

Jarai Predicates: Culmination & Scales of Change

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Abstract

Many accomplishment predicates in Jarai have both a telic interpretation and an atelic one. Creation and consumption verbs with a definite theme can be interpreted both ways, as can verbs of directed motion with a specified endpoint. However, creation and consumption verbs with an indefinite enumerated theme are telic only. I examine the properties of variably telic accomplishment predicates—those having both a telic and an atelic interpretation—and argue that atelicity derives from the properties of a scale encoded by the predicate (Hay et al. 1999; Kennedy & Levin 2008; Kennedy 2012) or from the relation that holds between a function measuring change and a comparison point used to evaluate that change. Supporting evidence for these two sources of atelicity comes from a post-verbal particle *hĩ*, which forces a telic reading for creation and consumption accomplishments, but not for motion accomplishments.

1. Introduction

The goal of this paper is to analyze variable telicity in Jarai, an Austronesian language of Vietnam and Cambodia. As (1) illustrates, many Jarai predicates with natural endpoints do not require achievement of those endpoints in past perfective clauses. The possibility of a non-telic interpretation is demonstrated using a parenthetical denial of the expected end-state.¹

- (1) a. Amĩ ñu pɔ-hlor asoi (samɔ̃ asoi bu hlor ôh).
mother 3sg caus-heat cooked.rice but cooked.rice neg hot neg2
'His mother heated the rice (but the rice isn't hot).'
- b. Tom-broi kâo bõng bõh pɔɔ anũn (samɔ̃ bu abih ôh).
yesterday 1sg eat fruit mango dem.med but neg finish neg2
'Yesterday I ate that mango (but didn't finish).'
- c. Tõm-broi kâo robat nao pɔ glai (samɔ̃ bu truh ôh).
yesterday 1sg walk go loc forest but neg arrive neg2
'Yesterday I walked to the forest (but didn't arrive).'

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1. The following abbreviations are used in glosses: 1 = First person, 2 = Second person, 3 = Third person, acc = accusative, caus = causative, clf = classifier, dat = dative, dem = demonstrative, dist = distal, fut = future, imp = imperative, incl = inclusive, loc = locative, med = medial, neg = negative, nmlz = nominalizer, part = partitive, pl = plural, prog = progressive, prox = proximal, prt = particle, pst = past, sg = singular.

Nevertheless, the first clause of each preceding example—the clause preceding the parenthetical denial—is normally interpreted as telic (culminating). The *variable* telicity consists in the fact that an atelic (non-culminating) interpretation is easily accessible.

In addition to variably telic predicates, Jarai also has necessarily telic predicates, as illustrated in (2), where the expected end-state cannot be denied felicitously. Observe that the predicate types in (2) are parallel to those in (1): the (a) examples involve a change of state, the (b) examples are consumption predicates, and the (c) examples are motion events.

- (2) a. Töm-broi asão kào djai (# samǒ ñu ăt hodĩp mǒn).
yesterday dog 1sg die but 3s still live also
'Yesterday my dog died (# but he's still alive).'
- b. Töm-broi kào bǒng klào bôh pǒo (# samǒ bu abih ôh).
yesterday 1sg eat three clf mango but neg finish neg2
'Yesterday I ate three mangos (# but didn't finish).'
- c. Töm-broi wa kào truh pǒ sang kào (# samǒ ñu bu pǒ anai ôh).
yesterday parent's.older.sibling 1sg arrive loc house 1sg but 3s NEG loc this NEG2
'Yesterday my uncle arrived (# but he was not here).'

Although parallel in one respect, the examples in (2) are distinguished from those in (1) in the following ways: (2a) and (2c) involve a two-point scale and path, respectively, and example (2b) has an enumerated theme.

Not only does Jarai distinguish predicates that are variably telic from those that are necessarily telic, but Jarai also has a particle that affects the telicity of otherwise variably telic predicates.

- (3) a. Amĩ ñu pǒ-hlǒr hĩ asoi (# samǒ asoi bu hlǒr ôh).
mother 3sg caus-heat prt cooked.rice but cooked.rice neg hot neg2
'His mother heated the rice (# but the rice isn't hot).'
- b. Töm-broi kào bǒng hĩ bôh pǒo anũn (# samǒ bu abih ôh).
yesterday 1sg eat prt fruit mango dem.med but neg finish neg2
'Yesterday I ate that mango (# but didn't finish).'
- c. Töm-broi kào robat nao hĩ pǒ glai (?# samǒ bu truh ôh).
yesterday 1sg walk go prt loc forest but neg arrive neg2
'Yesterday I walked to the forest (?# but didn't arrive).'

My basic analytical claim is that the telicity of Jarai predicates is a lexical property that can be modeled in terms of scales of change (Hay et al. 1999; Kennedy & Levin 2008; Kennedy 2012). The analysis I propose will focus on creation/consumption-type accomplishments and directed motion accomplishments, leaving aside the simpler cases of change-of-state and achievement predicates.

2. A short introduction to Jarai

Jarai is in the Chamic sub-branch of the Malayo-Polynesian languages; Chamic is a sister branch to the Malayic languages.

Typologically, Jarai is head-initial: Verbs precede their complements (4a), as do prepositions (4b).²

- (4) a. Ty **taih** adoi ñu.
Ty strike younger.sibling 3sg
'Ty struck his younger sibling.'
- b. Homão monũ **amăng** sang ih.
have chicken in house 2sg
'There {is a chicken/are chickens} in your house.'

Jarai has no inflectional morphology: tense (5a) and aspect (5b) are indicated lexically or inferred from context.

- (5) a. Kão **amra** pōnah roman.
1sg fut shoot elephant
'I will shoot {an elephant/the elephant(s)}.'
- b. Amĩ ñu **hlăk** kih sang.
mother 3sg prog sweep house
'{His/Her} mother is sweeping the house.'

Grammatical number is not morphologically marked on nouns or verbs (4b), (5a), and enumeration of nouns is licensed by classifiers, (6).

- (6) a. **Dua** *(**čô**) monuih nao pō sang sĩ modrô.
two clf human go loc house sell trade
'Two people went to the store.'
- b. Mōguăh anai kão bũh **roma** *(**droi**) asão.
morning dem.prox 1sg see five clf dog
'This morning I saw five dogs.'

3. Possible analyses

I ultimately argue that non-culminating interpretations for Jarai accomplishment predicates can be attributed to their scalar properties. Before putting forward my proposal, however, I wish to dispense with other competing explanations.

2. Transcriptions use the Jarai orthography. Most Jarai characters are close to their IPA look-alikes; unfamiliar glyphs are as follows: OBSTRUANTS: b = ʔb, d = ʔd, V# = Vʔ; GLIDES: Vo = Vw, Vi = Vj; VOWELS: â = a, o = ɔ, ô = o, σ = ə, u = u.

3.1. Atelicity is not imperfectivity

In English, when a telic predicate is embedded under a marker of imperfectivity (“viewpoint aspect”), the entailment of completion disappears.³

- (7) a. Ruth wove that basket in/??for three hours. telic
 b. Ruth **was** weaving that basket for/??in three hours. atelic
- (8) a. Emil walked to the ocean (??but never made it). telic
 b. Emil **was** walking to the ocean (but never made it). atelic

On the analogy of English, if Jarai has *null-marked* imperfective aspect, variable telicity might be an aspectual phenomenon (viewpoint aspect) rather than a lexical one. This account has *prima facie* plausibility for two reasons. First, an imperfective reading is available for accomplishments with no aspect marking. Consider the answers in (10) paired with the question in (9).

- (9) Yua hoget ih bu iâu ôh kâo bôir dua mông tởm-bơi?
 because what 2sg neg call neg2 1sg at two hour yesterday
‘Why didn’t you call me at 2 o’clock yesterday?’

An *imperfective* answer is expected because the excuse needs to give the speaker an alibi for the time leading up to and including 2 o’clock. The responses in (10) were volunteered by my consultants.

- (10) a. Yuakơ kâo mã-bruă.
 because 1sg work
‘Because I was working.’
- b. Yuakơ kâo nao hră.
 because 1sg go study
‘Because I was on my way to school.’
- c. Yuakơ kâo kih sang kâo.
 because 1sg sweep house 1sg
‘Because I was sweeping my house.’

The second reason that null-marked imperfectivity seems plausible is that Jarai speakers sometimes use progressive aspect in their English translations of non-culminating Jarai accomplishments.

- (11) Kâorobat nao pơ sang hră (samở bu truh ôh).
 1sg walk go loc house paper but neg arrive neg2
‘I walked to school (but didn’t arrive).’

Speaker comment: “Well, you were walking there, but you didn’t get there.”

3. Apparently this is not the case for (null marked) imperfective aspect in German, as argued by Kratzer (2004). Kratzer suggests that the English progressive marker may have a modal element—perhaps connected to the fact that English progressive aspect is overtly marked—and this modal element permits non-culmination (in the actual world, at least).

It appears, then, that we can attribute variable telicity in Jarai to the simple fact that imperfective readings—and thus non-culminating ones—are available in the absence of overt aspect marking. This analysis makes an important predication: If potential atelicity is due to null imperfectivity, then forcing a perfective reading will require a telic reading.

We can test this prediction using the perfect marker *laih* ‘already’, which requires the event encoded by the verb phrase to have stopped by reference time (which often equals utterance time). Speakers judge that the events in (12), *singing* and *walking*, must have concluded by the time the utterance is made; otherwise, the sentences are infelicitous.

- (12) a. Adoi kâo adôh **laih** tɔlɔi adôh anũn.
 younger.sibling 1sg sing already nmlz sing dem.med
 ‘My younger sibling sang that song (already).’
 b. Kâo robat nao pɔr sang hră **laih**.
 1sg walk go loc house study already
 ‘I walked to school (already).’

Because *laih* requires the event to be closed off, it performs the function of a perfective marker.⁴ Thus, inserting *laih* in a clause forces a perfective reading. And if atelic readings correspond to (null) imperfectivity, a clause with *laih* should necessarily be interpreted as telic. However, as the examples in (13) show, atelic readings are still available when *laih* is present.

- (13) a. Kâo pɔkra sang kâo **laih** (samɔ̃ bu giõng ôh).
 1sg make house 1sg already but neg finish neg2
 ‘I made my house (but didn’t finish).’
 b. Tõm-broi kâo đõk hră **laih** (samɔ̃ bu giõng ôh).
 yesterday 1sg read book already but neg finish neg2
 ‘Yesterday I read a book (but didn’t finish).’
 c. Kâo robat nao pɔr sang hră **laih** (samɔ̃ bu truh ôh).
 1sg walk go loc house paper already but neg arrive neg2
 ‘I walked to school (but didn’t arrive).’

It must be the case, then, that Jarai accomplishment predicates have variably telic readings independently of viewpoint aspect. In other words, the availability of an atelic reading does not depend on the availability of an imperfective reading. Thus, variable telicity in Jarai is not a function of viewpoint aspect.

3.2. Motion accomplishments: atelicity and the preposition *pɔr*

The next two potential analyses would treat the variable telicity of various predicate types differently. That is, variable telicity in motion accomplishments may be due to a different range of factors than vari-

4. As noted above, the primary contribution of *laih* is that of perfect, which in languages like English is compatible with either perfective or imperfective, but in Jarai is compatible only with perfective.

able telicity in consumption and change-of-state accomplishments. Here I consider a possible treatment of motion accomplishments.

Perhaps, we might suppose, variably telic motion accomplishments in Jarai arise from properties of a variably telic preposition. Such an explanation would be consistent with the English facts, where a telic preposition such as *to* can yield a telic event (14a), whereas the atelic *towards* yields an atelic event (14b).

- (14) a. Doug swam to the raft (??but didn't make it). telic
b. Doug swam toward the raft (but didn't make it). atelic

Thus, the Jarai preposition *pɔ*, like English *toward*, may have an atelic semantics, giving rise to non-culmination in clauses such as (15).

- (15) Tõm-broi kâo luai nao **pɔ** ia rosĩ (samõ bu truh ôh).
yesterday 1sg swim go loc water ocean but neg arrive neg2
'Yesterday I swam to(ward) the ocean (but didn't arrive).'

In order to evaluate this proposal, a bit more data is needed on *pɔ*. I begin by situating *pɔ* in terms of an important semantic contrast: PLACE VERSUS PATH prepositions (Jackendoff 1983; Wunderlich 1991 among others). As illustrated in (16), a place preposition can be used with a stative predicate, whereas a path preposition cannot be.

- (16) a. His dog is **in** the yard. PLACE
b. *His dog is **into** the yard. PATH

As (17) illustrates, Jarai *pɔ* can be part of a stative predicate, indicating that it is a place rather than a path preposition.

- (17) Nũ dĩ [**pɔ** sang].
3sg stay loc house
'He is (staying) at home.'

Further, as (18) shows, *pɔ* cannot yield a path reading. When coupled with a manner of motion verb like *robat* 'walk', the prepositional phrase headed by *pɔ* gives the area in which the walking takes place (a place reading) but cannot give the path along which the walking is defined.

- (18) Kâorobat [**pɔ** glai]. PLACE
1sg walk loc forest
'I walked in/at the forest.'
(≠ 'I walked into/to(wards) the forest.')

In order to introduce a path in a motion event, a directed motion verb such as *nao* 'go' must be used.⁵

5. Two other common directed motion verbs in Jarai are *rai* 'come' and *glai* 'return'.

- (19) Kâo rɔbat **nao** [pɔ glai].
 1sg walk go loc forest
'I walked to(wards) the forest.'

PATH

Thus, the path semantics in (19) is clearly contributed by the verb *nao* 'go' rather than the preposition *pɔ*. We can conclude that *pɔ* is unambiguously a PLACE preposition.

With this background established, we have to ask in what way the place preposition *pɔ* might introduce variability in the telicity of motion accomplishments. An attractive proposal is that *pɔ* means 'near', so that the motion event brings the theme near the goal without necessarily reaching the goal.⁶ Under this analysis, the sentence in (19) essentially means 'I walked to (some place) *near* the forest.' The 'to' (direction) element is contributed by *nao* 'go', which as we saw, denotes the path. The 'near' element is contributed by the preposition *pɔ*. This sentence would be true as long as the theme gets close to the goal. In fact, it would even be true if the theme reaches the goal, because that is as near as possible as the theme can get to the goal.

However, there are two problems with this explanation for variably telic motion events. First, if *pɔ* means 'near', then a sentence like (19) would be true only if the theme actually ends up near the goal at the end of the event. However, (19) is true even when the theme is still far away from the goal, but has simply moved *nearer* than it was at the beginning.

A second argument against this analysis is that *pɔ* cannot mean 'near' when it is used in a stative (locative) clause, which we would predict to be a possible meaning.

- (20) H'Len dõ pɔ glai.
 H'Len stay loc forest
'H'Len is at the forest.'
 ≠ *'H'Len is near the forest.'*

Consequently, the atelic interpretation of Jarai motion accomplishments cannot be attributed to the meaning of the preposition *pɔ*.

3.3. Incremental theme accomplishments: atelicity and Accusative Case

This final possible analysis concerns the variable telicity of incremental theme accomplishments, a class of predicates that includes consumption and creation events. This approach argues that variable telicity in incremental theme accomplishments is a function of the presence or absence of Accusative Case (Kratzer 2004). By way of illustration, Finnish accomplishments with ACCUSATIVE-marked objects yield telic interpretations, whereas PARTITIVE-marked objects yield atelic interpretations (21) (=ex.1, pg. 389 in Kratzer (2004)).

- (21) a. Ammu-i-n karhu-a
 shoot-pst-1sg bear-part
'I shot at a bear.'
'I shot at the bear.'

partitive/atelic

6. This way of analyzing *pɔ* is inspired by Zwarts (2005), who considers (but ultimately rejects) such an analysis for English *towards*, as suggested by Asher & Sablayrolles (1995).

- b. Ammu-i-n karhu-n accusative/telic
 shoot-PAST-1sg bear-acc
'I shot the bear.'
'I shot a bear.'

Under Kratzer's analysis, the construction of telicity involves two pieces: an incremental theme, and a telicity head that provides the necessary semantics for mapping that theme to the event (Kratzer 1989, 1992). Syntactically, this head is in a position that immediately dominates the lexical V and assigns accusative case.

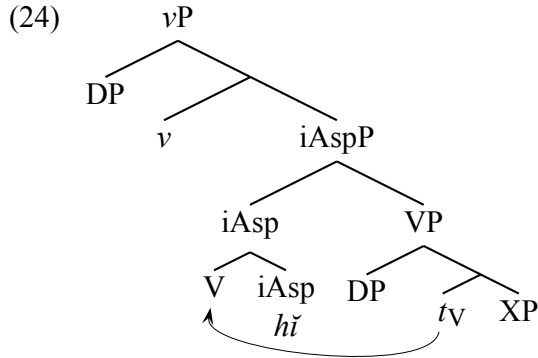
Turning to the Jarai data, let's begin with a variably telic incremental theme accomplishment, (22), which gives a creation event.

- (22) Kâo pokra sang kâo (samǝ bu giǝng ôh).
 1sg make house 1sg but neg finish neg2
'I made my house (but it didn't get finished).'

Once we add the telicity head *hĩ*, only a telic reading is available, as illustrated in (23).

- (23) Kâo pokra **hĩ** sang kâo (# samǝ bu giǝng ôh).
 1sg make prt house 1sg but neg finish neg2
'I made my house (# but it didn't get finished).'

I propose that *hĩ* merges as an inner aspect head (iAsp) below agent-introducing *v* and above V (Travis 2010). The lexical verb (V) then raises and adjoins to the iAsp position.⁷



Under a Kratzerian analysis, *hĩ*, the telicity head, assigns accusative case to the incremental theme and thus mediates the mapping relation needed to yield a telic interpretation.

In spite of its attractive handling of the contrasts between (22) and (23), this analysis runs into serious problems in Jarai. The first problem is that telic readings are available for Jarai definite incremental theme predicates such as (22) apart from *hĩ*. This is not expected, because telic readings should be available only when accusative case is assigned, and *hĩ* is required for assigning accusative.

7. For further details of the phrase structural position of *hĩ*, see §6.4 in Jensen (2013).

A second problem is that the presence of *hĩ* forces telicity in cases where clearly no accusative case is assigned: namely, with unaccusative DEGREE ACHIEVEMENTS. A predicate of this type is illustrated (first without *hĩ*) in (25).

- (25) *Đã anai lik (samǒ bu lik abih ôh).*
ice dem.prox melt but neg melt all neg2
‘This ice melted (but it hasn’t melted all the way).’

When we add *hĩ*, the predicate is no longer variable in its telicity: instead, it is necessarily telic (26).

- (26) *Đã anai lik hĩ (# samǒ bu lik abih ôh).*
ice dem.prox melt prt but neg melt run.out.of neg2
‘This ice melted (# but it hasn’t melted all the way).’

This result is unexpected if *hĩ* contributes a telic meaning by assigning accusative case to a theme: in (26), the theme is in subject position, where it should be unavailable for accusative case assignment.

I conclude, then, that variable telicity for Jarai incremental theme predicates cannot be attributed to the presence or absence of accusative case. Nevertheless, I will continue to treat *hĩ* as an iAsp head between V and *v*, leaving open the question of how *hĩ* contributes to the interpretation of telicity.

So far I have laid out three classes of Jarai predicates that show variable telicity: degree achievements, motion accomplishments, and incremental theme accomplishments. I have argued, first, that Jarai variable telicity cannot be attributed solely to viewpoint aspect; second, that variable telicity for motion accomplishments is not a function of prepositional meaning; and third, that variable telicity for incremental theme accomplishments is not a function of Case. I now move to my analysis, which I present according to predicate types.

4. Jarai Incremental theme accomplishments

An incremental theme accomplishment is a predicate in which the event is measured out incrementally by some property of the theme (such as the theme’s extent). Thus, an apple-eating event is measured out by the extent of the apple being eaten. When all of the relevant parts of the apple have been consumed, the apple-eating event has culminated. I begin with definite incremental themes (which are variably telic), then move to indefinite enumerated themes (which are telic).

4.1. Definite incremental themes

DEFINITE INCREMENTAL THEME predicates are variably telic: that is, they can be interpreted as either telic or atelic. I illustrate this first with the creation verbs in (27), each of which has an incremental theme.

- (27) a. *Hlào kơ kào nao chuã goyũt kào, kào ngă kơbang anai (samǒ bu giông ôh).*
before dat 1sg go visit friend 1sg 1sg make table dem.prox but neg finish neg2
‘Before I went to visit my friend, I made this table (but it didn’t get finished).’
b. *Adoi kào adôh lai t’oloi adôh anũn (samǒ bu giông ôh).*
younger.sibling 1sg sing already nmlz sing dem.med but neg finish neg2
‘My younger sibling sang that song already (but didn’t finish).’

The examples in (28) illustrate consumption verbs with a definite incremental theme.

- (28) a. Tom-broi kâo **bǒng bôh pǒ** **anũn** (samǒ bu abih ôh).
 yesterday 1sg eat fruit mango dem.med but neg finish neg2
'Yesterday I ate that mango (but I didn't finish).'
- b. Tôm-broi kâo **đők hră** **anũn** (samǒ bu giǒng ôh).
 yesterday 1sg read paper dem.med but neg finish neg2
'Yesterday I read that book (but I didn't finish).'

In all of the examples above, the default interpretation is telic, but an atelic interpretation is easily accessible. As example (29b) shows, the presence of a numeral in the theme makes no difference in the interpretation, so long as the theme is definite (cf. 29a). The interpretation remains variably telic.

- (29) a. Je ngă sang anũn.
 Je make house dem.med
'Je made that house.' (a)telic
- b. Je ngă dua bôh sang anũn.
 Je make two clf house dem.med
'Je made those two houses.' (a)telic

The analysis I propose for the variable telicity of definite incremental theme predicates is essentially that proposed by Kennedy (2012) for comparable predicates in English. Kennedy argues that a definite incremental theme denotes a scale based on the part structure of the theme (*half of the house, all of the house, some of the house*, etc). In the absence of a quantifier, the denotation is that *some part* of the theme participates in the event. The part that participates in the event may be (i) more than 0 (=atelic), or (ii) equal to 1, which is all of the theme (=telic). Consequently, we get a variably telic interpretation because of these two options for definite incremental themes.⁸

Now recall that when the iAsp head *hĩ* is added to a definite incremental theme predicate, the interpretation switches to necessary telicity (30).

- (30) Kâo pokra **hĩ** sang kâo (# samǒ bu giǒng ôh).
 1sg make prt house 1sg but neg finish neg2
'I made my house (# but it didn't get finished).'

I propose that *hĩ* eliminates the lower standard for how much of the theme undergoes the change. It does so by requiring that the standard of comparison cannot simply be set at 0. The remaining option is a standard of comparison of 1, which is the telic option.

4.2. Indefinite enumerated incremental themes

Turning to INDEFINITE ENUMERATED INCREMENTAL THEMES, we find that they are basically telic. The examples in (31) illustrate this for both creation and consumption predicates.

8. See the appendix for a sample of the formal notation.

- (31) a. Thũn tǝm adih kǝ **ngǎ** **dua bǝh sang** (# samǝ bu giǝng ôh).
 year previous dem.dist 1sg make two clf house but neg finish neg2
'Last year I made two houses (# but I didn't finish).'
- b. Kǝ **čih** **dua bǝh hrǎ** kǝ amĩ ta bǝi ih glǎk pĩt, (# samǝ kǝ čih
 1sg write two clf paper dat mother 1pl.incl when 2sg prog sleep but 1sg write
 bu giǝng ôh).
 neg finish neg2
'I wrote two letter to our mother while you were sleeping (# but I didn't finish writing).'
- c. Tǝm-broi kǝ **bǝng klǝu bǝh pǝu** (# samǝ bu abih ôh).
 yesterday 1sg eat three clf mango but neg finish neg2
'Yesterday I ate three mangos (# but I didn't finish).'

An initially plausible explanation for this telic requirement is that enumerating the theme creates a strong impression that entire units (whole mangoes or houses) were involved in the event, not just parts. However, as we saw above, definite themes give rise to variably telic interpretations—rather than telic-only ones—even when they are enumerated. The examples in (32) give further demonstration of this fact.

- (32) a. Thũn tǝm adih kǝ **ngǎ** **dua bǝh sang anũn** (samǝ bu giǝng ôh).
 year previous dem.dist 1sg make two clf house dem.med but neg finish neg2
'Last year I made those two house (but I didn't finish).'
- b. Tǝm-broi kǝ **bǝng klǝu bǝh pǝu anũn** (samǝ bu abih ôh).
 yesterday 1sg eat three clf mango dem.med but neg finish neg2
'Yesterday I ate those three mangos (but I didn't finish).'

Again following Kennedy (2012), I analyze the indefinite enumerated incremental theme as denoting a scale based on the natural unit numbering of the theme (*two houses*, *three mangos*, etc). The numeral itself then provides a standard of judgment to evaluate how much of the theme must undergo the change event. There is no atelic interpretation available because the standard is explicit. (Recall that for definite incremental themes, there is no explicit standard, so two natural standards are available: more than 0 and all of the theme, corresponding to atelic and telic respectively.)

In the case of indefinite enumerated themes, the addition of *hĩ* strengthens the impression of telicity but does not seem to fundamentally alter the truth conditions.

5. Jarai motion accomplishments

I turn now to motion accomplishments. I give examples of two kinds of motion accomplishments in Jarai: those that include both a manner of motion (such as walking or swimming) and a goal, and those that include only a goal. However, both types behave the same with respect to telicity. The examples in (33) illustrate MANNER-GOAL MOTION ACCOMPLISHMENTS.

- (33) a. Tõm-broi kâo **luai nao** pơ ia rơsĩ (samõ Ɓu truh ôh).
yesterday 1sg swim go at water ocean but neg arrive neg2
'Yesterday I swam to the ocean (but I didn't arrive).'
- b. Tõm-broi kâo **robat nao** pơ sang amĩ kâo (samõ Ɓu truh ôh).
yesterday 1sg walk go loc house mother 1sg but neg arrive neg2
'Yesterday I walked to my mother's house (but I didn't arrive).'
- c. Kâo **pogat rơdêh nao** pơ Kur klãm tõm-broi.
1sg drive car go loc Cambodia afternoon yesterday
'I drove to Cambodia yesterday afternoon [but never arrived]⁹.'

The examples in (34) are of SIMPLE DIRECTED MOTION ACCOMPLISHMENTS (i.e., no manner of motion is explicit).

- (34) a. Hroi dua hlâo kâo **nao** pơ sang H'Lên (samõ jolan ia ling yua anũn
day two before 1sg go loc house H'Len but trail water flood because dem.med
kâo Ɓu truh ôh).
1sg neg arrive neg2
'Last Tuesday I went to H'Len's house (but the trail was flooded, so I didn't arrive).'
- b. Tõm-broi anõng ñu **rai** pơ sang kâo (samõ ñu djai hĩ Ɓoi
yesterday parent's.younger.brother 3sg come loc house 1sg but 3sg die prt at
jolan).
trail
'Yesterday his uncle came to my house (but he died along the way).'
- c. Laih Jê tobiã mõng sang hră, ñu **glai** pơ sang (samõ ñu rongiã yua
after Je come.out from house paper 3sg return loc house but 3sg lose because
anũn ñu Ɓu truh pơ sang ôh).
dem.med 3sg neg arrive loc house neg2
'After Je went out from school, he returned home (but he got lost, so he didn't arrive home).'

As all of the examples above show, directed motion accomplishments are variably telic: they can be interpreted as either culminating or not.

So far in looking at incremental theme predicates, I have used a scale-based analysis based on Kennedy (2012) (and earlier in Hay et al. 1999; Kennedy & Levin 2008). However, none of these analyses makes a concrete proposal regarding the semantics of motion predicates. I propose, therefore, to extend these earlier analyses to the case of directed motion predicates in Jarai.

The basics of the analysis are as follows. First, verbs of directed motion in Jarai (*nao* 'go', *glai* 'return', *rai* 'come') denote a change in location mapped onto a scale, where the endpoint of the scale

9. For this example, I did not elicit the follow-up statement in Jarai, but my consultant and I discussed various scenarios under which it would be true, and one was the case in which the speaker never arrived in Cambodia.

is the location provided by the PP. However, instead of asserting that the theme of motion achieves a certain point on the scale (e.g., *greater than 0* or *at least 1*), directed motion verbs require only that the theme approaches the goal (i.e., *closer to PP at the end of event than at the beginning*). Consequently, both atelic (*go towards goal*) and telic (*go to goal*) interpretations are available, since both involve the theme getting nearer the goal than it was at the beginning of the event.¹⁰

When we add *hĩ* to directed motion predicates, we find that telicity is still not required (35), in contrast to when *hĩ* appears with an incremental theme predicate or a change of state predicate.

- (35) a. Kào robat nao **hĩ** pơ sang hră laiĥ (?# samǒ bu truh ôh).
 1sg walk go prt loc house paper already but neg arrive neg2
'I walked to school (?# but didn't arrive).'
- b. Hlào kơ kào nao lua ajĩ, kào robat nao **hĩ** pơ sang Tre (samǒ bu truh ôh).
 before dat 1sg go hunt frog 1sg walk go prt loc house Tre but neg arrive neg2
'Before I went frog-hunting, I walked to Tre's house (but I didn't arrive).'

I propose that because the semantics of *hĩ* involve the standard of comparison (it cannot simply be 0), it has no truth conditional impact on motion events. Atelicity for motion events comes from the *at most* (rather than *at least*) relation between the change in the theme and the standard of comparison, not from whether the standard of comparison is 0 or 1. Thus, *hĩ*—which requires that the standard of comparison is more than 0—has no impact on the truth conditions of a directed motion clause.

6. Conclusion

My essential claim has been that variable telicity in Jarai, as in English, comes from the meanings of individual lexical items. In other words, differences in telicity between Jarai and English (and other languages) are a function of the lexicon, not parametric differences in the grammar or a fundamentally different conception of “completeness.” Further, scales of change can provide a unified semantics for telicity across predicate types. Thus, a typology of telicity within and across languages will focus on which lexical items contribute to building scales of change, as well as the combinatorial possibilities that result in differences in the scales.

Appendix: Formalisms

I include a few sample formalisms here to give concrete expression to the proposals in the body of the paper. I begin with a denotation for example (29a), modeled on Kennedy (2012).

$$(36) \lambda e. \exists d, y [\text{make}(e) \wedge \text{partof}_{\Delta}(\text{that house})(y)(e) \succeq d]$$

This says that *e* is a making event, and by the end of the making event, the *y* part of **that house** which is involved in the making is at least *d*.

Two interpretations are possible for the existentially-bound *d*:

10. See the appendix for a sketch of the formal implementation.

- (37) a. $d = 1$, *yielding*
 $\mathbf{partof}_{\Delta}(\mathbf{that\ house})(y)(e) = 1$ telic
 b. $d = 0$, *yielding*
 $\mathbf{partof}_{\Delta}(\mathbf{that\ house})(y)(e) \succ 0$ atelic

In (37a), the part of the house that must be in the situation at the end of the making event is 1 (i.e., all of the house), a telic interpretation. In (37b), the part of the house that must be in the situation at the end of the making event is simply more than 0 (i.e., some part), an atelic interpretation.

For directed motion accomplishments, I innovate based on Kennedy’s work with incremental themes.¹¹ The denotations are based on example (19). First, the preposition *po* is analyzed as follows:

$$(38) \llbracket po \rrbracket = \lambda x. \mathbf{p}(x)$$

Read (38) as: *po* selects for an individual x and maps x to the points in space occupied by x . Essentially, *po* takes the denotation of an individual and converts it into the denotation of the region that the individual occupies in space. The directed motion verb *nao* ‘go’ is analyzed like this:

$$(39) \llbracket nao \rrbracket = \lambda d \lambda x \lambda e. \mathbf{loc}_{\Delta}(x)(e) \preceq d,$$

where \mathbf{loc}_{Δ} is a function from individuals x and events e to the non-dashed part of:

$$[\text{LOCATION } 0 \text{ --- } \mathbf{loc}(x)(\mathbf{beg}(e)) \text{ --- } \infty)$$

Where the value returned is $\mathbf{loc}(x)(\mathbf{end}(e))$, the location of x (relative to point 0) in the situation holding at the end of e , and the minimum element (0) of the derived scale is $\mathbf{loc}(x)(\mathbf{beg}(e))$, the location of x (relative to underived point 0) in the situation holding at the beginning of e .

In a nutshell, this says that the ending location of x must be closer to d than the beginning position of x . Thus, the denotation of (19), ignoring the manner of motion verb, comes out as in (40).

$$(40) \lambda e. \mathbf{loc}_{\Delta}(\mathbf{me})(e) \preceq \mathbf{p}(\mathbf{the\ forest})$$

In other words, (40) is true of an event iff the theme (**me**) is part of an event e during which **me** moves closer to the region occupied by **the forest**. The theme may reach **the forest** or not; as long as the event involved **me** getting closer at the end than at the beginning, the description is true.

The atelic interpretation arises when the theme’s final location is closer to the goal than its initial position was, but not actually there (41a). The telic interpretation arises when the theme actually reaches the goal of motion (41b).

- (41) a. $\mathbf{loc}_{\Delta}(x)(e) \prec d$ atelic
 b. $\mathbf{loc}_{\Delta}(x)(e) = d$ telic

11. Although quite a bit different in implementation, these representations are inspired by Zwarts’s (2005) analysis of the English preposition *towards*.

References

- Asher, Nicholas & Pierre Sablayrolles. 1995. A typology and discourse semantics for motion verbs and spatial PPs in French. *Journal of Semantics* 12(2). 163–209. doi:10.1093/jos/12.2.163.
- Backstrom, Maria, Jeremy Ironside, Gordon Paterson, Jonathan Padwe & Ian G. Baird. 2007. Indigenous traditional legal systems and conflict resolution in Ratanakiri and Mondulakiri Provinces, Cambodia. Tech. rep. United Nations Development Programme Bangkok.
- Chung, Sandra & William Ladusaw. 2004. *Restriction and saturation* (Linguistic Inquiry Monographs 42). Cambridge, MA: The MIT Press.
- Chung, Sandra & William Ladusaw. 2006. Chamorro evidence for compositional asymmetry. *Natural Language Semantics* 14(4). 325–357. doi:10.1007/s11050-007-9007-x.
- Hay, Jennifer, Christopher Kennedy & Beth Levin. 1999. Scalar structure underlies telicity in ‘degree achievements’. In Tanya Mathews & Devon Strolovitch (eds.), *Semantics and linguistic theory 9*, 127–144. Ithaca, NY: CLC Publications.
- Jackendoff, Ray. 1983. *Semantics and cognition* (Current Studies in Linguistics 8). Cambridge, MA: MIT Press.
- Jensen, Joshua M. 2013. *The structure of jarai clauses and noun phrases*. Arlington, TX: The University of Texas at Arlington Ph.D. dissertation.
- Kennedy, Christopher. 2012. The composition of incremental change. In Violeta Demonte & Louise McNally (eds.), *Telicity, change, and state: A cross-categorical view of event structure* Oxford Studies in Theoretical Linguistics, 103–121. Oxford: Oxford University Press.
- Kennedy, Christopher & Beth Levin. 2008. Measure of change: The adjectival core of degree achievements. In Louise McNally & Christopher Kennedy (eds.), *Adjectives and adverbs: Syntax, semantics, and discourse* (Oxford Studies in Theoretical Linguistics 19), 156–182. Oxford: Oxford University Press.
- Kratzer, Angelika. 2004. Telicity and the meaning of objective case. In Jacqueline Guéron & Jacqueline Lecarme (eds.), *The syntax of time* (Current Studies in Linguistics 37), 389–423. MIT Press.
- Krifka, Manfred. 1989. Nominal reference, temporal constitution and quantification in event semantics. In Renate Bartsch, Johan van Benthem & Peter van Emde Boas (eds.), *Semantics and contextual expressions* (Groningen-Amsterdam Studies in Semantics 11), 75–115. Foris: Dordrecht.
- Krifka, Manfred. 1992. Thematic relations as links between nominal reference and temporal constitution. In Ivan A. Sag & Anna Szabolcsi (eds.), *Lexical matters* Lecture Notes, 29–53. Stanford: Center for the Study of Language (CSLI).
- Lewis, M. Paul. 2009. *Ethnologue: Languages of the world*. Dallas: SIL International 16th edn.
- Travis, Lisa deMena. 2010. *Inner aspect: The articulation of VP*. Dordrecht: Springer.
- Wunderlich, Dieter. 1991. How do prepositional phrases fit into compositional syntax and semantics? *Linguistics* 29. 591–621.
- Zwarts, Joost. 2005. Prepositional aspect and the algebra of paths. *Linguistics and Philosophy* 28(6). 739–779.