

Polar degree questions and answers in Ktunaxa

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Polar Question Meaning[s] Across Languages
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Introduction

In English, *how* is a degree *wh* word, but degrees can also be elicited with polar questions:

- (1) A: Is Floyd very tall?
B: He's 6 feet.

In Ktunaxa, this is the *only* strategy for asking degree questions:

- (2) K-ʔisiʔ wuq̄aʔiʔq̄ak La·t?
 COMP-very tall La·t
 ‘How tall is La·t?’ (Lit: ‘Is La·t very tall?’)

How does (2) ask for degrees?

- Define the empirical distribution of polar degree questions (PDQs) in Ktunaxa.
- Argue that this effect is semantic, not pragmatic
- *?isiʔ* is a covert *wh* word.

Ktunaxa

The Ktunaxa language



- Traditionally spoken in the Columbia River Basin by the Ktunaxa people
- Language isolate
- 18 fluent speakers (FPCC, 2022) in Canada
- Data elicited from three speakers in their 70s who learned language as children.

Questions

Polar questions are marked with complementizer *k* (Morgan 1991).

- (3) **K** wuḡaḡiḡḡak La·t?
 COMP tall La·t
 ‘Is La·t tall?’

Wh- questions are known to have a constituent at the left periphery.

- (4) **Qaḡa** **k** wuḡaḡiḡḡak?
 who **COMP** tall
 ‘Who is tall?’

Polar degree questions

There is no question word for degrees in Ktunaxa.

When provided with English-Ktunaxa translation tasks, consultants consistently give polar degree questions, as in (5).

- (5) *You're catching up with a friend you haven't seen in a while.
You want to know how tall her nephew La·t has grown.*

K-ʔisiʔ wuq̄aʔiʔq̄ak La·t?

COMP-very tall La·t

'How tall is La·t?' (Lit: 'Is La·t very tall?')

Polar degree questions

- (6) K-ʔisiʔ wuq̄aʔiʔq̄ak La·t?
COMP-very tall La·t
'How tall is La·t?' (Lit: 'Is La·t very tall?')

Ktunaxa lacks measure phrases, but you can answer PDQs by specifying the measure without saying *hiyi* 'yes' or *waha* 'no':

- (7) wuq̄aʔiʔq̄ak-ni ʔisç Maʔi (8) ʔisiʔ çakuna-ni
tall-IND than Mary very short-IND
'He's taller than Mary.' 'He's is very short'

Hiyi 'yes' or *waha* 'no' are still also licit answers, though.

Assembling a Ktunaxa degree question:

- complementizer *k* marks that it's a question
- a gradable predicate
- *ʔisiʔ*, an intensifier, also used in comparative and superlative structures (Bertrand 2022, 2024)

(9) *K-ʔisiʔ* *wuq̄aʔiʔq̄ak* *La·t?*
COMP-very tall *La·t*
'How tall is *La·t*?' (Lit: 'Is *La·t* very tall?')

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Assembling a Ktunaxa degree question:

- complementizer *k* marks that it's a question
- a gradable predicate
- *?isiʔ*, an intensifier, also used in comparative and superlative structures (Bertrand 2022, 2024)

(9) K-*?isiʔ* wuq̄aʔiʔq̄ak La·t?
COMP-very tall La·t
'How tall is La·t?' (Lit: 'Is La·t very tall?')

The degree morpheme *ʔisiʔ* has several uses:

(10) **Intensifier**

La·t ʔisiʔ wuqaʔiʔqak-ni

La·t very tall-IND

'La·t is very tall'

(11) **Comparative**

La·t ʔisiʔ wuqaʔiʔqak-ni ʔis-ç Maʔis

La·t very tall-IND DEM-COORD Mary-OBV

'La·t is taller than Mary'

(12) **Superlative**

La·t ʔisiʔ wuqaʔiʔqak-ni

La·t very tall-IND

'La·t is the tallest'

(identical to (10))

How do PDQs elicit degree answers?

- **Compositional Hypothesis:** PDQs are only overtly polar—semantically they are *wh*.
- **Gricean Hypothesis:** PDQs are true polar questions—the degree answers it elicits are a pragmatic effect.

We ultimately pursue the compositional hypothesis, as the degree reading is impossible in exactly those syntactic environments that forbid extraction.

Data

Complex NP Island Constraint

The Complex NP Island prevents extraction from clausal complements to nouns:

(13) a. What₁ do you believe that Floyd likes t₁?



b. *What₁ do you believe [the claim that Floyd likes t₁].



Intended: 'What is the x such that you believe the claim that Floyd likes x ?'

(14) a. How tall₁ do you believe that Floyd is t₁?



b. *How tall₁ do you believe [the claim that Floyd is t₁].



Intended: 'What is the degree d such that you believe the claim that Floyd is d tall?'

The Complex NP Island in Ktunaxa degree questions

A question cannot have a PDQ reading when *?isi#* is embedded inside a Complex NP Island:

- (15) #Context: You're curious about how tall *?amlu* is. You ask what height *La·t* thinks he is.

K qanikitçi?t ni-s [qakyami-s k-?isi# wuqa#i#qak-s
COMP believe DEM-OBV [story-OBV COMP-very tall-OBV
?amlu-s] La·t?
?amlu-OBV] La·t

Intended but not possible: 'What is the degree *d* such that you believe the story that *?amlu* is *d* tall?'

The only possible reading is 'Does *La·t* believe the story that *?amlu* is very tall?'

Impossible degree answers

(16) does not allow degree answers:

(16) K qanikitçi?t ni-s [qakyami-s k-?isi# wuqati#qak-s
COMP believe DEM-OBV [story-OBV COMP-very tall-OBV
?amlu-s] La:t?
?amlu-OBV] La:t
'Does La:t believe the story that ?amlu is very tall?'

(17) #?isi# wuqati#qak-ni
very tall-IND
'very tall'

Without the complex NP island, the PDQ reading is possible:

- (18) K qanikitçi?t k-?isi# wuqati#qak-s ?amlu-s La:t?
COMP believe COMP-very tall-OBV ?amlu-OBV La:t
'How tall does La:t believe ?amlu is?' (Lit: 'Does La:t believe
?amlu is very tall?')
- (19) ?isi# wuqati#qak-ni
very tall-IND
'very tall'

Negation also creates islands:

(20) *How tall isn't Floyd?

'What is the degree d such that Floyd is not d tall?'

These islands probably have a semantic cause rather than a syntactic one (Szabolcsi & Zwarts 1993, Rullmann 1995, others): maximality.

Ktunaxa also observes negative islands (Bertrand 2022), and the degree reading of *?isi#* is absent under negation:

(21) K qa ?isi# wuqati#qak Lu·s?
 COMP NEG very tall Lu·s
 ‘Is Lu·s not very tall?’ / #‘How tall isn’t Lu·s?’

(22) #?isi# wuqati#qak-ni
 very tall-IND
 ‘very tall’

(23) a. *What₁ did you eat [t₁ and beans]?



b. *How tall₁ is Floyd [t₁ and ugly]?



Coordinate Structure Islands in Ktunaxa

The PDQ reading of (24) is unavailable when *?isi#* is in a coordinate structure.

- (24) *#Context: your friend's child wants to try out for wrestling. You know he's tall, but you also need to know his weight to know what division they would be in.*

K-wuq̄a#i#q̄ak ç ?isi# ?aniki?

COMP-tall and very heavy

'Are they tall and very heavy?'

Intended but not available: 'You are tall and how heavy are you?'

Island summary

Ktunaxa PDQs exhibit the same island constraints as *wh* degree questions in English:

| | Complex NPs | Negative | Coordination |
|--------------------------|-------------|----------|--------------|
| English <i>how</i> DegQs | x | x | x |
| Ktunaxa PDQs | x | x | x |

Meanwhile, a Gricean analysis does not obviously predict the infelicity of PDQs in such environments.

Grice's detachability: Synonymous equally complex linguistic expressions should give rise the same implicatures.

So: A Gricean analysis predicts that synonyms of *?isi#* should have PDQ readings, but intensifiers *çmaki#* and *qayaqana#* don't:

(25) K-çmaki# wuqa#i#qak Ma#i?

COMP-very tall Ma#i

'Is Ma#i very tall?'

#'How tall is Ma#i?'

(26) K-qayaqana# wuqa#i#qak Ma#i?

COMP-very tall Ma#i

'Is Ma#i very tall?'

#'How tall is Ma#i?'

A possible point for a Gricean strategy: you can't ask PDQs in direct perception contexts.

(27) #Context: You see La·t, and he's grown to be very tall. You ask him (exactly) how tall he is.

Xina! K-hin ?is-i# wuqa#i#qak?

EXCL COMP-2.SUBJ very tall

Infelicitous as either 'Wow! Are you very tall?' or 'How tall are you?'

Explaining the evidential effect

The effect, we suggest, is a side-effect of the vagueness that PDQs inherit from their polar cousins. In the context in (27), a question of the form ‘are you very tall?’ is infelicitous in Ktunaxa, as indeed it is English.

It asks an *approximate* height question whose answer in direct perception contexts is self-evident. One can see people’s approximate height and needn’t ask for it.

We argue for the Compositional Hypothesis because:

- *?isi#* is sensitive to island constraints (complex NP embedding, negation, and coordination), just as English degree *how* and other Ktunaxa *wh* words are.
- *?isi#* and only *?isi#* has this effect. No other intensifiers do.

Analysis

- We will argue that *?isi#* has a distinct meaning as a degree question word.
- To accommodate the island facts, we will assume it moves at LF.
- Crucially, it asks an *approximate wh* question.
- Beyond that, a fairly unsurprising semantics.

We distinguish other uses of *?isi#* from the *wh* use.

Building on Abrusán (2011)'s theory of degree questions:

$$(28) \quad \llbracket ?isi\#_{WH} \rrbracket = \lambda D_{\langle d, t \rangle} . \{p : \exists d [p = \wedge \mathbf{max}(D) \approx d]\}$$

?isi# denotes a function from a set of degrees to a set of propositions like 'La-t's maximal height is approximately *d*'.

To be interpreted, $?isi\#$ must raise covertly to bind its trace position:

(29) **Overt:**

K- $?isi\#_{WH}$ wuqatiqak La:t?
COMP- $?isi\#_{WH}$ tall La:t

(30) **LF:**

$?isi\#_{WH}$ λd K- t_d wuqatiqak La:t?
 $?isi\#_{WH}$ COMP- tall La:t

Sentence denotation

$$(31) \quad \llbracket \lambda d \text{ K- } t_d \text{ wu} \acute{\alpha} a \# i \acute{\alpha} a k \text{ La} \cdot t \rrbracket = \lambda d . \text{tall}(\text{La} \cdot t, d)$$

$$(32) \quad \llbracket ?i s i \#_{WH} \rrbracket (\llbracket \lambda d \text{ K- } t_d \text{ wu} \acute{\alpha} a \# i \acute{\alpha} a k \text{ La} \cdot t \rrbracket) \\ = \{p : \exists d [p = \wedge \text{max}(\lambda d' . \text{tall}(\text{La} \cdot t, d)') \approx d]\}$$

Potential answers *in principle*:

$$(33) \quad \left\{ \begin{array}{l} \wedge \text{max}(\lambda d' . \text{tall}(\text{La} \cdot t, d)') \approx 6\text{ft} \\ \wedge \text{max}(\lambda d' . \text{tall}(\text{La} \cdot t, d)') \approx 5\text{ft} \\ \vdots \end{array} \right\}$$

But!

What is expressible?

Ktunaxa doesn't actually have measure phrases, so it isn't *literally* possible to answer with e.g. 'La·t is approximately six feet.'

It is possible, of course, to give answers that have similar entailments in context:

- 'La·t is so tall!'
- 'La·t taller than that tree', where the tree is 6 feet tall.

Taking stock

- This analysis also helps explain other degree patterns in Ktunaxa.
- Ktunaxa is a language with degree abstraction—it has subcomparatives, measure phrases, and negative islands (Bertrand 2022)
- Its apparently lack of a *wh* degree word is surprising given Beck et al. (2009)'s framework.
- Analysing *?isiʔ* as such fills this typological gap.

Similar patterns to Ktunaxa PDQs have been observed in Northern Norwegian (Svenonius & Kennedy 2006).

- Polar questions with gradable predicates are interpretable as degree questions.
- Does that suggest crosslinguistic parallels in how PDQs are formed?

- (34) **A:** Is Floyd very tall?
B: He's 6 feet.

Alarming fact:

- Virtually everything we said about Ktunaxa *?isi#* is also true of English *very*.
- The same arguments should go through.
- Is there a form of *very* that moves covertly at LF?(!)

English degree intensifiers vary

Certain degree intensifiers allow degree question interpretations while others don't:

- (35) a. Is Floyd $\left\{ \begin{array}{l} \text{very} \\ ??\text{really} \\ ??\text{so} \\ ??\text{exceptionally} \end{array} \right\}$ tall?
- b. Do you have $\left\{ \begin{array}{l} \text{many} \\ ??\text{loads} \\ ??\text{a bunch of} \end{array} \right\}$ rodents?

Positing covert wh movement of *very* is deeply disconcerting. Must we actually do that?

- If the case is sufficient for Ktunaxa, it should be sufficient for English.
- But one could chart a different course: semantic theories of islands.
 - But are there any that explain the Complex NP Island? The Coordinate Structure Island?
 - Could we build such a theory that relies on creating island violations inside the structure of QUDs? But then they'd have to have syntactic structure!

Alternative source of island effects?

One alternative analytical possibility: might island effects arise from the structure of *answers*, rather than questions?

(36) **A:** Do you believe the claim that Floyd is very tall?

B: Six feet₁, I believe [~~the claim Floyd is t₁ tall~~].

Assumes Merchant (2005) theory of fragment answers via ellipsis.

Takeaway points

- Ktunaxa's strategy for asking degree questions is asking what appear to be polar questions with intensifier *?isi#*.
- Analyzing this as a semantic fact as opposed to a pragmatic one accounts for *?isi#*'s island sensitivity and detachability facts
- We analyze *?isi#* as a covert *wh* word.
- There may be cross-linguistic connections with e.g. English

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Appendix

- (37) Qanikitçi?t-i ni-s qakyami-s k'awum-s Ma?i-s La:t
Believe-IND DEM-OBV story-OBV PREGNANT-OBV Mary-OBV La:t
'La:t believed the story that Mary is pregnant'
- (38) *Qa?a-s La:t qaki?qa?-ni ni-s qakyami-s k'awum-s.
who-OBV La:t believe-IND DEM-OBV story-OBV pregnant-OBV
Intended: what is the x such that you believe the story that x
is pregnant?

- (39) La:t ʔik-ni ɕikin-s ɕ niɕna-s
La:t eat-IND chicken-OBV COORD CARROT-OBV
'La:t ate chicken and carrots.'

- (40) *Qaʔa-s ʔik-ni ɕ ɕikin-s La:t
what-OBV eat-IND COORD chicken-OBV La:t
Intended: what is the x such that La:t ate chicken and x?