# Two Positions with Distinct Semantic Interpretations in ASL

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Situation types of verb constellations may be shifted through the addition of tense/aspectual morphology and/or adverbial phrases, among other elements (Smith 1997). It is shown that situation types may also be shifted according to the position of an element with respect to the verb. In particular, if the element is in sentence-final position, the situation type of the verb constellation shifts to a resultative event (= accomplishment) reading. Evidence is drawn from data with individual-level vs. stage-level predicates and as well as SELF constructions in American Sign Language (ASL). The distinctions among the different readings are formalized within the (Segmented) Discourse Representation Theory ((S)DRT) (Kamp and Reyle 1993, Asher 1993) and further supported with ASL data on negation, temporal ordering and aspectual modulations. Two possible syntactic structures are offered for the different positions of the grammatical element that may determine the situation type of the verb constellation.

## 1. Introduction

Each sentence describes a situation that can be associated with one of the situation types delineated by Vendler (1967), Dowty (1979) and Smith (1997), among others. Smith (1995) provides the following examples of different situation types.[1]

| | | | |
|---|---|---|---|
| (1) | i. | Achievement | *Ex.* Mary won the race. |
| | ii. | Accomplishment | *Ex.* Mary built a house. |
| | iii. | Activity | *Ex.* Mary laughed. |
| | iv. | State | *Ex.* Mary knows the answer. |

(examples adapted from Smith 1995)

In Smith's (1995) words, achievements are dynamic, telic instantaneous events. For example, Mary's winning the race is an activity that happens in an instant and has a natural endpoint. In contrast, accomplishments are durative, that is, they happen over a period of time but otherwise they have a natural endpoint. Mary's building a house takes time, but eventually she finishes building the house. An activity is similar to an accomplishment except that there is no natural endpoint. While knowledge of the world dictates that Mary's laughing is bound to stop sooner or later, there is no obvious endpoint. Finally, states differ from all the other types in that they describe some property rather an activity. Mary's knowing the answer is a property of Mary and does not refer to any particular activity, although there may have been some activity beforehand to arrive at the state that Mary is in now.

[1] Smith (1995, 1997) also includes semelfactives in her typology, which shall not concern us here.

Naturally, each language can express all of the situation types. The lexical semantics of each verb constellation usually can be correlated with a particular situation type, as we have seen above. Smith (1995) calls this the basic level of categorization. For example, the phrase *to win a race* is inherently an achievement while *to build a house* is an accomplishment. Languages may vary in the correlations between verbs and situation types; for example, a verb in one language may describe an achievement, while the closest translation in another language may actually describe an accomplishment. Overall, however, each language has its own means for expressing each situation type.

There is another level where we can understand the situation types, which Smith (1995) calls the shifted level. The basic situation type of a verb constellation may be shifted to another type. Such a shift can be triggered through interaction with additional material, such as tense and aspectual morphology and/or adverbial or prepositional phrases. Here are some relevant examples from Smith (1997).

(2)
| | | |
|---|---|---|
| i. | Achievement | *Ex.* Mary deliberately broke the glass. |
| ii. | Accomplishment | *Ex.* Sam was opening the door. |
| iii. | Activity | *Ex.* Emily voluntarily pushed the cart. |
| iv. | State | *Ex.* Mary was sick for three days. |

(examples from Smith 1997)

The phrase *to break the glass* describes an activity; when the adverb *deliberately* is added and the past tense is used, the situation type is shifted to an achievement. Similarly, *to open the door* describes an achievement; this situation type is shifted to an accomplishment when the imperfective aspect is used.

It is such shifts in situation type that I wish to focus on in this paper. While we have seen from the above examples that adverbials and tense/aspect morphology may condition a shift in the situation type of a verb constellation, I wish to suggest that there is another means of conditioning a situation type shift: by varying the position of a grammatical element with respect to the verb such as temporal aspect, adverbials of negation and modals. In particular, if the grammatical element is in sentence-final position, the situation type of the verb constellation shifts to one of an accomplishment.

This paper reports on the preliminary findings from American Sign Language (ASL) in regard to the above suggestion. It will first elaborate on the different readings that a sentence can have in ASL depending on the position of the grammatical element. To justify the distinctions among the different readings, evidence will be drawn from two sources: (i) interactions with individual-level vs. stage-level predicates and (ii) interactions with SELF constructions in ASL. Next the paper will formalize the distinctions using (Segmented) Discourse Representation Theory ((S)DRT) (Kamp and Reyle 1993, Asher 1993). Support for the proposal will come from data on negation, temporal ordering and aspectual modulations. Finally, the paper will close with a discussion of possible syntactic structures for the different positions of the grammatical element and how they may determine the situation type of the verb constellation.

## 2. Two positions

In ASL, there is one aspectual marker glossed as FINISH. This sign is used in two different ways, first as a verb meaning 'to complete, finish' or as an imperative verb meaning 'stop!' or 'cut it out'. This is not to be confused with the aspectual meaning that roughly indicates perfective aspect. In all the following examples, I will be referring to the second sense. The sign may appear in one of two positions: pre-verbal or sentence-final.

(3) a. JOHN **FINISH** COOK SALMON
'John has cooked salmon'

b. JOHN COOK SALMON **FINISH**
'John has cooked salmon'

This phenomenon has been noted in the sign language literature for various signs (e.g. Fischer and Gough 1972, Petronio 1993, Matsuoka 1997, Wood 1999 and Neidle, Kegl, MacLaughlin, Bahan, and Lee 2000). I return to some of this work at the end.

Depending on the position of FINISH, there are three possible readings: resultative event, achievement, or state. While Smith (1997) and others use the term 'accomplishment', I prefer to use 'resultative event' in the discussion of ASL because it describes the meaning more closely: a resultative event indicates that as a result of a particular process, an event has come to an end.

(4) a. *Resultative Event (=Accomplishment) reading*
'John has so far cooked salmon, i.e. so far, a process has occurred through which the event of John's cooking salmon has come to an end'

b. *Achievement reading*
'John has cooked salmon, i.e. the event of John's cooking salmon has happened, without implications about the process leading to the end'

c. *Stative reading* (including the generic reading)
'John has in general cooked salmon, i.e. cooking salmon is a property that John does have in general, which other people may or may not have'

When FINISH is in the pre-verbal position, it is ambiguous between achievement and stative readings. When it is in the sentence-final position, the resultative event reading is the strongest, while the achievement reading is possible although weak.

(5) JOHN { **FINISH** / #[2] resultative event / √ achievement / √ stative[3] } COOK SALMON { **FINISH** / √ resultative event / # achievement / * stative }

[2] I use '√' to indicate that the reading is possible; '#' pragmatically odd; '?' awkward compared with other readings; and '*' impossible.

[3] There is a generic reading in which John has the ability to cook salmon. I subsume this reading under the stative reading. I assume that the stative reading always has the option of leading to such a generic reading.

The resultative event and achievement readings both indicate that an event has occurred at a specific time and place. While the resultative event and achievement readings entail the same result, the achievement reading stresses the result, whereas the resultative event reading stresses the process leading to the result. The stative reading is close to the achievement reading, with the difference that the achievement reading locates the event at a particular time, while the stative reading specifies a property that John has regardless of time.

## 3. Evidence for the distinct readings

In this section, I present two kinds of evidence for the distinct readings correlating to the position of the grammatical element FINISH: (i) interactions with stage-level vs. individual-level predicates and (ii) interactions with SELF constructions.

### 3.1 Stage-level versus individual-level predicates

Sentence with stage-level predicates like STUDY pattern like the above examples, as shown in (6).

(6) *Stage-level predicate*

a. Pre-verbal position
I **FINISH** STUDY FRENCH
? resultative event reading: 'So far, I have studied French.'
√ achievement reading: 'I have studied French.'
√ stative reading: 'In general, I study French.'

b. Sentence-final position
I STUDY FRENCH **FINISH**
√ resultative event reading: 'So far, I have studied French.'
* achievement reading: 'I have studied French.'
* stative reading: 'In general, I study French.'

However, a different picture emerges in (7) with individual-level predicates like KNOW. For some reason, FINISH cannot precede an individual-level predicate but ALREADY may appear instead. The only difference is that the optional mouthing for FINISH indicates the English word 'finish' while that for ALREADY indicates 'already'. There are then no surprises regarding (7a): as in (6a), when the element is pre-verbal, either a stative or an achievement reading is possible.

Given the stative reading induced by individual-level predicates, the absence of any felicitous reading in (7b), where FINISH is sentence-final, reveals a conflict with and therefore diagnoses the presence of the resultative event reading..[4]

(7) *Individual-level predicate*

a. Pre-verbal position
I **(*FINISH)/ALREADY** KNOW FRENCH
? resultative event reading: '(After studying a lot) I know French.'
√ achievement reading: 'I know French.'
√ stative reading: 'I know French in general.'

b. Sentence-final position
I KNOW FRENCH **FINISH**
# resultative event reading: '(After studying a lot) I know French.'
* achievement reading: 'I know French.'
* stative reading: 'I know French in general.'

### 3.2 SELF constructions

Padden (1983) has described an ASL sign, SELF, that can be associated only with the subject. Inspite of the gloss, SELF is not used as a reflexive but rather is used to introduce and emphasize information about the subject. It must appear adjacent and to the right of the subject.

(8) a. √ HE$_a$ **SELF$_a$** (ALWAYS) INFORM

b. * HE$_a$ (ALWAYS) INFORM **SELF$_a$**
'He is always good about informing (other people).'

The subscript 'a' to the right of HE and SELF indicates that these signs are articulated at the same point in the space in front of the signer; this ensures that HE and SELF are co-referential. (The sentence in (8b) may be grammatical if the sign SELF is understood as a reflexive; however this is signed differently than when it is used to introduce information about the subject.) .

The contrast in (8) has no analogue in English. While the English word 'himself' cannot be used in the same sense as SELF in ASL, it can be used in another sense apart from being a reflexive, namely, that of an intensive adverbial. Unlike in ASL, the alternative reading of the reflexive is available regardless of whether it appears adjacent and to the right of the subject or at the end of the sentence.

(9) a. John **himself** informed Mary.
b. John informed Mary **himself**.

The contrast between (8) and (9) shows that ASL uses the pre-verbal vs. sentence-final position to make a distinction among the possible readings, whereas other languages like English may not use such a distinction. Moreover, in ASL, each position is correlated with certain readings. For example, the sentence-final position is correlated with a resultative event reading. If SELF appears in this position, a clash occurs between the accomplsihment reading induced by the sentence-final position and the stative reading induced by the sign SELF, which predicates of the subject the property denoted by the verb phrase, hence explaining why (8b) is marked.

[4] A similar generalization holds for the ASL sign NEVER. Pre-verbal NEVER in (i) is consistent with the stative reading that humans can never fly, but sentence-final NEVER in (ii), correlated with a resultative event reading, is awkward at best, because it carries the implication that the event of humans flying is possible at another time.

(i) √ I **NEVER** FLY
'I do not fly in general (in the sense of birds flying, as opposed to flying on a plane).'

(ii) # I FLY **NEVER**
'I have not yet flown (in the sense of birds flying, as opposed to flying on a plane).'

## 4. Formalizing the distinctions among the readings

We have seen that when an element is in pre-verbal position, the stative and achievement readings are more salient. When an element is in sentence-final position, the resultative event reading is strongly preferred. The distinctions among the readings and their correlations with the structural position of FINISH are formalized within the (Segmented) Discourse Representation Theory ((S)DRT) developed by Kamp and Reyle (1993) and Asher (1993), among others.

Like Smith (1997), Kamp and Reyle (1993) note that the situation type (or in their terms, Aktionsart) of the sentence in English depends on the presence of temporal adverbs (TAs), on the value of tense, and on whether the verb is stative ([+/-STAT]). They (1993: 543) propose a construction rule for sentences with temporal adverbs called CR.$S'_{TA=<TENSE, STAT>}$ that derives DRSs for the structures in (10) depending on the tense and aspect of the verb.

(10) (i) 

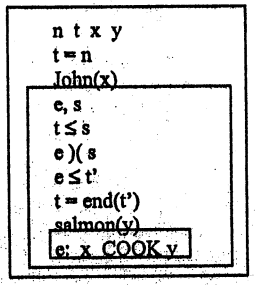
(ii) 

(iii) 


The structures differ with respect to the position of the temporal adverb. In (11ii), the adverb is to the left of the sentence while in (11iii), the adverb is in a sentence-final position. Inspite of these differences , the construction rule provides the same DRS for these structures.

In light of the ASL data, I propose to adapt the construction rule so that different DRSs are generated corresponding to the position of FINISH. In particular, I propose that (11ii) in which the adverb is preverbal[5] leads either to the kind of DRS for the [+STAT] value when a generic operator is present or otherwise to the DRS for the [-STAT] value. However, the structure in (11iii) can lead only to a DRS with the [-STAT] value.

(11) JOHN COOK SALMON **FINISH** (resultative event reading)



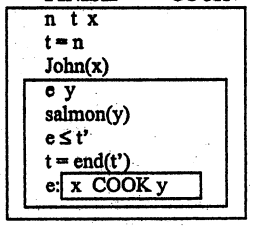

In the above DRS, the following variables are introduced: n, t, x, and y, where t represents a certain time, n represents the time of the utterance, and x and y belong to the domain of individuals. The next line sets the time equal to the time of the utterance, while the following line fixes the value of x as John.

[5] The structure would actually be modified slightly so that the adverb is not before S, but between the external argument and the verb phrase.

In the sub-box, two further variables are introduced: e (for some event) and s (for some state).The line 't ≤ s' means that the time that the following takes place holds under the state s, while the line 'e )( s', in the notation of Kamp and Reyle (1993: 573), says that "s starts the very moment e ends." This is essential for the resultative event reading, since the event has led to a result which is now the present state. The next part "e ≤ t' and t = end(t')" says that the event has taken place up to now, and the last box indicates the predicate that forms part of the event.

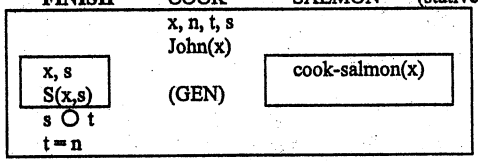
The DRS for the achievement reading is similar to the resultative event DRS except that the lines "t ≤ s" and "e )( s" are missing. There is no reference to any state s, i.e. no reference to any resulting outcome of the event, so that the DRS just indicates that the event has taken place without any further reference to the process leading up to the completion of the event.

(12) JOHN **FINISH** COOK SALMON (achievement reading)




In the DRS for the stative reading, there is no reference to any event e but only a reference to a state s. Captial S indicates a predicate (such as having a skill) that involves both the variable x and the state s, which is described by the smaller box on the right. The notation "s O t" indicates that the state applies over time indefinitely. The next line "t = n" fixes the time as being equal to now, but is used only as an example. The time may be fixed elsewhere, e.g. "yesterday(t)" or "on-Sunday(t)" since states like 'being sick' can occur at certain times.

(13) JOHN **FINISH** COOK SALMON (stative reading)




The stative reading may lead to a generic reading, in which case the operator GEN is inserted as shown above, and the time is set equal to **n** (now) so that the state applies over time generally.

## 5. Supporting data for the formal characterizations

To test the above formal characterizations, this section shows how these generalizations apply not only to FINISH but also to other grammatical elements such as adverbs of negation. The preceding discussion is not due to a peculiar property of FINISH but is generalizable to other elements that appear in either position. Next I present two other pieces of closely related

data: temporal ordering and aspectual morphology. They involve events with more complex internal structure. The prediction is that if the element is in sentence-final position, the process leads up to the event so that the complex internal structure of the event will affect the reading, whereas if the element is in pre-verbal position, the complex internal structure will make no difference and will allow several possible readings.

5.1 Negation

The paradigm that we have seen with FINISH applies to NEVER and NOT-YET. NEVER indicates that an event has not taken place over any particular time frame; and NOT-YET indicates that an event has yet to occur within a time frame. The sentences can generate several readings, whose availability depend on the position of the negation.

(14) JOHN {NEVER / NOT-YET} COOK
# resultative event
√ achievement
√ stative

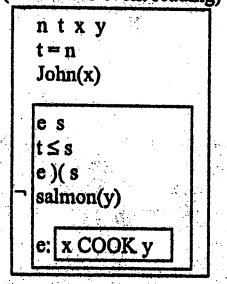
SALMON {NEVER / NOT-YET}
√ resultative event
# achievement
* stative

Resultative event: 'John has {never, not-yet} gone through the process of cooking salmon & completed it'
Achievement: 'John has {never, not-yet} completed cooking salmon'
Stative: 'John does {never, not-yet} have the property of having cooked salmon'

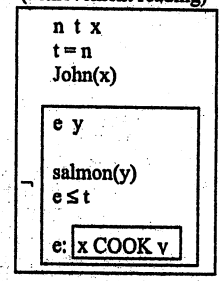
As with FINISH, when negation precedes the verb phrase, the achievement and stative readings are possible, but when negation appears at the end of the sentence, it is the resultative event reading that stands out most strongly. I present the following DRSs for sentences with NEVER.

(15) α = NEVER

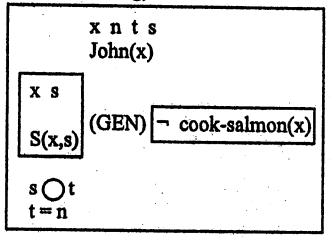
JOHN COOK SALMON α (resultative event reading)




JOHN α COOK SALMON (achievement reading)




JOHN α COOK SALMON (stative reading)

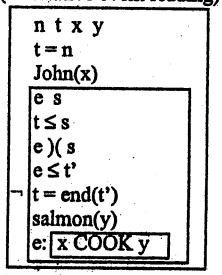



The resultative event DRS for NEVER is parallel to the resultative event DRS for FINISH in (11). The DRS for NEVER differs in that the negation operator (¬) is present and in that the reference to time applies only to the current time (t = n) and not to any span of time leading up to the present time; note that the line as "t = end(t')" is missing. The achievement DRS for NEVER also parallels the achievement DRS for FINISH in (12). Again, the difference is in the presence of the negation operator. Similarly, the stative DRS parallels the stative DRS for FINISH in (13) and differs in the placement of the negation operator before the predicate 'cook-salmon'.

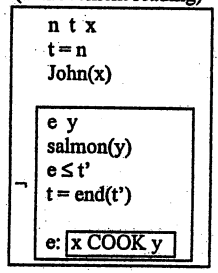
The DRSs for sentences with NOT-YET differ from the FINISH DRSs in that there is a negation operator present and they differ from the NEVER DRSs in that they define the current time (t =n) as being the end of the time (t') over which the event has taken place (t = end(t')).

(16) α = NOT-YET

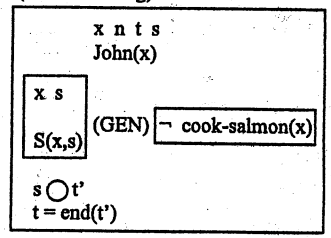
JOHN COOK SALMON α (resultative event reading)




JOHN α COOK SALMON (achievement reading)




JOHN α COOK SALMON (stative reading)




Regardless of whether the grammatical element is FINISH or NEVER, there is a correlation between the position of the element and the interpetation of the sentence. If the element is sentence-final, we are interested in the process leading up to the event. In contrast, when the element is in pre-verbal position, we are not so much interested in the process leading up to the event, so that other readings are possible, i.e. the achievement and stative readings.

5.2 Temporal ordering

I turn to the next piece of supporting data from complex verb predicates that describe several events such as swimming, running, and sunbathing. This predicate has complex internal structure since it consists of different activities named in a particular order. The prediction is that when the element is sentence-final, the interpretation (i.e. the resultative event reading), which is concerned with the nature of the process leading up to the result, is sensitive to the particular order that the activities are named, but not necessarily so when the element is pre-verbal.

When FINISH is sentence-final as in (17a), it indicates that the three events are executed in the particular order that they have been named. In contrast, when FINISH is pre-verbal as in (18b), the sentence permits not only that reading but also other readings in which the activities are ordered differently than the order in which they are named.

(17) a. JOHN [SWIM RUN SUNBATHE] **FINISH**
√ resultative event reading: 'John has swum, run, and sunbathed (in that order).'
# achievement reading: 'John has swum, run and sunbathed'
* stative reading: 'John swims, runs, and sunbathes.'

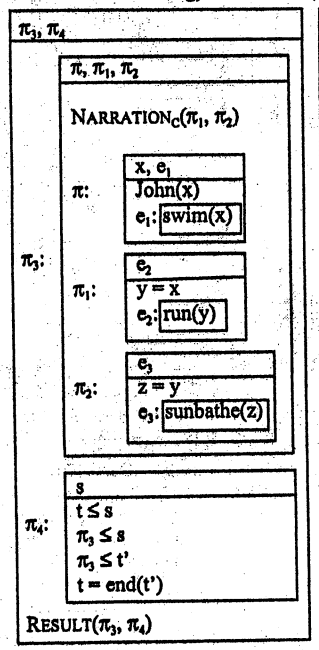
b. JOHN **FINISH** [SWIM RUN SUNBATHE]
* resultative event reading: 'John has swum, run, and sunbathed (in that order).'
√ achievement reading: 'John has swum, run and sunbathed'
√ stative reading: 'John swims, runs, and sunbathes.'

The DRS for (17a) uses certain discourse relations within Asher's (1993) Segmented Discourse Representation Theory (SDRT): (definitions are from Lascarides and Asher 1993):

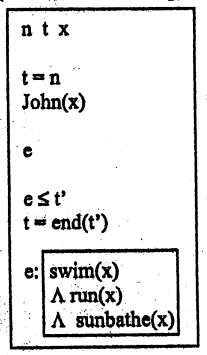
(18) i. ELABORATION(α,β): The event described in β is part of the event described in α
*Ex.* Mary had a great time. She went to an ASL show.
ii. NARRATION(α,β): The event described in β is a consequence of (but not strictly speaking caused by) the event described in α.
*Ex.* Mary went to an ASL show. Then she went out to a party.
iii. RESULT(α,β): The event described in α caused the event or state described in β.
*Ex.* Mary saw one ASL show. She was inspired to study ASL.

(19) Let S, R, S = [SWIM RUN SUNBATHE]

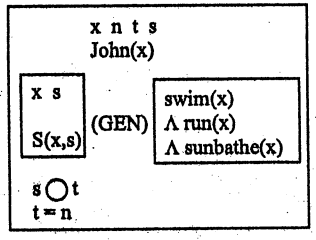
JOHN [S, R, S] **FINISH** (resultative event reading)




JOHN **FINISH** [S, R, S] (achievement reading)




JOHN **FINISH** [S, R, S] (stative reading)




The resultative event DRS shows that the three events of swimming, running, and sunbathing occur in a NARRATION relation to one another. Using the NARRATION relation helps to encode that the temporal order among these events is important. That is, the event of swimming precedes the event of running, which in turn precedes the event of sunbathing. The lower box within the structure encodes the result that arises from these events. Note this part of the structure is parallel to the resultative event DRS for FINISH in (11); this structure ensures that we are interested in the process that leads up to the completion of the events, which are earlier related through NARRATION. Hence the interpretation is sensitive to the temporal ordering that NARRATION imposes: the structure means that John has finished swimming, running, and sunbathing in that particular order and not in any other order.

In contrast, the achievement reading is not sensitive to such ordering. Accordingly, there is no representation of NARRATION in the achievement DRS structure. The difference is clear: all the events are listed together, so that it does not matter in what order they occur, although one may use the order in which they are named as the default order according to Asher's (2001) Maximize Discouse Coherence principle, which says that "in updating a discourse context τ with new information ϕ, choose an attachment point or discourse relation if this is not already determined by the logic for computing discourse structure that leads to the production of an update that is τ, ϕ maximal. A τ, ϕ maximal update is one in which a maximal number of underspecified elements have been resolved and in which each discourse relation in the structure is as strong as it can be" (Asher 2001).

For example, the sentence can be interpreted as meaning any one of these sentences: (i) I swam, ran, and sunbathed; (ii) I swan, sunbathed, and ran; (iii) I ran, swan, and sunbathed; (iv) I ran, sunbathed, and swam; (v) I sunbathed, ran, and swam, or (vi) I sunbathed, swam, and ran.

Otherwise, the parallel is preserved with the DRSs for the achievement readings that we have seen so far, e.g. the one in (12). In particular, there is information about the fact that the event has taken place up to now (t = end(t')).

The stative DRS is parallel to the basic DRS structure for the stative reading in (13), with the difference being that the predicate now consists of three conjoined predicates instead of just one. Like with the achievement reading, there is no NARRATION represented so that the interpretation is not sensitive to the particular temporal ordering of the events.

Moreover, with regard to the resultative event DRS in (20), the sign FINISH can be further analyzed as part of ELABORATION. Consider the following contrast:

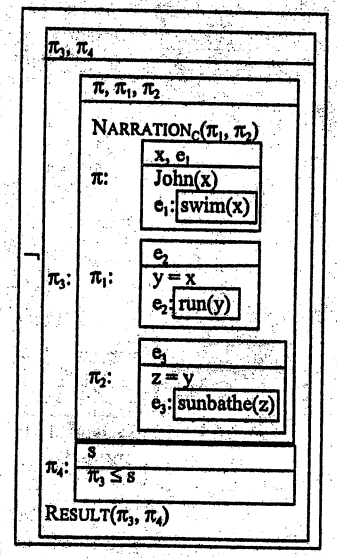
(20) a. √ JOHN [ SWIM RUN SUNBATHE ] **FINISH**. (pro) EXHAUSTED.
'John swam, ran, and sunbathed in that order. He was exhausted.'

b. # JOHN **FINISH** [ SWIM RUN SUNBATHE ]. (pro) EXHAUSTED
'John swam, ran, and sunbathed in that order. He was exhausted.'

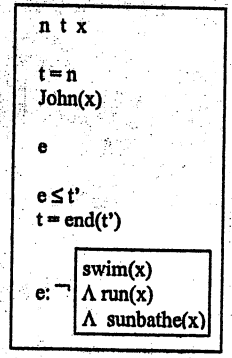
Only a NARRATION, like in (20a), may be followed by an ELABORATION. The three events of swimming, running, and sunbathing constitute part of the NARRATION which lead to the elaboration on the point that these have been completed (in that order).

Examples with NEVER, which involve a negation operator (¬), provide further support for the proposal, since the operator can appear in different places, leading to ambiguous readings, but depending on the situation type of the sentence, the operator is forced in specific places.

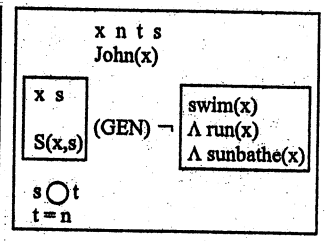
(21) JOHN [S,R,S] NEVER (resultative event reading)




JOHN NEVER [S,R,S] (achievement reading)




JOHN NEVER [S,R,S] (stative reading)




5.3 Aspectual morphology

The last piece of evidence for the formal characterization of the distinct readings comes from sentences containing verbs that are morphologically marked for temporal aspect. Here I focus on two such forms. The progressive form ('prog'), traditionally known as the 'continuative' form in sign language literature (e.g. Klima and Bellugi 1979), indicates that the event described by the verb phrase takes place over a long time without any breaks. The iterative form ('iter') carries the meaning that the event is repeated several times with breaks in between.

Like complex verb predicates, verbs with temporal aspectual morphology contain complex internal structure. It is expected then that the resultative event reading, which is appears with the sentence-final position and highlights the process leading to the result, will reflect the internal structure of the verbal predicate. This is what we see in (24a) and (25a). A mild achievement reading is perhaps available if the verb is inflected for iterative aspect, as in (25a).

It is the contrast between (22b) and (23b) that is relevant: when FINISH is pre-verbal, a stative reading is available if the verb is inflected for iterative aspect but not for progressive. (Otherwise 22a and 23b are similar in that the resultative event reading is not available and the achievement reading is available weakly at best).

(22) Progressive aspect

a. JOHN [STUDYprog] **FINISH**
√ resultative event reading: 'John has gone through the process of studying for a long time and has completed it'
* achievement reading: 'John has completed studying for a long time'
* stative reading: 'John has in general studied for a long time'

b. JOHN **FINISH** [STUDYprog]
* resultative event reading: 'John has gone through the process of studying for a long time and has completed it'
# achievement reading: 'John has completed studying for a long time'
* stative reading: 'John has in general studied for a long time'

(23) Iterative aspect

a. JOHN [STUDYiter] **FINISH**
√ acccomplishment reading: 'John has gone through the process of studying several times and has completed it'
# achievement reading: 'John has completed studying several times'
* stative reading: 'John has in general studied several times'

b. JOHN **FINISH** [STUDYiter]
* resultative event reading: 'John has gone through the process of studying several times and has completed it'
# achievement reading: 'John has completed studying several times'
√ stative reading: 'John has in general studied several times'

The contrast between (22b) and (23b) is not restricted to ASL, for the same phenomenon also occurs in some spoken languages. For example, in English, the word *never*, which can appear only pre-verbally, is usually not compatible with progressive aspect, which is similar to the progressive aspect in ASL in some ways.

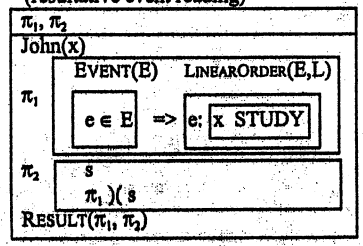
In (22a), when FINISH follows the verb modulated for progressive aspect, the meaning is that at all times up to now, John has studied for a long time. However, in (22b), when FINISH precedes the same verb, the more salient interpretation is that John has completed studying for a long time. The difference in interpretation is made clear by testing with NEVER and an additional phrase, as in (24):

(24) a. √√ JOHN [STUDY] **NEVER**, BUT I [CONVINCE+him] (so that)
HE WILL DO TOMORROW
'John has never studied for a long time, but I convinced him to do otherwise for tomorrow'

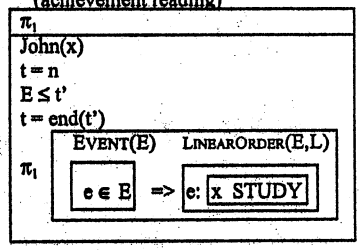
b. √ JOHN **NEVER** [STUDY], BUT I [CONVINCE+him] (so that)
HE WILL DO TOMORROW
'John in general does not study for a long time, but I convinced him to do otherwise for tomorrow'

Since the sentence-final position of NEVER in (24a) is consistent with a resultative event reading, a phrase can be added to the effect that this state of affairs can change the next day.
I now present the DRSs for (22) and (23), starting with the iterative aspect:

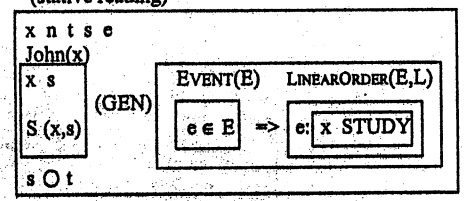
(25) JOHN [STUDYiter] **FINISH**
(resultative event reading)




JOHN **FINISH** [STUDYiter]
(achievement reading)



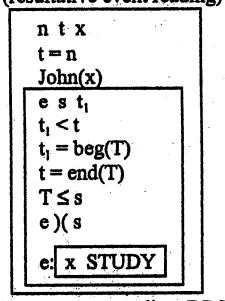

JOHN **FINISH** [STUDYiter]
(stative reading)




The resultative event DRS differs from the basic resultative event DRS in (11) in that there is a series of times T, expressed by t1, t2, ...., t, the last of which is equal to the present time and which is relevant for computing the value of 'iterative'. This also appears in the other DRSs; otherwise, they parallel the achievement and stative DRSs for FINISH in (12) and (13).

In the resultative event DRS for progressive aspect, I have used the concept of an interval (notated by T with its boundaries $t_i$ and t) to interpret the progressive marker. Otherwise, the DRS is parallel to the basic resultative event DRS in (11).

(26) JOHN [STUDYprog] **FINISH**
(resultative event reading)




There is no corresponding DRS for JOHN FINISH [STUDYprog] because the progressive marker requires that the event turns into a result "e )( s", so that only the resultative event DRS is compatible with the progressive marker. The achievement DRS is not compatible because the achievement DRS contains information only about an event e, but not that it has turned into a resulting state s, and the progressive marker is also not compatible with the stative DRS because the stative DRS has information only about the state s, not about the event e.

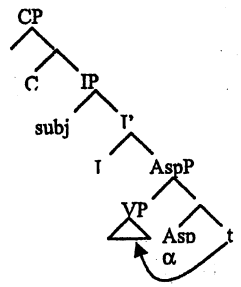
## 6. Discussion

The above DRS-theoretic analysis has shown that the situation type of a verb may be shifted according to the position of a certain element. In particular, the pre-verbal position may signal stative and achievement readings, while the sentence-final position may signal the resultative event reading. Here, I consider (i) possible structures corresponding to the pre-verbal and sentence-final positions; (ii) other findings that bear on these structures; and (iii) further issues to be explored.

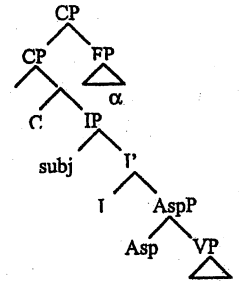
### 6.1 Two possible structures for the pre-verbal and sentence-final positions

If Aspect Phrase is the locus of the distinctions among the situation types, the pre-verbal position can be under the Aspect head. The issue is whether the sentence-final position is under Aspect, with VP moving into SpecAspP, or whether it is to the right of the sentence in a Focus Phrase (FP).

(27) (i)




OR (ii)

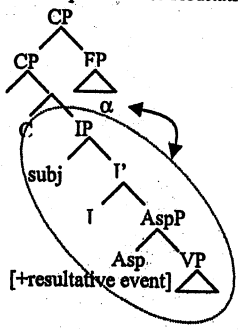


The structure in (27i), where *a* is in the lower position, conforms to standard analyses (e.g. Larson 1988, Kayne 1994, Pesetsky 1995) in which the rightward element is lower in structure. It is also consistent with the Kratzer (1989), Diesing (1992) account that the episodic (=resultative or achievement) reading is present when the element is lower in the structure. This structure allows us to tie the distinct readings to situation type under AspP. That is, the resultative event or achievement reading may be obtained under existential closure in nuclear scope. While it captures the distinction between achievement or stative readings, in which the VP moves to Spec,AspP, and the resultative event reading, in which VP stays, it is not clear when the reading is a resultative event or an achievement. Moreover, when there is a resultative event, the structure does not stress RESULT, which can lead to ELABORATION.

On the other hand, in (27ii), while the rightward element is still associated with an resultative or achievement reading, it is assumed to be in a higher position. As with the other structure, this structure permits us to tie the distinct readings to situation type under AspP and also stresses RESULT, which may lead to ELABORATION. The only weakness is that if there is no GEN operator under the head of AspP, FP should be projected, but this leads to yet another question of determining when the GEN operator is not present and under what conditions.

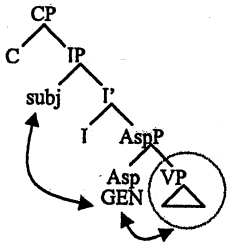
Let us say for the sake of discussion that it is Aspect Phrase (AspP) where the distinctions among the situation types are made, in accordance with standard assumptions. If the situation type is a resultative event, this feature licenses the projection of some functional category XP to the right of CP, as shown in (28). This XP is a Focus Phrase since it serves to set up a contrast between the resultative event reading and the other readings, but there are no further arguments for the status of this functional category at this point.

(28) Element α in sentence-final position for resultative event reading



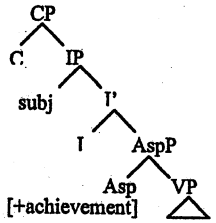

The next question is how to obtain the structure for the stative reading, especially the generic reading which is itself derived from the stative reading. For the generic reading, Chierchia's (1995) hypothesis is applied in (29): all verbs have a Davidsonian argument and their subjects are generated in Spec,VP; moreover, a GEN operator must be present to license individual-level predicates, and its scope of the operator is free.

(29) Element α in pre-verbal position for stative (generic) reading




When there is a GEN operator in the structure, it bars the projection of Focus Phrase, so that we see 'clashes' like those between an individual-level predicate (which introduces a GEN operator) and the sentence-final position of an element like FINISH. If there is no GEN operator, the structure is left as it is and is interpreted under existential closure, leading to the achievement reading, as shown in (30).

(30) Element α in pre-verbal position for achievement reading




Returning to the original proposal regarding Kamp and Reyle's (1993) construction rule for such structures, the paper shows for ASL that there needs to be a separate construction rule for each of the three structures corresponding to the different situation types. In particular, if there is a resultative event reading, the structure in (28) will generate a DRS like in (11); an achievement reading will generate the structure in (30) which will correspond to a DRS like in (12), and a stative reading will result in a structure like (29) that will in turn trigger a DRS like that in (13).

6.2 Other findings bearing on these structures

Other sign language researchers have also noticed that in ASL, some elements may appear in the sentence-final position. I briefly consider three such works. Petronio (1993) focuses on modals, the sign NOT, and light verbs such as *try* and *want*. While she does not specifically discuss the signs that have been discussed here, i.e. FINISH, NOT-YET and NEVER, her discussion is relevant because she notes that in ASL, the other elements may appear either pre-verbally or sentence-finally. She argues that the pre-verbal position is under the Infl head and the basic structural position, and that the sentence-final position is under the C head (which she takes to be head-final). On her analysis, a modal may appear in this sentence-final position only if it is copied from the Infl head, and the internal twin undergoes LF focus raising to the specifier

position of CP. That is, an element in a sentence-final position is a copy of the pre-verbal element and functions as a focus position.

Wood (1999) has similarly noted that in ASL, NOT and NEVER may appear in pre-verbal or sentence-final positions. Under this analysis, the pre-verbal position of NOT and NEVER is the head of Negation Phrase. The sentence-final position of NOT is derived by moving the verb phrase to Spec, NegP. Like Petronio, Wood (1999) assumes that NOT occurs in the sentence-final position for (prosodic) focus. The sentence-final position of NEVER is derived by moving NEVER to the head of CP; the function of the movement is to effect "a change in the semantic interpretation of the modality predicated of the subject by NEVER" (Wood 1999: 32).

Finally, Neidle, Kegl, MacLauglin, Bahan, and Lee (2000) (NKMBL) discuss modals such as CAN, lexical tense markers such as WILL and lexical aspect markers including FINISH. They argue that modals and lexical tense markers are in complementary distribution; that they appear as the head of Tense Phrase; and that they may precede negation and lexical aspect markers. Modals and lexical tense markers may also appear sentence-finally. NKMBL argues that there are two contexts in which such an element appears in a sentence-final position. In one context, the verb phrase may be optionally raised past the element. In the other context, the element is part of a tag construction in which it is right-adjoined to CP.

I now compare these analyses with respect to the structures in (27). Petronio's (1993) analysis is more close to the structure represented in (27ii) in the sense that the sentence-final element appears higher in the structure. The difference is that instead of a phrase right-adjoined to CP, the element is a head which raises to a head-final C. Depending on the particular sign, Wood's (1999) analysis uses both kinds of structures in (27): the (i) structure is used for NOT, which remains lower in the structure, while the (ii) structure is used for NEVER, which is raised to a higher position, as in Petronio 1993. NKMBL 2000 similarly uses both kinds of structures, but the choice of structure depends on the context, not on the sign. While each of the analyses do not always include the same signs under discussion here, and while there is no consensus on the right choice of the structure, they have provided insights into each type of structure that should be pursued further.

Apart from the findings by other sign language researchers regarding the sentence-final (and pre-verbal) position of certain elements, there are some findings from English that may bear on the above structures as well, even though the data here concern adverbs and not the kinds of signs that the paper has been discussing. In English, there are some adverbs whose position, whether pre-verbal or sentence-final, do not seem to affect the overall semantics of the sentence, as in (31).

(31) a. √ John { sometimes / regularly } exercises.

b. √ John exercises { sometimes. / regularly }

On the other hand, there are some adverbs in English whose position does seem to interact with the semantics of the sentence.

(32) a. √ John { always / usually } exercises.

b. ? John exercises { always. / usually }

It seems that English adverbs like 'always' or 'usually' are preferred to appear in the pre-verbal position for the same reason that individual-level predicates in ASL, which project the GEN operator, are compatible with elements only in the pre-verbal position for that is where the stative (generic) reading is encoded. If GEN is under Aspect Phrase, this would allow us to tie distinctions in situation type under Aspect Phrase.

Finally there are some English adverbs that may appear in either position but somehow seem more felicitious in the sentence-final position.

(33) a. √ John { frequently / habitually } exercises.

b. √√ John exercises { frequently. / habitually }

The above paradigms in (31) through (33) also seem to hold when the verb is in the passive and/or past (perfect) tense. While it remains to be investigated why the above English adverbs behave differently, it is clear that the position of the adverb has an effect on the semantics of the sentence. While some adverbs may appear in either position, there are some adverbs that seem to be more compatible with the pre-verbal position and others with the sentence-final position.

### 6.3 Issues for further investigation

There are several avenues for continuing the investigation that would clarify the relation between the structural positions of certain elements and the situation type of the sentence. First, the data concerning the position of adverbs in English and other languages should be explored further (see, e.g. Cinque 1999).

Second, the semantics of sentences in ASL should be further investigated using the other elements that have been discussed by Petronio (1993), Wood (1999) and NKMBL (2000), e.g. modals like CAN, lexical tense markers like WILL, other negation signs like NOT, and light verbs such as WANT and TRY, all of which can apparently appear in either position.

Also, it remains to be investigated whether the above generalizations hold not only in ASL but also in other signed and spoken languages. Finally, if we return to the beginning where the English paradigm is first shown in (1), one issue that should be probed is whether the English paradigm in (1) also holds in ASL. That is, are there any verb constellations in ASL whose situation types remain constant regardless of the position of other elements?

In closing, it is known that through interaction with another grammatical element such as tense/aspectual morphology and/or adverbial phrases, the situation type of a verb constellation may be shifted. This paper has attempted to show that not only these grammatical elements but also their position with respect to the verb may shift the situation type of a verb constellation.

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