A new perspective on negative bias in polar questions: The view from Russian

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Abstract This article is a focused examination of two Russian question particles, *razve* and *neuzheli*. Previous literature characterizes them as markers of negative epistemic bias and positive contextual bias, roughly corresponding to English *really* (Repp and Geist forth.). Zooming in on subtle differences in their conventional meaning and conversational dynamics (cf. Baranov 1986; Bulygina and Shmelev 1997), I propose a novel conceptualization of negative bias in questions as a linguistic phenomenon sensitive to non-monotonic belief revision and make a case for examining contextual bias through the prism of research on evidence in language (see overview in Bary and Korotkova 2023). I further show that this view makes correct empirical predictions not captured by the existing typology.

Keywords attitudes, belief revision, discourse particles, evidence, question bias, Russian

Razve ty mne ne skazhesh snova
Pobedivshee smert' slovo
I razgadku zhizni moei?

And then won't you say
One more time
That word that overcomes death
And unties the enigma of my life?

—Anna Akhmatova, *Poem Without a Hero*
(Translated by L. Mayhew & W. McNaughton)

1 Introduction

This article is a focused examination of two Russian question particles, *razve* and *neuzheli*. Semantic literature characterizes them as markers of negative epistemic bias and positive contextual bias, and as such near-counterparts of English *really* (Repp and Geist forth.). Zooming in on subtle differences in their conventional meaning and conversational dynamics (cf. Baranov 1986; Bulygina and Shmelev 1997), I propose a novel conceptualization of negative bias in questions as a linguistic phenomenon sensitive to non-monotonic belief revision and make a case for treating contextual bias as an evidential notion. I further show that this view makes correct empirical predictions not captured by the existing typology.

Limited to matrix polar interrogatives, *razve* and *neuzheli* are presumptuous in neutral inquiries (e.g., job interviews) as they encode (i) the speaker's prior belief that the prejacent is unlikely, and (ii) mutually available evidence supporting the prejacent. I argue that the core contrast between them lies in how far along the speaker is in the process of revising their beliefs in light of new evidence: with *razve*, the speaker is deliberating, while with *neuzheli*, they are on the verge of accepting the prejacent. (1) illustrates.[1]

(1) *Vladimir Kovalevsky writes to his brother, who was about to leave Kyiv for Odesa.*

a. **Neuzheli** ty [...] poedesh v Odessu,
NEUZHELI you.NOM go.2SG.PRES in Odesa.PREP
≈'I can hardly believe you are going to Odesa'

b. **razve** nel'zia oboiti chtenie lekcii na etot semestr?
RAZVE impossible.PRED avoid.INF reading.ACC.SG lecture.GEN.PL on this.M.ACC.SG semester.ACC.SG
≈'Is it impossible to get out of teaching this semester? (I thought it wasn't).'
(*Letters to Alexander Kovalevsky*, Vladimir Kovalevsky)

Neuzheli (1a) conveys the speaker's prior belief that it is unlikely that the addressee would leave for Odesa ($\neg p$). *Razve* (1b) conveys the speaker's prior belief that the addressee could get out of teaching ($\neg q$). Each belief is at odds with contextual evidence: the addressee is clearly leaving (p), likely because they have to teach (q). The key difference is

[1] I use the Library of Congress transliteration conventions throughout (https://www.loc.gov/catdir/cpso/romanization/russian.pdf). Glosses: 1,2,3 person, ACC accusative, DAT dative, GEN genitive, F feminine, INC inchoative, INF infinitive, INSTR instrumental, M masculine, NEG negation, NOM nominative, PL plural, PRED predicative, PREP prepositional, PRES present, PTCP participle, PST past, SG singular.

in communicative goals. *Neuzheli* signals high credence in p and requests a confirmation, while *razve* signals ignorance about q and requests an answer.

Building on Korotkova (2023), I propose that *razve* and *neuzheli* are appropriately used at different stages in the process of non-monotonic belief revision and argue that the each particle conventionally encodes (i) the speaker's current credence in the prejacent ($\neq$ initial belief): low to undecided with *razve*, high to full with *neuzheli*, and (ii) evidential restrictions: *razve*, but not *neuzheli*, requires the presence of an abductive inference. I further show that this semantics determines: (i) the subjective strength of contextual evidence, and (ii) the range of conversational moves each particle performs. The overarching goal of the paper is to demonstrate that the two particles do not fit into the extant typology and to re-evaluate our current views on question bias.

I proceed as follows. Section 2 provides the background on polar interrogatives in Russian. Section 3 is the empirical heart of the paper and discusses the particles in detail. Section 4 proposes an analysis of *razve* and *neuzheli* as doxastic operators and shows how this semantics derives their uses in discourse. Section 5 concludes.

2 Polar interrogatives

Setting alternative questions aside, Russian has two types of polar questions (Comrie 1984; Schwabe 2004; Shvedova et al. 1980; see also Šimík 2023 on Slavic):

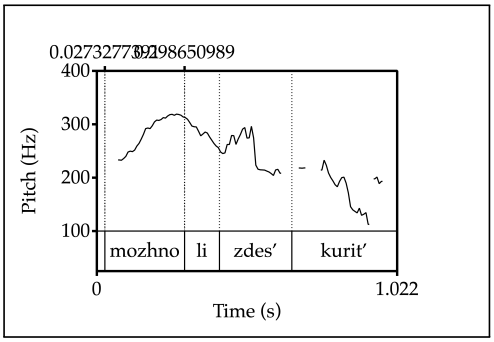
1. ***li*-Qs**: questions with the focus particle *li*;
2. **Decl-Qs**: declarative strings with the 'Q-peak' intonation (term from Esipova 2024).

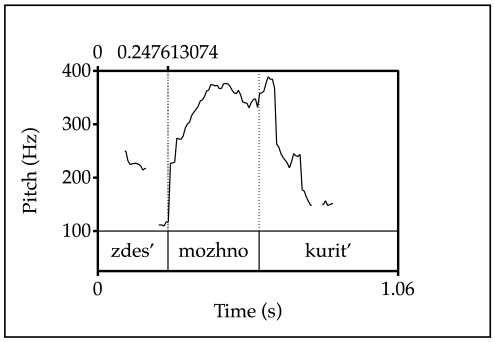
While there are pragmatic nuances in the use of *li*-Qs vs. Decl-Qs (Esipova and Korotkova 2024), neither strategy encodes bias. Both *li*-Qs and Decl-Qs are felicitous in unbiased contexts where the speaker has no prior expectations about the answer (2).[2]

(2) *Visiting a new city, I'd like to know the local rules—I genuinely have no idea.*

a. Mozhno **li** zdes' kurit'?
can.PRED LI here smoke.INF
'Can one smoke here?'

b. Zdes' mozhno kurit'?
Here can.PRED smoke.INF
'Can one smoke here?'





2.1. *Li*-questions

Li is a second-position clitic (Bošković 2001; Franks and King 2000). Its host is the the focus of the question or a part of the focus-bearing constituent, which is always fronted. *Li*-Qs have no final rise and the focused element has the same prosodic profile as focus marking elsewhere in the language (Meyer and Mleinek 2006; Yanko 2019).

[2]Pitch contours were generated using *Praat*.

Because only *li*-Qs are available in embedded polar (≠alternative) questions (3), *li* has been treated as an interrogative complementizer (Bošković 2001; Franks and King 2000; Schwabe 2004). I will review one argument for the low attachment of *li* (see detailed discussion in Rudnitskaya 2000; Shushurin 2024): *li*-phrases are retained in sluicing (4).[3]

(3) Masha sprosila/uznala, tancuet *(**li**) Tata.
Masha.NOM ask.F.SG.PST/learn.F.SG.PST dance.3SG.PRES LI Tata.NOM
'Masha asked/learned if Tata danced.'

(4) Nina zavtra uezzhaet, no ia ne znaiu, nadolgo **li**
Nina.NOM tomorrow leave.3SG.PRES but I.NOM NEG know.1SG.PRES for.long LI
[~~Nina~~ ~~zavtra~~ ~~uezzhaet~~].
Nina.NOM tomorrow leave.3SG.PRES
'Nina is leaving tomorrow, but I don't know if she is leaving for long.'
(adapted from Shushurin 2024: ex.21a)

Complementizers in general are ungrammatical in sluices (Merchant 2001), so the data suggest that *li* is not base-generated in C. The exact analysis of non-*wh*-sluicing is not important here: *li*-phrases can be treated as moving to SpecCP (Shushurin 2024) or as staying in a low left-peripheral position, such as focus (in line with Rudnitskaya 2000; see Marušič et al. 2018; Craenenbroeck and Lipták 2013 on focus remnants of sluicing in Slovene and Hungarian, respectively). Crucially, *li* does not behave as a clause-typing element. Additional support for the non-complementizer view comes from *li*'s non-interrogative uses.

Li is often seen outside of questions, including in sentential epistemic adverbials *edva li* 'unlikely' and *chut' li* 'hardly' (both derived from 'barely' + *li*), in an epistemic particle *chto li* ('what/something' + *li*; Onoeva 2024), and in what I call 'extreme ignorance disjunction' *to li X, to li Y* (unlike with standard disjunction, ignorance effects are always present). Historically, *li* is also a part of the standard disjunction *ili* (< *i* 'and' + *li*) and the conditional conjunction *esli* 'if' (< *est'* be.3SG.PRES + *li*). There is a deep semantic connection between polar questions and disjunction (Mascarenhas 2009 and later work within Inquisitive Semantics) and disjunctions often are the source of question particles (Walkden et al. forth.). Furthermore, multiple languages have elements that systematically show up in polar questions, disjunctions, conditional antecedents and indefinite pronouns (Szabolcsi 2015). These facts call for a unified analysis of *li* in questions and outside of them, even though *li*'s synchronic distribution is more constrained than that of particles discussed by Szabolcsi. While I leave spelling out the compositional details for future research, I maintain that only a non-complementizer analysis of *li*, which is backed up by independent syntactic evidence, can be compatible with *li*'s other uses.

2.2. Declarative string questions

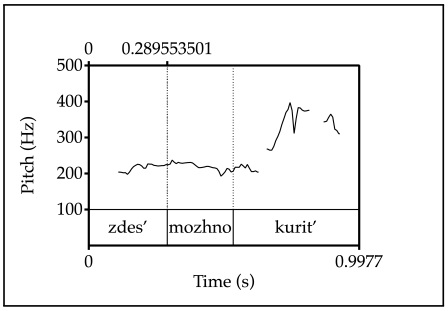
Declarative string questions (2b) have the same surface word order as declarative string assertions (SVO with permutations possible, e.g., due to information structure; Bailyn 2011), but are reliably distinguished from assertions in perception and production through intonation (Makarova 2007; Rathcke 2006). Assertions are characterized by broad sentential focus: early f0 alignment with the onset of the accented vowel, gradual low rise. Decl-Qs feature the Q-peak (term from Esipova 2024), a special prominence on the semantically focused constituent: late f0 alignment, steep high rise. Note that Russian is typologically

[3] Erschler (2017) explicitly argues that such cases instantiate sluicing vs. other types of ellipsis.

unusual: questions do not have a rising intonation. The Q-peak differs from ordinary focus marking in shape and height (Meyer and Mleinek 2006) and its main function is to request a reaction from the addressee (Esipova 2024), similar to Cantonese *aa* (Law et al. 2024). In addition to Decl-Qs, the Q-peak appears in 'concerned' requests (Esipova 2024), which I assume can be derived as secondary speech acts.

Q-peak placement gives rise to different discourse effects (Esipova and Romero 2023). Q-peak on the main predicate: neutral question (2b), nearly synonymous to a *li*-Q. Clause-final Q-peak (≠ rising tune, there is a rise and fall): the utterance requires the presence of a non-trivial higher-order QUD. Such explanation-seeking questions (term from Esipova and Romero) often occur in scenarios where the speaker has some contextual evidence supporting the prejacent (5). Importantly, the clause-final contour in (5) is infelicitous in the neutral-inquiry context from (2), and the utterance from (2b), with the Q-peak on main predicate, in infelicitous in the non-neutral context in (5). I will not derive the effects of the Q-peak placement here, and assume that they are rooted in the Q-peak's interaction with focus and the QUD structure.

(5) *I see people smoking on the train.*
Zdes' mozhno kurit'?
Here can.PRED smoke.INF
'Can one smoke here?'



Summing up, Russian has two strategies for neutral polar questions: *li*-Qs, with the focus particle *li*, and Decl-Qs, with the Q-peak intonation. Each strategy has a distinct prosodic and syntactic profile, and in many contexts, they are nearly interchangeable.

3 Core data

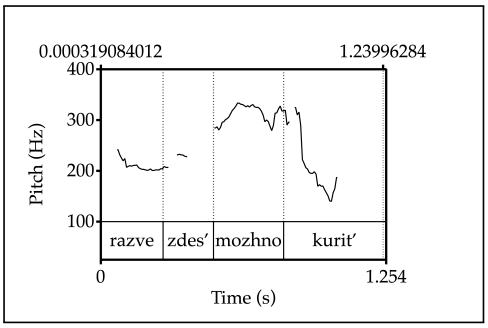
Razve and *neuzheli* fall squarely under the umbrella of 'discourse particles', small words that explicitly bring out often hidden aspects of conversational information flow. Russian has an assortment of particles with varied functions (Shimchuk and Shchur 1999; Zybatow 1990). My focus is on *razve* and *neuzheli* as, among various elements conveying what can be described as question bias, they are the only two particles limited to polar questions.[4] Their semantics and use conditions are similar, yet interestingly different, and as such they shed light on the nature of bias and adjacent phenomena.

3.1. Distribution

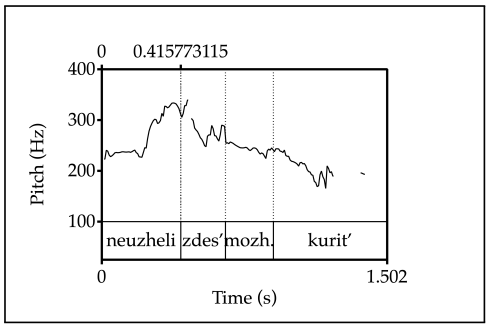
Razve and *neuzheli* are typically clause-initial and can occur stand-alone (22). With *razve*, the Q-peak is on the main predicate (6). With *neuzheli*, the Q-peak is on *neuzheli* (7), often with additional intonational cues signalling heightened emotion. Importantly, neither *razve*-Qs nor *neuzheli*-Qs require the explanation-seeking contour, which shows that evidential restrictions associated with them (section 3.5) come from the particles.

[4] *Razve* also introduces nominal and clausal exceptives, which I will treat as synchronically unrelated to its life as a question particle. *Neuzheli* has colloquial variants *neuzhel'* and *neuzhto*. *Neuzheli* (< *ne* NEG + *uzhe* 'already' + *li*) used to co-exist with the particle *uzheli* (< *uzhe* 'already' + *li*), but the extent of their semantic differences remains unclear. Now *uzheli* is obsolete, appearing exclusively in archaic texts.

(6) **Razve** zdes' mozhno kurit'?
RAZVE here can.PRED smoke.INF
'Can one smoke here?'



(7) **Neuzheli** zdes' mozhno kurit'?
NEUZHELI here can.PRED smoke.INF
'Can one smoke here?'



The particles are infelicitous in assertions, *li*-Qs (8), alternative questions (9), *wh*-questions (10) or embedded polar questions (11). Given that only *li*-Qs (but not Decl-Qs) are licensed in embedded polar questions, the ungrammaticality of (11) can be due to incompatibility with *li*, rather than non-embeddability. Crucially, since *li* is not a complementizer, these facts are not due to a syntactic competition between *li* and *razve/neuzheli*.

(8) **Razve/neuzheli** (*li) Tata (*li) tancuet? [*li*-Q]
RAZVE/NEUZHELI LI Tata.NOM LI dance.3SG.PRES
'Does Tata dance? (I thought she didn't)'

(9) (***razve/neuzheli**) Tata tancuet ili net? [*alternative Q]
RAZVE/NEUZHELI Tata.NOM dance.3SG.PRES or not
'Does Tata dance or not?'

(10) (***razve/neuzheli**) kogda (***razve/neuzheli**) Tata tancuet? [*wh*-Q]
RAZVE/NEUZHELI when RAZVE/NEUZHELI Tata.NOM dance.3SG.PRES
'When is Tata dancing?'

(11) *Masha sprosila/uznala, **razve/neuzheli** Tata tancuet.
M.NOM ask.F.SG.PST/learn.F.SG.PST RAZVE/NEUZHELI T.NOM dance.3SG.PRES
Intended: 'Masha asked/learned if Tata danced.'

3.2. Types of bias

Current research identifies two types of bias in polar questions (Goodhue 2022; Romero 2024): (i) **original bias**: the speaker's prior attitude towards the prejacent (e.g., belief or preference), and (ii) **contextual bias**: mutually available evidence bearing on the prejacent. In (12), among the scenarios manipulating different bias conditions and polarity of bias—positive, negative, neutral (cf. Domaneschi et al. 2017), *razve* and *neuzheli* are only licensed in Scenario C2: the speaker's prior belief that $\neg p$ conflicts with contextual evidence that p, which confirms the intuitions expressed, but not explicitly checked, in previous literature (Baranov 1986; Bulygina and Shmelev 1997; Repp and Geist forth.).

(12) A. **Neutral epistemic:** *I meet you for the first time, we go out for lunch.*

1. **Neutral contextual:** I order for both us and check with you beforehand.
2. **Positive contextual:** You order beetroot hummus.
3. **Negative contextual:** You avoid all beet mezzes.

B. **Positive epistemic:** *I was sure you like beets*.

1. **Neutral contextual:** I invite you over and double-check before cooking.
2. **Positive contextual:** We go out for lunch, you order beetroot hummus.
3. **Negative contextual:** We go out for lunch, you avoid all beet mezzes.

C. **Negative epistemic:** *I was sure you hate beets*.

1. **Neutral contextual:** I invite you over and double-check before cooking.
✓2. **Positive contextual:** We go out for lunch, you order beetroot hummus.
3. **Negative contextual:** We go out for lunch, you avoid all beet mezzes.

Razve/**neuzheli** ty liubish' sveklu?
RAZVE/NEUZHELI you.NOM love.2SG.PRS beet.ACC.SG
≈ 'Do you like beets?'

Razve and *neuzheli* can express preferences in addition to beliefs, but only the epistemic, and not bouletic, component is hard-wired (Bulygina and Shmelev 1997:274).[5]

(13) *We're in what we thought was a non-smoking bar. Another guest lights a cigarette.*

✓**1. Positive bouletic:** An avid smoker, I am delighted to be mistaken.
✓**2. Negative bouletic:** An adamant non-smoker, I am dismayed to be mistaken.
✓**3. Neutral bouletic:** I have no preference either way.

Razve/**neuzheli** zdes' mozhno kurit'?
RAZVE/NEUZHELI here can.PRED smoke.INF
'Can one smoke here?'

Data in (12) seem to suggest that *razve* and *neuzheli* encode negative epistemic bias and positive contextual bias (Repp and Geist forth.). As I show below, the particles can only be characterized as markers of negative bias based on prior attitude, while based on current credence, *razve* may be unbiased and *neuzheli* positively biased. Something clearly goes amiss. First, the literature conceptualizes original bias as a static notion: the speaker's attitude prior to conversation. I propose that negative epistemic bias is best understood through the lens of belief revision and that *razve* and *neuzheli* conventionally encode epistemic states associated with different stages of this process (sections 3.3 and 3.4). Second, I examine evidential bias within research on evidence in language and argue that *razve* and *neuzheli* exhibit distinctions akin to those of evidentials (section 3.5). I focus on sentences with a positive prejacent. While negation in Decl-Qs was argued to convey contextual bias (Onoeva and Šimík 2023; Repp and Geist forth.), these studies did not control for intonation and putative bias effects might be due to the explanation-seeking contour (cf. 5).

3.3. What *razve* does

Razve encodes that the speaker considered p unlikely prior to conversation and that there is presently good-enough evidence for p. This puts them in the middle of belief revision process: credence in p may have increased due to new evidence, but not enough to accept p. Depending on the speaker's willingness to let go of prior belief, *razve*-Qs have two uses: (i) information-seeking: the speaker is presently unopinionated about p (14), and (ii) challenging: the speaker holds on to belief that $\neg p$ (15,16). Both uses have the same prosody and semantics (Korotkova 2023), and only differ in discourse updates (Section 4.3).

[5] I thank Robert van Rooij for raising this issue.

In information-seeking *razve*-Qs, the speaker wants to resolve an epistemic conflict between prior belief and current evidence (14a) and may be unopinionated about p (14b). Pace Repp and Geist (forth.), *razve* does not correspond to English *really*, which requires a strong present conviction that $\neg p$ (Bill and Koev 2022) and renders (14a) borderline rude.

(14) *I overhear a friend thanking the waiter in Turkish at a coffee shop.*

a. **Razve** ty govorish po-turetski?
RAZVE you.NOM speak.2SG.PRS Turkish
'Do you speak Turkish? (I thought you didn't.)'
≠ 'Do you really speak Turkish?' (Korotkova 2023:335)

b. Ia ✓dumala / ??dumaiu, chto net. [follow-up to (14a)]
I.NOM think.F.SG.PST think.1SG.PRS COMP be.NEG
'I thought / (??) think that you didn't.'

In challenging *razve*-Qs, the speaker protests p and it becoming common ground (15).

(15) *According to the Chukchi ritual, offerings were left in the snow for the spirits, but a city boy refers to it as a 'buried meat'.*

Razve tak mozhno nazyvat' sviashchennuiu zhertvu?
RAZVE so can.PRED call.INF sacred.FEM.ACC.SG offering.ACC.SG
≈'How dare you call a sacred offering this way! (Literally: Can one call a sacred offering this way?)' (*The Time of Melting Snows*, Yuri Rytkheu)

Challenging uses, common with normative language, often convey the speaker's preference that $\neg p$. But even then the preference component is not hard-wired. Thus, in (16) the speaker is talking about their beliefs, not wishes.

(16) *Runaway slave George Harris, talking in bitter despair to his former owner, argues that there can't possibly be a God for Black people.*

Razve Bog est'?
RAZVE God.NOM.SG be.PRES
'Does God exist? (I don't think so) (Original: *Is* there a God to trust in?)'
(*Uncle's Tom Cabin*, Harriet Beecher Stowe, translated by V.S. Waldman)

3.4. What *neuzheli* does

Previous research classifies *neuzheli* as a marker of disbelief: the speaker is unwilling to accept p (Baranov 1986; Bulygina and Shmelev 1997; Repp and Geist forth.). I argue that it expresses an opposite doxastic state—the speaker's upward trending credence in p, up to full belief, along with the fact that the speaker considered p unlikely prior to conversation. *Neuzheli*-Qs have two uses: (i) positively biased: the speaker is leaning towards p but isn't sure (17,18), and (ii) polar exclamatives: the speaker is astonished that p (19, 20). Let's start with positively biased *neuzheli*-Qs.

(17) *Mission leader can't make a decision about who's going.*

A. **Neuzheli** tak trudno vybrat' troix?
NEUZHELI so difficult.PRED choose.INF three.ACC
'Is it that difficult to choose three people?'

B. Trudno.
difficult.PRED
'It is difficult'.

(Film *Teens in the Universe*)

(18) *Soviet diplomat Volodin has long been contemplating contacting a foreign ministry about the Soviet Atomic Program. Initially he considers an anonymous call safe but after nerve-wrenching deliberations he is becoming convinced otherwise.*

Neuzheli uznaiut po telefonnomu sdavlennomu golosu?
NEUZHELI identify.3PL.PRES by phone.M.SG.DAT muffled.M.SG.DAT voice.SG.DAT
'Surely they couldn't identify a muffled voice over a telephone?' (Literally: Will they identify a muffled voice over a telephone?)

(*In The First Circle*, Aleksandr Solzhenitsyn; translated by H. Willets)

In (17), a *neuzheli*-Q is used in a dialogue to double-check whether p is actually true, even though they previously considered it unlikely. Such questions are well-behaved interrogatives, for example, they can be answered (17,30). In (18), a *neuzheli*-Q in an internal monologue conveys the complexities of a changing epistemic state—from believing $\neg p$ to entertaining p—in a situation with life-or-death consequences, the nuances of the speaker's attitude rendered through the combination of *surely*, negation and a rising declarative in the English literary translation.

Another use of *neuzheli*-Qs is what I call exclamative polar questions.[6] (19), from a scientific space mission, and (20), from a scientific magazine, demonstrate that the speaker conveys that the state of wonder about p, rather than a refusal to accept it. Such uses of *neuzheli* are akin to the English *can't believe* construction ($\neq$ *don't believe*; Roberts 2019).

(19) *Space ship captain announces that maximum speed has been reached.*

A. Slushaj, **neuzheli** my letim so skorostiu sveta?
Listen.IMP NEUZHELI we.NOM fly.1PL.PRES with speed.ACC.SG light.GEN.SG
≈ 'Look, I can't believe we are flying with light speed!'

B. Da, pochti.
yes almost
'Yes, almost.' *(Film Moscow–Cassiopeia)*

(20) *Description of a reader's first encounter with Hawking's multiverse theory.*

Neuzheli vokrug nashego mira zerkalami rasstavleny
NEUZHELI around our.M.GEN.SG world.GEN.SG mirror.INSTR.PL put.PTCP.PL
drugie miry?
other.NOM.PL world.NOM.PL
≈ 'I can't believe that there are other worlds put like mirrors around ours'.

(Magazine *Knowledge is power*)

I argue that *neuzheli* has the same core semantics across the board and that there is no reason to treat exclamative uses separately. Unlike standard exclamatives, all *neuzheli*-Qs can be answered (17,19,30). Furthermore, unlike *wh*-exclamatives (Castroviejo 2019; Rett 2011) or verb-initial exclamatives (Brandner 2010), *neuzheli*-Qs needn't be degree-based. Like *that*-exclamatives across Germanic (Grosz 2012), they are felicitous with non-gradable properties and express astonishment about the very fact that p holds (18,20,25).

[6]The literature also offers terms 'suprise questions' (Celle 2023) and 'counterexpectactional questions' (Bhadra 2024) for questions with miratives and related markers. Crucially, unlike canonical miratives (Zhuang 2023), *neuzheli* isn't veridical and allows for the speaker's uncertainty (17, 18). Furthermore, while *neuzheli*-Qs can express violated expectations (25), they also express a slightly different attitude, background beliefs that ended up being false (21). I leave finessing those points for future research.

This suggests that all *neuzheli*-clauses are in fact interrogative[7] and that the exclamative effect arises from the speaker's level of certainty.

3.5. Evidential restrictions

The literature treats 'evidential bias' as a monolithic notion (Büring and Gunlogson 2000; Romero 2024; Sudo 2013 a.o.), without an explicit discussion of the nature of contextual evidence. Capitalizing on the research on evidentiality (see overview in Bary and Korotkova 2023), I propose a more nuanced view on contextual bias. Evidential markers are commonly distinguished based on evidence type (e.g., perception, hearsay, various types of inference; Willett 1988) and the strength of belief this evidence produces (Krawczyk 2012; Murray 2017). Below I show that these distinctions are at play with *razve* and *neuzheli*.

Evidence type *Razve* is compatible with perception (14a=21), hearsay (15,22) and abductive inferences (12,13,23), but not anti-abductive inferences (24) (see Douven 2021 on abduction). Overall, it requires a weak abductive inference that supports the prejacent—contextually salient information for which the prejacent is a good-fit explanation (Korotkova 2023). The notion of abduction covers perception and hearsay: observing that p or an assertion that p constitute a good explanation for p (Krawczyk 2012). (21)–(23) have the following schema: p is the prejacent of the question, there is a prior belief that $\neg p$ and a current observation q; p is a good-fit explanation for q, therefore, q is evidence for p.

(21) **Perception**
I overhear a friend thanking the waiter in Turkish at a coffee shop.
Razve/neuzheli ty govorish po-turetski? [=14a]
RAZVE/NEUZHELI you.NOM speak.2SG.PRS Turkish
razve-Q: 'Do you speak Turkish? (I thought you didn't.)'
neuzheli-Q: 'I can't believe you speak Turkish!'

(22) **Hearsay**
Looking at the boys in front of him, Uncle remarks that they are charming brothers. In unison, they reply: "We're not brothers."
Neuzheli/razve? A ia dumal — brat'ia.
NEUZHELI/RAZVE and I.NOM think.M.SG.PST brother.NOM.PL
≈ 'So you're not brothers? And I thought you were.'
(adapted from *Seriozha*, Vera Panova)

(23) **Abductive inference: effect to explanation**
There was no rain in the forecast but now I see that my laundry is wet.
Razve/neuzheli byl dozhd'?
RAZVE/NEUZHELI be.M.SG.PST rain.NOM.SG
razve-Q: 'Did it rain? (I thought it wouldn't.)
neuzheli-Q: 'Oh, so it rained?'
p = 'that it rains', q = 'that laundry gets wet', rain explains wet laundry

Neuzheli is omnivorous with respect to evidence type. Just like *razve*, it is compatible with perception (21,25), hearsay (19,22) and abductive inferences (12,13,17,23). Additionally, it allows anti-abductive inferences (18,24). (24) has the following schema: p is

[7] It is common to use NPIs to distinguish between interrogatives and exclamatives (Delfitto and Fiorin 2014), but this test is not applicable to Russian, which does not have canonical NPIs (Pereltsvaig 2006). Looking at prosody may be more promising, but I won't explore it here for reasons of space.

the prejacent of the question, there is a prior belief that $\neg p$ and a current observation q; q is an explanation for p, therefore, q is evidence for p.

(24) **Anti-abductive inference: explanation to effect**
There was no rain in the forecast but now you tell me that it did rain after all.
✓**Neuzheli**/#**razve** bel'io namoklo?
NEUZHELI/RAZVE laundry.NOM.SG get.wet.N.SG.PST
'Oh, did the laundry get wet? (I thought it wouldn't.)
p = 'that laundry gets wet', q = 'that it rains', rain causes wet laundry

The key distinction is the direction of reasoning: *razve* requires the evidence to be causally downstream of the belief it produces, while *neuzheli* is bi-directional.

Evidence strength *Razve* and *neuzheli* are associated with different levels of current credence in p: (i) low to undecided with *razve*, (ii) high to full with *neuzheli*. This constrains the subjective strength of contextual evidence.[8] *Razve* requires evidence to be good enough for the speaker to entertain p, but not too strong to accept it (Korotkova 2023). *Neuzheli* is associated with a higher credence in p and therefore stronger subjective evidence.

This difference in the epistemic states accounts for the following empirical contrasts. First, in scenarios that allow both *razve* and *neuzheli*, the particles are not interchangeable. Thus, in (21) and (22) *razve*-Qs convey genuine curiosity about the prejacent, while *neuzheli*-Qs convey more certainty. Second, there are cases where only *neuzheli*-Qs are acceptable, because the evidence is too strong to leave room for complete ignorance.[9] (25) illustrates: *razve* is off as it implies that the speaker does not trust their perception.

(25) *Opening the door to someone you never expected to see again.*
✓**Neuzheli**/#**razve** eto ty?
NEUZHELI/RAZVE this you.NOM
'I can't believe this is you!'

Strength-based asymmetries also play a role in dialogues. *Razve*-Qs, albeit often acceptable as reactions to a previous assertion (especially as challenging questions; (15), (16)), can sometimes be construed as incredulous/impolite (Bulygina and Shmelev 1997:275-276). Thus, *razve* is off in (19), as it suggests that the captain's announcement is insufficient to believe p. *Neuzheli*-Qs, on the other hand, are perfectly fine in those scenarios.

To sum up, *razve*-Qs and *neuzheli*-Qs encode that the speaker considered p unlikely and that there is contextual evidence supporting p. They differ in what they convey about the speaker's current epistemic state and contextual evidence, these subtle distinctions not predicted by the existing typology: (i) with *razve*, the speaker may have no opinion about p (information-seeking uses) or they may still believe $\neg p$ (challenging uses), and there is a weak abductive inference that p; (ii) with *neuzheli*, the speaker's credence in p has increased (opinionated uses) or they may have accepted it (exclamative uses), and there is strong contextual evidence supporting p. I analyze the particles as pure doxastic operators and argue that their discourse effects are rooted in this basic semantics.

[8] Repp and Geist forth. couch this contrast as the strength of epistemic conflict between prior belief and new evidence. I propose instead that it has to do with the difference between prior vs. posterior credence.

[9] Evidence type does not always determine evidence strength, in particular, perceptual evidence does not always produce more certainty than inferential knowledge (Faller 2001; McCready 2015).

4 Proposal

4.1. Polar interrogatives

I assume a type distinction between declaratives and interrogatives (propositions vs. sets of propositions) and the monopolar semantics for polar questions (singleton sets), with questionhood encoded by the Q operator in C (26; adapted from Biezma and Rawlins 2012:392). Note that the prejacent of a question must be one of the salient alternatives—a question must address the QUD.

(26) $[\![\ [_{CP}\ Q\ [p]]\ ]\!]^c = \{\lambda w.p(w)\}$,
defined iff (i) $\{\lambda p.p(w)\} \subseteq \textsc{Alts}(c)$ or $\textsc{Alts}(c) = \emptyset$, and
(ii) $|\ \{\lambda p.p(w)\} \cup \textsc{Alts}(c)\ | > 1$.
($\textsc{Alts}(c)$ is a set of salient propositions that are possible answers to the QUD.)

For Russian *li*-Qs and Decl-Qs, I assume the following properties: (i) neither *li* nor the Q-peak encodes the Q operator directly (questions that are not marked in any way will be ruled out due to the pressure to distinguish questions from assertions), (ii) *li* is a binary alternative operator that can combine with questions, (iii) the Q-peak selects for the Q operator, which limits it to questions, and adds the use-conditional meaning "Please react". We can now define the semantics for *li*-Qs (27) and Decl-Qs (28).[10]

(27) a. *Mozhno li zdes' kurit'?* 'Can one smoke here?' [*li*-Q; =2a]

b. $[\![$ (27a) $]\!]^c = [\![\ [_{CP}$ li [Q [one can smoke here]]] $]\!]^c$
$= \{\lambda w.\textsc{can smoke}(w),\ \lambda w.\neg\textsc{can smoke}(w)\} = \{\textsc{can smoke}, \neg\textsc{can smoke}\}$,
defined iff (i) $\{\textsc{can smoke}\} \subseteq \textsc{Alts}(c)$ or $\textsc{Alts}(c) = \emptyset$, and
(ii) $|\ \{\textsc{can smoke}\} \cup \textsc{Alts}(c)\ | = 2$.

(28) a. *Zdes' mozhno kurit'?* 'Can one smoke here?' [Decl-Q; =2b]

b. $[\![$ (28a) $]\!]^c = [\![\ [_{CP}$ Q-peak [Q [one can smoke here]]] $]\!]^c$
$= \{\lambda w.\textsc{can smoke}(w)\} = \{\textsc{can smoke}\}$,
defined iff (i) $\{\textsc{can smoke}\} \subseteq \textsc{Alts}(c)$ or $\textsc{Alts}(c) = \emptyset$, and
(ii) $|\ \{\textsc{can smoke}\} \cup \textsc{Alts}(c)\ | > 1$;
felicitous iff (iii) Speaker wants Adressee to react.

Any standard semantics predicts that the interpretation of a *Li*-Q with *li* on the main predicate will contain only two alternatives. Crucially, the strictly doubleton semantics (27) is needed to account for cases when *li*'s host is a non main predicate constituent. Even then, unlike in corresponding Decl-Qs with focus, *li*-Qs are limited to scenarios with two salient alternatives (29), which shows that this property must be hard-wired.

(29) ✓**Two alternatives**: *Dima is planning to go either to Berlin or to Copenhagen.*
#**More than two alternatives**: *Dima is planning to visit a European city.*
V Berlin li sobiraetsia poexat' Dima?
in Berlin.ACC LI intend.3SG.PRES go.INF Dima.INF
'Is it Berlin that Dima is going to visit?'
(adapted from an earlier version of Shushurin 2024)

[10] This is a simplification, as I will not attempt to derive non-interrogative uses of *li* or the interpretational effects of the Q-peak placement here (neutral vs. explanation-seeking contours).

4.2. Core semantics

Razve and *neuzheli* have a limited distribution. They are out in assertions, embedded questions, *li*-Qs, alternative questions and *wh*-questions. Following Korotkova (2023) on *razve* (inspired by Bhatt and Dayal 2020), I propose a semantic explanation of the pattern. I argue that both particles select for sets of propositions (32,33), which limits them to questions, and impose a singleton constraint, which limits them to Decl-Qs (and with *neuzheli*, non-neutral tunes conveying heightened emotions).[11] First, *wh*-questions, alternative questions and *li*-Qs are not singletons. Second, the particles' incompatibility with *li* (the only strategy for embedded polar questions; (3)) ensures that they are limited to root clauses without any additional assumptions about embeddability or the denotation of embedded questions.

Our next stop is the semantic status of bias inferences, both of which I analyze as not-at-issue entailments (cf. also Xu 2017). First, neither *razve*-Qs nor *neuzheli*-Qs can be followed up with *I've never considered this issue* (cancelling belief) or *We have no reasons to think so* (cancelling evidence), which shows that each inference is hard-wired. Second, responses can only target the prejacent (30), but not the speaker's evidence or prior belief, which shows that only the prejacent is part of the at-issue content (Amaral et al. 2007).[12]

(30) A. **Razve**/**neuzheli** zdes' mozhno kurit'?
RAZVE/NEUZHELI here can.PRED smoke.INF
'Can one smoke here? (I thought not.)'

B. Da. 'Yes'.
= 'One can smoke.'
≠ 'You thought one could'.
≠ 'There is evidence for this.'

B'. Net. 'No'.
= 'One can't smoke.'
≠ 'You didn't think one could.'
≠ 'There is no evidence for this.'

Both biases are conventionally encoded by *razve*/*neuzheli* and constitute a type of not-at-issue content, though of different sorts. The proposition that is considered evidence is part of mutual knowledge, but the speaker's attitude can be new information. (31) illustrates.

(31) *We're in a bar. I think smoking is universally banned and don't bring it up beforehand.*
✓**Mutual evidence**: We watch another guest light a cigarette.
#**Non-mutual evidence**: You were at the counter, another guest lit a cigarette.
Razve/**neuzheli** zdes' mozhno kurit'? 'Can one smoke here?' (=30)

We can now provide compositional semantics for *razve* (32) and *neuzheli* (33).

(32) $[\![\text{ razve }]\!]^c = \lambda \mathbb{P}_{\langle\langle st\rangle t\rangle}.\mathbb{P}$

a. Defined iff $|\mathbb{P}| = 1$ and $\exists q \in cg$;

b. Felicitous iff $\forall p \in \mathbb{P}$
$[c_t(p \mid q) > c_t(p)$, `[q is evidence for p]`
and q is causally downstream of p, `[abductive evidence]`
and $\exists t'.[t' < t \ \wedge \ 0 \leq c_{t'}(p) \leq 0.25]$, `[speaker's prior credence]`
and $0 \leq c_t(p) \leq 0.5]$. `[speaker's current credence]`
(where cg is the common ground, c—credence, t—the utterance time.)

[11] Highlighting (Roelofsen and Farkas 2015) is another option (cf. Xu 2017 on *nandao*). If *razve* and *neuzheli* select for clauses that highlight only one alternative, they are out in *wh*-questions and alternative questions, which highlight more than one. But one would still have to explain the incompatibility with *li*-Qs.

[12] Due to the restricted distribution of the particles, other diagnostics of (not-)at-issueness do not apply.

(33) $[\![\text{ neuzheli }]\!]^c = \lambda \mathbb{P}_{\langle\langle st\rangle t\rangle}.\mathbb{P}$

a. Defined iff $|\mathbb{P}| = 1$ and $\exists q \in cg$;

b. Felicitous iff $\forall p \in \mathbb{P}$
$[c_t(p \mid q) > c_t(p)$, `[q is evidence for p]`
and $\neg\exists r \neq q.[c_t(p \mid r) \geq c_t(p \mid q)]$, `[strong evidence]`
and $\exists t'.[t' < t \ \wedge \ 0 \leq c_{t'}(p) \leq 0.25]$, `[speaker's prior credence]`
and $0.75 \leq c_t(p) \leq 1]$. `[speaker's current credence]`
(where cg is the common ground, c—credence, t—the utterance time.)

Razve and *neuzheli* select for singleton sets of propositions and signal that (i) the speaker considered the prejacent unlikely prior to conversation, (ii) there is mutually known salient information q and (iii) the speaker considers it to be evidence for the prejacent (q is a good predictor of p). With *razve*, evidence for p must be abductive and the speaker may consider p unlikely or be genuinely undecided. With *neuzheli*, the evidence for p must be strong (other than q, there is no equally good predictor for p) and the speaker considers p likely.[13]

4.3. Meaning in context

We are now in a position to derive the full meaning of *razve*-Qs and *neuzheli*-Qs, including their conversational effects. I will start with *razve*-Qs. Note that neither *razve* nor *neuzheli* select for the Q-peak directly—they select for sets of propositions, and are potentially compatible with non-neutral question tunes that don't have the Q-peak.

(34) *We're in what we thought was a non-smoking bar. Another guest lights a cigarette.*
Razve zdes' mozhno kurit'? [=6]
RAZVE here can.PRED smoke.INF
'Can one smoke here?'

(35) $[\![\text{ (34) }]\!] = [\![\text{ razve } [_{\text{CP}} \text{ Q-peak } [\text{ Q } [\text{ one can smoke here }]]]]\!]^c$
$= \{\lambda w.\text{CAN SMOKE}(w)\} = \{\text{CAN SMOKE}\}$

a. Defined iff $\{\text{CAN SMOKE}\} \subseteq \text{ALTS(c)}$ or $\text{ALTS(c)} = \emptyset$,
and $|\{\text{CAN SMOKE}\}| = 1$,
and $\exists q \in cg \ (q = \text{LIT CIGARETTE})$;

b. Felicitous iff Speaker wants Addressee to react,
and $c_t(\text{CAN SMOKE} \mid \text{LIT CIGARETTE}) > c_t(\text{CAN SMOKE})$,
and LIT CIGARETTE is causally downstream of CAN SMOKE,
and $\exists t'.[t' < t \ \wedge \ 0 \leq c_{t'}(\text{CAN SMOKE}) \leq 0.25]$,
and $0 \leq c_t(\text{CAN SMOKE}) \leq 0.5$.
(where cg is the common ground, c—credence, t—the utterance time.)

[13] Caveats about the formal implementation. A. The presence of salient information imposes a constraint on the input context and is treated as a definedness condition. B. The speaker's attitude to q needn't be mutual knowledge, so this is modelled in the same way as the speaker's credence in p, as a novel use-conditional contribution. A complete model of different not-at-issue contributions is beyond the scope of this paper. Crucially, the inference about the speaker's credence is not a presupposition, even though epistemic bias has been treated as such (cf. Frana and Rawlins 2019). C. The probabilistic treatment of evidence is standard in epistemology (Williamson 2000). D. Conditional probabilities are not sufficient to talk about abductive inferences (Pearl 2009), so the specific evidence relevant for *razve* is unformalized for simplicity. One option will be causal models (cf. Bjorndahl and Snider 2015; Cumming and Winans 2021 on counterfactuals). E. Probability thresholds reflect likelihood: unlikely at below 25%, likely at above 75%.

Razve-Qs can be used as information-seeking questions and as challenging questions (section 3.3). I argue that the actual interpretation in context is determined by the speaker's current credence in p (undetermined by the semantics):

— information-seeking: the speaker is undecided, $\approx\ 0.25 \leq C_t(p) \leq 0.5$;
— challenging: speaker is unwilling to give up their prior belief, $\approx\ 0 \leq C_t(p) \leq 0.25$.

I represent the contrast between different interpretations via the Table model (Farkas and Bruce 2010), a model of discourse that consists of the sets DC_{Sp} and DC_{Ad} for individual discourse commitments of the interlocutors, the Table for issues under discussion, the common ground *cg* and the projected set *ps* for possible outcomes of a discourse move. I assume the following architecture of discourse: (i) assertions and questions are associated with different updates;[14] (ii) questions put the set of salient focus alternatives on the Table, which amounts to $\{p, \neg p\}$ for polar questions; (iii) only at-issue content is represented; (iv) discourse commitments are all-or-nothing, not graded (cf. Rudin 2022). (36) shows the update of a neutral information-seeking question in (28a).

(36) Information-seeking question
Zdes' mozhno kurit'? 'Can one smoke here?'

K_0

DC_{Sp}	Table	DC_{Ad}
cg_0		

$\rightarrow K_1$

DC_{Sp}	Table	DC_{Ad}
	$\{p, \neg p\}$	
$cg_1 = cg_0$	$ps_1 = \{cg_1 \cup \{p\}, cg_1 \cup \{\neg p\}\}$	

Turning back to *razve*, I assume the following: (i) all *razve*-clauses are interrogative; (ii) credence determines commitment; (iii) *razve* introduces a constraint on the input CG. I argue that in those cases when the speaker is genuinely undecided at present (1a, 12, 14=21, 22, 23), the discourse effect is only minimally different from ordinary information seeking questions. (37) illustrates this for (34).

(37) Information-seeking *razve*-Q: ignorant/confused speaker
Razve zdes' mozhno kurit'? 'Can one smoke here?'
≈ I thought one couldn't, but now I see it could be allowed. So is it allowed or not?

K_0

$DC_S p$	Table	$DC_A d$
$q \in cg_0$		

$\rightarrow K_1$

$DC_S p$	Table	$DC_A d$
	$\{p, \neg p\}$	
$cg_1 = cg_0$	$ps_1 = \{cg_1 \cup \{p\}, cg_1 \cup \{\neg p\}\}$	

Challenging uses of *razve*-Qs have a more involved pragmatics. Unlike canonical rhetorical questions (see overview in this volume), they don't require the speaker to assume that the answer is known or entailed by context (see detailed discussion in Korotkova 2023). And unlike challenging uses of rhetorical questions (Eckardt 2024), they can directly challenge a previous assertion (15, 16) and, in turn, the other interlocutor's commitment that p. They can also be used in contexts where the issue that p is brought up through some other means (e.g., words or actions of a third party) and the speaker does not want it to be silently accepted, especially in light of their prior beliefs. (34) allows this interpretation, for example, when the speaker is adamant that all bars should ban smoking and wants to go on public record with it, ideally extracting a commitment from the addressee as well. I

[14] An alternative is to use the general update function (Farkas and Roelofsen 2017) and to treat declaratives as sets, but then we need to explain the incompatibility of *razve* and *neuzheli* with *li*-Qs (cf. footnote 11).

argue that this interpretation arises when the speaker considered p unlikely and still does. (38) illustrates.

(38) Challenging *razve*-Qs: adamant/indignant speaker
Razve zdes' mozhno kurit'? 'Can one smoke here?'
≈ Someone is smoking, but this should not be allowed. I'd like indicate that $\neg p$ is a live possibility and, ideally, make it common ground.

	DC_{Sp}	Table	DC_{Ad}
K_0		$\{p\}$	optional: $\{p\}$
	$q \in cg_0$	$ps = \{cg_0 \cup \{p\}\}$	

→

	DC_{Sp}	Table	DC_{Ad}
K_1	$\{\neg p\}$	$\{p, \neg p\}$	optional: $\{p\}$
	$cg_1 = cg_0$	$ps_1 = \{cg_1 \cup \{p\}, cg_1 \cup \{\neg p\}\}$	

(38) is a non-monotonic update—instead of decreasing the space of live options, it increases them—that may ask the addressee to revise commitments, which is an adversarial discourse move (Rudin 2022). This is a welcome result, as it reflects the discourse dynamics associated with challenging questions—they challenge. Note that (38) is reminiscent of the discourse effect of the common-ground management operator FALSUM (Repp 2013), which states that the speaker is against adding the prejacent to the common ground. FALSUM has been used to account for negative epistemic bias, including for *razve* (Repp and Geist forth.). However, the same effect can be achieved with a much simpler system above. Furthermore, the FALSUM-based account undergenerates for *razve*: it incorrectly predicts that *razve*-Qs are always 'biased', while in fact *razve*-Qs have information-seeking uses and the speaker may have no current opinion about the prejacent (14).

We can now turn to *neuzheli* and its discourse effects.

(39) *We're in what we thought was a non-smoking bar. Another guest lights a cigarette.*
Neuzheli zdes' mozhno kurit'? [=7]
NEUZHELI here can.PRED smoke.INF
'Can one smoke here?'

(40) $[\![(34)]\!] = [\![$ neuzheli $[_{CP}$ Q-peak [Q [one can smoke here]]] $]\!]^c$
$= \{\lambda w.\text{CAN SMOKE}(w)\} = \{\text{CAN SMOKE}\}$

a. Defined iff $\{\text{CAN SMOKE}\} \subseteq \text{ALTS(c)}$ or $\text{ALTS(c)} = \emptyset$,
and $|\{\text{CAN SMOKE}\}| = 1$,
and $\exists q \in cg\ (q = \text{LIT CIGARETTE})$;

b. Felicitous iff Speaker wants Addressee to react,
and $c_t(\text{CAN SMOKE} \mid \text{LIT CIGARETTE}) > c_t(\text{CAN SMOKE})$,
and $\neg\exists r \neq q.[c_t(\text{CAN SMOKE} \mid r) \geq c_t(\text{CAN SMOKE} \mid \text{LIT CIGARETTE})]$,
and $\exists t'.[t' < t \ \wedge\ 0 \leq c_{t'}(\text{CAN SMOKE}) \leq 0.25]$,
and $0.75 \leq c_t(\text{CAN SMOKE}) \leq 1$.
(where cg is the common ground, c—credence, t—the utterance time.)

Neuzheli-Qs have two uses, as positively biased questions and as polar exclamatives (section 3.4). Just like with *razve*, those differences are traced to the speaker's credence:[15]
— positively biased: the speaker is is leaning towards prejacent, $\approx\ 0.75 \leq c_t(p) < 1$;
— exclamative: speaker is astonished that p, $\approx\ c_t(p) = 1$.

[15] *Neuzheli* is also used sarcastically (especially with cues like breathy voice), which is derived from its core semantics as a hyperbole (cf. Nouwen 2024): an expression of high certainty conveying doubt. *Razve*, precisely because of its semantics, does not have such uses.

The Table model is not well-suited for exclamatives (unless not-at-issue content, including the expressive content of exclamatives, is somehow incorporated), so the representation that I propose in (41) collapses the distinction between the two uses of *neuzheli*-Qs. It only models the distinction between all *neuzheli*-Qs vs. ordinary information-seeking questions via the speaker's commitment to p.[16]

(41) ***Neuzheli*-Qs**

Neuzheli zdes' mozhno kurit'? 'I can't believe one can smoke here'
Biased interpretation, opinonated speaker: Can you confirm this?
Exclamative interpretation, astonished speaker: Oh wow!

K_0

DC_{Sp}	Table	DC_{Ad}
$q \in cg_0$		

$\rightarrow K_1$

DC_{Sp}	Table	DC_{Ad}
$\{p\}$	$\{p; \neg p\}$	
$cg_1 = cg_0$	$ps_1 = \{cg_1 \cup \{p\}, cg_1 \cup \{\neg p\}\}$	

The representation in (41) is similar to the discourse effect of the common-ground management operator VERUM, which states that the speaker wants p to become ground. However, just like with *razve* above, a much simpler system handles the facts just as well. The pragmatics I propose for *razve*-Qs (37,38) and *neuzheli*-Qs (41) follows naturally from the compositional semantics of *razve* and *neuzheli*. Each particle is associated with a particular degree of credence in the prejacent: low to undecided for *razve*, high to full for *neuzheli*. My key assumption is that credence determines the level of commitment. This in turn determines the range of conversational moves available to each particle.

By treating bias-inducing expressions as doxastic operators, the proposed account shifts the locus of variation into semantics. Natural language has a plethora of expressions that convey various degrees of credence. When used in questions, they may create discourse effects that can be described as bias (e.g., weak epistemic adverbials). Crucially, those discourse effects needn't be treated as primitives, but can be derived in combination with standard assumptions about the pragmatics of questions.

5 Outlook

Focusing on two question particles in Russian, *razve* and *neuzheli*, I have argued that negative bias in questions can be understood through the prism of non-monotonic belief revision. This proposal offers a new perspective on the phenomenon of question bias and showcases the limitations of present approaches.

First, epistemic bias is usually conceived as the speaker's prior attitude towards the prejacent. However, this view does not predict fine-grained differences between *razve* and *neuzheli*, both of which convey a prior belief that the prejacent is not likely, but differ in the speaker's present credence in light of new evidence. Bringing belief revision into the picture straightforwardly captures the facts, and correctly predicts the existence of expressions sensitive to changes in the epistemic state.

Second, epistemic bias and contextual bias are viewed as independent notions within the existing feature typology. This, in turn, predicts the existence of expressions that encode

[16] Maybe polar exclamative questions as assertions: the speaker puts p on the Table and commits to it. But then we sacrifice the idea that exclamative *neuzheli*-clauses are interrogative. It is possible that exclamative *neuzheli*-Qs differ from questions in additional presuppositions (see (Zanuttini and Portner 2003) on *wh*-exclamatives). For now, I assume that the Table model must not account for all possible discourse effects, especially those outside of assertions and polar questions.

only one type of bias, but not the other. However, a closer examination reveals that the typology overgenerates (see also Gärtner and Gyuris 2017, 2023 on constraints on feature combinations). Consider (42): the speaker has negative epistemic bias but no contextual evidence either way and the main function of the question is to double-check a prior belief. It turns out that there are no expressions earmarked just for negative bias in questions. This meaning can be expressed through a denial marker like Italian *mica* compatible with both questions and assertions (42a; cf. Frana and Rawlins's (2019) ex.36) or a confirmation-seeking marker with a negative prejacent (as in the English translation). But markers that are limited to questions are infelicitous in such cases, as is demonstrated below for Russian *razve* and *neuzheli* (42b), German *etwa* (42c) and Mandarin *nandao* (42d).[17] I will call this the NO NEGATIVE BIAS CONJECTURE, which of course has to be tested for more languages.

(42) *In the morning, I burned a cake in the kitchen and had to leave the window wide open to get rid of the nasty smell. I am at work and check with my spouse that they did not close the window. I expect they didn't.*

a. **Mica** hai chiuso la finestra? [Italian]
MICA have.2SG.PRS close.PTCP DEF window
'You didn't close the window, right?'

b. #**Razve/neuzheli** ty zakryl okno? [Russian]
RAZVE/NEUZHELI you.NOM close.M.SG.PST window.ACC.SG

c. #Hast du **etwa** das Fenster zugemacht? [German]
have.2SG.PRES you ETWA DEF.ACC window close.PTCP

d. #**Nandao** ni guan-shang chuanghu le ma? [Mandarin]
NANDAO you close-up window INC Q

Speakers tend to conserve beliefs in general (see, for example, vast literature on 'belief bias'; Evans et al. 1983 and later work) and only sufficient evidence can trigger the process of belief revision. It is therefore only expected from a utility perspective (cf. Van Rooij and Šafářová 2003) that natural language will have dedicated expressions for inquiries signalling belief revision potential, but not just negative epistemic bias.

If non-monotonic belief revision is the ultimate concept underlying negative bias in questions, it is tempting to simplify the semantics of respective expressions and do away with contextual bias as part of the denotation. But we have seen with *razve* and *neuzheli* that some expressions can have very specific evidential restrictions. Can we derive them on independent grounds (cf. Kamali and Nakamura 2024)? This is a question that can only be answered through a careful investigation of the types of contextual bias with an eye on evidential distinctions, presently an uncharted territory.

The combinatorics of different bias types predicts simultaneously less variation and more variation than we find. I have argued that belief revision provides an instrumental way of understanding the landscape of question bias as it explains both the unexpected and the unattested cases in a principled way. It remains to be seen how much mileage we can get out of similar reasoning-based explanations when it comes to empirical generalizations about non-canonical questions at large.

[17] Xu (2017) discusses *etwa* and *nandao* in detail (see also Gieselman and Caponigro 2013 on *etwa*), but the explicit observation that they convey positive evidential bias is novel, to the best of my knowledge.

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