Serial Verbs and Serial Motion

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1 How many events?

A key observation about serial verb constructions (SVCs) is that they express a single, perhaps complex, event rather than a series of distinct events (Durie (1997), Osam (1994, 2003), inter alia).¹ Durie (1997:291) puts it this way:

a single serial verb complex describes what is conceptualized as a single event: this is repeatedly reported to be a clear intuition of native speakers, and can be demonstrated through semantic analysis. It follows that a serial verb complex can often be best translated into a non-serializing language using a single, mono-verbal clause.

However, it is not always a straightforward matter to determine the event boundaries. This paper applies the tools of Vendlerian Aktionsarten (Vendler (1967), Dowty (1979), Smith (1997), inter alia) to certain types of Thai serial verbs in an attempt to delineate the event structures denoted by such constructions.

It should be noted from the outset that not all SVCs are equal. Osam notes, for example, that different SVCs exhibit different ‘levels of integration’, as illustrated by the following SVCs in Akan (Fante dialect) (Osam (2003), ex. 53):

(1) a. Aba yé-è asør má-à Kofi.  
Aba do-COMPL prayer give-COMPL Kofi  
‘Aba prayed for Kofi.’

b. Gyasiba ná-à sika sì-ì dan tön-èè  
Gyasiba get-COMPL money build-COMPL house sell-COMPL.  
‘Gyasiba got money, built a house, and sold it.’

Osam 2003 observes that (1b) can be paraphrased by a series of three independent Akan sentences meaning ‘Gyasiba got money’, ‘Gyasiba built a house’, and ‘Gyasiba sold the house’— but that by constrast no similar decomposition is possible for (1a).

Even among SVCs that allow such decomposition, events structures vary. Compare the Thai sentences (2a) and (2b).

(2) a. Piti den khâw roongrian.  
Piti walk enter school  
‘Piti entered the school walking.’

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¹I am indebted to Cholthica Sudmuk for Thai grammaticality judgments and valuable discussion of the data.
The verbs in the Thai sentences (2), ‘walk’, ‘enter’, and ‘arrive’ can all head independent sentences:

(3) a. Piti den.
   Piti walk
   ‘Piti walked.’

b. Piti khāw rooŋrian.
   Piti enter school
   ‘Piti entered the school.’

c. Piti (maa / pay) thūŋ rooŋrian.
   Piti (come / go) arrive school
   ‘Piti arrived (here / there) at school.’

However, it turns out that (2a) and (2b) differ markedly in their situation aspect. It will be shown below that in the first sentence khāw ‘enter’ controls the aspect of the whole SVC, while in the second sentence thūŋ ‘arrive’ sets the final endpoint of the walking event. We will explore these issues in detail below.

The Thai language lacks tense, aspect, and mood inflection. Instead, aspect is indicated by special serial verbs (Koenig and Muansuwan (2000, in preparation)). Instead of tense inflection, default time interpretation is determined by aspect: by default, progressives are present and completives are past, but context or time adverbials can override these defaults (Sudmuk (2003b)). In sense this makes Thai a good candidate for the present study. We are interested in the semantics of event structure rather than tense/aspect morphology per se. We can study event semantics by applying Vendler-type tests of situation type, without having to abstract away from the effects of morphology.

2 Event structure

Events and states as represented by language are characterized by specific kinds of structure (Vendler (1967), Dowty (1979), Smith (1997)). The Smith 1997 typology distinguishes five types: states, activities, accomplishments, semelfactives, and achievements.2 These types are cross-classified along the three binary dimensions of static/dynamic, durative/punctual, and telic/atelic, as shown in the table below.

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2Smith builds on the Vendler 1967 four-way classification, adding semelfactives.
(4) Situation types (from Smith 1997:20)

<table>
<thead>
<tr>
<th>States</th>
<th>examples</th>
<th>static</th>
<th>durative</th>
<th>telic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities</td>
<td>run, smoke a pipe</td>
<td>−</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>Accomplishments</td>
<td>run a mile, draw a circle</td>
<td>−</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Semelfactives</td>
<td>tap, knock, hiccup</td>
<td>−</td>
<td>−</td>
<td>−</td>
</tr>
<tr>
<td>Achievements</td>
<td>die, reach the top</td>
<td>−</td>
<td>−</td>
<td>+</td>
</tr>
</tbody>
</table>

States are distinguished from non-states (also called supercategory ‘events’), in that only events involve change or dynamism. Durative situations are extended in time, as distinct from the instantaneous or punctual events termed achievements and semelfactives. The final feature of telicity characterizes events with a definite endpoint. Hence accomplishments and achievements both have a definite endpoint, but the former are extended in time while the latter are not.

An ongoing research question is how events get built up compositionally in a sentence when a verb is combined with dependents such as a PP or resultative AP, as in the following examples.

(5) a. John drew a circle (?for one minute / in one minute).
    b. John walked (for an hour / *in an hour).
    c. John walked to the store (?for an hour / in an hour).
    d. Mary hammered the metal (for an hour / *in an hour).
    e. Mary hammered the metal flat (?for an hour / in an hour).

Cooccurrence with durative adverbials (for an hour) and interval adverbials (in an hour) is a standard test of telicity, illustrated by the contrast between (5a) and (b). The addition of the goal PP in (c) adds a definite endpoint to the walking event, rendering the sentence telic. Similarly, the resultative AP flat telicizes the hammering event in (d-e). Note that it is not the events themselves that are classified in this way: the very same event of walking could be accurately described by both sentences (b) and (c). Rather it is the conceptual representation of a situation that can be telic or atelic, durative or punctual, and so on.

The strategy of this paper will be to apply aspectual tests to SVCs in order to determine how the event structure gets built up compositionally from the component verbs.
3 Thai motion verb complexes

SVCs are very common and serve a wide variety of semantic functions in Thai (Sudmuk (2003b), Muansuwan (2001, 2002), Kanachawan (1978)). Thai has few prepositions, and many of the functions of prepositions in preposition-rich languages are taken over by serial verbs in Thai. This paper focuses primarily on constructions expressing motion, like (2) above.\(^3\)

3.1 Telicity versus purpose

Thai has a rather strong tendency towards atelic sentences. In particular, an SVC containing a goal expression, such as den pay roo\(_{\text{g}}\)rian, literally ‘walk go school’, while loosely translated as ‘walk to school’, normally expresses the purpose behind the action rather than entailing that the destination has actually been reached. The translation of (6a) suggests this purposive interpretation.

(6) a. Piti den pay roo\(_{\text{g}}\)rian m\(\ddot{u}\)awaann\(\ddot{n}\)i.
   Piti walk go school yesterday
   ‘Piti walked in order to get to school yesterday.’ (purpose)

b. * Piti den pay roo\(_{\text{g}}\)rian m\(\ddot{u}\)awaann\(\ddot{n}\)i nay welaa sip naatii.
   Piti walk go school yesterday in time ten minute
   (**Piti walked in ten minutes in order to get to school yesterday.’)

This contrasts with English, for example, where Pete walked to school entails that Pete reached the school. As a consequence (6a) is atelic, as shown by the interval adverbial test in (6b).

To indicate completion of the event, a third verb meaning ‘arrive’ is added to the series:

(7) a. Piti den pay th\(_{\text{n}}\)\(_{\text{g}}\)\(_{\text{r}}\)\(_{\text{q}}\)\(_{\text{i}}\)\(_{\text{a}}\)\(_{\text{n}}\)\(_{\text{i}}\)\(_{\text{i}}\) m\(\ddot{u}\)awaann\(\ddot{n}\)i.
   Piti walk go arrive school yesterday
   ‘Piti walked to school yesterday.’ (telic)

b. Piti den pay th\(_{\text{n}}\)\(_{\text{g}}\)\(_{\text{r}}\)\(_{\text{q}}\)\(_{\text{i}}\)\(_{\text{a}}\)\(_{\text{n}}\)\(_{\text{i}}\)\(_{\text{i}}\) nay welaa sip naatii.
   Piti walk go arrive school in time ten minute
   ‘Piti walked to school in ten minutes.’

Now the interval adverbial test succeeds, showing that (7a) is telic (cf. (6a)).

Similarly, a Thai expression like ‘walk in the school’ normally lacks the goal reading and has only the reading in which the walking event is located in the school.

\(^3\)Muansuwan (2001) calls these directional SVCs.
A special Thai verb is needed to indicate a goal reading. English sentences like (8a) are ambiguous between two readings, the location reading (8b) and the goal reading roughly paraphrased by (8c). Example (8d) has only the goal reading.

(8)  a. Mary walked in the school.
    b. Mary walked around in the school.
    c. Mary walked into the school.
    d. Mary walked in.

In contrast, the Thai sentence (9a) lacks the goal ‘into the school’ reading, leaving only the static location interpretation for *nay roo⁹rian* ‘in the school’. To get the goal reading one must add the verb *khâw* ‘enter’, as shown in (9b).

(9)  a. Piti den pay nay roo⁹rian.
      Piti walk go in school
      ‘Piti walked around inside the school.’
      (NOT ‘Piti walked into the school.’)
    b. Piti den khâw (pay nay) roo⁹rian.
      Piti walk enter go in school
      ‘Piti walked into the school.’

Without the serial verb *khâw* ‘enter’, sentence (9a) lacks the goal reading, as indicated by the translation. Note that the sequence *pay nay* ‘go in’ becomes optional when *khâw* ‘enter’ is added in (9b). The next section explores the ‘walk enter’ series in more detail.

4 ‘walk + enter’

What is the resulting meaning when *den* ‘walk’ and *khâw* ‘enter’ are combined as serial verbs? Is it a sequence of two events or is it one event? How does it compare with English *walk into*? Let us consider three hypotheses about the meaning of sentence (9b):

(10) a. SERIAL INTERPRETATION. A walking event followed by an entering event:
      cp. *Piti walked, and then entered the school.*
    b. GOAL INTERPRETATION. A walking event along a path whose endpoint is located inside the school:
      cp. *Piti walked to a place within the school.*
c. **Coextensive Interpretation.** An event involving simultaneous, coextensive walking and entering:

cp. *Piti entered, walking.*

The Serial Interpretation involves concatenation of two events in time, roughly like separate clauses connected by ‘and then’. On the Goal Interpretation, the words *khaw roogrian* ‘enter school’ specify the location of the endpoint of the walking path. Finally, the Coextensive Interpretation involves a single event described both as walking and as entering. Crucially, on this last view the walking and entering are coextensive, that is, they have the same temporal trace: they begin together and end together.

Interestingly, essentially the same issue arises regarding the interpretation of an English sentence like *Pete walked into the room.* It is often assumed, following Gruber (1965) and Jackendoff (1983, 1990), that *into* corresponds in meaning to *to* plus *in*; in the present terms this would mean that *Pete walked into the room* has the Goal Interpretation.

However, Denis et al. (2003) argue that such a sentence actually has the Coextensive Interpretation, as we will see in Section 5 below. It will now be argued that the Coextensive Interpretation is the correct one for Thai ‘walk + enter’—just as Denis et al. (2003) claim for English ‘walk + into’.

When the verb *khaw* ‘enter’ follows an event verb (call the first verb V1) in a series, it does not merely attach a second event or designate the endpoint of the V1 event, but rather controls the aspect of the entire SVC.

The first piece of evidence is that a time interval adverbial like ‘in ten minutes’ measures the entering event only, and not an event composed of first walking, then entering.

(11) *Piti den khaw (pay nay) roogrian nay welaa sip naatii.  
Piti walk enter go in school in time ten minute  
‘Piti spent 10 minutes walking into the school.’*

If the Serial or Goal Interpretation was correct, the event denoted by this SVC would include some walking that occurs before the entering starts, for example while Piti walks through the rice fields on the path leading to school. Then the time interval would include the walk through the rice fields. But in fact it cannot include this portion of the journey. Instead (11) has only the pragmatically odd reading where the entering itself lasts ten minutes, perhaps because the door to the school was difficult to open or the entryway was crowded.

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4 Recall Osam’s comments on the less ‘integrated’ Akan SVC in (1b).
Similarly, a distance measure phrase applies to the entering event only. Recall from (6) above that the ‘walk go school’ type sequence is atelic, exhibiting only the purposive reading. Addition of thūŋ rooŋrian ‘arrive’ (see (7)) or khāw ‘enter’ yields a telic sentence. Another way to telicize is to add a distance measure like ‘for five miles’, as shown in (12a). This measures the entire journey, rice fields and all. But khāw ‘enter’ produces a different effect for the measure phrase, as shown in (12b).

(12) a. Piti den pay rooŋrian pen ráyáthaŋ håa may.
   Piti walk go school for distance five miles
   ‘Piti walked 5 miles to the school.’ (telic)

   b. #Piti den khāw pay nay rooŋrian pen ráyáthaŋ håa may.
   Piti walk enter go in school for distance five miles
   ‘Piti walked five miles into the school.’
   (I.e. ‘Piti entered the school and walked five miles inside the school.’)

Crucially, sentence (12b) does not mean that Piti walked five miles along a path whose endpoint is located inside the school. Indeed there appears to be no simple way to say that in Thai (or in English; see below). Instead it has only the odd interpretation that suggests an enormous school, and a certain vagueness concerning the endpoint. The five mile measure is being applied to the entering event, that is, to the transition from outside to inside the school. It is not applied to some larger walking event whose endpoint is inside the school.

A third piece of evidence for the Coextensive Interpretation involves the progressive word kamlaŋ, illustrated in (13a). When applied to ‘walk + enter’ as in (13b), the progressive marker indicates the entering event, not a walking + entering event, is in progress:

(13) a. Piti kamlaŋ den pay rooŋrian.
   Piti PROG walk go school
   ‘Piti is in the process of walking to the school.’

   b. Piti kamlaŋ den khāw (pay nay) rooŋrian.
   Piti PROG walk enter go in school
   ‘Piti is in the process of walking into the school.’

Again, (13b) lacks the interpretation in which Piti is on the way to (a place inside) the school, e.g. on the path through the rice fields. Instead it must mean that Piti is partway through the doorway.

A fourth argument involves the property of detachability (Dowty 1979:58; Smith 1997:44). For accomplishment type events, the process is detachable from
its outcome, while this does not hold for any of the other types. Detachability can be diagnosed with the adverb *almost*, as Dowty (1979:58) illustrated with the contrast between (a) and (b):

(14) a. John almost painted a picture.
    b. John almost walked.
    c. John almost coughed.
    d. John almost won the race.

Dowty observes that sentence (b) entails that John did not walk at all, while (a) is ambiguous: either John had the intention of painting a picture but changed his mind and did nothing; or John started work on the picture but did not quite complete it. This ambiguity arises because *almost* can apply to either the entire accomplishment or just the process leading up to the result. Semelfactives like (c) and achievements like (d) lack ambiguous readings because they are punctual, hence they lack the durative process portion entirely. Ambiguity is found only with accomplishments, since only they are both telic and durative.

Similarly, the Thai adverb *kūap cà ‘almost’* is ambiguous with accomplishments only. First the durative versus interval adverbial test allows us to establish that *hāa ‘search’* is atelic (an activity) while the verb series *hāa...phòp ‘search...find’* (i.e. search successfully) is telic (an accomplishment):

(15) a. khāw hāa nāǔtūu pen (/*nay) welaa sip naatii.
    he search book for (/*in) time ten minute
    ‘He searched for the book for (/*in) ten minutes.’

    b. khāw hāa nāǔtūu phòp nay (/*pen) welaa sip naatii.
    he search book find in (/*for) time ten minute
    ‘He searched for and found the book in (/*for) ten minutes.’

As expected, *kūap cà ‘almost’* is ambiguous with the accomplishment ‘search...find’ in (16c) but unambiguous with the activity ‘search’ in (16a) and the achievement ‘find’ in (16b).

(16) a. khāw kūap cà hāa nāǔtūu.
    he almost search book
    ‘He almost searched for the book.’ (unambiguous)

    b. khāw kūap cà phòp nāǔtūu.
    he almost find book
    ‘He almost found the book.’ (unambiguous)
c.  khâu k인터 c thể hảnh nẵng thông phỏp.
   he almost search book find
   (i) ‘He almost searched for the book.’
   (ii) ‘He searched and almost found the book.’

Now we are prepared to apply our test to the various motion complexes. Recall that the ‘walk go school’ type is atelic (and purposive), hence 栌 c‘almost’ does not introduce ambiguity with this type (see 17a). But a measure phrase creates an accomplishment, leading to ambiguity (see 17b).

(17)  a.  Piti k인터 c thể den pay roongrian.
   Piti almost walk go school
   ‘Piti almost walked in order to get to school.’ (activity)
   (i) Piti almost started walking to school.
   (NOT Piti almost completed the trip to school.)

   b.  Piti k인터 c thể den pay roongrian pen râyáthaaj hảa may.
   Piti almost walk go school for distance five miles
   ‘Piti almost walked five miles to the school.’ (accomplishment)
   (i) Piti almost started walking to school.
   (ii) Piti almost completed the 5-mile trip to school.

Turning now to ‘walk + enter’, we find that this verb series behaves like an achievement and not an accomplishment: example (18a) is unambiguous, as shown. In fact we can omit ‘walk’, leaving just ‘enter’, and get the same result, as in (18b). This confirms the present view that the aspectual properties of the ‘walk + enter’ series is determined by ‘enter’.5

(18)  a.  Piti k인터 c thể den khâu (pay nay) roongrian.
   Piti almost walk enter go in school
   ‘Piti almost walked into the school.’ (achievement)
   (i) P. almost started walking into the school.
   (NOT P. almost finished walking into the school.)

   b.  Piti k인터 c thể khâu (pay nay) roongrian.
   Piti almost enter go in school
   ‘Piti almost entered the school.’ (achievement)
   (i) P. almost started entering the school.
   (NOT P. almost finished entering the school.)

5Sentence (18c) also has an idiomatic interpretation, meaning ‘Piti almost quit school’.
Example (18c) shows that ꞌook ‘exit’, like khâw ‘enter’, is punctual.

In conclusion, the Thai verb sequence ‘walk + enter’ has the Coextensive Interpretation, paraphrasable roughly as ‘enter (by) walking’. The verb ‘walk’ is itself rather unspecific as to situation type, depending instead on its associated predicates to determine the event structure. Occurring alone ‘walk’ typically designates an activity. When it appears in construction with a true goal expression such as Thai thûng roogrian ‘arrive (at) school’, the resulting complex predicate expresses an accomplishment—much as the English goal phrase to the school telicizes a VP expressing a walking activity. When ‘walk’ appears in construction with khâw ‘enter’ the result is an achievement referring only to the ‘entering’ proper, that is, the transition from outside to inside.

5 Comparison with English goal PPs and resultatives

As noted above, the English preposition into has been analyzed semantically as a combination of in and to, and similarly for onto (Gruber 1965, Jackendoff 1983, 1990). According to that view sentence (a) can be paraphrased as (b):

(19)    a. Newman ran into the post office.
    b. Newman ran to a location inside the post office.
    c. The cat jumped onto the table.
    d. The cat jumped to a location on the table.

This analysis treats the into/onto-PP as indicating the location of the endpoint of motion. This means that such sentences are vague as to the start and midpoints of the path, just as John walked to school says nothing about the path except the endpoint.

However, Denis et al. (2003) argue against this view. Instead, into describes only the transition from outside to inside, forcing an achievement reading. The main focus of that paper is a similar claim concerning the locative prepositions in, on, under, etc., in the goal of motion reading with motion verbs, as in We walked in the house when it started to rain. For the present purposes, the focus instead is on into.
English ‘walk + into’ differs markedly from ‘walk + to’. The goal to-PP specifies only the endpoint of the path of motion, while leaving the rest of the path vague as to its origin, length, shape, and where it goes along the way. A distance measure modifies this entire walking event, whatever it may be, as in (20a). In contrast, an into-PP like *into the post office* does more than place the endpoint within the post office. It also restricts the entire denoted event to the transition from outside to inside the post office. The only interpretation of (20b) is that this transition itself extends over five miles. This means in effect that Newman is embedded five miles deep within the confines of the post office.

(20) 
  a. Newman walked five miles to the post office.
  b. #Newman walked five miles into the post office.
  c. Newman walked five miles to a location inside the post office.

In particular, the five mile measure cannot include the walk that precedes entrance to the post office proper, i.e. (20b) cannot be paraphrased as (20c). This is mysterious on the Gruber/Jackendoff view of *into X* as ‘to a location in X’ (compare (19a,b) above).

A ‘walking into’ event is normally a punctual event, except when it has been stretched out into a durative, as in example (20b) above. This can be shown by the behavior of adverbials like *in ten minutes*. With punctual events such adverbials are ingressive, that is, they denote a time interval, at the end of which the event occurs, as in these examples (from Smith 1997:115):

(21) 
  a. They reached the top in an hour.
  b. He won the race in ten minutes.
  c. She knocked at the door in five minutes.

But with a durative telic event (i.e. an accomplishment) such adverbials locate the event at an interval, at the end of which the event is completed (Smith 1997:114):

(22) 
  a. Bill walked to work in an hour.
  b. Mary wrote a sonnet in five minutes.

The accomplishments alternatively allow the ingressive reading for such adverbials, as long as some reference time can be inferred. This ambiguity is more salient in the future tense, since the reference time defaults to the present: cp. *John will walk to work in an hour*. Comparing our *into- and to-PPs, the into-PP allows only the ingressive reading, while the to-PPs are ambiguous, as we have already seen.\(^6\)

\(^6\)The completive reading is marginally possible in (23a) if the entering event is coerced to a durative, as in the examples above.
(23) a. Newman walked into the post office in ten minutes.
    b. Newman walked to the post office in ten minutes.
    c. Newman walked to a location inside the post office in ten minutes.

This suggests that ‘walk + into’ produces a punctual event.

Preposition selection by verbs provides further evidence for the notion that the preposition into imposes its aspectual profile on the entire event rather than just indicating the endpoint. Beavers (2002a,b) observes many systematic contrast like the following:

(24) a. I walked {to / into} the cave.
    b. I ducked {to / into} the cave.
    c. Bill stepped {to / into / in} the office.
    d. Bill stepped {to / onto / on} the box.

Verbs like duck and step suggest the sort of quick motion that is temporally compatible with into (or onto, in the case of step)— but not to. This makes sense on the view that the PP controls the aspctual contours of the entire motion event rather than simply specifying the endpoint location. A PP like into the cave specifically designates the transition from location outside to inside the cave, not a vague path of indeterminate origin and length whose endpoint is in the cave. Beavers (2002a,b) concludes that a to-PP imposes a sortal restriction on the governing verb: it requires that verb to be durative.

English resultative secondary predicates suggest a similar analysis (Wechsler (2001, to appear)). Like the into-PPs they have been assumed to indicate only the result state of an action. According to a common view (e.g. Dowty 1979), sentence (25a) means something like (25b):

(25) a. John hammered the metal flat.
    b. ‘John hammered the metal; as a result, the metal became flat.’

The resultative secondary predicate flat has been analyzed as indicating the result state. But as argued in detail on the basis of corpus data in Wechsler (to appear), the adjective phrase does not specify only the nature of the endpoint but rather colors the aspctual properties of the entire event.

Constraints on the resultative adjective have long been noted, generally put down to lexical idiosyncracy (Green (1972); Dowty 1979:303; i.a.):

(26) a. John wiped the table clean / dry / #dirty / #wet.
    b. Mary hammered the metal flat / smooth / into the ground / #beautiful / #safe / #tubular.
c. The puddle froze solid / #slippery / #dangerous.

But these patterns turn out to be largely predictable from the semantics of the adjectives, as defended in Wechsler (to appear) on the basis of extensive corpus data.

Gradable (or scalar) adjectives fall into two semantic subclasses (Kennedy and McNally (1999), Hay et al. (1999)):

- **CLOSED-SCALE ADJECTIVES**: associated with a scale with a maximal value.
  - examples: (completely) full, empty, straight, dry

- **OPEN-SCALE ADJECTIVES**: not possible to identify maximal values.
  - examples: (??completely) long, wide, short, cool

An adjective like dry has an inherent maximum value: when there is no liquid at all. This maximum serves as a default value, in the absence of a contextual standard for what counts as ‘dry.’ No comparable inherent maximum exists for long, so such adjectives must rely on contextual standards instead.

Closed-scale adjectives are further subdivided into the **MAXIMAL ENDPOINT**, such as dry, clean, or flat; and **MINIMAL ENDPOINT**, such as wet or dirty. In the absence of an overriding contextual standard, the standard for a maximal endpoint adjective defaults to that maximum, as in the case of dry described above. But for a minimal endpoint adjective, the standard defaults to a minimum, in the absence of an overriding context: any amount of water on an object qualifies the object as wet. However, the minimal endpoint is so low that a contextual standard generally prevails: a towel with a few molecules of water doesn’t normally count as wet. So these minimal endpoint (closed-scale) adjectives act as if they lacked inherent endpoints entirely; they are de facto open-scale adjectives.

Resultative constructions are telic: they have a definite endpoint. Hence the resultative secondary predicate must provide an inherent bound. As a result, the most suitable adjective for a resultative construction is a maximal endpoint closed-scale adjective. Other types of adjective are awkward or impossible. This explains constrasts like (27a) (from Green, 1972, ex. 6b/7b):

(27) a. He wiped it clean / dry / smooth / #damp / #dirty / #stained / #wet.
    b. clean, dry, smooth: (maximal endpoint) closed-scale
    c. damp, dirty, stained, wet: minimal endpoint (de facto open-scale)

The upshot is that the resultative secondary predicate does not merely describe the result state of the action denoted by the primary predicate. It lends its aspectual structure to the entire event. The scale associated with the adjective defines the
(conceptual) path of the event. In order for the event to be telic, that path must have an inherent bound.

Similarly, a non-gradable adjective like *dead* is sometimes possible in a resultative construction, but only if the event can be seen as punctual or very rapid:

(28) a. He and a confederate shot the miller dead.
    b. The lecturer bored them *dead / to death.

This points to a new view of so-called goal and result expressions as not merely indicating the ‘result state’ of an action but rather more heavily influencing the aspectual properties of the action itself. See Wechsler (to appear) for discussion.

Returning to Thai, the semantics of Thai ‘walk + enter’ appears to exemplify the same phenomenon, only with a verb-verb combination. Indeed, the semantics of Thai ‘walk + enter’ is very similar to English ‘walk + into’— on the view of the English V-PP taken by Denis et al. (2003), but not on the Gruber/Jackendoff view. The next section presents a preliminary formalization that can be applied to both the Thai serial verbs and English PP complements.

6 Towards formalization

The HPSG formalization sketched in this section relies on Pollard & Sag (1994), but adopts a richer notion of semantic content, following work on the interface between syntax and lexical semantics by Wechsler (1995, 1997) and Davis (2001). An HPSG sort inheritance hierarchy is used to cross-classify the syntactically relevant aspects of semantic relations. This hierarchy is related to another inheritance hierarchy for the lexical items (verbs, prepositions etc.) for a language. To the extent that syntactic subcategorization is semantically determined, the cross-hierarchy relation will be systematic; however, the general architecture allows for idiosyncrasies as well.

Let us assume for the present purposes that the Thai SVCs considered here have a right-branching complement VP structure, as shown here:7

(29) Piti den khâw roöprian.
    Piti walk enter school
    ‘Piti walked into the school.’

7See Muansuwan (2001, 2002) for detailed discussion of the constituent structure of Thai directional SVCs.
In this example the verb *den* ‘walk’ selects a VP complement.

In our treatment of PP complements of (motion) verbs, Wechsler (1995) and Denis et al. (2003) propose that the semantic content specification for verbs and prepositions may be of the same or compatible sorts; hence the composition of a verb and a PP complement can be simply modeled as the unification of their content specifications. According to Wechsler (1995, 1997), (optional) PP complements can be freely appended to the ARG-ST of the verb (see (31)). They are not c-selected (i.e., they are not part of the argument-structure of the verb) but they are s-selected: compatibility of the semantic content representations determines their distribution. The Denis et al. (2003) lexical schema for an English verb is given in (31a). This analysis is extended to Thai serial verbs in (31b).

(31) a. Schematic entry for an English verb (e.g. *walk*)

\[
\begin{array}{l}
\text{ARG-ST} \quad \langle \ldots \rangle \oplus \langle \text{PP} \rangle \\
\text{CONTENT} \quad \square
\end{array}
\]

b. Schematic entry for a Thai serial verb (e.g. *den* ‘walk’)

\[
\begin{array}{l}
\text{ARG-ST} \quad \langle \ldots \rangle \oplus \langle \text{VP} \rangle \\
\text{CONTENT} \quad \square
\end{array}
\]

On this view of an SVC such (29), the semantic CONTENTS of verbs are unified. This reflects the conclusion we reached in the previous section, that ‘walk enter’, for example, describes a single event that is both a walking event and an entering event.

Next let us consider the semantic representation in a bit more detail.
7 Representing motion events

For the representation of semantic relations we use a slightly enriched version of Davis’ (2001) lexical decomposition theory. Davis’ framework is inspired by Jackendoff’s conceptual structure and uses macro-role attributes like ACTor and UNDdergoer. Among its other functions, UND serves as the locatum or theme in situations involving spatial location or displacement.

Verbs, prepositions and other predicators take CONTENT values of the type rel (‘relation’). The subtype of rel of interest to us here is spatial_rel. The type declaration for spatial_rel declares the UNDdergoer and GRound attributes. As noted, the UND value corresponds to the theme argument, normally expressed by an NP, such as the subject of ‘walk’. The relation between the theme and the background with respect to which that theme moves or is located can be seen as a figure/ground relation from gestalt psychology. In the cases of interest to us here, the GRND feature encodes the location or path of motion.

The type spatial_rel is further divided into the subtypes mot_rel (‘motion relation’) and loc_rel (‘location relation’). Stative and positional verbs like be and stay express location relations. The GRND value for a loc_rel is of type place, while the GRND value of a motion_rel is a path. The types, their interrelations, and their feature declarations are summarized in the following the inheritance hierarchy:

(32) Hierarchy of spatial relations

\[
\begin{array}{c}
\text{rel} \\
\text{UND nom ref} \\
\text{GRND spatial matrix} \\
\end{array}
\]

\[
\begin{array}{c}
\text{spatial rel} \\
\text{mot rel} \\
\text{GRND path} \\
\text{run rel} \quad \text{arrive rel} \quad \ldots \quad \text{dance rel} \\
\text{loc rel} \\
\text{GRND place} \\
\text{be rel} \quad \ldots \quad \text{stay rel}
\end{array}
\]

The CONTENT value of verbs like run and dance are specific motion relations like run_rel and dance_rel, shown as leaves in the hierarchy above.

\[\text{The term proto-role is often used, following Dowty (1991). But Dowty (1991) explicitly rejects the notion that proto-roles are part of the competence grammar, in contrast to what Davis 2001 assumed, and what we assume here.}\]
The CONTENT value of (English) spatial prepositions will generally be a structure of sort \textit{spatial\_ref} or one of its subsorts, which makes the unification account of V-PP complexes possible. The same goes for Thai verbs like \textit{pay} 'enter' and \textit{thtit} 'arrive.' These verbs specify aspects of the path of motion but are silent as to the manner or means of motion (walking, running, flying, etc.). When their semantic content unifies with that of a manner of motion verb such as \textit{walk}, each verb contributes a different aspect of the same description.

Paths and places, the possible values for GROUND, are subsorts of a more abstract \textit{spatial\_matrix} sort:

\[
(33) \quad \text{spatial\_matrix} \\
\quad \text{place} \quad \text{path}
\]

For a more fine-grained distinction of preposition types (and verb types) we introduce further sub-distinctions for the two subsorts of \textit{spatial\_matrix}.

Following Jackendoff (1990), one can recognize different types of \textit{place} (functions); these are partially summarized in the following hierarchy:

More relevant to the present concerns, we also recognize three kinds of paths, again following Jackendoff (1990): (i) SOURCE paths, which include the point of origin (e.g., \textit{from the library}), (ii) VIA paths (e.g., \textit{through the room}), and (iii) ENDPT ('endpoint') paths (e.g. \textit{to the store}). These semantic objects are organized in a type-hierarchy:
The key to the present analysis is the distinction between two subtypes of ENDPT paths, namely \textit{min.path} (‘minimal path’) and \textit{ext.path} ‘extended path’. This distinction is introduced by Denis et al. (2003), a crucial enrichment of the original ontology of paths proposed by Jackendoff.

Denis et al. (2003) capture the systematic linguistic contrasts between accomplishments and achievements in terms of the internal structure of the path. An accomplishment predicate consists of a movement along a ‘long’ path (i.e., what they dub an \textit{extended path}), whereas an achievement is a movement along a ‘short’ (or \textit{minimal}) path. See Beavers 2002a,b for similar notions and their formal definitions.

Informally, a minimal path has a simple binary structure: it can be thought of as a transition from a stative predicate to its negation. This is based on Dowty’s (1979:73ff) \textsc{become} operator, for which he cites von Wright’s (1963, 1968) \textit{logic of change}. Dowty’s \textsc{become} operator encodes a transition from a stative proposition \( p \) to its negation \( \neg p \). In the case of motion events, this is a transition from one location (the set complement of all points denoted by the endpoint location) into another location (the set of points denoted by the endpoint location). The sentence \textit{John entered the room} denotes a transition from \( \neg p \) to \( p \), where \( p \) is the proposition ‘John is in the room.’ A minimal path is a structure that only has two atomic subparts, a source and an endpoint; see Beavers (2002a,b) for discussion. An extended path, on the other hand, has a more complex internal structure: it contains at least three subpaths, source, via, and endpoint.

8 Semantics of serial verbs

Manner of motion verbs like \textit{walk} have lexical entries like the following:

\[
(34) \begin{array}{ll}
\text{PHON} & /den/ \\
\text{ARG-ST} & \langle \text{NP} \rangle \\
\text{CONTENT} & \begin{array}{c}
\langle \text{ACT} \rangle \\
\langle \text{UND} \rangle \\
\langle \text{GRND} \rangle \\
\text{path}
\end{array}
\end{array}
\]

That is, manner of motion verbs subcategorize for a unique subject argument (NP\( ^1 \)), but they also semantically select an additional \textit{path} argument.\footnote{As shown in this representation, the walker participant, expressed by the subject NP, is both the \textit{ACTor} and \textit{UNDergeer}.} Being a serial verb it inherits the optional VP complement, with which it shares its \textit{CONTENT} (recall (31b) above).
The lexical entry for ‘enter’ specifies the position of the endpoint of motion and, crucially, the \textit{min\_path} path length:

\begin{align*}
(36) & \begin{cases}
\text{PHON} & /\text{kh\^aw}/ \\
\text{ARG-ST} & \langle \text{NP}_1, \text{NP}_2 \rangle \\
\text{CONTENT} & \left[ \begin{array}{c}
\text{mot\_rel} \\
\text{UND} \\
\text{GRND} \\
\text{ENDPT} \left[ \begin{array}{c}
\text{in\_place} \\
\text{IN} \left[ \text{nom\_ref} \right] \\
\end{array} \right]
\end{array} \right]
\end{cases}
\end{align*}

Unifying the content values of ‘walk’ and ‘enter’ gives the semantics of the verb series ‘walk enter’. Sentence (29) has the following semantic content, where the arguments ‘Piti’ and ‘school’ are shown informally for clarity.

\begin{align*}
(37) & \begin{cases}
\text{ACT} & \text{walk} \\
\text{UND} & \text{in\_place} \\
\text{GRND} & \text{ENDPT} \left[ \begin{array}{c}
\text{in\_place} \\
\text{IN} \left[ \text{nom\_ref} \right] \\
\end{array} \right]
\end{cases}
\end{align*}

Turning now to the verb ‘arrive’, its lexical entry is specified as follows:

\begin{align*}
(38) & \begin{cases}
\text{ARG-ST} & \langle \text{NP}_1, \text{NP}_2 \rangle \\
\text{CONTENT} & \left[ \begin{array}{c}
\text{mot\_rel} \\
\text{UND} \\
\text{GRND} \\
\text{ENDPT} \left[ \begin{array}{c}
\text{at\_place} \\
\text{AT} \left[ \text{nom\_ref} \right] \\
\end{array} \right]
\end{array} \right]
\end{cases}
\end{align*}

The lexical entry above captures the fact that ‘arrive’ specifies the endpoint of motion by means of a locative reference point supplied by the verb’s grammatical object (NP$_2$).\footnote{The \textit{AT} attribute formalizes Jackendoff’s place function.} The \textbf{GROUND} value is \textit{path}, the disjunction of \textit{ext\_path} and \textit{min\_path}.\footnote{The \textit{AT} attribute formalizes Jackendoff’s place function.}
hence the path length for ‘arrive’ is unspecified. This contrasts with ‘enter’, which specifies a \textit{min\_path} (cp. (36) above). This captures the fact that ‘enter’ imposes its achievement type aspect on the event, while ‘arrive’ can add an endpoint to a durative event, thus yielding an accomplishment.

Interestingly, the analyses of Thai ‘enter’ and ‘arrive’ given above are essentially equivalent to those given by Denis et al. (2003) for the English prepositions \textit{into} and \textit{to}, respectively. As noted above, Denis et al. (2003) posit that such prepositions have \textit{contents} of the same (or compatible) type as the motion verbs that govern them (this follows Wechsler (1997)). If Thai serial verbs, which belong to the same category, are governed by the same lexicosemantic system, this would seem to bolster this hypothesis.

9 True serial motion

In Section 4 above we defended the Coextensive Interpretation of the verb series ‘walk enter’ (cp. ‘Piti entered, walking’), and argued against the Serial Interpretation. That is, we argued that this verb series does not describe a walking event followed by an entering event (see (10) above). Nevertheless, the appropriate context makes the Serial Interpretation available with verbs of this kind. For example, the following sentence describes a series of two consecutive events.

(39) Piti den loŋ̃ thaaŋ hɔŋ̃hooŋ (l`e) kʰaw pay nay s`an̄aam.
   Piti walk down path `h`away (and) enter go in courtyard.
   ‘Piti walked down the hallway (and) into the courtyard.’

In this example each subevent has been enriched with path modifiers that effectively force the serial interpretation. The conjunction word \textit{l`e} is optional, with no discernable difference in meaning. Thus ‘covert coordination’ is suggested for the conjunctionless variant.\footnote{Muansuwan (2002), Sec. 2.6.2 proposes a semantics in which each subevent in a Thai Directional Serial Verb Construction is embedded within the full event via a part-whole relation. This captures the Serial Interpretation.}

Another way to force the Serial Interpretation is by means of the Thai continuative marker \textit{too}. The continuative morpheme adds the suggestion of two events in series, either by presupposing some earlier subevent or by splitting the entailed event into two parts. When \textit{too} is added to an activity event, as in sentence (40a), it projects a presupposed earlier motion subevent (normally a walking subevent) just prior to the walking event referred to by the sentence. For the entering event in sentence (40b), which is an achievement type, the continuative marker adds the
presupposition of some earlier segment of the journey, of which Piti’s entrance into the school is a continuation.

\[(40)\] a. Piti den pay rooŋrian too.
    Piti walk go school CONT
    ‘Piti continued to walk to the school.’

b. Piti khâw (pay nay) rooŋrian too.
    Piti enter go in school CONT
    ‘Piti continued his trip by entering the school.’

As expected, when applied to a ‘walk enter’ verb series, the continuative marker has the effect of splitting it into a temporal sequence of two subevents, first walking then entering. Thus it forces the Serial Interpretation, as shown in (41a).

There is an important difference between ‘arrive’ and ‘enter’ which is not captured by the formal representations in the previous section. ‘Arrival’ is not itself a motion event but rather the endpoint of one (cp. also reach, leave, etc.). But entering is itself a motion event, albeit typically a short one. This difference, which will not be captured formally here, may help explain an interesting contrast. Unlike khâw ‘enter’, the verb tthûŋ ‘arrive’ cannot be similarly coerced into a serial interpretation, as shown in (41b).

\[(41)\] a. Piti den khâw (pay nay) rooŋrian too.
    Piti walk enter go in school CONT
    ‘Piti walked to the school and continued his trip, into the school.’

b. * Piti (den) maa-tthûŋ rooŋrian too.
    Piti (walk) come-reach school CONT
    ‘Piti continued his (walking) trip by arriving at the school.’

Sentence (41b) is unacceptable with or without the verb den ‘walk.’ Intuitively, the problem is that ‘arriving’ is itself the endpoint of a journey. It cannot be split apart from the journey and represented as a consecutive event transpiring after the journey ends.

10 Simultaneous postural SVCs

In Section 8 we proposed a simple compositional semantics of serial verbs with the coextensive interpretation: their semantic content values unify. Manner of motion verbs like ‘walk’ are specified for manner but not path type, while ‘enter’ and ‘arrive’ are specified for path type but not manner. Hence each verb in the series contributes information with no resulting clash. But in some SVCs with
this type of interpretation both verbs indicate manner, an apparent problem for the unification account. Some examples follow (from Sudmuk (2003a)).

(42) a.  Sùrīy yāmu rōŋpleen.  
Suri stand sing.  
‘Suri stood singing.’

b.  Sùrīy nāṭ ?aān nāŋmu.  
Suri sit read book  
‘Suri sat reading a book.’

As suggested by the translations, these sentences involve coextensive (simultaneous) reading and standing/sitting. For convenience we will refer to the first and second verbs in series as V1 and V2 respectively.

It appears that in constructions of this kind V1 is rather severely restricted, to intransitive verbs of body posture or body motion (see Sudmuk (2003a)) . The verbs cannot be reversed, as in (10a), nor can we use a non-postural V1, as in (10b).

(43)  * Sùrīy rōŋpleen yāmu.  
Suri sing stand  
(‘Suri sang while standing.’)

(44)  * Sùrīy lēn rōŋpleen  
Suri play sing  
‘Suri played and sang (at the same time).’

Like the postural verbs, a body motion verb such as ‘walk’ can serve as V1, with the simultaneous reading:

(45)  Sùrīy den rōŋpleen.  
Suri walk sing.  
simultaneous / *purpose

However, if a goal is specified for the body motion V1, then the coextensive interpretation disappears, leaving only the purpose reading:

Suri walk go market sing / buy candy  
‘Suri walked to get to the market to sing / to buy candy.’

purpose / *simultaneous
b. Ṣurii den pay / maa ṭọọpleeŋ.

Suri walk go / come sing

‘Suri walked here / there to sing.’

purpose / *simultaneous

These facts suggest that V₁ is semantically subordinated to V₂, supplying only information about body posture or movement while V₂ provides the main semantic relation. Lexical signs for ṭọọpleeŋ ‘sing’ and yumun ‘stand’ appear in (47) and (48), respectively:

(47) \[
\begin{array}{c}
\text{PHON} /\text{ṛọọpleeŋ} / \\
\text{ARG-ST} \langle \text{NP} \rangle \\
\text{CONTENT} [\text{sing}_{rel}] \\
\end{array}
\]

(48) \[
\begin{array}{c}
\text{PHON} /\text{yumun} / \\
\text{ARG-ST} \langle \text{NP}, \text{VP} \rangle \\
\text{CONTENT} [\text{ACT} \text{POSTURE} \text{stand}_{rel}] \\
\end{array}
\]

When these verbs combine as in example (10), their CONTENT values are unified, yielding the following result (where 1 is the index of the subject NP):

(49) \[
\begin{array}{c}
\text{sing}_{rel} \\
\text{ACT} \\
\text{POSTURE} \text{stand}_{rel}
\end{array}
\]

This explains the disappearance of the simultaneous reading in (46). This analysis entails that the postural V₁, such as ‘walk’, has been relegated to the role of providing the value for the POSTURE feature. The event structure comes from V₂. But ‘sing’ is an activity and semantically inappropriate for being delimited with a locative goal (cp. *I sang to the market). Hence the simultaneous interpretation is not possible. The addition of the goal argument forces the ‘walk’ predicate into a separate event nucleus, as in the purposive reading.

A last observation: the negative morpheme can sometimes intervene between the two verbs, taking scope over only V₂. However, this is possible only in the purpose interpretation, not the simultaneous interpretation:

(50) * Ṣurii den māy dāay ṭọọpleeŋ.

Suri walk NEG sing.

(‘Suri walked but did not sing.’)
(51)  Sūrii den  pay àlāat  mái dāāy rōŋpLEEPŋ.
Suri walk go market NEG sing
‘Suri walked to get to the market, not to sing.’

This suggests that the semantic structure shown here as the value for a verb’s content may be the minimal domain for application of negation. In particular, it is not possible for negation to target the main predicate (e.g. ‘sing’) while leaving out the subsidiary postural feature.

11 Conclusion

We have applied the analytical tools and tests of Vendlerian Aktionsarten to Thai serial verbs in hopes of giving an empirically testable picture of the event structure of certain serial verb constructions. One interesting conclusion is that some rather subtle aspects of the combinatorial event semantics appear to be similar regardless of whether the categories combined are Verb plus Preposition, as in English, or Verb plus Verb, as in Thai.

This study is necessarily a preliminary one. It is hoped that it will inspire similar work on a wider range of serial verb constructions, across a variety of languages, in order to eventually unlock the mysteries of these constructions.

References


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