

**Early time reference in Inuktitut child language:  
The role of event realization and aspectual interpretation**

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In Inuktitut, a polysynthetic language spoken by the Inuit of arctic Quebec, a single temporally unmarked verb form is interpreted as either perfective or imperfective, depending on the telicity of the verb stem. The theoretical framework of Bohnemeyer and Swift (in press) explains this alignment pattern with the notion of event realization, that is, the entailment of occurrence of an event (at a certain time). This paper traces the role of event realization and aspectual interpretation in the development of time reference in children acquiring Inuktitut. These children exhibit three developmental phenomena that appear puzzling or contradictory in comparison with findings reported crosslinguistically. First, early on children acquiring Inuktitut demonstrate facility with the variation in time reference of the temporally unmarked verb forms, even in the absence of overt linguistic cues marking temporal differences. Second, they develop competence with future marking before past marking. Third, they first use marked past forms with atelic verbs. The analysis presented provides a uniform explanation for these three developmental puzzles.

### **1. Introduction**

Children acquiring the temporal system of Inuktitut, a polysynthetic language spoken by the Inuit of arctic Quebec, exhibit some developmental phenomena that appear puzzling when compared with findings reported for other languages, and in some cases what the Inuit children do goes against theoretical claims that have been made based on those findings.

This paper addresses three properties of the developmental sequence of temporal reference marking in the speech of children acquiring Inuktitut that differ from findings reported crosslinguistically. First, very early on Inuit children use a single temporally unmarked verb construction for two kinds of temporal reference: perfective reference with telic event descriptions, and imperfective reference with atelic event descriptions. In other words, they use a single, uniform construction with different interpretations, depending on the meaning of the root (or stem), and there are no “local cues” to facilitate differentiation of interpretation (cf. *-ed* and *-ing* in English, *spilled* and *swimming*).

Even though this sequence of development appears unusual in light of the crosslinguistic findings, on the analysis presented here, what the developmental pattern of

Inuktitut shares with what children are doing crosslinguistically is the pattern of pairing perfective aspect with telic event descriptions and imperfective aspect with atelic event descriptions. In the other languages studied, children exhibit this pattern with a restricted use of the tense-aspect markers in their language, but in Inuktitut, the children exhibit this pattern with a single, unmarked form.

The second development in Inuktitut child speech is that the children use markers for future time reference before they use markers for past time reference, in striking contrast to findings reported for other languages. Third, their first past and perfective marking appears with atelic predicates, also in contrast to the crosslinguistic findings.

I account for these three puzzles with an analysis based on the notion of EVENT REALIZATION, which intuitively is the entailment of factual occurrence of an event at a certain time. Event realization plays a double role in the analysis presented here. On this analysis, event realization constrains aspectual reference in early child language crosslinguistically. In addition, it plays a special role in Inuktitut, because in Inuktitut there is a single temporally unmarked verb form that receives its aspectual interpretation under event realization, as described in the next section.

## 2. The perfective/imperfective distinction in Inuktitut

The Inuktitut temporal system is based on a future-nonfuture opposition, which is part of a more general irrealis-realis opposition. Future is the marked member of the opposition, so all future time reference must be overtly marked, and temporally unmarked verbs have nonfuture time reference that can be either perfective or imperfective, depending on the semantics of the verb. Temporally unmarked verbs with telic stems have a perfective interpretation, as in (1), while those with atelic stems have an imperfective interpretation, as in (2):<sup>1</sup>

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|---|---|
| <p>(1) <i>Anijuq.</i><br/>         ani-juq<br/>         go.out-PAR.3sS<br/>         ‘She went out.’</p> | <p>(2) <i>Pinasuttuq.</i><br/>         pinasuk-juq<br/>         work-PAR.3sS<br/>         ‘She is working.’</p> |
|---|---|

Examples (1) and (2) are representative of the basic verb form in Inuktitut, which consists of a verbal root (or a more complex stem) followed by an ending that encodes person, number and mood, but not tense or aspect.<sup>2</sup> In addition to verb forms with no overt temporal marking, Inuktitut has a rich system of aspectual markers and markers for degrees of temporal remoteness (four for future and at least five for past time (as detailed in Swift (2001))). Overt temporal markers are needed to express temporal meanings

<sup>1</sup> The following notation is used in the examples: Nominal case: ABS = absolutive; LOC = locative. Verb mood: CTG = contingent; IMP = imperative; IND = indicative; INT = interrogative; PAR = participial (functionally equivalent to standard indicative in *Tarramiut*). Verbal inflection (e.g., PAR.3sS): 1 = first person; 2 = second person; 3 = third person (disjoint); s = singular; d = dual; p = plural; S = subject; O = object. Nominal inflection (e.g., ABS.SG): SG = singular; PL = plural. Possessed nominal inflection (e.g., ABS.1Ssg): 1 = first person possessor; S = singular possessor; sg = singular possessum. Suffixes: EMPH = emphatic; ING = ingressive; NEG = negation; NZ = nominalizer; PASS = passive; PAST = past; PERF = perfect; POL = politeness (preceding imperative inflection); PRSP = prospective; TERM = terminative; RCT.PAST = recent past; TODAY.PAST = same day past.

<sup>2</sup> Certain subordinating endings that have temporal properties are not considered here as they are not used productively in early child speech.

beyond the lexically distributed perfective/imperfective contrast illustrated in (1) and (2). To express imperfective aspect with telic predicates and perfective aspect with atelic predicates, overt aspect markers must be used. For instance, the ingressive marker *-liq-* is used in (3) to establish imperfective reference with the telic verb stem *ani-* ‘go out’, and the terminative marker *-jariiq-* establishes perfective reference on the activity denoted by the atelic verb stem *pinasuk-* ‘work’ in (4):

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|--|--|
| (3) <i>Anilirtuq.</i><br>ani- <b>liq</b> -juq<br>go.out-ING-PAR.3sS<br>‘She is (in the process of) going out.’ | (4) <i>Pinasugiirtuq.</i><br>pinasuk- <b>jariiq</b> -juq<br>work-TERM-PAR.3sS<br>‘She finished working.’ |
|--|--|

Similarly, markers of temporal remoteness are required to convey temporal distance from the present. (5) illustrates past reference to an event that occurred on the previous day from the time of utterance with the ‘yesterday’ past remoteness marker *-lauq-*, and (6) illustrates future reference to the next day with the ‘tomorrow’ future remoteness marker *-laaq-*.

- |   |  |
|---|--|
| (5) <i>Anilaurtuq.</i><br>ani- <b>lauq</b> -juq<br>go.out-YESTERDAY.PAST-PAR.3sS<br>‘She went out yesterday.’ | (6) <i>Pinasulaartuq.</i><br>pinasuk- <b>laaq</b> -juq<br>work-TOMORROW.FUT-PAR.3sS<br>‘She will work tomorrow.’ |
|---|--|

The conditions on the felicity of use of the utterances shown in (1) and (2) are such that the event that is asserted must occur (i.e. be realized) with respect to the time for which the assertion is made (i.e., the Kleinian topic time, defined in section 4). Thus it is infelicitous to utter (1) if the person in question has not actually gone out at the time of utterance. Likewise, it is infelicitous to utter (2) if the person is not working at the time the utterance is made. The next section examines the relationship between event realization and aspectual interpretation in Inuktitut in more detail.

### 3. Event realization and aspectual interpretation

Bohnemeyer and Swift (in press; henceforth B&S) show that across languages, there is a consistent affinity of atelic predicates for imperfective viewpoints, while telic predicates tend to favor perfective viewpoints, as follows:

- (7) *Preferred correlation between telicity and viewpoint selection*
- | <u>Event description</u> | ~ | <u>Viewpoint</u> |
|--------------------------|---|------------------|
| Telic                    | ~ | Perfective       |
| Atelic                   | ~ | Imperfective     |

This pattern manifests itself in languages like German, Russian, and Inuktitut in the aspectual interpretation of forms not overtly marked for what Smith (1991) calls viewpoint aspect. For this paper, I focus on this correlation in Inuktitut, and as it manifests itself in early child language crosslinguistically.

In child language, data from a number of typologically diverse languages show that children demonstrate an initial preferential distribution of tense-aspect markers based on verb meaning, consistent with the correlation in (7). At first, children tend to use past or perfective marking only with telic verbs, and present or imperfective marking only

with atelic verbs. For example, data from children acquiring English show that children's first uses of past marking appear with verbs such as *drop*, *spill* and *fall*, and progressive – *ing* with verbs such as *run*, *sleep* and *swim* (Bloom, Lifter and Hafitz 1980; Sachs 1983; Shirai and Andersen 1995; Clark 1996):

(8) *It spilled.*

(9) *She's swimming.*

B&S explain the alignment patterns between telicity and viewpoint aspect with reference to the notion of event realization. In the case of Inuktitut, the temporally unmarked verbs in (1) and (2) entail event realization with respect to the Kleinian topic time, and it is this feature that determines their aspectual interpretation: perfective for telic predicates, and imperfective for atelic predicates.

The aim of this paper is to trace the role of event realization, telicity and viewpoint aspect in the development of time reference in the speech of young children learning Inuktitut. The correlation between event realization, telicity and viewpoint aspect provides a consistent explanation for the three properties of developmental sequence of temporal reference in Inuktitut child language mentioned above.

#### 4. Aspect, telicity and event realization

This section outlines the framework on which this analysis is based (for a full explication, see Bohnemeyer and Swift (in press)). B&S formalize the notion of event realization and capture the telicity-dependent patterns of aspectual reference on which it is based by combining Krifka's (1989, 1992, 1998) event lattices with a model-theoretic interpretation of Klein's (1994) theory of tense and aspect.

Klein (1994) characterizes perfective and imperfective aspect as a relation between the temporal parameters of TOPIC TIME ( $t_{TOP}$ ), the time for which a proposition is evaluated (e.g., for which an assertion is made), and SITUATION TIME (Tsit), the time at which an event occurs. Tsit is a situated time interval that gives the run-time of the event, which B&S capture with the temporal trace function  $\tau(e)$ .

B&S recast Klein's analysis in a Davidsonian (1967) framework. Perfective aspect (PRV) selects a topic time  $t_{TOP}$  such that  $\tau(e)$  is part of  $t_{TOP}$ , as defined in (10), and imperfective aspect (IMPF) selects a  $t_{TOP}$  such that  $t_{TOP}$  is a proper part of  $\tau(e)$ , as defined in (11):

$$(10) \quad \text{PRV} := \lambda P \lambda t_{TOP} \exists e [P(e) \wedge \tau(e) \leq_T t_{TOP}]$$

$$(11) \quad \text{IMPF} := \lambda P \lambda t_{TOP} \exists e [P(e) \wedge t_{TOP} <_T \tau(e)]$$

For the characterization of (a)telicity, B&S adopt a part-structure model of events, following Krifka (1992, 1998) and assume  $U_E$  is a universe of events within an event structure  $E$  that defines a mereological part relation  $\leq_E$  and proper part relation  $<_E$  among events.

B&S define telicity as quantizedness and atelicity as divisiveness. Specifically, telicity is defined in terms of Krifka's quantized predicates (1992:32 and 1998:200). An event predicate  $P$  is telic if an event  $e$  that instantiates  $P$  cannot be a proper part of another event  $e'$  that also instantiates  $P$ :

$$(12) \quad \forall P \subseteq U_E [\text{TEL}_E(P) \leftrightarrow \forall e, e' \in U_E [P(e) \wedge P(e') \rightarrow \neg e' <_E e]]$$

Atelicity is defined as divisive. An event predicate  $P$  is atelic if an event  $e$  that

instantiates  $P$  has at least one proper part  $e'$  that falls under the same predicate:

$$(13) \quad \forall P \subseteq U_E [\text{ATEL}_E(P) \leftrightarrow \forall e \in U_E [P(e) \rightarrow \exists e' \in U_E [P(e') \wedge e' <_E e]]]$$

As mentioned above, the ‘realization’ of an event amounts to what is meant by saying that an event occurs or happens.<sup>3</sup> The crux of the analysis is the formalization of the notion of event realization in (14). The realization conditions of a predicate depend on its telicity, because only the parts of an event that fall in  $t_{TOP}$  are entailed to be realized, so  $t_{TOP}$  is a filter on event realization.

$$(14) \quad \forall P, t_{TOP}, e \subseteq E [\text{REAL}_E(P, t_{TOP}, e) \leftrightarrow P(e) \wedge \exists e' [P(e') \wedge e' \leq_E e \wedge \tau(e') \leq_T t_{TOP}]]$$

An event  $e$  that falls under  $P$  is realized at a time interval  $t_{TOP}$  iff  $t_{TOP}$  contains the run time  $\tau(e')$  of a subevent  $e'$  of  $e$  that also falls under  $P$ . For telic predicates, according to the definition of  $\text{TEL}_E(P)$  in (12), there are no subevents that fall under a  $\text{TEL}_E(P)$  so the whole event must fall in  $t_{TOP}$  to be realized, and this requires perfectivity according to (10). For  $\text{ATEL}_E(P)$ , only one subevent that falls under  $P$  must be realized, and this is compatible with IMPF in (11).

### 5. The Child Language Data

The data for this study are taken from two longitudinal spontaneous speech corpora collected by Crago (1988) and Allen (1996). The data represent the *Tarramiut* (Hudson Strait) dialect of Inuktitut, spoken by approximately 1500 Inuit in arctic Quebec. Inuktitut is still the first language of many children as well as the language of instruction for early primary education, although beyond the first years, formal instruction is conducted predominantly in English or French. The combined corpora represent eight Inuit children with ages ranging from 1;0 up to 3;6, all acquiring Inuktitut as a first language.

The data collection took place in functionally monolingual Inuit communities of approximately 200 people in arctic Quebec. The children were videotaped on average for four hours per month for nine months in naturalistic communication situations with caregivers, siblings and peers. The child speech data, as well as speech from those who interacted with the children during taping, were transcribed and checked by native speakers and entered into a database in the CHAT format (MacWhinney and Snow 1990).

Table 1 shows the ages and mean length of verbal utterances (verbal MLU) produced by the children during the sessions included in the data reported here. The verbal MLU value is the mean of productive morphemes per utterance in a speech sample and provides a metric of developmental complexity independent of speaker age.<sup>4</sup>

The speech data in the selected recording sessions were coded and analyzed for developmental trends in temporal reference (for full details, see Swift (to appear)). The remainder of the paper examines the three developmental puzzles introduced in section 1 in light of the approach sketched in section 4.

<sup>3</sup> The term ‘event realization’ is adopted from Pederson (in press) and Talmy (1991).

<sup>4</sup> See Allen (1996) for discussion of the MLU measure in polysynthetic languages.

Table 1 *Child, age, and verbal mean length of utterance*

CHILD	AGE (YEARS;MONTHS)	VERBAL MLU
Elijah	2;0	4.13
	2;5	5.11
	2;9	5.32
Lizzie	2;6	4.29
	2;10	4.48
	3;3	4.96
Paul	2;6	3.89
	2;11	4.18
	3;3	4.50
Louisa	2;10	3.28
	3;2	3.85
	3;6	4.37
Tumasi	1;9	1.29
	2;1	2.89
Jini	1;0	1.00
	1;4	1.68
	1;8	2.13
	2;1	2.53
Lucasi	1;8	1.16
	2;0	1.57
	2;4	1.81
	2;8	2.04
Sarah	1;4	0
	1;8	1.25
	1;11	2.34
	2;4	2.35

### 6. Temporally unmarked verbs

The first developmental puzzle is Inuit children's early facility with the variation in time reference of the unmarked verb form. From a very early stage in their verbal development, before they use overt temporal markers such as those shown in (3)-(6) above, Inuit children use temporally unmarked verbs such as those in (1) and (2) in the appropriate contexts: that is, they use unmarked telic predicates in reference to completed events (cf. (15)-(17)) and unmarked atelic predicates in reference to ongoing events (cf. (18)-(20)). Moreover, the production data indicate that the children do not use unmarked telic verbs with ongoing event reference, or unmarked atelic verbs with completed event reference.

- (15) *Katapu.*  
 katak-vuq  
 fall-IND.3sS  
 'It fell.' (Jini 1;4)
- (16) *Piikpa.*  
 piiq-va  
 remove-INT.3sS  
 'Did it come off?' (Jini 1;4)

- (17) *Milupara!*  
 miluq-vara  
 hit.with.projectile-IND.1sS.3sO  
 'I hit her!' (Elijah 2;9)
- (18) *Tiiturpuq.*  
 tii-tuq-vuq  
 tea-consume-IND.3sS  
 'She's drinking tea.' (Jini 1;8)
- (19) *Ammutu maani.*  
 ammu-juq                    ma-ani  
 sleep-PAR.3sS            here-LOC  
 'She's sleeping here.' (Jini 1;8)
- (20) *Ataataga sinittu kinalu?*  
 ataata-ga                    sinik-juq                    kina=lu  
 father-ABS.1Ssg            sleep-PAR.3sS            who=and  
 'My father is sleeping, and who (else)?' (Elijah 2;0)

The puzzle is how children acquiring Inuktitut come to terms with the variability of time reference within the same verb form. On this analysis, children refer only to realized events in their early speech, and they pick up on the forms in the input that allow them to do that. In a language such as English, there are two different forms, one for telic (marked past) and one for atelic (marked progressive) event descriptions. In contrast, in Inuktitut there is one form for both telic and atelic event descriptions: the unmarked form. Although the Inuktitut encoding of temporal variation in a single unmarked verb form contrasts with languages that have marked distinctions such as English, the expression of realized events with the unmarked verb form appears to come quite naturally to children acquiring the language. The analysis of B&S uses the notion of reference to events under 'event realization' to give a uniform interpretation to the single temporally unmarked form.

### 7. Future before past

The second puzzle is that Inuit children use marking for future time reference before they use marking for past time reference, a development that is in striking contrast to findings that have been reported across languages. For example in English, the first temporal markers used in child speech are progressive *-ing*, irregular past, and past marked with *-ed* (e.g., Brown 1973; Bloom, Lifter and Hafitz 1980).

The first future markers in Inuktitut child speech (prospective aspect *-si-* and near future *-langa-*) appear in productive use when children have a verbal MLU of 2.5 (compared to first productive past marking at MLU 4.0). Some examples of early future marking are shown below:

- (21) *Ataisimmat.*  
 atai-si-mmat  
 go.out-PRSP-CTG.3sS  
 'He's going to go out.' (Tumasi 1;9)



- (26) *Takujauqqaumat?*  
 taku-jau-**qqa**-mmat  
 see-PASS-TODAY.PAST-CTG.3sS  
 ‘Because he was seen (filmed) (earlier today)?’ (Paul 2;6)
- (27) *Maaniikainnamat.*  
 ma-ani-it-**kainnaq**-mmat  
 here-LOC-be-RCT.PAST-CTG.3sS  
 ‘It was here (a moment ago).’ (Lizzie 2;6)

First marked past with atelic predicates in Inuktitut child language can be explained with reference to the unmarked verb form having past-time (perfective) reference with events denoted by telic predicates, since these require completion for event realization. So the first marked forms for past time reference are used for reference to completed events denoted by atelic predicates.

### 9. Conclusion

On the analysis presented here, the three developmental puzzles in Inuktitut child speech can be explained with reference to the notion of event realization. In Inuktitut, event realization has a special status because it determines the aspectual reference of temporally unmarked verbs. Children acquiring Inuktitut start out using the temporally unmarked verb form to talk about ongoing activities and completed events – that is, realized events, and their subsequent development of the temporal marking system follows from that. More generally, on this analysis event realization constrains aspectual reference in early child language crosslinguistically, so children start out with whatever resources the language makes available for realized events. In many languages, this involves marked tense-aspect distinctions, but in Inuktitut, this happens to be the unmarked verb form. From a semantic perspective, interpreting the dual temporal reference of unmarked verbs under event realization provides a uniform temporal interpretation for the unmarked form. From a cognitive perspective, this analysis offers a conceptual naturalness and simplicity.

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