e. Feeling: *love, like, want, need, fear, boast; fond, afraid, angry, proud*
- f. Relationship: *possess, have, lack, resemble, correspond, consist; similar, lacking*
- g. Ability: *capable, proficient, good*

(Semi-colons separate verbal predicates from adjectival predicates; will ignore the latter, though note that they are only found in the classes low on the hierarchy.)

The verbs highest in the hierarchy are most likely to be transitive across languages.
(They are also most likely to show passive, antipassive, reflexive, reciprocal forms.)

6.1 What factors organize the hierarchy?

Tsunoda (1985:388-389) suggests that the hierarchy is organized in terms of the decreasing affectedness of the patient, following an assessment of a set of semantic components of transitivity suggested by Hopper & Thompson (1980), which includes this notion

Hopper & Thompson suggest that transitivity is a prototype notion, identifying the following semantic components (1980:252, (1)), many of which have figured in subsequent work:

	COMPONENTS	HIGH	LOW
A.	Participants	2 or more participants, A and O	1 participant
B.	Kinesis	Action	Non-action
C.	Aspect	Telic	Atelic
D.	Punctuality	Punctual	Non-punctual
E.	Volitionality	Volitional	Non-volitional
F.	Affirmation	Affirmative	Negative
G.	Mode	Realis	Irrealis
H.	Agency	A high in potency	A low in potency
I.	Affectedness of O	O totally affected	O not affected
J.	Individuation of O	O highly individuated	O not individuated

Hopper & Thompson (1980:253, (2)) on the components of individuation:

INDIVIDUATED	NON-INDIVIDUATED
proper	common
human, animate	inanimate
concrete	abstract
singular	plural
count	mass
referential, definite	non-referential

(20) Transitivity, then, viewed in the most conventional and traditional way possible … can be broken down into its component parts, each focusing on a different facet of this carrying-over in a different part of the clause. Taken together, they allow clauses to be characterized as MORE or LESS Transitive: the more features a clause has in the 'high' column in 1A–J, the more Transitive it is … (Hopper & Thompson 1980:253)

Tsunoda (1985) notes it is difficult to find correlations between the agent and patient properties:

(21) a. No correlation between volitionality-agency and affectedness:
— accidental killing is as effective as intentional killing.

b. Agentivity can be irrelevant to transitivity:
'hit' NOM-ACC: patient affected; either volitional or non-volitional;
either agentive or nonagentive: *He (deliberately/accidentally) hit the fly*.

Tsunoda's own focus on affectedness reflects his contention that there is no correlation between volitionality-agency and affectedness.

(22) … in manifesting a transitive case frame, (I) Affectedness is crucial, but (E) Volitionality and (H) Agency appear to be irrelevant. (Tsunoda 1985:395)

Tsunoda (1981:393) proposes some "additions" to Hopper & Thompson's semantic components of transitivity; he calls these added components "effectiveness conditions".

COMPONENTS	HIGH	LOW
Impingement	Impingement on O	Non-impingement on O
Attainment	O attained	O not attained
Completion	completed	uncompleted, in progress
Resultative	resultative	non-resultative
Genericity	specific or single activity/situation	customary/general/habitual activity/situation
Realization	actual/realized	potential/unrealized

On some of Tsunoda's (1981:393-394) terms:
— "*kill* is resultative, creating a change of state in O, but *hit* is not necessarily so."
— "*hit* can impinge on O, but other actions, states etc, cannot, e.g. *search, like, possess*."
— "Completed versus uncompleted or in progress. E.g. *He hit me* versus *He will hit me* or *He was hitting me*."
— "*see, find* (actual/realized) versus *search, try to find* (potential/unrealized)"; also *shoot* versus *shoot at*.

6.2 What matters in Tsunoda's hierarchy?

The verbs in Tsunoda's hierarchy can be reorganized into four classes for our purposes:

(23) a. Resultative verbs with a direct effect on patient: *kill, break, bend*
b. Non-resultative verbs with a direct effect on patient: *hit, shoot, kick, eat*
c. Verbs of pursuit: *search, wait, await*
d. Stative predicates of perception, cognition, feeling, possession: *see, hear, find; know, understand, remember, forget; love, like, want, need, fear, boast; possess, have, lack, resemble, correspond, consist*

Some comments on these classes:

• RESULTATIVE VERBS WITH A DIRECT EFFECT ON PATIENT: these are the "agent-patient" verbs of Lecture Notes I or the complex event verbs of Lecture Notes II: verbs in which an agent acts on and causes a change of state in a patient. They fit the complex (causative) event structure in (7), which explains why they are always reported among the transitive verbs of a language.

• NON-RESULTATIVE VERBS WITH A DIRECT EFFECT ON PATIENT: these verbs deviate from the agent-patient mold; will focus on a major subset of them—surface contact verbs—in section 7.

• VERBS OF PURSUIT: Tsunoda does not give a lot of information about this class, and it may actually conflate several classes. Some of its members fall into the class of interaction verbs to be discussed in section 8

• STATIVE VERBS OF PERCEPTION, COGNITION, FEELING, POSSESSION: Will not consider these in detail, but their status is most likely attributable to their stativity, which distinguishes them from the agent-patient verbs. Most likely, it is the requirement that one of their arguments be sentient, which makes this argument eligible for subjecthood (cf. Dowty 1991, Fillmore 1977, Mohanan 1994, Wechsler 1995). (See Bossong 1998, Haspelmath 2001, and Onishi 2001 for further generalizations about the crosslinguistic distribution of these verbs across the transitive and intransitive verb classes.

Malchukov (2005) refines Tsunoda's hierarchy, suggesting it collapses two dimensions of variation:

(24) a. Decrease in the affectedness of the "O" argument:
effective action > contact > pursuit > (motion)
break > hit > look for/search > go

b. Decrease in the agentivity of the "A" argument:
effective action > perception/cognition > emotion > (sensation)
break > see/know > like/fear > freeze/be cold

The notions "A" and "O":
"A" — the argument of a transitive verb which is expressed like the agent of a core transitive verb;
"O" — the argument of a transitive verb which is expressed like the patient of a core transitive verb.

7 Surface contact verbs

A significant subset of Tsunoda's class of "non-resultative verbs with a direct effect on patient" are verbs that describe an event which involves contact with a surface, without entailing any change.

(25) a. Canonical surface contact verbs: hit, kick, shoot, slap, . . .

b. "Extended" members of the class: mow, rake, rub, scratch, sweep, wipe, . . .

7.1 Crosslinguistic evidence for variable transitivity

The placement of surface contact verbs in Tsunoda's hierarchy is intended to capture the observation that these verbs are not transitive in every language, though they are in many languages.

Evidence for this observation, some of it repeated from Lecture Notes I:

• LHASA TIBETAN: The counterpart of English *hit* is not transitive: the argument denoting surface contacted takes a locative marker. Concepts expressed by other surface contact verbs involve verb-noun combinations (DeLancey 1995, 2000).

(26) shing*(-la) sta=re-s gzhus-pa.
tree-LOC axe-ERG hit
'hit the tree with an axe' (DeLancey 1995: (18))

(27) nga-s blo=bzang=la rdog=rdyag gzhus-pa yin
I-ERG Lobsang-LOC kick_{N} hit/throw-PERF/CONJUNCT
'I kicked Lobsang' (DeLancey 1995: (20))

• INGUSH: The counterparts of certain English surface contact verbs are also expressed via verb-noun combinations (Nichols 1982:447, 1984:188). Again the surface is expressed in an oblique case—a case-marking pattern common across Caucasian languages (Nichols 1984:188).

(28) *tuop tuoxan* 'rifle hit' means 'shoot', not 'beat with a rifle' (Nichols 1984: 189).

• HEBREW: The surface is expressed in a PP headed by the locative preposition *be*.

(29) *xavat be* 'hit', *ba'at be* 'kicked', *naga be* 'touched', *halam/hika be* 'beat' (Botwinik-Rotem 2003:10)

• VIETNAMESE: Surface contact verbs may express the surface as an object or take cognate objects with the surface expressed in a PP.

(30) *da* 'kick', *dam* 'punch', *thui* 'punch', *cao* 'scratch', *cau* 'pinch/nip', *nen* 'beat', *quai* 'beat', *can* 'bit', *danh* 'hit', *tat* 'slap', *vuot* 'stroke/fondle', *liem* 'lick', *hon* 'kiss', *cu* 'tickle', *phang* 'strike with a stick', *quat* 'strike', . . . (Pham 1999:233)

(31) Ti da toi.
Ti kicked me
'Ti kicked me.' (Pham 1999:232, (10a))

(32) Ti da mot da.
Ti kicked a kick
'Ti kicked a kick.' (Pham 1999:233, (10b))

(33) Ti da mot da vao toi.
Ti kicked a kick on me
'Ti kicked me a kick.' (Pham 1999:233, (10c))

7.2 The relevant semantic determinant of objecthood: Force recipient

One way of modeling events is in terms of causal chains (Croft 1991, 1998, DeLancey 1984, Langacker 1987, Talmy 1976).

From this perspective, the event type prototypically denoted by a transitive verb involves:
— The asymmetric transmission of a force from one entity to a second, followed by
— A change in the second entity, i.e., the manifestation of the force transmission.
i.e., Tsunoda's "resultative verbs with a direct effect on patient" or "agent-patient verbs".

Agent-patient verbs involve a transmission of force to their patient and a change in it;
surface contact verbs only involve transmission of force from one entity to a second.
(These verbs in isolation do not entail the second entity changes state and, thus, do not conform to the prototypical transitive event.)

Causal chains and argument ranking:

> "Instead of a thematic role hierarchy, a ranking of participants in terms of their force-dynamic relations to each other is argued to be critical for linking, in fact more important than type of thematic role in the usual sense. One participant outranks another if it is antecedent to the other in the causal chain (in terms of transmission of force)." (Croft 1998:23; see also Langacker 1990:238 on his "energy flow hierarchy")

The grammatical relations subject and object are assigned according to the order of arguments in the causal chain: THE CAUSAL ORDER HYPOTHESIS (Croft 1991:186).

Force transmission along the causal chain can be seen as like or even as a type of control relation.

IMPLICATIONS FOR ARGUMENT REALIZATION WITH SURFACE CONTACT VERBS:
— Surface contact verbs take two arguments: "force transmitter" and "force recipient".
— The causal chain defines a semantic prominence relation between these two arguments.
— The placement of these verbs on Tsunoda's hierarchy suggests that such verbs have priority over verbs of other types in realizing their arguments as subjects and objects.
— Specifically, force recipients are candidates for expression as direct object.

Crosslinguistic differences appear to involve whether the force recipient qualifies as an object or not; languages agree that the force transmitter is a subject.

INDEPENDENT EVIDENCE FOR "FORCE RECIPIENT": The distribution of result XPs.
Rappaport Hovav & Levin (2001) argue it allows for a unified generalization.

The distribution of result XPs with transitive verbs plus objects.
Change of state verbs can only predicate a result XP of their object.
Other classes of transitives that also only predicate a result XP of their object include:
— Verbs of surface contact (e.g., *rub, sweep, wipe*)
— Verbs of exerting force (e.g., *pull, push, tug, yank*)

(34) a. She might employ it [her body] as a weapon—fall forward and FLATTEN me wafer-thin. (D. Ephron, *Big City Eyes*, Putnam's, New York, 2000, p. 92)

b. She was WIPING the mirror free of steam … (E. George, *Missing Joseph*, Bantam, New York, 1993, p. 251)

c. He PULLED the glass door tightly shut behind them … (A. Cleeves, *Murder in My Backyard*, Fawcett, New York, 1991, p. 119)

THE GENERALIZATION: The result XP is predicated of the NP denoting the argument of a transitive verb which is the recipient of a transmitted force, if there is one.

RH&L (2001) argue that this restriction has its source in the basic properties of events
(Croft 1991:173, 269).

7.3 Why do surface contact verbs occur where they do in Tsunoda's hierarchy?

That is, why are these verbs the most likely to be transitive crosslinguistically after the "resultative verbs with a direct effect on patient", that is, agent-patient verbs?

Surface contact verbs have an argument that is a force recipient, but does not change state.
In general, verbs with such arguments are associated with a cancellable implicature that the force recipient undergoes a change related to the conventional result of the action.
This implicature creates the impression that these verbs fit the agent-patient mold.
(See Talmy 2000 for more discussion.)

Furthermore, the "surface" argument is frequently filled by an animate;
this gives it information structure prominence that may favor object over oblique realization, especially in languages with fixed word order and no case marking.

8 Interaction verbs: A class of often nontransitive two-argument agentive verbs

In contrast to surface contact verbs, which are frequently among the transitive verbs of languages, there is a class of "interaction verbs" (Blume 1998)—two-argument verbs with two typically sentient arguments, which do not figure among the transitives of many languages, with English being an exception.

Typically, interaction verbs take nominative-dative (or nominative-oblique) arguments in most languages (e.g., German, Hungarian, Maori).

In Vietnamese these verbs, as well as other verbs of perception, emotional action, and mental attitude, can also be distinguished from canonical transitives, but show yet another argument realization option: they take an animate object and a cognate "second object" or PP headed by *voi/bang* 'with'.

(35) giupdo 'help/support', *chao* 'greet', *chaodon* 'welcome', *chucmung* 'congratulate', *camon* 'thank', *khenngoi* 'praise', *cauxin* 'ask for', *thamvieng* 'visit', . . . (Pham 1999:234)

(36)

Ho	chaodon	nha	nghesi	mot	su	chaodon	nongnhiet.
they	welcome	CLASS	actor	a	CLASS	welcoming	warm

'They gave a warm welcome to the actor.' (Pham 1999:234, (15a))

Blume's list of interaction verbs includes some of Tsunoda's pursuit verbs and the (active) perception verbs with a "less attained" patient.

(37) Subclasses of interaction verbs (Blume 1998:274)

a. Verbs of communication/social gesture (rather than transmission of a proposition that changes knowledge): *listen to, answer, greet, call for, wave to, congratulate, thank, read to, threaten, give notice to, . . .*

b. Motion verbs: *follow, dodge, meet*
Both participants show autonomous activity, performing actions independently of each other.

c. 'Obey' verbs: *obey, work for, serve*
"Nominative participant that has to conform to particular standards and/or purposes presupposed on the part of the dative participant"

NOTE: Further refinements of Blume's hierarchy are likely to be necessary, with different subsets varying with respect to their likelihood of being transitive.

8.1 A semantic characterization of interaction verbs

Blume's (1998:254) semantic characterization of these verbs: "Agentive /nom/dat verbs denote complex events consisting of more than one subevent — one of them typically presupposed — where each participant in the complex event is independently active in at least one of the subevents"

AN EXAMPLE: Blume's characterization of German *helfen* 'help'

(38) "two temporally overlapping subevents s1 and s2: in s1 one participant is presupposed to strive consciously for a certain aim . . . in s2 the other participant performs an unspecified act that contributes to the achievement of the aim of the first one." (Blume 1998:254-255)

Interaction verbs are said to be "weakly transitive", i.e., "verbs expressing complex events that do not assign proto-patient properties in any implied subevent," (Blume 1998:255), specifically, "both arguments bear proto-agent properties in at least one implied or presupposed subevent, but neither argument bears proto-patient" (Blume 1998:268, (9))

Blume (1998:268, (9)) posits her own scale of semantic transitivity of verb classes:

(39) *+transitive*
Verbs expressing situations that involve:
I. two and more argument positions; one or more arguments bear Proto-Patient properties in at least one implied subevent;
II. two argument positions; both arguments bear Proto-Agent properties in at least one implied or presupposed subevent, but neither argument bears Proto-Patient properties in any implied subevent;
III. more than one argument position; at most one of the arguments bears Proto-Agent properties; Proto-Patient properties are not assigned;
IV. only one argument position
–transitive

Blume's redefinition of proto-role properties (1998:266, (7)):

(40) Contributing properties for the Proto-Agent:
A participant A is a Proto-Agent iff it fulfills the following functions in at least one of the subevents E that are expressed by the meaning of a verb:
— A controls E
— A is conscious of E ("sentience")
— A is autonomously active/has an essential function in E

(41) Contributing properties for the Proto-Patient:
A participant P is a Proto-Patient iff it fulfills the following functions in at least one of the subevents E that are expressed by the meaning of a verb:
— P is in E created or destroyed by A ("dependent existence")
— P is in E directly affected by A
— P is in E controlled or manipulated by A

RELATIONS BETWEEN CASE ARRAYS AND SEMANTIC VERB CLASSES:
— nom-dat interaction verbs are level II, as each participant is an agent in a subevent
— nom-dat psych, perception, and possession verbs are level III, as they are statives
— agentive level III verbs select PP or adverbial NPs; these are verbs whose second participant need not have Proto-Agent properties

(42) A verb expressing a complex action may select a /nom/dat or /abs/dat case frame iff it is on level II of the transitivity scale. (Blume 1998:269, (10))

(43) The agent in the first implied subevent of a temporally ordered sequence of subevents in the event structure of a verb is coindexed with the nominative or absolutive.
(Blume 1998:269, (11))

NOTE: Blume's transitivity hierarchy may be more about affectedness than she suggests as all Type I-III verbs take a Proto-Agent; they differ in the status of their second argument.

8.2 English and German interaction verbs

ENGLISH: Even in English, despite their surface transitivity, interaction verbs can be distinguished from agent-patient verbs, using diagnostics discussed by Maling (2001) in a study of the mapping between morphological case and semantic roles in Germanic.

Baker (1997) identifies diagnostics to distinguish direct vs. indirect objects of ditransitives.
Though Baker takes these to diagnose grammatical function, Maling argues that they are sensitive to semantic roles as some two-argument verbs have a nonagent argument that patterns with patients and others with goals of ditransitives.

SAMPLE ARGUMENT: English synthetic compounds (Maling 1997)
Baker (1997) notes an asymmetry in compound formation with ditransitives, as in (44).
Just like the goal of a ditransitive, the object of *help*, *invite, reach, telephone, thank, visit*
cannot be the left-hand element of a synthetic compound.
Unifying generalization must be semantic: goals are not found in compounds.
Similar argument possible with derived nominals, depictive secondary predicates, middles
(not mentioned by Baker).

(44) Three-argument (i.e., ditransitive) verbs:
Theme compounded: secret-telling (to spies), book-reading (to children)
Goal compounded: *spy-telling (of secrets), *child-reading (of books)

(45) Two-argument interaction verbs:
∗ relative-inviting, *needy-helping, *friend-telephoning

(46) Two-argument agent-patient verbs:
mosquito-killing, window-breaking, door-opening

GERMAN: There are many nom-dat interaction verbs, but also some nom-acc ones.
All interaction verbs pattern together independent of the case of their second argument (which Maling calls a goal); the nom-acc interaction verbs do not pattern with nom-acc agent-patient verbs, again suggesting that semantic properties are the issue.

The relevant German two-argument verb classes:

(47) German:

a. Verbs with "goals" expressed as datives: *helfen* 'help', *danken* 'thank', *begegnen* 'meet', *drohen* 'threaten', *schaden* 'harm', *fluchen* 'curse', ...
b. Verbs with "goals" expressed as accusatives: *bitten* 'ask', *anrufen* 'appeal to/phone', *bedienen* 'serve', *einladen* 'invite', *treffen* 'meet', *unterrichten* 'instruct', *unterstützen* 'support', ...
c. Verbs with themes (i.e., patients) expressed as datives: NOT FOUND
d. Verbs with themes expressed as accusatives: prototypical transitives

GERMAN MIDDLES (Maling 2001:440, Table 2)

Semantic role	m-case	German verb	Middle
Theme	Acc	*waschen* 'wash'	*sich waschen*
Theme	Dat	none	N/A
Goal	Acc	*bitten* 'ask'	**sich bitten*
Goal	Dat	*helfen* 'help'	**sich helfen*

GERMAN DEPICTIVE PREDICATES (Maling 2001:446, Table 4)

Semantic role	m-case	German verb	Object as depictive host
Theme	Acc	*untersuchen* 'examine'	possible
Theme	Dat	none	N/A
Goal	Acc	*bedienen* 'serve'	not possible
Goal	Dat	*helfen* 'help'	not possible

GERMAN SYNTHETIC COMPOUNDS (Maling 2001)
— Accusative themes can be productively compounded.
— Accusative goals pattern like dative goals: can't compound.

A NONSEMANTIC ALTERNATIVE: Build on Baker's UTAH and posit a more abstract underlying syntactic structure for verbs like *help* in a language like German in order to make them structurally parallel to ditransitive verbs. Could use null prepositions, little v's, extra arguments.

EXAMPLE: Platzack (2005) proposes that German verbs with dative objects have an invisible cognate object, so that *help NP* = 'provide help to NP'.

8.3 Why are interactions verbs often not transitive?

Blume suggests interaction verbs take two Proto-Agent arguments (Dowty 1991), a semantic characterization which leaves their frequent intransitivity unexplained.

PROPOSAL: The (in)transitivity of interaction verbs has three sources: the nature of the semantics-syntax mapping, the verbs' own meanings, and language-specific argument realization options.

• The contribution of an event structure-based theory of argument realization

Interaction verbs have a simple event structure which formally requires them to have a subject only;
The expression of their nonagent argument is open, allowing them to be transitive in some languages and intransitive with an oblique complement in others.

• The contribution of the meaning of the verbs themselves

Interaction verbs are more often intransitive than transitive crosslinguistically, contrasting, for example, with surface contact verbs, which also have a simple event structure, but are often transitive.

WHY THE DIFFERENCE?
The difference arises because surface contact verbs semantically resemble change of state verbs, which are always transitive, more than interaction verbs do.

Surface contact verbs, like change of state verbs, involve the asymmetric transmission of force from one entity to a second, but unlike them do not entail a change in the second entity.
However, most surface contact verbs denote conventional means of achieving particular results (e.g., hitting can cause damage), so they are associated with a cancellable implicature that the force recipient undergoes a change (Talmy 2000).
Apparently, in many languages this qualifies any force recipient for objecthood, even when part of a simple event; hence, these verbs are often among the transitives of a language.

In contrast, the second argument of interaction verbs does not change state, nor is it implied that it will change state, nor is it even a force recipient.
It is not surprising, then, that these verbs are frequently intransitive crosslinguistically.

• The contribution of language-specific argument realization options

Languages where interaction verbs are intransitive with a dative complement have well-developed morphological case systems (e.g., German, Hungarian). The second argument, being sentient, has an affinity for the dative case, which is used with animates (Aristar 1996), particularly possessors.

In English, which lacks a case system, this option is unavailable; rather, a wide range of arguments are expressed as object, and interaction verbs are transitives.

8.4 Refining Blume's classification: Verbs of relative motion

McFadden (2004) argues that Blume's motion subclass of interaction verbs—what he calls "verbs of relative motion"— needs to to be distinguished from the other two subclasses.

(48) Motion verbs: *follow, dodge, meet*

Reinterpreting slightly, he argues that in German the dative NP with the motion class patterns more like an allative NP (i.e., clearly an oblique), while the dative NP with the other interaction verbs patterns more like the dative NP with ditransitives, such as 'give'.

He gives this difference a syntactic implementation positing that:
— the dative NP of motion verbs is introduced within a PP in VP
— the dative NP of other interaction verbs is introduced as a specifier of an applicative little v above the VP (cf. Pylkkänen 2000).

It is interesting that verbs of relative motion pattern distinctly, given that Dowty includes as a Proto-Agent entailment: "movement relative to the position of another participant".

9 Summary and conclusions

• The contribution of event structure to argument realization: Causers have priority for subject selection and patients for object selection, presumably by virtue of the geometry of event structure. The geometry of event structure also determines that causers are more prominent than patients.

• Systematic crosslinguistic differences in the class of transitive verbs across languages can be fruitfully investigated to identify semantic determinants of argument realization and prominence relations between the arguments of two-argument verbs.

• Notions that appear to be relevant to defining semantic prominence relations include force transmission, sentience, movement.

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