Ktunaxa Ranges*

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1 Introduction

This paper discusses the expression of ranges in Ktunaxa.[1,2] I review how phrases that express upper and lower bounds can be used in spatial, temporal, and degree domains. I use the empirical and theoretical frameworks for ranges presented in Gobeski and Morzycki (2022) and expanded upon

[1] Ktunaxa is a language isolate spoken in parts of interior British Columbia, and northern Montana, Idaho, and Washington. According to the 2022 FPCC Language Status Report, there are 18 fluent speakers in British Columbia, which classifies Ktunaxa as severely endangered (Gessner et al. 2022).

[2] The following data comes from my own primary fieldwork with Ktunaxa speaker Violet Birdstone. The working language for conducting interviews was English, and the primary elicitation strategies used were translation tasks and acceptability judgment tasks (Bochnak and Matthewson 2015). A sentence presented without a diacritic signals the sentence is semantically well-formed in a given context. # signals that a sentence was judged as semantically ill-formed in a given context. A check mark, ✓, next to a context signals that the sentence is compatible with the context in the example and an x mark, ✗, indicates that the sentence is in compatible with a given context. The following shorthands are used in morpheme glosses: 1 = 1st person, 3 = 3rd person, IND = indicative, OBV = obviative, PRVB = preverb, SUBJ = subject, COMP = complementizer, COP = copula, DEM = demonstrative, DIST = distal demonstrative, GRP = group, INDEF.AMT = indefinite amount, NEG = negative, PASS = passive, PST = past, RFLX = reflexive. Characters in Ktunaxa orthography not conforming to their typical IPA values are as follows: ł = [ɬ], ¢ = [t͡s].

by Sandoval (2023). I discuss one productive range construction in Ktunaxa (though there may be others). It appears to be derived from a locative phrase signaling a start- and an endpoint (similar to how English *from...to* functions). In the subsequent sections, I discuss background on range expressions, the ingredients used for ranges in Ktunaxa, and their application to spatial, temporal and degree ranges.

2   Degree and temporal ranges in English

Gobeski and Morzycki (2022) classify ranges as a subkind of *composite measure phrase*—measure phrases with multiple measure phrases as sub-constituents. Ranges have two arguments—one that sets a lower bound and one that sets an upper bound. Gobeski and Morzycki (2022) identify three distinct English expressions that refer to ranges: *from...to* (1a), *between...and* (1b), and *through* (1c). All of these phrases include two degrees (or names that map to an ordered list) that set an upper and lower bound of a range.

(1)   a.   This volume spans **from** Lincoln **to** Taft.   *(from d to d')*

b.   This volume spans **between** Lincoln **and** Taft. *(between d and d')*

c.   This volume spans Lincoln **through** Taft.   *(d through d')*

Gobeski and Morzycki also identify three different kinds of range readings that relate to the value of the degree under discussion. Under the *singleton punctual* reading, the range expression references a span that *one value* falls into. In (2a), Floyd's age is naturally a single, unique value, and the range expression *between four and six* references a scale that the single value falls on. Meanwhile, under the *set punctual* reading, the range expression references a scale that a set of multiple values fall onto. In (2b), there are multiple children, so there are multiple ages that fall into the range. Lastly, there is the *interval* reading, under which the discussed value spans the *entire* distance that the range expression denotes. In (2c), degrees at which the chemical freezes span the entirety of the range named.

(2) a. Floyd is between four and six years old.   *(singleton punctual)*
age 4   ·   age 6

   b. The children are between four and six years old. *(set punctual)*
age 4 ·   · · · age 6

   c. The chemical freezes between -15° and 0°.   *(interval)*
-15° ——————— 0°

Gobeski and Morzycki identify *from...to* and *between...and* range expressions as compatible with all three readings.[3] Meanwhile *through* only allows an interval reading. Table 1 summarizes their generalizations.

	singleton punctual	set punctual	interval
from d **to** d'	✓	✓	✓
between d **and** d'	✓	✓	✓
d **through** d'	✗	✗	✓

Table 1: Range interpretations available with range expressions in the degree domain

Sandoval (2023) additionally discusses ranges in the temporal domain, which behave similarly to degree range constructions, though *from... to* fully resists a *singleton punctual* reading, shown in (3a). Meanwhile it improves under a *set punctual* reading and especially an *interval* reading, shown in (3b) and (3c). This data is summarized in Table 2.

(3) a. # Clyde's birthday is from Monday to Friday.   *(singleton punctual)*

   b. The guests arrived from Monday to Friday.   *(set punctual)*

   c. The event lasted from Monday to Friday.   *(interval)*

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[3] There are contexts in which *from...to* resists a *singleton punctual* interpretation. For more discussion of this constraint, see Geurts and Nouwen (2007); Gobeski and Morzycki (2022); Kennedy (2015); Sandoval (2023).

	singleton punctual	set punctual	interval
from d **to** d'	✗	✓	✓
between d **and** d'	✓	✓	✓
d **through** d'	✗	✗	✓

Table 2: Range interpretations available with range expressions in the temporal domain

3 Morphological ingredients for Ktunaxa ranges in the spatial domain

Ktunaxa can express the start- and endpoints of a spatial path using *ʔi-s-¢* to express the beginning region of the path (i.e. 'from') and *¢ qu* to express the destination of the path (i.e. 'to'). An example sentence using this construction is shown in (4).

(4) Mu   ¢inaxi **ʔis¢**   Vancouver ¢ **qu** Toronto.
    Ma-hu   ¢inax-i ʔi-s-¢   Vancouver ¢ qu Toronto.
    PST-1.SUBJ go-IND DET-OBV-and Vancouver and DIST Toronto.
    'I went **from** Vancouver **to** Toronto.'

On its own, *ʔis* is a determiner marked with obviation. In (5), it modifies the NP *kapis*, 'coffee'.

(5) Q̇apił   ʔikułni **ʔis**   kapis   Mały
    Q̇ap-ił ʔikuł-ni ʔi-s   kapi-s   Mały
    all-PRVB drink-IND DET-OBV coffee-OBV Mary
    'Mary drank all **the** coffee.'

¢ on its on functions as a conjunction. In (6) it conjoins *hanuhusni* 'red' and *hamak¢iʔni* 'yellow'.

(6) Niʔi ʔaquk̇wuk hanuhusni ¢   hamak¢iʔni.
    Niʔi ʔaquk̇wuk hanuhus-ni ¢   hamak¢iʔ-ni
    DET box   red-IND   and yellow-IND
    'The box is red **and** yellow.'

ʔis and *¢* co-occur as *ʔis¢* to mark a standard of comparison in degree constructions Bertrand (2021). This is shown in (7).

(7) La·t wuq̇ałiłq̇akni **ʔisȼ**   ʔamlus
     La·t wuq̇ałiłq̇ak-ni ʔi-s-ȼ   ʔamlu-s
     La·t tall-IND   DET-OBV-and ʔamlu-OBV
     'La·t is taller **than** ʔamlu'

Qus functions as a distal demonstrative marked by obviation. In (8), it picks out the (location of the) swans and indicates they are relatively far from the speaker.

(8) ʔinu, **qus**   ʔini   hakisuqki   ʔuʔu
     ʔinu, qu-s   ʔi-ni   hakisuqk-i ʔuʔu
     look, DIST.DEM-OBV COP-IND swim.by-IND swan
     'Look, **over there/those** are swans swimming by.'

Together these morphological ingredients can mark the start- and end-point of a region. A final relevant point is that all of these morphemes are obligatory, as shown in (9).

(9) Mu   ȼinaxi   *(**ʔisȼ**)   Vancouver *(**ȼ**) *(**qu**)
     Ma-hu   ȼ'inax-i ʔi-s-ȼ   Vancouver ȼ   qu
     PST-1.SUBJ go-IND   DET-OBV-and Vancouver and   DIST.DEM
         Toronto.
         Toronto.
         Toronto.
     'I went **from** Vancouver **to** Toronto.'

4   Degree ranges

Degree ranges are formed similarly to how spatial paths are expressed. *ʔisȼ* is still used to mark the start point/lower bound. However, only *ȼ*, not *ȼ qus*, is used to mark the upper bound. Using the distal demonstrative in these cases is semantically anomalous. Meanwhile *qus* is obligatory when describing spatial paths. The sentence in (10) shows this fact and additionally demonstrates this structure can be used with a *singleton punctual* reading. Furthermore, it is felicitous in both a context where the speaker does (Context 1) and does not (Context 2) know the exact number.

(10) ***Context 1:*** *You know how many apples La·t ate, and you want your*
      sister to guess. You give her a hint that it was between four and six.
      Context 2: *You don't remember how many apples La·t ate exactly,*
      but it was somewhere between four and six.

Ɂikni	**Ɂisȼ**	xaȼas	ȼ	(*qus)	Ɂinmisas
Ɂik-ni	Ɂi-s-ȼ	xaȼa-s	ȼ	qu-s	Ɂinmisa-s
eat-IND	DET-OBV-and	four-OBV	and	DIST.DEM-OBV	six-OBV

      kanuhusnanas   La·t.
      kanuhusnana-s La·t
      apple-OBV   La·t
      'La·t ate **from** four **to** six apples.'

This structure also allows for a *set punctual* reading. In (11) there are
multiple values within the range, as there are multiple children who ate
apples.

(11) *Context: The children in your class all ate apples. Some had four,*
      some had five, some had six.

Ɂikni	**Ɂisȼ**	xaȼas	ȼ	(*qus)	Ɂinmisas
Ɂik-ni	Ɂi-s-ȼ	xaȼa-s	ȼ	qu-s	Ɂinmisa-s
eat-IND	DET-OBV-and	four-OBV	and	DIST.DEM-OBV	six-OBV

      kanuhusnanas   ni   łkamnintik.
      kanuhusnana-s ni   łkam-nintik.
      apple-OBV   DETchild-GRP
      'The children ate **from** four **to** six apples.'

5   Temporal ranges

To express a temporal range in Ktunaxa, the same construction is used as
the spatial distance construction used in the previous section. *Ɂisȼ* marks
the start of the range and *ȼ qus* marks the end of the range. However,
in temporal range constructions, the distal demonstrative *qus* is optional,
whereas with the spatial examples, it is obligatory, and with the degree ex-
amples, it is impossible. (12) provides an example of an interval reading
of a temporal range. My consultant commented that the sentence sounded
well-formed with or without *qus* and judged both versions to mean the
same thing.

(12) *Context: La·t wanted to be healthier, so he did not eat sweets for*
      the first three months of the year.

La·t qa   ʔikni   kquqȼils   ʔikiɬs   **ʔisȼ**
La·t qa   ʔik-ni k-quqȼil-s   ʔik-iɬ-s   ʔi-s-ȼ
La·t NEG   eat-IND COMP-sweet-OBV   eat-PASS-OBV   DET-OBV-and

   kmitxaɬtitnams ȼ   **(qus)**   ɬikuḳs
   kmitxaɬtitnam-s ȼ   qu-s   ɬikuḳ-s
   January-OBV   and DIST.DEM-OBV   March-OBV

'La·t didn't eat sweets **from** January **to** March.'

Like *from...to* in English, temporal ranges in Ktunaxa resist singleton punctual readings.

(13) *Context: You're a detective and you find La·t dead. You don't know*
      when he died, but he was away Monday to Friday so it must have
      been sometime then.

#ʔupni   **ʔisȼ**   kɬaʔukinmiyits   ȼ
ʔup-ni   ʔi-s-ȼ   k-ɬa-ʔuki=n-miyit-s   ȼ
die-IND DEM-OBV-and   COMP-again-one-day-OBV   and

   (qus)   kɬayi·kunmiyits   La·t
   qu-s   k-ɬa-yi·ku=n-miyit-s   La·t
   DIST.DEM-OBV   COMP-again-five-day-OBV   La·t

Intended 'La·t died between Monday and Friday.'
Consultant comment: This would mean he was dying the whole
time.

My consultant volunteered a repair for (13) by inserting *ʔaqanmiyits* 'some day' into the structure. This also makes a *from...to* structure more felicitous in English according to some speakers (15) when it would otherwise be fully ill-formed.

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(14) *Context: You're a detective and you find La·t dead. You don't know when he died, but he was away Monday to Friday so it must have been sometime then.*

ʔupni	ʔaqanmiyits	**ʔisȼ**		
ʔup-ni	ʔaqan-miyit-s	ʔi-s-ȼ		
die-IND	INDEF.AMT-day-OBV	DEM-OBV-and		

kɬaʔukinmiyits	**ȼ**	**(qus)**
k-ɬa-ʔuki=n-miyit-s	ȼ	qu-s
COMP-again-one-day-OBV	and	DIST.DEM-OBV

kɬayi·kunmiyits	La·t
k-ɬa-yi·ku=n-miyit-s	La·t
COMP-again-five-day-OBV	La·t

'La·t died sometime between Monday and Friday.'

(15) Floyd died #(sometime) from Monday to Friday.

6 Taking stock

To summarize, Ktunaxa range expressions (and their related locative, region-referencing expressions) all require *ʔisȼ* to introduce the lower bound and *ȼ* to mark the upper bound. However, the inclusion of *qus* after *ȼ* in the upper bound is a point of variation. For spatial distances it is obligatory, for temporal ranges it is optional, and for degree ranges it is prohbited. These generalizations are summarized in Table 3.

	Obligatory	Optional	Prohibited
Spatial	✓		
Temporal		✓	
Degree			✓

Table 3: Distribution of *qus* accross range expressions in Ktunaxa

Additionally, spatial and degree range expressions allow singleton punctual expressions, while temporal range expressions restrict them. The behavior of the spatial data contrasts with *from...to* in English, which does not allow a *singleton punctual* reading, shown in (16).

(16) # The museum is from Boston to Cleveland.

This data is summarized in Table 4.

	from...to	ʔisȼ qus
degree	✓	✓
temporal	✗	✗
spatial	✗	✓

Table 4: Allowance of singleton punctual readings

Degree range expressions in Ktunaxa marked by *ʔisȼ...ȼ* liberally allow a *singleton punctual* interpretation, unlike English. In English, the felicity of *singleton punctual* readings of *from...to* degree range expressions is variable and there are constraints related to ignorance and potentially unknown other factors (Gobeski and Morzycki 2022). Whether temporal range expressions marked by *ʔisȼ...ȼ (qus)* allow *singleton punctual* readings without *ʔaqanmiyit* (the modifier 'some day') requires future research.

Ktunaxa is also different from English in that there appears to only be one method for forming range constructions. While English has *from...to*, *between...and*, and *through*, Ktunaxa only appears to have the equivalent of English *from...to*. This may be because only *from...to* can be expressed with free morphemes. For example, when I have tried to elicit *between...and* in a spatial context, my consultant used the verb *yankin-miɬ*, 'to separate'.

(17)   *Context: You are seated between ʔamlu and La·t.*
       Hun   yankinmiɬni k   sankamik ʔamlu ȼ   La·t
       Hun   yankinmiɬ-ni k   sanka-mik ʔamlu ȼ   La·t
       1.SUBJ separate-IND COMP stand.RFLX ʔamlu and La·t
       'I separated ʔamlu and La·t with myself.'

A final cross-linguistic parallel is that in English, range expressions can be used somewhat figuratively to express that there exist a wide variety of options or events that are not necessarily in a linear order. Some examples are shown in (18).

(18)   a.   We have flavors from blueberry to pistachio.

       b.   Floyd's emotions ranged from elated to angry.

       c.   From breaking my leg to seeing a double rainbow, this has

certainly been an eventful trip.

These examples may mirror non-numeral uses of *at least/most* as discussed by Geurts and Nouwen (2007). An example is shown in (19).

(19)   The trip was awful, but **at least** the weather was nice.

It appears that at least with range constructions, Ktunaxa also allows this figurative expression as shown in (20). There is no standardized scale with edges marked by blue jays and bears. Rather, as these two animals are distinguished from one another, they demonstrate that Vancouver hosts a variety of wildlife.

(20)   *Context: Vancouver has a lot of wildlife. You want to express that it has a lot of different types of animals.*

Haqaʔni	kt'uq¢qamnas	ʔis¢	ququskis	¢
Haqaʔ-ni	kt'uq¢qamna-s	ʔi-s-¢	ququski-s	¢
exist-IND	animal-OBV	DET-OBV-and	bluejay-OBV	and

nupqus	Vancouver.
nupqu-s	Vancouver.
bear-OBV	Vancouver

'Vancouver has animals from blue jays to bears.'

In summary, Ktunaxa range expressions show striking similarities to English with respect to spatial metaphor and available interpretations, but also prompt future questions about the use of the distal demonstrative *qus*, strategies for expressing locations, and the use of *ʔaqanmiyit* ('some day') modification. This data also prompts larger cross-linguistic questions about ranges—how frequently do degree and temporal ranges map to locative prepositions, and what similarities are there between spatial expressions used and the range readings they allow?

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