1. Introduction

Progressive aspect has been characterized by event-in-progress readings, and not associated with resultative readings concerning a state resulting from a prior situation, typically expressed by perfect aspect. However, it is not unattested that in some languages the event-in-progress and resultative readings are grouped under a single category, e.g., the Japanese -tei- (Ogihara 1998) and the marker -ite in Totela (Bantu) (Crane 2013). This paper adds into this picture the morpheme cyux/nyux in Atayal,
an Austronesian language spoken in the northern mountainous areas of Taiwan.

The morpheme cyux/nyux, which takes different forms depending on spatial deixis, ‘distal’ for ‘cyux’ and ‘proximal’ for nyux, functions as a main verb denoting existence or possession, and an aspectual auxiliary often analogous to the English progressive; the two uses are morpho-syntactically distinguishable, e.g., by syntactic distribution and by their negative form (Huang 2008). This paper focuses on the semantics of the aspectual auxiliary cyux/nyux. I propose that cyux/nyux has a unified meaning as with a progressive, which places the reference time inside a proper part of the event described by the predicate, either a process or a result state through coercion.

The data in this paper come from my own fieldwork on the Squiliq dialect of Atayal spoken in Hsinchu County, Taiwan. Most data are embedded in contexts with speakers’ grammaticality and felicity judgments, largely following the procedures outlined in Matthewson (2004).

The remainder of the paper is organized as follows. Section 2 presents empirical evidence for the readings that cyux/nyux yields. Section 3 provides an analysis. Section 4 compares cyux/nyux to the markers with the same set of readings in other languages. Section 5 concludes.

2. Aspectually-conditioned readings

This section shows that cyux/nyux allows for varied readings depending on the lexical aspectual class of the verb in the scope of cyux/nyux.
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2.1. Event-in-progress readings and the imperfective paradox

The Atayal cyux/nyux has an event-in-progress reading, and for this reason it has been glossed or described as a progressive or imperfective aspect (e.g., Zeitoun et al. 1996, Huang 2008). As shown in (1), the described event overlaps with the reference time introduced by the punctual when-clause.

(1) m-wah=saku’ shira’ ga cyux m-’abi’ hiya’.
   AV-come=1S.ABS yesterday TOP PROG.DIST AV-sleep 3S.N
   ‘When I came yesterday, he was sleeping.’

The event-in-progress reading only arises with activity and accomplishment verbs;¹ with achievement and stative verbs, cyux/nyux gives rise to a result-state reading (see below); see S. Chen (2017) for distinguishing the four lexical classes in Atayal.

Also like progressives/imperfectives cross-linguistically, the event-in-progress reading with cyux/nyux exhibits the so-called imperfective paradox (Dowty 1979): A progressive/imperfective sentence does not entail its perfective/perfect counterpart. The perfect aspect wal in Atayal necessarily entails the culmination of an accomplishment event, but substituting wal with cyux/nyux no longer entails the culmination. This is shown in (2)-(3): Unlike in (2), continuing the cyux/nyux sentence with an assertion that the house-building event is not completed is felicitous in (3).

¹ Some accomplishments with cyux/nyux appear to allow for non-progressive readings, e.g., the verb bzirun ‘buy something’ is translated as an event completed, as in nyux maku’ bzi run kwara ka musa’ su’ b bla q niqun na baybway ‘I just bought all the fruits you like to eat’. Further investigation on accomplishment verbs is required.
The progressive in English and the imperfective in Romance languages (e.g., French) are either incompatible with an achievement verb, or induce an event-in-preparation reading (i.e., a preliminary process leading up to the culmination of events) (Dowty 1979, Rothstein 2004, Arregui et al. 2014). Atayal cyuw/nyuw however yields a result-state reading with achievements. Although the result-state reading has not been explicitly pointed out in the literature, examples are abundant, often indicated by translation or surrounding passages. For instance, the dying event in (4) is translated with the English perfect with a hint of a result state.

(4) cyux m-huqil yaba’=maku’.
PROG.DIST AV-die father = 1S.GEN
‘My father has died [not yet carried away].’

(Fuxing Squiliq Atayal, Egerod 1999:116)

The example in (5) is elicited out of the blue, in which the

2 The morpheme cyuw/nyuw in (3) is given as a free variant of cyux/nyux, which seems to have only the aspectual but not the verbal use. Throughout the discussion, I will simply refer to both variants as cyux/nyux.
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consultant’s comment suggests that the state of having reached the summit in the past (i.e., being at the summit) continues.

(5) \( nyux = maku' \) thk-an la.

\[
\text{PROG.PROX} = 1\text{S.ERG} \quad \text{arrive-LV} \quad \text{PRT}
\]

‘I’ve reached the summit.’ / \( \approx \) ‘I’m reaching the summit.’

Consultant’s comment: “You say this when you are now at the summit.”

Manipulating contexts with/without a result state manifests the same fact. The felicity of (6) supports that the state resulting from the putting event holds at the utterance time, whereas in (7), the state of being at the summit is stated as over, and using cyux is no longer felicitous.\(^3\) It is noteworthy that the presence of a result state entails that cyux/nyux-marked achievements have culminated, in contrast to the ongoing reading with durative events discussed above.

(6) Context: Where is the hoe?

\[
\text{cyux} = maku' \quad \text{syun} \quad \text{sa} \quad \text{qung balay na}
\]

\[
\text{PROG.DIST} = 1\text{S.ERG} \quad \text{put.PV} \quad \text{LOC inner truly GEN}
\]

\[
khu' = maku'.
\]

\[
barn = 1\text{S.GEN}
\]

‘I’ve put it in the most inner corner of my barn.’

\(^3\) A more precise generalization is that the result state is holding at a reference time (that can be distinct from the utterance time); support from this comes from an overlapping readings when cyux/nyux-marked achievements are modified by a punctual \textit{when}-clause.
(7) Context: You climbed the mountain and reached the summit. Right after you left the summit, your friend called you. You told him:

\[
\text{#cyux}=\text{saku’} \text{ tayhuk} \text{ b’bu’} \text{ rgyax} \text{ la.}
\]

\[
\text{PROG.DIST} = 1\text{S.ABS} \text{ arrive.AV} \text{ summit mountain PRT}
\]

‘I’ve arrived at the summit.’

_Cyux/nyux_ is also infelicitous in contexts where the culmination of a change of state hasn’t happened, as shown in (8); this demonstrates that an event-in-preparation reading is not available.

(8) Context: You carry heavy stuff on your back and you feel your waist is going to break as you can’t stand up straight.

\[
\{ \text{# cyux} \text{ m-kphuw} / \text{p-kphuw} \} \text{ hwinuk=maku’}.
\]

\[
\text{PROG.DIST} \text{ AV-snap} / \text{FUT.AV-snap} \text{ waist = 1SGEN}
\]

‘My waist is going to break.’

2.3 Result-state and current-state readings with statives

Stative predicates modified by _cyux/nyux_ appear to allow for result-state and current-state readings. With individual-level statives (i.e., those denoting permanent properties), _cyux/nyux_ often induces inchoativity. For example, when given out of the blue, (9) is translated as inchoative, and the consultant comments that a change of state recently occurred. _Cyux/nyux_ is also accepted in an inchoative context, as in (10).\(^4\) Given the described state holds at the utterance time, as in (10), I assume that this is a

\(^4\) The final particle _la_ is preferably present with inchoative readings; see below for this issue.
result-state reading similar to the reading that a cyux/nyux-marked achievement has.\(^5\)

(9) cyux m-nguray hiya'.
\hspace{1cm} \text{PROG.DIST AV-silly 3s.N}

Volunteered translation: ‘He is becoming silly.’
Consultant’s comment: “Sounds like he just became silly.”

(10) Context: You see your friend’s kid Tali’ after a long time.
\hspace{1cm} (nyux) krahu’ qu Tali’ la.
\hspace{1cm} \text{PROG.PROX big.AV ABS Tali’ PRT}

‘Tali’ (has) got big.’

Interestingly, cyux/nyux-marked individual-level statives can also appear in non-inchoative contexts, but in such cases the described state must be temporary, much like stage-level states (those which denote transitory properties), as in (11) vs. (12). A further example is given in (13), where adding cyux to the verb mngungu ‘be timid/feel fear’ describes a momentary state of that kind, unlike the bare form which is used for one’s character. Given the property of temporariness, I term this reading a current-state reading.

(11) Context: You are trying to remind me of who is who among our new friends. “Tali’ is big and Temu’s is small.”
\hspace{1cm} (#cyuw) krahu’ qu Tali’.
\hspace{1cm} \text{PROG.DIST big.AV ABS Tali’}

‘Tali’ is big.’

---

\(^5\) Ideally, an entailment test like (7) above for the state continuing is desired; this awaits further data collection.
(12) Context: A kid is standing in front of you. You’re surprised at his height.

\[\text{cyux} = \text{su wagiq.}\]

Volunteered translation: ‘You are growing tall.’ or ‘You are tall.’

(13) \[\text{cyux} m-\text{ngungu’ balay qu laqi’ qasa.}\]

‘That kid is afraid of something.’

#‘That kid is timid.’ (OK without \text{cyux})

(Fuxing Squiq Atayal, H.-T. Chen 2015:82)

\text{Cyux/nyux}-marked stage-level statives also possess both types of readings—result state and current state readings. The \text{nyux} sentence in (14) describes that one’s physical state has changed, and the result continues up to now (indicated by the temporal adverb \text{ssawni’} ‘now’). In (15), the context describes the state of that window being broken, and \text{nyux} is obligatory.

(14) \[\text{m-< in >’uy shira’ ha, ru nyux AV-< PST > tired yesterday first CONJ PROG.PROX lawkah ssawni’ qani la.}\]

\[\text{strong.AV today.earlier this PRT}\]

‘He was tired yesterday but he has recovered (lit. got strong) at this moment.’

Me: “Can this mean he is still recovering?”

Consultant: “No, he is fully recovered.”

(15) Context: You open the windows in the morning, and find one of them is cracked.

\[\text{(<nyuw)} m-bka’ qu tubung qasa la.\]

\[\text{PROG.PROX AV-break ABS window that PRT}\]

‘That window is broken.’
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The current-state readings are shown by the felicity of cyux/nyux in (16), where the context does not specify any transition into the state of being bright but describes the existence of a past temporary state.

(16) Context: A policeman asking a witness, “What did you notice when you entered the room?”

cyuw s < m > yax qu pilaw = nya’
PROG.DIST bright < AV > ABS light = 3S.GEN
hya’ ga cyux s < m > 'an ngta’
EMP TOP PROG.DIST feed < AV > chicken
tay tanux Tali’ hya’.
LOC outside Tali EMP

‘The light was on, but Tali was feeding chickens outside.’

While the result-state and current-state readings are presented as two types of readings, I suggest that they are in fact the same reading; that is, the current-state reading also entails a change of state. This proposal is supported by the fact that adding cyux/nyux to individual-level stative induces an inchoativity effect, e.g., (9). The inchoativity however seems to be a tangled issue in other examples where the final particle la is also present, e.g., (10), (14), and (15). Yet, la does not always contribute to inchoativity; Gorbunova (2015) shows that la has an unexpected earliness effect as with ‘already’ for cyux/nyux-marked activities. If cyux/nyux-marked statives were simply non-inchoative current statives (i.e., cyux/nyux contributed to temporariness rather than inchoativity), la would similarly give rise to an ‘already’ reading as with cyux/nyux-marked activities. Thus, I conclude that cyux/nyux-

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6 The reading would be comparable to English He is already being big, which is however not the intended reading of cyux/nyux-marked statives with la, e.g., (10), (14), and (15).
marked statives consistently denote a state resulting from an earlier change.

2.4 Summary

Summarizing this section, Atayal cyux/nyux gives rise to event-in-progress readings with activities and accomplishments, where the imperfective paradox arises as with the English progressive, but it yields result-state readings with achievements and statives.

3. Analysis

I propose that cyux/nyux has a unified semantics denoting a proper stage of the VP event, similar to a progressive aspect. I argue that a coercion rule (a covert type-shifting operation, cf. de Swart 1998) in Atayal shifts achievements to inchoative states, which cyux/nyux can take as an input.

To implement the analysis formally, I adopt Altshuler’s (2014) STAGE operator for progressive aspect. As given in (17), cyux/nyux denotes a function from a predicate of events to a predicate of times and worlds, and it is true of a time t and w if and only if there is an event e, which is a stage of the VP-event e’ in a world w’, and the runtime of e in w includes t.

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7 Other approaches that can deal with the imperfective paradox, e.g., Portner (1998), may also serve the purpose.
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(17) a. \[
[[\text{cyux/nyux}]]^{\sigma \epsilon} = \lambda P_{<\lambda e, \lambda t \lambda w. \exists w' \exists e \exists e'}
\text{STAGE}\{e, e', w, w', P\} \& t \subseteq \tau(e)]
\]
b. \[
[[\text{STAGE}\{e, e', w, w', P\})]^{\sigma \epsilon} = 1 \text{ iff (i)-(iv) holds:}
\]
   (i) the history of w' is the same as the history of w up to and including \(\tau(e)\)
   (ii) w' is a reasonable option for e in w
   (iii) \([[P]]^{\sigma \epsilon}(e', w') = 1\)
   (iv) \(e \subset e'\)

The requirements in (i-iii) of (17b) ensure that e develops into a VP-event e' in a possible world whose history is the same as the actual world up to the runtime of e and in which e continues on the basis of reasonable properties of e in the actual world (Landman 1992). The condition in (17b-iv) only requires that e is a proper part of the VP-event e', and thus an accomplishment verb does not entail culmination. Assuming that cyux/nyux behaves the same as the English progressive regarding event-in-progress readings, I refer the reader to Altshuler (2014) and Rothstein (2004) for a formal implementation of progressive-marked accomplishments.

The condition in (17b-iv) is not satisfied when VP events are achievements since achievement events consist of atomic stages (Altshuler 2014). However, progressive-marked achievements are not always unavailable; for example, they may refer to a preparatory stage in English. In one approach in the literature, achievements within the scope of progressive are type-shifted into an event process which has proper stages (Moens and Steedman 1988, Rothstein 2004, a.o.). Following this spirit, I propose a different type-shifting rule for Atayal achievements, as in (18); it turns an achievement into a complex predicate with an inchoative event, BECOME, as well as an associated result state, \(P\). For instance, the event of reaching a summit after shifting acquires the
state of being at the summit, as in (19) (where \(e_1 \sqcup e_2\) is the sum of \(e_1\) and \(e_2\), and the superscript \(S\) is the operation forming a singular entity out of this sum).

\[
(18) \text{SHIFT}(VP_{punctual}): \lambda e. \lambda w. (\text{BECOME})(e)(w) \rightarrow \\
\lambda e. \lambda w. \exists e_1 \exists e_2 [e = ^{S}(e_1 \sqcup e_2) \& (\text{BECOME}(P))(e_1)(w) \& (P)(e_2)(w)]
\]

\[
(19) \lambda e. \lambda w. \exists e_1 \exists e_2 [e = ^{S}(e_1 \sqcup e_2) \& \text{reach-a-summit}(e_1)(w) \\
\& \text{being-at-a-summit}(e_2)(w) \& \text{Theme}(e)(w) = x]
\]

Applying \(cyux/nyux\) to (19) gives (20), which says that the sentence is true in \(w\) at \(t\) iff there is an event \(e'\) in \(w'\), of which \(e\) is a proper part in \(w\), such that \(e'\) is Tali’s reaching a summit with the associated result state, and the runtime of \(e\) includes \(t\). Since the culmination is atomic, \(e\) must be equal to or a part of the result state. This result thus correctly captures the fact that achievements culminate and their result state includes the reference time.

\[
(20) [[cyux/nyux (Tali' reach a summit)]^{\delta e} = \lambda t. \lambda w. \exists w' \exists e \\
\exists e' [\text{STAGE}(e, e', w, w', \lambda e''. \lambda w''. \exists e''_1 \exists e''_2[e'' = \\
^{S}(e''_1 \sqcup e''_2) \& \text{reach-a-summit}(e''_1)(w'') \& \text{being-at-a-summit} \\
(e''_2)(w'') \& \text{Theme}(e'')(w'') = \text{Tali'}] \& t \subseteq \tau(e)]
\]

Statives are typically assumed to have no stages (e.g., Rothstein 2004),\(^8\) and thus are expected to not occur in the progressive as well.\(^9\) Yet \(cyux/nyux\) can mark statives, and output

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\(^8\) As noted by Rothstein (2004:12), “states […] are non-dynamic so that every bit is exactly the same as every other bit and therefore no stages can be distinguished.”

\(^9\) This assumption is compatible with the view that statives are homogeneous, denoted by predicates of time without an eventuality argument (see e.g., Katz 2003); they are thus of the wrong type for the progressive to apply to.
a result state. Given that bare statives can be non-inchoative and homogenous in Atayal, the question is then where the change of state with cyux/nyux comes from. It cannot be provided by the semantics of cyux/nyux, since cyux/nyux does not give activity and accomplishment events an inchoative effect. The options left are (a) stative predicates are lexically ambiguous between homogeneous and inchoative, and (b) stative predicates are coerced into inchoatives. Whatever the correct analysis is, which requires further research, I assume that cyux/nyux can apply to inchoatives, which have stages (i.e., a BECOME and a P event, similar to the coerced meaning of achievements after coercions, cf. (19)); having stages also explains why cyux/nyux-marked statives have a temporariness effect (cf. (11-13)). The output of a cyux/nyux-marked stative is exemplified in (21), where the reference time \( t \) is necessarily included in the result state (because the change-of-state part has no proper stages); this thus accounts for the temporariness effect of statives with cyux/nyux.

(21) \[ [[\text{cyux/nyux (Tali' get big)}]]^{t\in E} = \lambda t. \lambda w. \exists w' \exists e \exists e' \\text{STAGE}(e, e', w, w', \lambda e'' \lambda w'' \exists e''_1 \exists e''_2 [e'' = \delta_{(e''_1 \cup e''_2)}] \& \text{get-big}(e''_1)(w'') \& \text{big}(e''_2)(w'') \& \text{Theme}(e'')(w'') = \text{Tali'}] \& t \subseteq \tau(e)]

4. **Viewing cyux/nyux in a cross-linguistic perspective**

The result-state reading of Atayal cyux/nyux is peculiar when compared to the English progressive but the fact that one grammatical form covers both event-in-progress and result-state readings has been attested in other languages. Like cyux/nyux, the marker -ite in Totela (Bantu) gives a perfect or resultative-like reading with change-of-state verbs (Crane 2013), while the marker
ko iss in Korean can co-occur with (non-permanent) statives, in addition to event-in-progress readings (Lee 2006).\(^\text{10}\) Moreover, bearing a strong resemblance to my proposal for cyux/nyux, both -ite and ko iss are analyzed as monosemous: -ite ‘picks a phase resulting from some part of a situation’s event structure, and presents it as a stable, undifferentiated property’ (Crane 2013:171), whereas ko iss denotes a middle phase of a situation (either a process or a state) (Lee 2006).

The two types of reading are also related in other grammatical aspects such as perfect and imperfective. The Japanese -tei-marker has typical perfect readings but also allows for the same two types of reading based on lexical aspect as with cyux/nyux (Ogihara 1998, Nishiyama 2006, a.o.). Similarly, while the marker kua in Niuean (Polynesian) qualifies as a perfect in many respects, it has event-in-progress readings with activities, and result-state readings with statives (Matthewson et al. 2015). According to the authors, these readings arise when the described process or state in the perfect happens to continue to the reference time (in the case of present perfect), thereby yielding a temporal configuration shared with cyux/nyux, -ite, and ko iss (i.e., event time includes reference time).

Likewise, imperfective aspect in many Slavic languages (Arregui et al. 2014) has the two types of reading conditioned by lexical class, among other readings. Arregui et al. (2014:332) view the result-state reading as the mirror image of the event-in-preparation reading in Romance languages but argue that the choice between the two must be hardwired into the semantics of imperfective as one language can have one but not the other.\(^\text{11}\)

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\(^\text{10}\) Korean’s ko iss however is like the English progressive in giving an event-in-preparation reading for achievements.

\(^\text{11}\) Arregui et al. (2014) state that the choice should not be understood in terms of competition with more specialized forms, as in some languages,
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This implies that my proposed coercion analysis is not purely pragmatic but semantic; I leave this issue for future research.

5. Conclusion

This paper argues that the aspect cyux/nyux in Atayal denotes an inclusion relation between the reference time and the time of an event process or a result state like a progressive; the former gives a typical progressive reading as with progressive aspect, while the latter a temporary (result) state. I propose that achievements in Atayal are coerced to inchoative statives rather than a preparatory process in Atayal. While using a single form for the two types of reading is attested across languages, the question remains why the coercion of achievements into inchoatives is available in one language but not in another.

References


having a perfect aspect or conditional/modal element does not block the expected reading.
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