

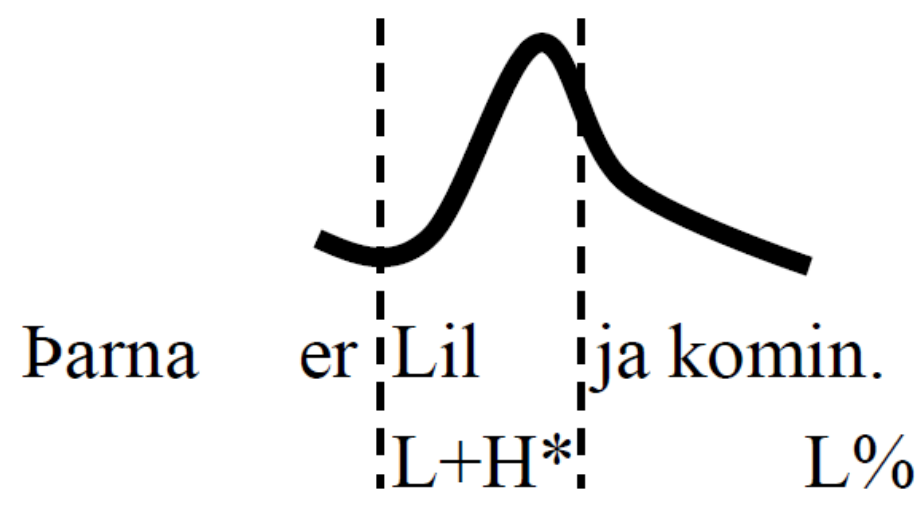
Icelandic question intonation

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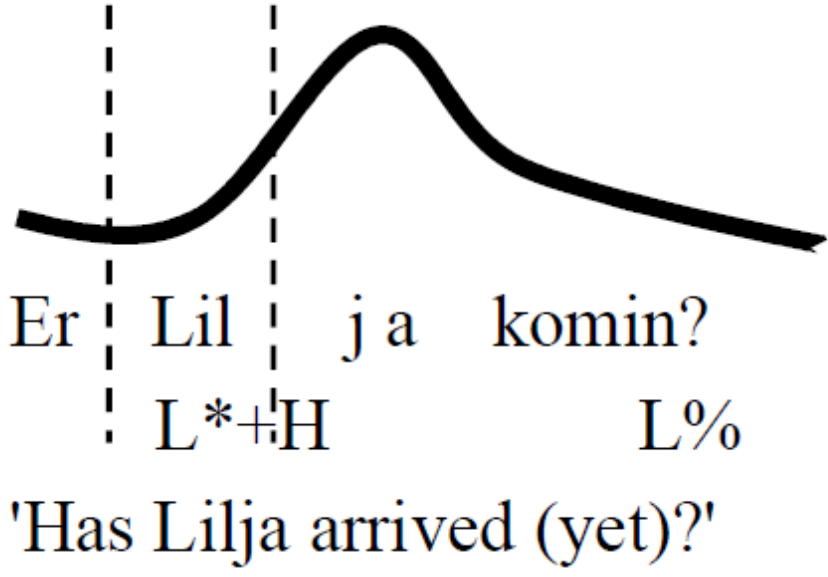
Background:

- Icelandic intonation (Árnason 1998, 2005, 2011, Dehé 2010):
 - Previous literature mostly based on introspective data
 - The default boundary tone for all sentence types (declaratives, polar questions, *wh*-questions) is L%.
 - Nuclear pitch accent types distinguish between sentence types.
 - Declaratives:** L+H* nuclear pitch accent; L+H* L% nuclear contour
 - Polar questions:** L*+H nuclear pitch accent; L*+H L% nuclear contour
 - Wh-questions:** the typical contour starts high, followed by a H* nuclear pitch accent; H* L% nuclear tune

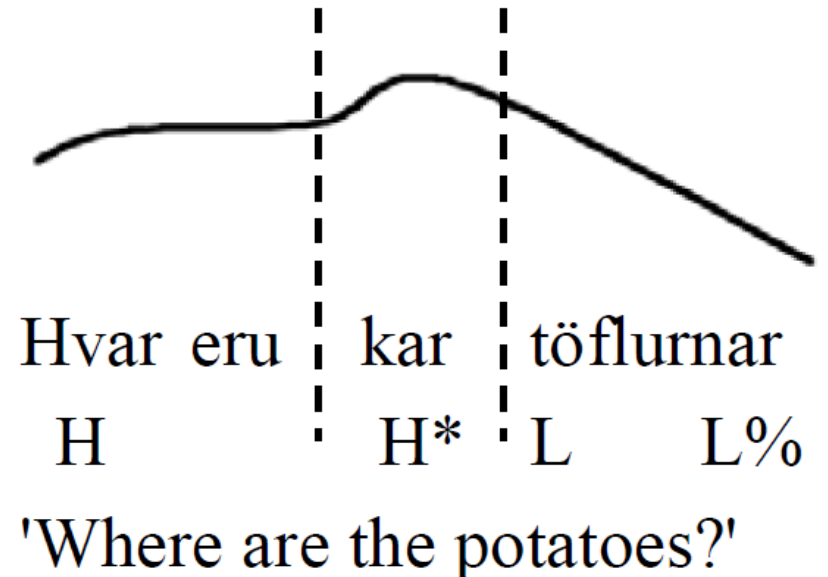
Declarative; early rise (L+H*) pitch accent



Polar question; late rise (L*+H) pitch accent



Wh-question; peak (H*) pitch accent



Hypotheses (question intonation):

- Both polar and *wh*-questions are typically produced with an intonation contour falling to L%.
- The two question types differ in nuclear pitch accent type. Specifically, polar questions are typically realized with a late rise (L*+H), while *wh*-questions are typically realized with a monotonal H* pitch accent.
- The typical contour associated with *wh*-questions starts high.

Production experiment:

- Materials:**
 - targets: 21 *wh*-interrogatives and 21 polar interrogatives, with contexts;
 - 34 fillers (mostly exclamatives), 3 practice items; also tested in the same experiment: same number of *wh*- and polar questions intended as rhetorical questions (Dehé & Braun to appear)
- Procedure:**
 - two experimental lists; each list contained both polar and *wh*-questions (and both illocution types; illocution type manipulated within-subjects)
 - visual display of the context, read carefully by participants, target on button press (self-paced); production as naturally as possible in given context
- Participants:** 17 native speakers of Icelandic (age: 22-32, average = 26.9; 6 male, 11 female)
- Data treatment:** 317 items analyzed: 155 polar, 162 *wh*; annotation following previous intonational analyses of Icelandic in the AM framework (e.g., Dehé 2010, 2018); done by first author, 15% annotated by second author, agreement 84.4%, kappa 0.81 (Cohen 1960)

Polar question	Wh-Question
(contexts translated from Icelandic)	
At a party, you offer cake, which contains limes. You would like to know which of your guests eat this fruit and whether they would like to try the cake.	At a party, you offer cake, which contains limes. You would like to know which of your guests eat this fruit and whether they would like to try the cake.
You say to your guests:	You say to your guests:
Target Q: <i>Borðar einhver límónur?</i>	Target Q: <i>Hver borðar límónur?</i>
'Does anybody eat limes?'	'Who eats limes?'

Results and discussion:

H1. Boundary tones: The default in both polar and *wh*-questions is L%.

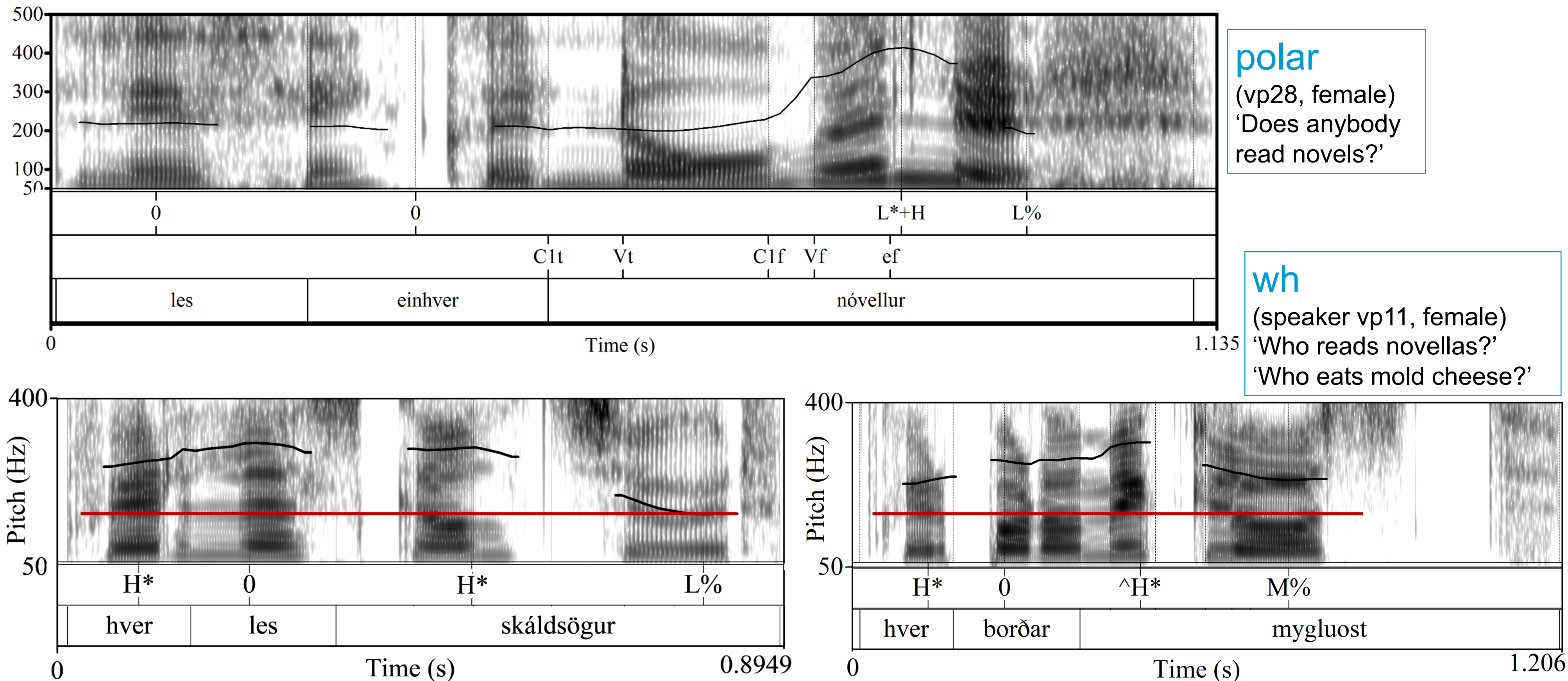
H1:	boundary tone	polar-ISQs (N=155)	wh-ISQs (N=162)
	L%	149 (96.1%)	141 (87.0%)
	H%	6 (3.9%)	2 (1.2%)
	M%	0	19 (11.7%)

H2. Polar and *wh*-questions differ in nuclear pitch accent types:

- Polar questions:** mostly bitonal (rising); mostly late rise, but more early rises in polar questions than hypothesized
- Wh-questions:** mostly monotonal high, followed by early rise

H2:	accent category	nuclear accent	polar Qs (N=155)	wh-Q (N=162)
monotonal (high)	H*	H*	2 (1.3%)	42 (25.9%)
		!H*	0	19 (11.7%)
		^H*	1 (0.6%)	40 (24.7%)
	sum		3 (1.9%)	101 (62.3%)
late rise	L*+H	L*+H	69 (44.5%)	4 (2.5%)
		L*+^H	18 (11.6%)	1 (0.6%)
	sum		87 (56.1%)	5 (3.1%)
early rise	L+H*	L+H*	45 (29.0%)	19 (11.7%)
		L+^H*	20 (12.9%)	34 (21.0%)
	L+!H*		0	3 (1.9%)
sum			65 (41.9%)	56 (34.6%)

Example contours:



Árnason, K. 1998. Toward an analysis of Icelandic intonation. In *Proceedings of Nordic Prosody 8*, Joensuu 1996, ed. S. Werner, 49-62. Frankfurt a.M.: Peter Lang. Árnason, K. 2005. *Hljóð. Handbók um hljóðfræði og hljóðkerfisfræði*. 1. Bindi: Íslensk tunga. Reykjavík: Almenna bókafélagið. Árnason, K. 2011. *The Phonology of Icelandic and Faroese*. Oxford: OUP. Dehé, N. 2010. The nature and use of Icelandic prenuclear and nuclear pitch accents: Evidence from F0 alignment and syllable/segment duration. *Nordic Journal of Linguistics* 33.31-65. Cohen, J. 1960. A coefficient of agreement for nominal scales. *Educational and Psychological Measurements* 20. 37-46. Dehé, N. 2018. The intonation of polar questions in North American ('heritage') Icelandic. *Journal of Germanic Linguistics* 30(3): 213-259. Dehé, N. & B. Braun. To appear. The intonation of information seeking and rhetorical questions in Icelandic. *Journal of Germanic Linguistics*.