Deriving deictic directionality and associated motion in Ktunaxa

Introduction: This research concerns the encoding of deictic direction of motion in Ktunaxa, an isolate language of the Columbia River Basin in Canada and the USA. Like many languages of North America, Ktunaxa marks deictic direction in its verbal morphology, with distinct positions in the verb corresponding to location, deictic direction, and manner of motion. This configuration has intriguing implications for semantic and structural theories of the (de)composition of motion events (Talmy 2000, 2017), and in particular, the notion of associated motion (AM): morphology which adds a deictically-oriented motion event to a non-motion stem (Guillaume & Koch 2021).

The deictic directional prefixes (DDPs) in Ktunaxa are not fully described, despite being first identified in Boas (1926), but their deictic and AM properties have been noted in previous research (Morgan 1991, Dryer 2002). While Dryer (2021) recognizes that AM readings occur in Ktunaxa, he claims they are not fully grammaticized, and are encoded by verbs rather than functional morphology. Providing a full description of the DDPs, I show that they are affixal, occur in a fixed position in verbal stems, and contribute predictable meaning. I also show that they are multifunctional, encoding direction of motion for motion verbs, and adding a motion event to non-motion verbs. I propose that the DDPs contain an event argument, and that mono- or bi-eventive readings are derived via (mis-)matches in semantic type.

Description: Direction is encoded by four prefixes, which vary in deixis and telicity (Table 1). While telic DDPs entail arrival, unspecified DDPs are compatible with arrival or non-arrival.

	Telic	**Unspecified**
Away from Deictic Centre	*-xa-*	*-na-*
Toward Deictic Centre	*wa-*	*-ka-*

Table 1: Direction and Telicity of DDPs

The DDPs immediately precede bound verb stems or a preverbal base (1), and must all (except *wa-*) be preceded by a prefix encoding location, manner, or temporal aspect (2a, b).

(1) a. ʔa-**ka**-nut-i Puł.
out-V-chase-IND Paul
'Paul chased it out, **coming**.'

b. **Wa**-ł ha-q-niʔ-ni Ȼan.
V.TL-PVB ASP-swim-ST-IND John
'John has swum here (**coming**).'

(2) Hu [qu-/ʔałqa-/ʔakłaʔ-]**na**-x-i.
1SBJ [there-/across-/different-]A-move-IND
'I went [there/across/a different way].'

b. Hu s-**na**-x-i
1SBJ PROG-A-move-IND
'I am going.'

Deictic direction and Associated Motion: When DDPs combine with verbs of motion, they act as deictic directionals, modifying the path of motion by deictically orienting its origin or endpoint (1, 2). When DDPs combine with other verbs, they pattern as markers of associated motion, introducing a motion event. Typically, this event precedes the eventuality denoted by the verb (3, 4), but with some stems (*qanitła?* 'have a house there') the two eventualities overlap (5).

(3) Ȼan ȼi-**na**-ł ha-wis-qaʔ-ni k=wił-qap-s nuʔkiy-s.
John ASP-A-PVB ASP-stand-exist-IND C=big-exist-OBV rock-OBV
'John went and stood by the big rock.'

(4) Hu **wa**-yiks-iy-ax-ni.
1SBJ V.TL-spend.night-REFL-APPL-IND

‘I came to spend the night with him.’

(5) Ƈan qa-w-**xa**-ɬ qa-n-itɬaʔ-ni Cranbrook-s.
John thus-to-A.TL-PVB thus-V.POS-house-IND Cranbrook-OBV
‘John put his house in Cranbrook.’

Analysis: This pattern aligns with findings across a typologically diverse range of languages (Dryer 2021; Ross 2021); when a morpheme has both DD and AM functions, its interpretation is dependent on lexico-aspectual characteristics of the predicate it modifies. For example, eventive predicates are more likely to pattern as DD, while statives pattern as AM (Belkadi 2016, 2021).

I attribute the multi-functionality of the Ktunaxa DDPs to semantic type. Adopting the notion of path from Zwarts 2005 (building on Jackendoff 1991; Zwarts 1997), I propose that both DDPs and motion verbs require an eventuality *e* and a vector argument *v.* Together, these arguments are used to define a path of motion aligned with the runtime of *e* (TRACE(*e*)), as well as a point on that path (the end-point of *v*). For motion verbs, the end-point of *v* may spatially define any point *i* on the path, while for the DDP *-xa-* ‘telic motion away from the deictic centre’, it defines the end of the path (TRACE(*e*)(1)). Because the DDPs are deictically oriented, the vector *v* of *-xa-* is defined as extending away from a contextually supplied deictic centre, DC_C. An additional conjunct compares *v* to a vector *v′* which is mapped to the start point of the path (TRACE(*e*)(0)), ensuring that the path of motion is one that progressively moves away from the DC_C.

Sharing a type, motion predicates and the DDPs combine by predicate modification, deriving a mono-eventive reading. The remaining vector argument then defines a single point on the path aligned with the eventuality.

(9) a. *Motion predicate* ⟦-nuxu α⟧ *‘α flies’*

$\lambda v \lambda e.\ \text{flying}(e) \wedge \text{theme}(e)(\alpha) \wedge \exists i[i \in [0,1] \wedge \text{loc}(\text{TRACE}(e)(i), v)]$

b. *DDP* ⟦-xa-⟧ *‘motion away from deictic centre’*

$\lambda v \lambda e.\ \text{ext}(v, DC_C) \wedge \text{loc}(\text{TRACE}(e)(1), v) \wedge \exists v'[\text{ext}(v', DC_C) \wedge |v'| < |v| \wedge \text{loc}(\text{TRACE}(e)(0), v')]$

When a DDP modifies a verb without a vector argument, type mismatch is resolved by inserting the operator in (10) which conjoins the eventualities of the verb and DDP as sub-events ($\leq_E$) of a single complex event (inspired by the analysis proposed for serial verb constructions in Igbo by Zimmerman & Amaechi (2024)). This operator additionally orders their end-points (*end*(*e*)), such that the motion event must end first, ensuring that only the attested orderings (precedence of the motion event, or overlap) are possible.

(10) *(Sub-)event conjoining operator:*

$\lambda v \lambda P \lambda Q \lambda e.\ \exists e_1, e_2[e_1, e_2 \leq_E e \wedge P(e_1)(v) \wedge Q(e_2) \wedge \mathit{end}(e_1) \ll_E \mathit{end}(e_2)]$

Contribution: Contra Dryer (2021), I find that Ktunaxa does grammaticize AM meaning in the form of regular, affixal morphology which appears in a fixed position on verb stems and preverbal bases. This proposal moves beyond description, in providing an account of how the multifunctionality of the DDPs morphemes may be derived compositionally, without appealing to flexible type semantics or type-shifting. Promisingly, the details of this account align with contemporary research on the language, which has suggested that vector arguments play a wider role in the verbal domain (Bertrand, forthcoming). Finally, these findings are more broadly pertinent to typological studies of associated and deictic motion, which has shown that the multifunctionality of the Ktunaxa DDPs fits a robust pattern observed across languages.

Abbreviations

1SBJ = 1st person subject; A = andative (going); APPL = applicative; ASP = aspect; C = complementizer; DIM = diminutive; IND = indicative; OBV = obviative; PROG = progressive; PVB = preverb; REFL = reflexive; ST = stative; TL = telic; V = venitive (coming)

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