Affectedness: an overview

Boban Arsenijević, František Kratochvíl and Joanna Ut-Seong Sio
boban.arsenijevic@filfak.ni.ac.rs, fkratochvil@ntu.edu.sg, ussio@ntu.edu.sg

This talk contains three sections:

- Overview on the notion of affectedness
- A discussion on affectedness and aspect
- New data

1. Overview

Affectedness has been implicated in many important linguistic domains such as verbal semantics, alignment, transitivity and various syntactic operations (middle construction, passive nominalization, etc.). It is also manifested in many genetically unrelated languages (e.g. Sino-Tibetan, Austronesian, Japanese, Papuan, and Indo-European).

1.1 Sensitivity in English

Anderson (1979) observes that nominal passives are only allowed if the pre-posed NP is affected:

(1) a. The barbarians destroyed Rome.
b. Rome's destruction by the barbarians
(2) a. John expressed great relief.
b. * Great relief's expression of John

Transitive predicates would only allow middle formation if the logical object is an affected object (Roberts 1987, Hoekstra and Roberts 1993, Fagan 1992):

(3) The wood splits easily.
(4) *This theorem learns fast.

1.2 Affectedness as an aspectual property

Tenny (1987) argues that the notion of *delimitedness* could subsume affectedness:

"A linguistically described event is delimited if the sentence describes an event as something that

must transpire over a fixed length of time. It does not matter whether that length of time is indicated in the sentence. The sentence or event is delimited if it is understood to mean that there is some point in time after which the event is no longer continuing" (Tenny 1987, 17)

For example, *John split the wood* is delimited because the change of the state of the object places a limit on the event.

Tenny (1987) arrives at a new semantic definition, which applies to five different verb classes (see table below), in which the direct object 'measures out' the event. The duration of the event (whether extended, little or none) is irrelevant (p. 105).

Verb class	Example of verb with direct object	Property of direct object that delimits event
Verbs of creation or consumption	eat an apple draw a circle translate a poem	size or spatial extent
Verbs with event objects	perform a play play a sonata	spatial or temporal extent
Verbs of motion with delimiting paths	cross the desert	spatial extent
Verbs expressing physical change of state	ripen the fruit tighten the cinch	ripeness tightness
Verbs expressing abstract change of state	bribe the offical	bribed-ness
Achievement verbs	explode the bomb	exploded-ness
Verbs of motion	push the cart	i. state of being in motion ii. finite distance moved

"Affectedness may be defined as the property of a verb, such that it describes a situation or happening that can be delimited by the direct argument of the verb. Affectedness verbs describe events which are 'measured out' and delimited by their direct arguments. Affectedness defined in this way as an aspectual property more adequately characterizes the verbs that allow middles and noun phrase passives than the definition of affectedness based on the notion of 'undergoing change'." (Tenny 1987:75)

1.3 Affectedness and transitivity

Hopper and Thompson include affectedness among their 10 transitivity parameters. They understand the degree of affectedness as 'the degree to which an action is transferred to a patient' (p.252-253).

Table 1 Parameters of transitivity (Hopper and Thompson 1980, p. 252)

	High transitivity	Low transitivity
1. Participants	Two participants or more (A and O)	One participant
2. Kinesis	Action	Nonaction
3. Aspect	Telic	Atelic
4. Punctuality	Punctual	Nonpunctual
5. Volitionality	Volitional	Nonvolitional
6. Affirmation	Affirmative	Negative
7. Mode	Realis	Irrealis
8. Agency	Agent high in potency	Agent low in potency
9. Affectedness of O	Object totally affected	Object not affected
10. Individuation of O	Object highly individuated	Object not individuated

In Hopper and Thompson (1980), at least two degrees of affectedness are distinguished – partial and total affectedness. The below Indonesian examples illustrate the distinction.

(5) Dia me-manas-kan air. (total)
3SG AV-heat-APPL water
'S/he heated the water (and the water become hot).'

(6) Dia me-manas-i air. (partial)
3SG AV-heat-APPL water
'S/he was heating the water (the result is unclear).'

1.4 Affectedness and case assignment

Tsunoda 1981 and 1985 examine split case marking patterns that identify larger verb classes in most languages. Examples from Avar, given in Tsunoda (1981:404) can be seen below. The DAT-ABS pattern is used in the 'affective' construction describing perception and emotion.

(7) *ʧanaqan-as bats'* *ʧawana*
hunter-ERG wolf.ABS killed
'The hunter killed the wolf.' ERG-ABS

(8) *inssu-da* *(žindargo)* *was* *wixana.*
father-LOC one's child.ABS saw
'The father saw the child (of his own).' LOC-ABS

(9) *či* *λimaq* *valáhula.*
man.ABS child.APU waits
'A man waits for a child.' ABS-APU

(10) *di-ya* *y-as* *y-ol'-ula*
1SG-DAT FEM-girl.ABS FEM-love-PRES
'I love the girl.' DAT-ABS

These case splits are motivated by many factors, but affectedness holds an important place (B, C, D)

	Effectiveness condition is met: (ERG-ABS)	is not met: (some other frame(s))
(A)	action	state
(B)	impingement on O	non-impingement on O
(C)	O attained	O not attained
(D)	O totally affected	O partially affected
(E)	completed	uncompleted, or in progress
(F)	punctual	durative
(G)	telic	atelic
(H)	resultative	non-resultative
(I)	specific or single activity/situation	customary/general/habitual activity/situation
(J)	O definite/specific/ referential	O indefinite/non-specific/ non-referential
(K)	actual/realized	potential/unrealized
(L)	realis	irrealis
(M)	affirmative	negative

Tsunoda's effectiveness condition (1981:393)

The above conditions typically detect some or all of the borders in the below classification of the verb classes, termed as 'verb-effectiveness hierarchy' (Tsunoda 1981:395).

Type	1		2		3	4	5	6
Meaning	direct effect		perception		pursuit	knowledge	feeling	possession
Examples	kill, break, hit, shoot		see, look, hear, listen, smell		search, wait	know, understand, remember, forget	love, like, want, need	possess
Subtype	1a	1b	2a	2b				
Examples	kill, break	hit, shoot	see	look				

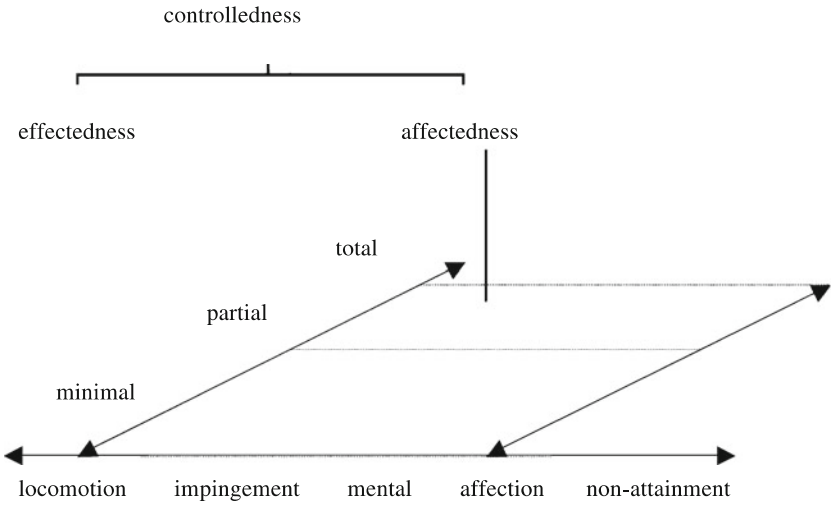
Tsunoda's verb-effectiveness hierarchy (1981:395)

The hierarchy has the more transitive verbs on the left and the less transitive ones on the right. The hierarchy predicts that if a transitive case frame can be used for a certain verb in the hierarchy, then all the verbs to its left (higher) in the hierarchy can have the transitive frame as well. This hierarchy has a loose correspondence to parameters of transitivity in Hopper and Thompson (1980): the verbs in the higher classes (e.g. *hit*, *break*) are more transitive.

1.5 Components of affectedness: domain and degree

Lehmann (1991:221) proposes a two-dimensional affectedness space by quality and quantity as

in Fig. 1. Effected objects are created and therefore do not show grades of existence. Affected objects vary on two dimensions: quality or the domain in which the object is affected: motion, existence, mental, affection, non-attainment; and the quantity or the grade to which an object is affected: total, partial or minimal (from von Heusinger and Kaiser 2011:597).



Two-dimensional affectedness space (Lehmann 1991:221 – representation in von Heusinger and Kaiser 2011:597)

Beaver (2011) also adopts a two-dimensional space for the encoding of affectedness. One dimension represents the types of change, and the other the degree of change. With respect to the types of change, he identifies the following 6 types:

(11)

(a) x changes in some observable property (*clean*/*paint*/*delouse*/*fix*/*break* x)

(b) x transforms into something else (*turn*/*carve*/*change*/*transform* x *into* y)

(c) x moves and stays at some location (*move*/*push*/*angle*/*roll* x *into* y)

(d) x is physically impinged (*hit*/*kick*/*punch*/*rub*/*slap*/*wipe*/*scrub*/*sweep* x)

(e) x goes out of existence (*delete*/*eat*/*consume*/*reduce*/*devour* x)

(f) x comes into existence (*build*/*design*/*construct*/*create* x)

With respect to the degree of change, Beavers (2011) proposes the following "Affectedness Hierarchy":

(12)

(a) x undergoes a quantized change (*break*/*shatter*/*destroy* x)

(b) x undergoes a non-quantized change (*widen*/*cool*/*cut*/*slice* x)

(c) x has a potential for change (*rub*/*punch*/hit x)

(d) x is unspecified for change (*see*/*laugh at*/*smell*/*follow*)

The 4 degrees corresponds to the degree of specificity in the verb about the endpoint of the theme's movement on the path or scale. Value on the left-hand side of the scale is highly specific and value on the right-hand side is unspecified:

Quantized change > non-quantized change > potential for change > unspecified for change

2. Affectedness, aspect and the notion of scale

Formal approaches to affectedness often model affectedness as an aspectual property. This section of the talk aims:

- To give a brief overview of the relation between the lexical aspect and the direct object position, and how this bears on the notion of affectedness.
- To introduce the scalar approaches to aspect and discuss their perspective on affectedness.

2.1 Direct objects and lexical aspect

At least since Verkuyl (1972), it has been observed that the lexical aspect of a VP headed by a transitive verb may depend on the properties of the direct object.

(13) a. John drank for/*in years.

b. John drank beer for/*in years.

c. John drank a beer *for/in 20 minutes.

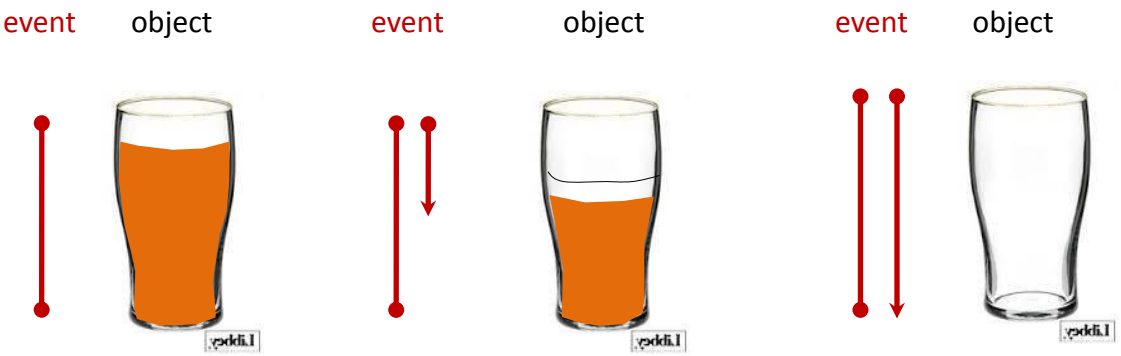
d. John drank beers for/in 20 minutes.

e. John drank 4 beers *for/in 20 minutes.

- **Measuring out**

Tenny (1987, 1994): the direct object enters a measuring out relation with the event.

(14) John drank a pint of beer.



- **Formal accounts of measuring out**

Three families:

i. Set-theoretical (Verkuyl 1972, 2000)

ii. Mereological (Krifka 1989, 1998)

iii. Scale-theoretical (Kennedy & Levin 2008)

Advantage of the scale-based accounts: reducing aspect (verbs), path (prepositions, verbs), degree (adjectives) and prototypicality (nouns) to the same modeling tool.

- **Components**

i. a scalar component SV in the meaning of the verb (i.e. the verb must entail a change: *paint* vs. *love*),
ii. a matching scalar component SO in the meaning of the direct object (a property that may undergo the change entailed by the verb),
iii. a mapping of SV onto SO (e.g. *drinking over beer* / *a beer* / *beers* / *3 beers*).

In 'J drank beers for/in 20 minutes', 'in 20 min.' distributes too, 'for 20 min.' does not.

- **Locative alternation**

In the locative alternation, the only difference between the two variants is in what measures out the event.

(15) a. John loaded the hay on the truck.
(all hay: the hay is measuring out)
b. John loaded the truck with hay.
(full truck: the truck is measuring out)

Still asymmetric with a referential locatum:

c. John loaded the truck with the hay.
(one interpretation: all hay + full truck)

- **Conative alternation**

In the conative alternation, the difference between the two variants is in the (im-)possibility of bounding the scale (dissociating the scales).

(16) a. Robin hammered the nail (flat), #but it wasn't affected by it.
b. Robin hammered at the nail (*flat), but it wasn't affected by it.

c. Robin hammered on the nail (*flat), but it wasn't affected by it.

(Ghomesh & Massam 1994: 203)

- **Event decomposition analyses**

(i) Dowty (1979), Parsons (1989): telic events include minimally one process component (act, do, cause, become) and one state component (be).
(ii) Arsenijević (2006), Ramchand (2008): the object of the process component is the subject of the result component.
(iii) The result specifies the final value reached of the dimension under change in the process.

- **Expression of the result**

The result can be expressed (any combination of 1-3 is also possible):
1. by the verb,
2. as a separate constituent (goal phrase, resultative secondary predicate),
3. by a prefix or particle,
4. by a verb in a serial verb construction.

2 and 3 express predicates over the object (SO)

- **Manner-result complementarity**

- One verb cannot express both manner and result at the same time (Rappaport Hovav & Levin 2010).
- Exception: verbs of manner of death (Koontz-Garboden & Beavers 2011)? (also climb etc.)
- Arsenijević (2012) shows no result is entailed:

(17) a. They hang/electrocuted/#killed John, but he survived.
b. The zombie was gillotined/??killed.

- **Entailment vs. presupposition**

- In other words, the verb either provides a specification of manner, or boundaries for a scalar component.
- Manner expressing verbs may presuppose boundaries of the scale (Husband 2012) and/or take additional constituents to introduce them.

(18) a. Mary climbed the mountain.
b. John danced (Mary into the ball room).

- **Types of scales**

- Closed and open scales.
- On the verb:

(19) a. John built a sand castle in/*for an hour.
b. John heated the water in/for an hour.

- On the direct object (granularity variation):

(20) a. John built a sand castle in/*for an hour.

(between a nonexistent and a complete castle)
b. John built sand castles *in/for an hour.
(between zero and an infinite number of castles)

- **Dependencies**

- Only closed scale verbs are strongly sensitive to the properties of the scale provided by the object.
- Open scale verbs show only a weak sensitivity.

(21) a. John lengthened the rope for/in an hour.
b. John lengthened ropes for/in an hour.
(telic versions take a context-given result length)

- **Types of scales…**

Levin (2010), Beavers (2013), a.o. identify three relevant types of scales:

- 1. physical extent (count : mass = closed : open),
- 2. scalar properties (temperature, size along different dimensions, open or closed) and
- 3. directed paths (by default open).

(22) a. John ate the pie.
b. John warmed the pie (up/to 100°C).
c. John walked (up/to the café).

- **… and their bounders**

Incremental theme verbs (physical extent) tend to have measuring out objects.

Degree achievements (scalar property change) and motion verbs (path scales) require an additional constituent to measure the event.

(23) a. John ate the pie.
b. John warmed the pie (up/to 100°C).
c. John walked (up/to the café).

- **Affectedness**

Several degrees of strength of the notion of affectedness on the object:

1. the strongest: incremental themes (physical extent, existence),
2. moderate: location/gradable property (reversible/irreversible relevant?) and
3. the weakest: no matching scales between the object and the verb.

Interim summary

- Aspect and affectedness well captured (and related) in terms of scales.

- Verbs can entail open and closed scales.
- Manner verbs cannot entail closed scales.
- When the verb entails a closed scale, it gets measured out by a matching scale denoted by an object (undergoer).
- When the verb entails an open scale, it gets bounded by a goal which maps onto the scale.

➢ **Direct objects**

- The direct object is best captured in terms of a syntactic position expressing the participant that measures out the event.
- When the verb carries no suitable scale, hence licensing no measuring out relation, (for reasons of economy?) non-measuring out arguments may take the direct object position.

➢ **Predictions and questions**

P1: Incremental theme verbs do not take goals.
P2: Closed scale verbs require measuring out objects, hence cannot describe states.

Q1: Why the mapping goes from the object to the verb? Is it like that in all languages (with direct objects)?
Q2: What happens with psych verbs? Do they ever establish the measuring out relation and how is it interpreted?
Q3: Are there languages without anything that consistently shows the properties of direct objects? Are these languages sensitive to the measuring out relation?
Q4: Is there any reality to the notion of affectedness or is it just a vague reference to a set of phenomena, including measuring out, types of scales (open / closed) and types of dimensions targeted (physical extent, gradable property, non-gradable property) which conspire to determine parameters such as the syntactic position and case marking?

3. New data

Given affectedness is such a complicated construct (with its tentacles stretching over various grammatical domains), one of the aims of this project is to bring in new data from various languages which might introduce new perspective on the issue. In what follows, we will present some examples from Czech and Cantonese.

3.1 Czech

In Czech, both transitive and intransitive verbs admit prefixes (with spatial meanings) that indicate or modify the aspectual properties of the verb and also, importantly, indicate various degrees of affectedness. It is a very productive process. Below, the possible alternations with the verb *řezat* 'cut' can be seen. Depending on the degree of manipulation, different prefixes can be chosen (*na-, vy-, po-*, etc.) Reflexive pronouns measure the 'effect' on the agent, who undergoes a change (here runs out of steam and stops cutting). The object of cutting, whose degree of

affectedness seems irrelevant here, receives the genitive case.

(24) Pavel řezal kládu.
P. cut.3SG.PST log.SG.ACC
'Pavel was cutting a log/the log.'

(25) Pavel **na-**řezal kládu.
P. on-cut.3SG.PST log.SG.ACC
'Pavel cut up a log/the log. [all of it into smaller pieces]'

(26) Pavel vy-řezal pokojíček.
P. out-cut.3SG.PST dollhouse.SG.ACC
'Pavel carved out a dollhouse.'

(27) Pavel se na-řezal klády.
P. REFL.ACC on-cut.3SG.PST log.SG.GEN
'Pavel cut a/the log [but run out of steam].'

(28) Pavel se na-řezal klád.
P. REFL.ACC on-cut.3SG.PST log.PL.GEN
'Pavel cut logs [but run out of steam].'

(29) Pavel si na-řezal klád.
P. REFL.DAT on-cut.3SG.PST log.PL.GEN
'Pavel cut logs [a sufficient amount of wood for his own use].'

Verbal prefixes can be doubled, giving rise to yet other readings:

(30) táta se na-vy-řezal pokojíčků
daddy REFL.ACC on-out-cut.3SG.PST dollhouse.PL.GEN
'Father carved many dollhouses [throughout his life/time he spent doing it]'

(31) táta si je krásně po-vy-řezával
daddy REFL.DAT 3PL.F.ACC beautifully along-out-cut.3SG.PST
'Father carved them [the boards] beautifully [just on the surface].'

Czech intransitive verbs allow similar alternations.

(32) Pavel běžel/běhal.
P. run.3SG.M.PST/ran.ITER.3SG.M.PST
'Pavel ran /was running, used to run.'

(33) Pavel si za-běhal.
P. REFL.DAT beyond-run.ITER.3SG.M.PST
'Pavel ran (a sufficient amount of time or distance to his own satisfaction).'

(34) Pavel se vy-běhal.
P. REFL.ACC out-run.ITER.3SG.M.PST
'Pavel ran (a maximum distance or amount of time he planned or was able to).'

(36) Pavel se pře-běhal.
P. REFL.ACC over-run.ITER.3SG.M.PST
'Pavel ran (more than a maximum distance or amount of time and was not able to run anymore and had to quit running – at least for some time).'[1]

The alternations apply to both unergative and unaccusative verbs, as show below.

(37) Pavel spal.
P. sleep.3SG.M.PST
'Pavel slept.'

(38) Pavel si po-spal.
P. REFL.DAT along-sleep.3SG.M.PST
'Pavel slept (a certain amount of time, or enough to feel somewhat rested).'

(39) Pavel se vy-spal.
P. REFL.ACC out-sleep.3SG.M.PST
'Pavel slept (a sufficient amount of time, or enough to feel rested).'

(40) Pavel se pře-spal.
P. REFL.ACC over-sleep.3SG.M.PST
'Pavel slept too much (slept longer then needed and suffers headache or in some other way in result).'

3.1 Cantonese

In Cantonese, the post-verbal particle *can* denotes a special kind of affectedness:

(41) ngo zong-can zek maau aa
1SG bump.into-CAN CL cat SFP
"I bumped into the cat (and as a result the cat was negatively affected to a small degree)."

In (41), if the cat was killed, it would not be an accurate statement. If the cat was bruised, (41) would give a correct depiction of the situation. In brief, the "end-point" of the effect of the action is **not specific**, but it cannot be too severe.

The particle *can* seems to involve two scales. With respect to what types of verbs would be

[1] Bývalý běžec, který *se přeběhal* a po několika zraněních přestal běhat. (lit. A former runner, who ran too much/injured himself running, and after several injuries quitted running all together.) source: http://www.bezvabeh.cz/blogy/1334-jiti

compatible with *can*, if we adopt Beavers' (2011) 4-degree scale, *can* seems to be only compatible "non-quantized change" and "a potential for change". In (41), *zong* "bump.into" belongs to the class "a potential for change". *Can* also involves another scale, when a cat was being "bumped into", the cat could be affected slightly (with no visible damage) or it could be dead. Within this scale, it seems that *can* is only allowed if the degree of the effect of the action is small.

It should also be noted that physical contact is not required for *can* to be used. The following examples are also possible:

(43) lei haak-can keoi laa
2SG frighten-CAN 3SG SFP
"You frighten him/her (and as a result she is mildly scared)."

(44) lei faan-can keoi laa
2SG annoy-CAN 3SG SFP
"You annoy him/her (and as a result she is mildly annoyed)."

However, there is a requirement that the object must be sentient:

(45) ngo tek-can zek mau/ #bui aa
1SG kick-CAN CL cat/ cup SFP
"I kicked the cat (and as a result it is mildly affected)."
"I kicked the cup (and as a result it is mildly affected)."

The addition of *can* also has an effect on the argument structure:

(46) ngo tau-sin jau-mou zong-can lei aa?
1SG just then have-not.have bump.into-CAN QP
"Did I bump into you and hurt you mildly?"

(47) # ngo jau-mou zong lei aa?
1SG have-not.have bump.into 2SG QP
Intended reading: "Did I bump into you (on purpose)?"

(47) is strange as the speaker should know whether he has bumped into someone or not. (46), on the other hand, sounds fine. This seems to suggest that when *can* is added to a verb, the agent the verbal complex selects is non-controlling. The agent has no control over whether the object is affected or not.

In brief, the Cantonese *can* seems to involve two scales, and it interacts with sentience and control.

4. Summary

What we know:

- Affectedness is a semantic notion which seems to play a role in verbal semantics, alignment, transitivity and various syntactic operations (middle construction, passive nominalization, etc.) across languages.
- Affectedness is understood as a two dimensional space: degree of change and types of change.
- Affectedness is often modeled as an aspectual property formally.

What we want to know:

- The nature of the scale and the types of change (is Beaver's model, the most elaborate to date, refined enough?)
- What are the dimensions that are relevant for affectedness? Animacy? Control? Definiteness of the object?
- What would a study of affectedness across languages tell us about the semantic features of verbs?
- And many more….

Selected bibliography

Anderson, Mona Katherine Johnson. 1979. *Noun phrase structure*. PhD Thesis. University of Connecticut.

Arsenijević, Boban. 2006. *Inner aspect and telicity: the decompositional and the quantificational nature of eventualities at the syntax-semantics interface*. Utrecht: LOT.

Beavers, John. 2011. On affectedness. *Natural Language & Linguistic Theory.* 29 (2): 335-370.

Beavers, John. 2013. Aspectual classes and scales of change. *Linguistics.* 51 (4): 681-706.

Beavers, John, and Andrew Koontz-Garboden. 2013. Complications in diagnosing lexical meaning: A rejoinder toHorvath and Siloni (2013). *Lingua* 134: 210-218.

Dowty, David. 1991. Thematic Proto-Roles and Argument Selection. *Language.* 67 (3): 547-619.

Egerland, Verner. 1998. The Affectedness Constraint and AspP. *Studia Linguistica.* 52 (1): 19-47.

Fillmore, Charles. 1968. The case for case. In E. Bach and R.T. Harms (eds.), *Universals in language*, 1-88. New York: Holt, Rinehart & Winston.

Hale, Kenneth, and Jay Keyser. 1987. *A view from the middle*. Lexicon Project, Center for Cognitive Science, Massachusetts Institute of Technology.

Hopper, Paul J., and Sandra A. Thompson. 1980. Transitivity in Grammar and Discourse. *Language.* 56 (2): 251-299.

Hopper, Paul J. Causes and affects. Papers from the Parasession on Causitives and Agentivity at the 21st Regional Meeting of the Chicago Linguistics Society. Chicago Linguistics Society. 1985.

Kenny, Anthony. 1963. *Action, emotion and will*. London: Routledge & K. Paul.

Lehmann, Christian. 1991. Predicate classes and PARTICIPATION. In H. Seiler & W. Premper (Eds.), *Partizipation: Das sprachliche Erfassen von Sachverhalten*, 183–239. Tübingen: Narr.

Næss, Åshild. 2007. *Prototypical transitivity*. Amsterdam: John Benjamins.

Tenny, Carol. 1987. *Grammaticalizing aspect and affectedness*. PhD Disertation. Cambridge, MA: Dept. of Linguistics and Philosophy, Massachusetts Institute of Technology.

Verkuyl, H. J. 1972. *On the compositional nature of the aspects*. Dordrecht: Reidel.