BIASED *wh*-INTERROGATIVES

Moreno Mitrović

BLED INSTITUTE & UNIVERSITY OF CYPRUS

ABSTRACT. This paper is a cross-grammatical investigation into Rhetorical Questions (RQs), more specifically, negatively biased *wh*-interrogatives in Ser-Bo-Croatian. The RQs under discussion express negative factivity and do not pose answerhood resolution conditions. Previous accounts of cross-linguistically comparable expressions suppose Focus association, via an *even*-like associate, which I confirm for Ser-Bo-Croatian. Several results are achieved: a syntactic analysis is argued for and mapped onto a compositional semantic/pragmatic analysis that derives the the relevant meanings. A prosodic study is reported which shows that focus associating *wh*-pronouns in RQs are significantly different. This difference is programmatically accounted for by reformulating the assumption that *wh*-terms have no ordinary semantic value as they demonstrably associate with Focus, as per syntactic, prosodic, and semantic/pragmatic evidence.

1 INTRODUCTION

Given that rhetorical questions (RQs) are not truth-conditional, yet express less inquisitive epistemic perspectives, how can the non-canonicity of questions, viz. rhetorical interrogatives, be given a unified treatment within a compositional framework? This paper is a cross-grammatical investigation into RQs, more specifically, negatively biased *wh*-interrogatives in Ser-Bo-Croatian.[1] The RQs under discussion express negative factivity and do not pose answerhood resolution conditions. Previous accounts of cross-linguistically comparable expressions suppose Focus association, via an *even*-like associate, which I confirm for Ser-Bo-Croatian. Several results are achieved: a syntactic analysis is argued for and mapped onto a compositional semantic/pragmatic analysis that derives the the relevant meanings. A prosodic study is reported which shows that focus associating *wh*-pronouns in RQs are significantly different. This difference is programmatically accounted for by reformulating the assumption that *wh*-terms have no ordinary semantic value as they demonstrably associate with Focus, as per syntactic, prosodic, and semantic/pragmatic evidence.

 The analysis rests on the empirical observation that Q(uestion) particles may optionally co-occur in *wh*-Qs, in which case they bear the interpretational signature of negative emotivity and rhetoricity. The core empirical facts are of the following kind, to which I will refer as *wh-li* constructions, which I also dub 'WTF Qs/expressions'.

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[1] I use the term Ser-Bo-Croatian to refer to the South Slavonic language spoken in Serbia, Bosnia, Croatia, and Montenegro, among others.

(1)   Šta   (**li**) radiš?
      what Q do.2.SG
      "What (*on earth*/WTF) are you doing?"

SerBo-Croatian (1), like most modern Indo-European languages, obey the 'Doubly filled COMP' filter (DFCF). However, the violation of DFCF may obtain: in such cases, the construction yields a rhetorical question, as shown in (1).

Similarly, and by cross-linguistic contrast, Chimane (ex. 2; isolate, Bolivia; Sandy Ritchie, pers. comm. and his own fieldwork) grammar obligates the DFCF to be doubly filled (2). Rhetoricity, however, may still obtain when the appropriate rhetorical interrogative particle is employed.

(2)   a.   STANDARD *wh*-QUESTION
           Jun' (***buty**) ji-yi-'   (?)
           how Q.STND happen-CL-F.SUB
           'What is happening?'

      b.   RHETORICAL *wh*-QUESTION
           Jun' (***dash**) ji-yi-'   (!?)
           how Q.RHET happen-CL-F.SUB
           'What *on earth* is happening?'

This paper investigates the nature of RQs in Ser-Bo-Croatian with regard to their syntactic, prosodic, and semantic/pragmatic properties.

If *wh*-pronouns in questions are inherently focused, or focus-associating, as argued for by many (Kotek 2014, and those cited therein), then they should exhibit uniform prosodic and semantic-pragmatic behaviour. More specifically, *wh*-phrases under 'additional' focus, if they are already inherently focused/focus-associating, is unexpected. I analyse a particular interrogative construction in Ser-Bo-Croatian which shows that *wh*-phrases are pronounced differently depending on whether they are interpreted as featuring in genuine *wh*-interrogatives or whether they are part of rhetorical and negatively biased *wh*-questions. This allows us to capture prosodic properties of Focus-association with the semantic/pragmatics of negative bias via Focus. Syntactically, genuine question obey the DFCF while negatively biased RQs do not. I explain this fact, along with the prosodic/semantic-pragmatic facts, by analysing true/standard *wh*-questions as involving 'true' *wh*-movement to Spec(ForceP). Conversely, rhetorical *wh*-questions show that the relevant landing site (final or non-final, in line with Bošković 2002) is located in Spec(FocP), which is responsible for the interpretational as well as the prosodic facts, unlike Spec(ForceP).

PLAN & STRUCTURE OF THE PAPER   In §2, I first introduce the various types of questions in Ser-Bo-Croatian, including the central RQ/WTF construction. I provide an empirically motivated syntactic analysis RQ/WTF constructions, along with their preliminary semantic features. I buttress the analysis with results from a prosodic experiment. §3 provides a detailed semantic/pragmatic analysis.

2 ENCODING (AND DISENTANGLING NON/STANDARD) *wh*-INTERROGATIVES IN SER-BO-CROATIAN

There are several ways of asking a question in Ser-Bo-Croatian. To ask a standard (non-echo) *wh*-question (3), Ā-movement to the clausal edge is required (I address what exactly probes this movement below).

(3) **Ko** te   vidi?
     Who you.ACC sees
     'Who sees you?

To ask a polar question (4), seemingly no movement is necessary: the interrogative C head is given overt phonological value as realises as the interrogative particle *li*. However, since *li* is a 'Wackernagel element', seemingly requiring placement in the second-position, an additional movement (of generally minimal verbal category) is required to satisfy this requirement.

(4) Vidi **li** te?
     sees Q you.ACC
     'Does (s)he sees you?

An echo-question is an *in-situ* variant of the *wh*-question formation:

(5) Vidi te   **ko**?
     sees you.ACC who
     'You're seen by who?

The two standard questions both require pronounced material in the C-system: either the *wh*-phrase or the interrogative C head, presumably in compliance with the Doubly Filled COMP Filter (DFCF; Chomsky and Lasnik 1977; Riemsdijk and Williams 1986). However, DFCF may be violated and when it is, the construction is interpreted as a a negative emotive factive, with an interpretation that is on a par with *wh- on earth/in hell/the fuck* rhetorical question.

(6) **Ko li** te   vidi?!
     who Q you.ACC sees
     '*Who on earth* sees you?

	wh-ex-situ in Spec(CP)	phonological index on $C^0_{[iQ]}$	DFCF violation
wh-Qs	+	−	−
polar Qs	−	+	−
echo Qs	−	−	−
WTF Qs	+	+	+

TABLE 1: *Some structural diagnostics for the types of interrogative constructions in Ser-Bo-Croatian.*
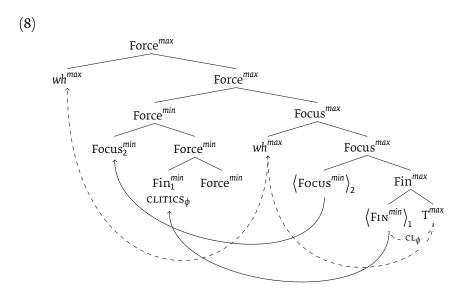
In Tab. 1, a simplex yet exhaustive structural parametrisation of the interrogative typology in Ser-Bo-Croatian is given. In the following three subsections, the WTF construction is introduced in syntactic (§2.1), semantic (§2.2), and prosodic (§2.3) terms.

2.1 SYNTAX

The particle *li* is claimed to structurally originate in the Focus projection of the clause before incorporating into the interrogative Force minimal category (assuming clausal micro-structure in line with Rizzi 1997), where its interrogative meaning presumably originates, based on clitic-configurational considerations alone. The clitic ordering ('▷' signalling linear order) in Ser-Bo-Croatian is strictly dictated and confined to the C-system (as I briefly argue below):

(7) $Q \triangleright AUX[-3.SG]_\phi \triangleright DAT_\phi \triangleright ACC_\phi \triangleright GEN_\phi \triangleright AUX[+3.SG]_\phi$

Assuming pronominal clitics (or ϕ-bearing elements) originate within the thematic nucleus of the clause, *v*P, but target clause-level heads via incorporation (clitics being 'defective' goals, following Roberts 2010), then the structurally most economical landing site is the lowest phasal edge from which the clitic goal may be targeted by an Agree operation: i.e., Fin^{min}. Fin-to-Force movement thus derives the correct configuration (7) in line with the Strict Cycle and without breaching, or relaxing, any other structure-building principles (such as the PIC of Chomsky 2001 *et seq.*). One consequence of the Fin-to-Force movement concerns the derivational origins of interrogative *li* (sitting in $Force^{min}$). If *li* is first-merged in $Force^{min}$, then the configurational sequence in (7) does not obtain given some basic assumptions I am making (say, incorporation/movement of the maximal category as left adjunction to the Force-probe). I adopt Roberts's (2012) view that *li* is first-merged in $Focus^{min}$ and raises independently of the clitic cluster (in Fin^{min}) to $Force^{min}$.[2] The resulting structure of the clausal edge is the thus the following:
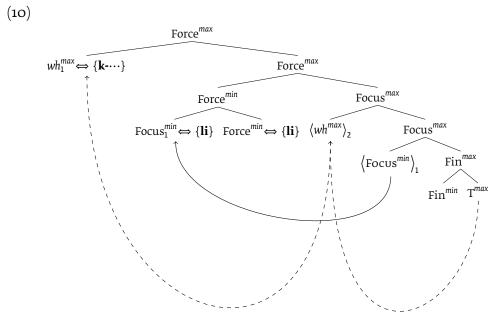
(8)

According to this view, therefore, *li* originates in the Focus field and incorporates into interrogative Force. This, however, makes an independent prediction that *li*, bu virtue of its first-merge position, has interpretational

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2 See Roberts (2010: 394ff;fn. 9, 10) for specific details. For general arguments and wider theoretical context, see also Roberts (2010); Mitrović (2014); Mitrović (2017b), *int. al.*. Independently, the relation between, and eventual grammaticalisation of, Focus and Force can be substantiated diachronically; see Mitrović (2015) for diachronic evidence from Japonic.

affinity with Focus. I lay out arguments for there being a non-interrogative meanings associated with *li*, which I understand as indicating a non-interrogative—structural, and thus interpretational—origin of *li*. The first argument concerns the doubling of the *li* particle (accepted and produced by some Bosnian speakers). In spontaneous elicitations, the *li li* sequence also truncates to *lil* for most speakers. The doubling of the *li* particle motivates the Focus analysis shown in (8).

(9) Ko **li l(i)** je   došao?
     who Q Q AUX.3.SG came.PTC.M.SG
     'Who on earth/the fuck came?!'

The evidence in (9) is predicted by the Focus analysis of *li*, i.e. the derivational account which supposes a first-merger of the *li*-exponent in Focus^{min}. I do not notate the doubling *li* explicitly when presenting the data as not all speakers allow the doubling, presumably for haplology constraints. However, I take the fact that doubling is possible for some speakers as evidence for the internal structure of the left edge in the C-system containing (at least) two derivationally and interpretationally relevant projections: ForceP, encoding interrogativity, and FocP, encoding association with Focus. Prosodic and semantic/pragmatic arguments are presented for the latter. In line with (8) and the doubling data in (9), I thus motivate the structure for the left edge involved in RQs as being the following, where the (previsouly motivated) incorporation of Fin^{min}, to which the pronominal clitics clusters, is ignored for simplicity and convenience.

(10)

While Bošković (2002) remains agnostic whether *wh*-focus-fronting requires additional successive movemebt of the *wh*-phrase to Spec(ForceP), the analysis I propose in (10) supposes such movement is obligated. Note, however, that the *li* particle's Wackernagel requirement to be second in position allows for such movement to be post-syntactically driven.[3]

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3 There are independent considerations for our dispreferring to appeal to post-syntactic movement operation, but these are irrelevant for the present purposes of this paper. See Roberts (2010); Roberts (2012); Mitrović (2017a), and those cited, for a discussion.

In ditransitive *wh-li*/WTF constructions, however, both the *wh*-pronoun and the *li* particle precede the clitics, as per (7).

(11) Ko   **li** joj   ju   je   dao?
who.NOM Q her.DAT her.ACC AUX.3.SG give.PTC.M.SG

'Who *the hell* gave it/her to her?!'

On its way to Force, the Focus marker *li* smuggles a specific focus meaning into the Force layer and triggers successive raising of wh^{max} to Spec(Force^{max}) from Spec(Focus^{max}). The very nature of the focus semantics in *wh*-questions should be automatic (Beck 2006, *inter multa alia*), which fortifies the argument that *li* be structurally located in the Focus projection on independent grounds.

Further evidence that the *li* particle is a marker of *even*-like associating focus comes from other independent constructions in the language (and note that it is optional in all of those). In expletive imperatives (12), for instance, it triggers the intensity implicature, presumably via the unlikelihood presupposition (more on that in the following section).

(12) Majku   (**li**) ti   bezobraznu
mother.ACC Q you.DAT faceless

"...your shameless mother"

In rhetorical exclamatives (13) it adds to the negative emotivity, as it does in exclamative evidentials (14), signalling, like *even* in English may, unlikelihood and/or undesirability

(13) Živote,   gorak **li** si!
Life.VOC bitter Q are.2.SG

'Life! You're bitter!'

(14) Kasan   **li** si!
late.PTC.M.SG Q are.2.SG

'[*What the hell,*] You're late!'

Perhaps not surprisingly, the *li* particle also features in comparatives, where the comparandum is an unlikely candidate for the relevant comparison. Unlike in English, it signals a rejection of the comparandum. For those speakers that accept *li*-doubling in RGS (9), (15) cannot contain a doubled *li*, as expected since comparatives do not express interrogative meaning. The same is true for exclamatives above.

(15) Slovenija je manja   nego **li**   (*li) Kina.
Slovenia is smaller than Q=even   Q China

'China is far bigger than Slovenia.'

In §2.2, I show independent evidence that the prosody of *wh*-terms is different in *wh-li*/WTF constructions. This discussion, as I contend, is also syntactically relevant for the typology of DFCF- violating and -obeying languages, which I now turn to.

Traditionally, the DFCF is a statement on prohibition on lexical material from realising on both the head and the specifier (edge) of the CP. (Chomsky and Lasnik, 1977; Riemsdijk and Williams, 1986).

(16) The DFCF:
      *[_{Comp} *wh*-phrase complementizer], where neither of the two is null.
      (Chomsky and Lasnik, 1977: 446)

One of the contributions of the present paper is to add a (synchronic) typological dimension (17iv) to the discussion on the nature of the DCFC.

(17)   i.   The DFCF **must be obligatorily obeyed**. (Standard English)
      ii.   The DFCF **must be obligatorily violated**. (West Flemish; Haegeman 1992)
      iii. The DFCF **may be optionally obeyed/violated**.(Bavarian and Alemannic; Bayer 2015, *int. al.*)
      iv.   The DFCF, when violable (17ii), **has interpretative effects**. (Ser-Bo-Croatian)

And it is these interpretive effects I now turn to in §2.2.

2.2 SEMANTICS

I provided some purely structural evidence in the previous section that Focus and Force and derivationally linked in Ser-Bo-Croatian. (Roberts, 2012) Empirically, focus and interrogative constructions share a common position: Spec(CP). Croft (1990), for instance, explains the obligatory presence in interrogatives by appealing to the obligatory presence of focus and thus treating leftward *wh*-movement as focus-movement. Bošković (2002), for instance, claims that in multiple-*wh* constructions, only the highest *wh*-term occupies the interrogative specifier while the subsequent are attracted to their specifier(s) by Focus.

On a more general (and specifically semantic) level, focus and question constructions have been receiving unifying treatment and there have been developments that the two construction are semantically (nearly if not completely) collapsable. *Wh*-questions, for instances, are taken to compose rather the same meanings, by virtue of the meaning of the *wh*-terms. The Hamblin school (see Kotek 2014 and references therein) treats, for instance, *wh*-pronouns, like *what*, as having only a focus semantic values and denote Hamblin sets. Being inherently focal, they have no ordinary values.

The interrogative complementiser, like the Force above, on the other hand, have no real meaning: they represent identity functions which simply pass on the denotation of their sisters to form part of the resulting Hamblin set by virtue of combining with *wh*-terms. On a conceptual level, there is no interpretative difference between a declarative and an interrogative complementiser. Aside from the fact that focus is the core mechanical device for deriving interrogatives, with the notion of alternatives providing the means for the affinity, there have been other consideration, as Eckardt (2007) notes.

One counterargument, which is crucial for the purposes of this paper, is that a supposition of inherently focal denotation of *wh*-pronouns technically and conceptually prevents from treating truly focussed *wh*-constituents. (Consult Eckardt 2007: 212ff. for further counter-argumentation). Although Romero (1998) attempted an analysis of focused *wh*-phrases, there has been (to the best of my knowledge) no subsequent serious endeavour to understand these.[4]

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4 I refer the reader to Romero (2017) which seems to be a resumption in this research direction.
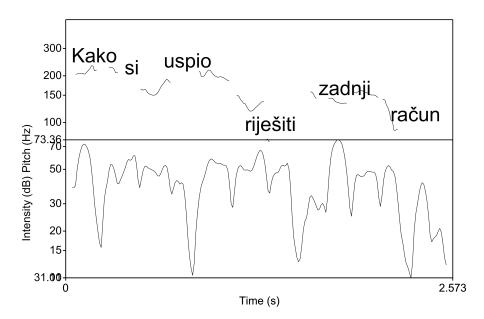
FIGURE 1: *Pitch and Intensity contours for example (18)*

With an immodest supposition of contributing in this direction, I now turn to demonstrating that standard *wh*-interrogatives differ prosodically when followed by the *li* particle in the WTF construction.

2.3 PROSODY

Prosodically, both the pitch and the intensity contours distinguish the *wh*-phrase in standard questions (null Force) from the *wh*-phrase in WTF interrogatives (with a non-null Force).

2.3.1 FIRST STUDY

The context for the minimal prosodic study reported in this section is the following: the participant is a mathematics teacher in high school. In the standard question in (18), the participant was asked to inquire of the student how s/he managed to arrive at the final result of the calculation, supposing a standard resolution (answerhood) condition. The pitch and intensity for this sentence are plotted in Fig. 1.

(18) **Kako** si   uspio   riješiti   račun?
      how AUX.SG succeed solve.INF calculation

      'How did you manage to solve the calculation?'

By contrast, in (19) is a WTF question asked in line with a variant of the context: the participant is still a mathematics teacher in high school. There was one question on partial differential equations assigned for homework which no student could ever solve. The participant is recorded asking the rhetorical and negatively emotive question, supposing that it was impossible for the student to have solved it. The pitch and intensity for this sentence are plotted in Fig. 2.

(19) **Kako li** si   uspio   riješiti   račun?
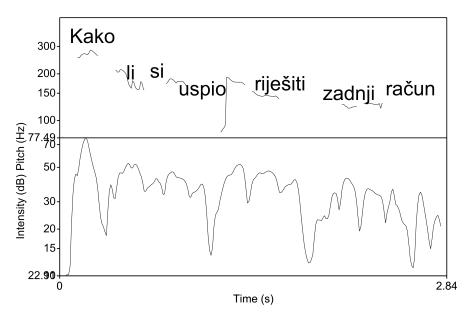   how Q AUX.2.SG succeed solve.INF calculation

FIGURE 2: *Pitch and Intensity contours for example (19)*

'*How on earth* did you manage to solve the calculation?'

Compare the contours between a standard- and a WTF-featuring *wh*-term. While the maximum pitch for standard interrogative was 234, 6 Hz, the maximum pitch for the WTF interrogative was 285, 3 Hz.

2.3.2 SECOND STUDY

I report here on a larger experiment, which was carried out with 8 untrained native speakers of Ser-Bo-Croatian from north-western (Krajina) area of Bosnia and Herzegovina (3 male, 5 female). At the time of the testing, the participants were unaware of the core aim of the study. Recording and analysis were carried out on a MacBook Pro (2016 model). The sound files were annotated and analysed using the software Praat (Boersma and Weenink, 2011: ver. 6.0.36). Participants were presented with 3 (six) pairs of interrogative *wh*-sentences, differing, on the one hand, in the syllable count of the *wh*-pronoun (#σ_{WH}) and, on the other, the presence/absence of the *li* particle. The three (pairs of glossed) sentences were the following:

(20) a. Koliko   (li) je   mrtvih?
          how.many Q AUX.3.SG dead

          '(My God!) How many dead are there?'   (#σ_{WH} = 3)

      b. Kome   (li) je   to   dao?
          whom.DAT Q AUX.3.SG this gave

          'Who (on earth) did you give this to?(!)'   (#σ_{WH} = 2)

      c. S   kim   (li) je   bio?
          with whom.INS Q AUX.3.SG was

          'Who (on earth) was he with?(!)'   (#σ_{WH} = 1)

As *wh*-words with higher number of syllables carry pitch more than those with fewer number of syllables, I report here the results of the trisyllabic context (20a) only.

Two effects were considered: intensity and pitch contour, as discussed below. The relevant effect that was investigated was obtained using ANOVA, using the *aov* function in R (Development Core Team, 2008), which confirmed a significant main effect of the context on both the pitch intensity maxima and pitch maxima.

INTENSITY   For intensity maxima, the two contexts under discussion were investigated: regular questions with the first landing site of *wh*-terms in Spec(ForceP) versus rhetorical/WTF constructions with Spec(FocP) being the first landing site in the C-system. The variable context is, in fact, significant for intensity maxima ($p = 0.000402$), while inter-speaker variation is insignificant ($p = 0.002044$). This confirms that the differential interpretation correlates with a significant intensity characterisation on the *wh*-phrase. Pairwise *post-hoc* tests revealed that there was a significant difference between regular and rhetorical interrogative readings. This is alined with the syntactic analysis proposed earlier where the two *wh*-pronouns occupy, or move through, different positions which gives rise to different interpretation. I turn to the latter in the next section.
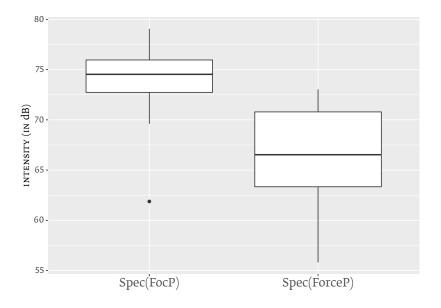

FIGURE 3: *Intensity maxima as per structural contexts and position of* wh-*pronouns.*

The corresponding details are presented in Tab. 2.

PITCH   Just as intensity, the pitch contours also differ significantly with respect to the context, i.e. the presence of the *li* particle, triggering rhetorical/WTF inferences, is reflected in prosody. The context has a very significant effect on the pitch contour, specifically pitch maxima ($p = 0.00263$), while inter-speaker variation is insignificant ($p = 0.00140$). Pairwise *post-hoc* tests, for a 95% family-wise confidence level, confirmed these significance results.

In Fig. 4, the raw results by context type are shown, i.e. for regular versus rhetorical questions.

	REGULAR Q: Spec(ForceP)			RHETORICAL Q: Spec(FocP)		
	MAX	MIN	RANGE	MAX	MIN	RANGE
s1	63.835	42.093	21.742	73.778	42.593	31.184
s2	73.033	42.120	30.912	74.107	33.881	40.226
s3	71.937	41.497	30.441	79.061	50.340	28.721
s4	70.408	40.277	30.131	78.073	42.334	35.739
s5	63.363	35.496	27.867	69.605	44.499	25.106
s6	63.265	34.010	29.255	74.949	41.837	33.112
s7	69.223	36.518	32.705	75.254	34.189	41.065
s8	55.816	32.680	23.136	61.875	37.088	24.788

TABLE 2: *Raw details of intensity (minima, maxima, and range) variation in trisyllabic* wh-*pronouns in the two differential contexts (across speakers 1–8). Values are in dB.*
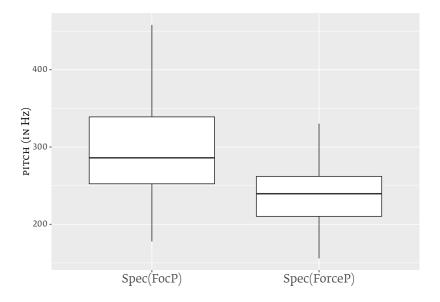

FIGURE 4: *Pitch maxima as per structural contexts and position of* wh-*pronouns.*

The raw results of pitch contours, characterised by pitch maxima, minima and corresponding ranges, i.e. the respective difference between maxima and minima, are given in Tab. 3.

Two prosodic correlates were found for the difference between regular and rhetorical/WTF *wh*-interrogatives: both intensity and pitch are significantly higher in RQ constructions. The syntactic analysis proposed in §2.1 differentiated between regular and rhetorical questions. The former DFCF-compliant *wh*-interrogatives were analysed as involving a single movement operation, where WH-phrases targeted the Spec(ForceP) site in a single movement operation. The latter dictate a Focus-associating movement of the *wh*-phrase to Spec(FocP). I have remained agnostic as to whether an additional movement step from Spec(FocP) to Spec(ForceP) takes places since nothing in the analysis rests on clarifying this assumption (I return to this point in §3.4). The critical different being the landing sites: Spec(FocP) for rhetorical questions and Spec(ForceP) for regular *wh*-interrogatives.

Movement to the Focus layer of the C-system is predicted to yield not only different interpretative properties of the question, but also, *ceteris paribus*,

	REGULAR Q: SPEC(FORCEP)			RHETORICAL Q: SPEC(FOCP)		
	MAX	MIN	RANGE	MAX	MIN	RANGE
s1	261.637	192.810	68.827	370.892	274.771	96.121
s2	330.287	226.348	103.938	458.164	231.725	226.439
s3	186.231	102.518	83.712	214.947	168.075	46.872
s4	155.826	117.576	38.250	177.741	109.463	68.278
s5	263.132	162.171	100.961	328.435	200.836	127.600
s6	218.244	158.768	59.476	264.955	165.887	99.068
s7	230.290	155.060	75.230	287.722	181.199	106.522
s8	248.839	172.204	76.635	284.311	194.043	90.267

TABLE 3: *Raw details of pitch contour variation in trisyllabic* wh-*pronouns in the two differential contexts: Spec(ForceP) vs Spec(FocP) yielding regular vs rhetorical interrogatives, respectively (across speakers 1–8). Values are in Hz.*

prosodic reflexes of Focus-association. Here, I reported on a study which shows that these reflexes obtain.

In the next section, I turn to explaining the semantic/pragmatic properties of RQ/WTF constructions.

3 ANALYSIS

Before proceeding, let me contextualise briefly the analysis by outlining three core approaches, drawing generally from Caponigro and Sprouse (2007), to the meanings of rhetorical questions, which is what WTF construction demonstrably are.

RHETORICAL QUESTIONS AS NEGATIVE STATEMENTS   The first approach to RQs treats them as covert negative statements. Furthermore, while they are interpreted as statements, they are syntactically derived as presumably proper questions. If a RQ contains a *wh*-phrase, "the *wh*-phrase maps onto a negative quantifier, as the result of a post-LF derivation." (Han, 2002: 220) This approach is inconsistent as it maintains that syntactic structure does not feed semantic interpretation in the case of RQs, yet manages to instruct, in whatever way, that an existentially quantificational *wh*-term be mapped onto a negative quantifier. I find this conceptual argument, coupled with the lack of predictive power of Han's (2002) analysis, sufficient to abandon building my proposal in this conjectural direction.

RHETORICAL QUESTIONS AS QUESTIONS WITHOUT AN ANSWER   RQs can also be treated as full questions, compositionally, with an additional assumption that their answer-set is empty. Since questions denote nothing more than the set of their answers, this approach may be intractable since the meaning of a RQ, *ceteris paribus*, would amount to $\varnothing$. I abandon this line of enquiry also.

RHETORICAL QUESTIONS AS QUESTIONS   This last camp of approaches is varied. According to Caponigro and Sprouse (2007), RQs are not asked to

trigger an increase in the amount of mutual knowledge as the knowledge is shared by both the Speaker and the Addressee.

In the following subsections, I will adopt the standard assumption that WTF RQS are questions and derive their properties—syntactic, semantic-pragmatic, and prosodic—successively.

My analysis aims to capture the facts along the following lines: WTF RQS invoke negatively emotive surprise over the existential presuppositional of the *wh*-term that cannot be readily suppressed. This will turn out to be a non-trivial pursuit. In my analysis, I do not assume all RQS form a single empirical class. From now on, I will focus exclusively on the WTF type outlined in the previous sections. I take the *on earth/in hell* adverb in English, being semantically on a par with the overt focus/interrogative particle *li* in Ser-Bo-Croatian. The English adjunct to yield a rhetorical effect, as understood here: the negative surprise contribution on part of the Speaker and reduced answerability (i.e., RQs denote biased sets of answers).

DESIDERATA   The desiderata for a theory of biased *wh*-interrogatives include the following results.

(21)   The analysis should
  i.   derive negatively biased attitude and emotive factivity,
  ii.   account for the reduced resolution conditions (unanswerability),
  iii.   account for the syntactic property of DFCF violations,
  iv.   account for the differential prosodic features of the *wh*-phrase in WTF constructions.

ROADMAP   In what follows, I lay out and motivate the ingredients for my analysis. The first the emotive component, which I derive by embedding the WTF RQS under emotive factives.

3.1 DERIVING EMOTIVITY

I follow Romero (2015: 227, ex. 12) in her adapting the semantics of desire-predicates (of Heim 1992 and Stalnaker 1984) to emotive factives, such as the *surprise* predicate. Defining this predicates requires two ingredients. The first is a relation of comparative similarity, which maps p to p-worlds maximally similar to w). The second is an expectability ordering ($>^{\text{EXP}}_{\langle x, w_0 \rangle}$), as defined in (22). Note that the epistemic similarity may be traded for a bouletic or teleological modal ordering which derives the negative flavour of the emotive factive.

(22) $[\![p \text{ surprises } x]\!] = \lambda w_0 \Big[\forall w \in \bigcap \text{Dox}(w_0) \big[\text{SIM}_w(\neg p) >^{\text{EXP}}_{\langle x, w_0 \rangle} \text{SIM}_w(p) \big] \Big]$

The alternative to p need not be (and is not) $\neg p$ Given the focus-sensitivity of emotive factives, the alternative activation and accessibility must somehow be obtained. I succeed in obtaining the relevant alternatives for the factive from within the complement clause, which will the role of the *wh*-term in Spec(ForceP).

To see this mechanism at play, consider the following scenario. Since the relevant focus-marking in the complement clause, in line with the scenario, is on TUESDAY, the focus alternatives from the embedded clause are

able to project upward point-wise and supply the emotive factive with the relevant doxastic alternatives.

(23) [SCENARIO] Lisa knew that syntax was going to be taught. She expected syntax to be taught by John, since he is the best syntactician around. Also, she expected syntax to be taught on Mondays, since that is the rule.

    a. It surprised Lisa that John taught syntax on TUESdays   TRUE

    b. It surprised Lisa that JOHN taught syntax on Tuesdays   NOT TRUE

With the emotives in place (21i), I turn to the more relevant semantic/pragmatic problem, i.e. deriving the rhetorical interrogative nucleus. The question meaning I am after is the one with reduced resolution condition (21ii), allowing for complete unanswerability without affecting the core logical makeup of the question as an answer-set denoting expression. I start the motivation for an analysis by adopting, and successively adapting, the meaning of *even* which would rank the relevant answers in a way that would allow for suppression of resolution conditions.

3.2 SUPPRESSING RESOLUTION CONDITIONS AND THE MEANING(S) OF *even*

I develop the view that the *li* particle in its original Focus position assosiates with the (focus-sentive) meaning of a particle like *even*, as independent evidence in (12–15) suggests.

The particle *even* does not seem to affect truth conditions, yet communicates that the proposition it associates with is less likely than its alternatives. In (24), the more likely alternatives to my ex's turning up the party, are all other people.

(24) **Even** my ex turned up to the party.

Standard *even*, EVEN_{STN} as Crnič (2014: 118) notes, triggers a likelihood presupposition that its propositional argument is less likely than all the relevant alternatives relative to the context of use. In (25), EVEN_{STN} is defined, where $p \lhd_w q$ is defined iff p is less likely than q (given the relevant facts in w; see Crnič 2011 for detailed discussion).

(25) $[\![\text{EVEN}_{\text{STN}}]\!]^{C,w,g} = \lambda C_{\langle\langle st\rangle t\rangle} . \lambda p_{\langle st\rangle} : \forall q \in C[p \neq q \rightarrow p \lhd_w q] . p$

Iatridou and Tatevosov (2016) discuss the appearance of *even* in questions that cannot be accounted using the standard entry for EVEN_{STN} in (25). Consider the following scenario.

(26) Iatridou and Tatevosov (2016: 298, ex. 7)

    A: Let's meet at Oleana for Dinner. Is that OK?

    B: Where is that **even**?

While the EVEN_{STN} operates on propositions (25), Iatridou and Tatevosov's (2016) *even*, or EVEN_{IT}, given in (27), is defined for questions, i.e. sets of propositions. The latter is taken to pick out the question that is least likely to be asked (in the relevant context). In (27), the definition of Iatridou and Tatevosov's (2016) EVEN_{IT} is given.

(27) $[\![\text{EVEN}_{\text{IT}}]\!]^{w,g} = \lambda C_{\langle\langle\langle st\rangle t\rangle t\rangle} . \lambda q_{\langle\langle st\rangle t\rangle} : \forall q' \in C[q' \neq q \rightarrow q \lhd_w q'] . q$

I now briefly reproduce Iatridou and Tatevosov's (2016) composition of their EVEN$_{IT}$ for a question 'Where is Tunica even spoken?' in (28). After the nucleus is existentially closed for the locative, the Question Speech Act applies to the formed proposition and delivers a set of propositions, i.e. the denotation of the question, with the *wh*-term applying as the λ-abstract to the question. EVEN$_{IT}$ attaches at the root and projects the unlikelihood presupposition, as per the lexical entry above.[5]

(28) When defined, ⟦Where is Tunica even spoken?⟧ =

The resulting assertive meaning is the set of questions, but those (presuppositionally) least likely to be asked. The lexical entry for EVEN$_{IT}$ brings us close to the meaning behind the DFCF-violating *wh*-interrogatives in Ser-Bo-Croatian. The least likelihood of the question is rather naturally connected to the notion of surprise by it logical design, and the contextual surprise derived by conventional implicature (I use ⤳ to symbolise implicatures). The entry of EVEN$_{IT}$, however, alone cannot account for the negative surprise attitude the constructions obligatorily express, for at least two strong reasons. Consider the relevant data once more:

(29) [CONTEXT: Little Mujo solved a partial differential equation, and his teacher says:]

Kako **li** si   uspio   rješiti   taj   račun?!
How Q AUX.SG succeeded.PTC.M solve.INF this.M calculation.M

'How on earth did you manage to solve this problem?!'

⤳$_1$ The speaker is emotionally invested: negatively surprised.
⤳$_2$ The question is rhetorical and does not impose resolution conditions (i.e., it may be unanswerable).

While surprise may obtain, the emotive negativity does not derive using the technology of the lexical entry for EVEN$_{IT}$ alone. As there is nothing intrinsically attitude-pertaining in their proposal underlying EVEN$_{IT}$, Iatridou and Tatevosov (2016) may relate the attitude expression to conventional implicatures. Even with this apparatus in place, the implicated attitude may, all else being equal, be a non-negative one. This one of the shortcoming in my adopting EVEN$_{IT}$ to cover the meaning of the biased interrogatives under discussion. This, in fact, does not go against Iatridou and Tatevosov's (2016) analysis *per se*, but rather against the application of their analysis to the empirical set relevant here. In order to obtain the relevant pragmatic ingredients, I follow Elliott et al.'s (2015) in customising Iatridou and Tatevosov's (2016) analysis of EVEN$_{IT}$. (The second reason (⤳$_2$) to do with resolution conditions is addressed below.)

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5 See Iatridou and Tatevosov (2016) for technical details and further particulars.

3.3 DERIVING NEGATIVE BIAS

There is an attitude-expressing *even* that Iatridou and Tatevosov's (2016) EVEN_{IT} cannot derive. Consider the following, from Elliott et al. (2015: ex. 6):

(30)   [CONTEXT: Andrew is smoking something that is causing a pungent smell.]
        What is Andrew **even** smoking!?

Clearly, given the context, the question in (30) is not unlikely to be asked (in fact, quite the opposite). This *even*, then, is distinct from EVEN_{IT}. Elliott et al. (2015) suggest that the core meaning of *even* in (30) is not unlikelihood, but rather low-rankedness. (I return to, and adapt, this notion later.)

The *attitude even*, EVEN_{ATT} in (30), according to Elliott et al. (2015) expresses the following meaning: All conceivable answers to the *wh*-question are low-ranked to some modal ordering. They assume that the modal ordering can be based on judge's (*j*)/speaker's (*s*) desires (bouletic), goals (teleological), or expectations (epistemic).

Just as Iatridou and Tatevosov (2016), Elliott et al. (2015) take EVEN_{ATT} to associate with a question, qua the set of propositions ('Hamblin-Question'), given an ordering source c_0. Their question-associating EVEN_{ATT} "expresses that for each $q \in Q$, for all $\forall w \in \text{DOX}_{c_w}(c_s)$, if $q(w) = 1$, then w is non-maximal according to the ordering source c_0." I take this meaning to be part of the presuppositional component, with the assertive component returning the input, i.e. the Hamblin-Question (the assertive meanings are thus stable, as per standard assumptions on truth-conditional vacuity of *even*, across the three lexical entries for EVEN, EVEN_{IT}, and EVEN_{ATT}). I formalise Elliott et al.'s (2015) EVEN_{ATT} in (31).

(31) $[\![\text{EVEN}_{\text{ATT}}]\!]^c(Q) = \forall q \in Q . \forall w \in \text{DOX}_{c_w}(c_s) : [q(w) = 1 \rightarrow \neg\text{MAX}_{c_0}(w)] . Q$

Thus for (30), the modal ordering for the attitude-holder is epistemic as the speaker (attitude-holder) thinks that whatever Andrew is smoking is surprising.

Aside from EVEN_{ATT}, Elliott et al. (2015) also propose a variant of the *discourse even* (EVEN_{DIS}), which is close in definition to EVEN_{IT}, but utilises low-rankedness instead of unlikelihood. While not formally defined, EVEN_{DIS} is defined as rejecting the presupposition that is made in the discourse, namely that a more fundamental question has been resolved. This, they propose, is derived via low-rankedness of the question in the discourse (and does not derive from the unlikelihood meaning). Their formal departure in describing EVEN_{DIS} is, in fact, in the interpretation of the logical role of the ◁-function in Iatridou and Tatevosov's (2016) definition of EVEN_{ATT}. Unlike them, Elliott et al. (2015) claim the the ◁-ordering "is not only based on the (un)likelihood of the question act, but more broadly on goals, conventional linguistic behaviour, etc." I therefore formally reconstruct EVEN_{DIS} using a new ◀-ordering relation that Elliott et al. (2015) suppose.[6] With (32) adopted, I customise (27) and formally dub EVEN_{DIS} in (33)

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6   Note that Elliott et al. (2015) define their EVEN operators as attaching to interrogative meanings that obtain through a Question Speech Act operator and thus the relevant alternatives Q are not those of questions but alternatives comprising question speech *acts* (cf. Iatridou and Tatevosov 2016: 309, fn. 20). In my discussion, I make no such theoretical commitments, primarily as I do not think I require them, and assume Q contains question alternatives, i.e., a set of answer sets.

(32) Let Q and Q' be alternative question acts. Q ◀ Q' means Q is 'more basic' than Q' and needs to be resolved before resolving Q'.

(33) $[\![\text{EVEN}_{\text{DIS}}]\!]^{w,g} = \lambda C_{\langle\langle\langle st\rangle t\rangle t\rangle} . \lambda q_{\langle\langle st\rangle t\rangle} : \forall q' \in C[q' \neq q \rightarrow q \blacktriangleleft_w q'] . q$

Elliott et al. (2015) thus re-read (26) to mean that "A assumes that the question of where Oleana' s is has been resolved, but B rejects to accommodate this presupposition."

What I hoped to gain by following Elliott et al. (2015) in hope to adopt EVEN$_{\text{ATT}}$ and EVEN$_{\text{DIS}}$ is a hard-wired attitude relation and automated negativity at that. However, the two lexical entries differ substaintially in their logical forms (to the extent that I can gather). Starting with the first, EVEN$_{\text{ATT}}$ (31) does not impose proper ordering on the doxastic alternatives it brings into play: it only discriminates between maximal and non-maximal questions. There is no true question that can be maximal. If all questions are equally low-ranked (which does not follow from their definitions directly), it is unclear what a higher ranked question alternative would be, which gives EVEN$_{\text{ATT}}$ an intractable quality, at least for my purposes. In the second lexical entry for EVEN$_{\text{DIS}}$, as best as it may be formalised (33), ◀-ordering is imposed, unlike in (31) for EVEN$_{\text{ATT}}$, but for reasons to reject a presupposition that a previous question has not been resolved.

This bring us to the second impediment ($\leadsto_2$) of EVEN$_{\text{IT}}$ that EVEN$_{\text{DIS}}$ also suffers: everything else being equal, EVEN$_{\text{ATT}}$-containing question imposes resolution conditions, which *wh-li*/WTF interrogatives in Ser-Bo-Croatian do not. Also, *wh-li*/WTF questions may be asked without prior questions or discourse, sharing the distribution of *what the hell/what on earth*/WTF-questions.

3.4 *wh*-F-ALTERNATIVES?

In this last subsection, I synthesise the proposal and propose programatically a pragmatic principle and some revisions of the relationship between focus, questions, and *wh*-phrases.

Suppose the *wh*-term in fact has ordinary semantic value defined, contra Beck (2006) and Kotek (2014), *int. al.* Suppose further that the ordinary semantic value is the relevant set of strictly non-scalar alternatives. In the sense of Chierchia (2013), I assume that the true focus alternatives of *wh*-expressions are their scalar alternatives along the dimension of its presuppositional component. The latter being existential, suppose its only focus/scalar alternative is non-existential.[7]

(34) THE SEMANTICS OF *what*:
   a. Kotek (2014: 242), *int. al.*
      i. ORDINARY SEMANTIC VALUE:
         $[\![what]\!]^0$ is undefined
      ii. FOCUS-SEMANTIC VALUE:
         $[\![what]\!]^f = \{x_e : x \text{ is a non-human}\}$
   b. Working proposal:
      i. ORDINARY SEMANTIC VALUE:
         $[\![what]\!]^0 = \{x_e : x \text{ is a non-human}\}$

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7 In his analysis of indeterminate quantification patters, Mitrović (2014) also posits a defined dimension of σ-alternatives for (indeterminate) *wh*-pronouns which are part of Horn scale $\langle$something, everything$\rangle$.

ii.   FOCUS-SEMANTIC VALUE:
$[\![\textit{what}]\!]^f = \langle \text{something, nothing} \rangle$

There at least two arguments for this treatment. Firstly, I adopt Krifka's (1995) stance in assuming that all scalar alternatives are inherently focused, which is borne out in (34b-ii). Secondly, the motivation for this treatment may be carried over from Alonso-Ovalle (2006) who convincingly argues that the *ordinary* semantic value of disjunction is its alternative value: what count as focus alternatives for other grammatical formatives are taken are ordinary semantic denotata for disjunction. Since disjunction and existential quantification (to which is what all *wh*-terms are reducible; see Mitrović 2014 or Xiang 2016 for a uniform treatment in this direction) are homeomorphic, it is sufficiently reasonable to motivate a focus-like ordinary semantic treatment of *wh*-phrases.[8] Conceptually, this technical leaves room for the treatment of truly focussed *wh*-constituents. The WTF RQs involving them, as I have demonstrated.

How would we implement this view (34b-ii) for WTF RQs? After a *wh*-phrase raises to Spec(FocP), the focus-semantic alternatives of the *wh*-phrase are activated, yielding a two-membered Horn scale, comprising an existential and a non-existential member. After successive raising from Spec(FocP) to Spec(ForceP), the *wh*-phrase's ordinary (non-scalar) alternatives are cached in order for the question meaning to obtain. I am therefore led to dub the following economy principle relevant for semantics/pragmatics.

(35)   PRAGMATIC ECONOMY ON ALTERNATIVE ACTIVATION:
If activation of alternatives in the assertive dimension is blocked (by virtue of already being active), proceed to activating the alternatives in the presuppositional dimension.

In the focus dimension, *li* has the meaning similar to EVEN_{DIS}: rather than rejecting the presupposition than a previous question has been answered, it rejects the presupposition of its *wh*-associate, namely its existential alternative which in the focus dimension has only one remaining alternative: the un-existential value. This arrives at the desired result, both conceptual and empirical.

4   CONCLUSIONS & OUTLOOK

This paper analysed the WTF RQ construction as a negatively emotive focus-construction that features a variant of EVEN. I have shown that factivity arises from the *wh*-term in the complement clause and the negative attitude from an EVEN operator that attaches to the question. I have corroborated my analysis using syntactic, semantic, pragmatic, and prosodic arguments.

Syntactically, I buttressed Roberts's (2012) analysis of the *li* Q-particle as originating in the Focus layer of the C-system. I did this by showing that at least one variety of Ser-Bo-Croatian in Bosnia in negatively biased (rhetorical) questions realises the *li* particle doubly. This is expected on a Focus analysis of *li*. Secondly, I reported on a prosodic study in §2.3.2 which shows prosodically different characterisation of *wh*-pronouns in rhetorical questions. This is, again, expected under a Focus analysis of *li*.

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8   For an independent argument that the scalar alternatives are relevant in various *wh*-constructions, see Mitrović (2014) and those cited.

I then proceeded to a semantic-pragmatic analysis of RQs by deriving, successively and successfully, the various properties of the RQ/WTF meaning: emotive factivity (§3.1), rhetoricity, or its suppressed answerability (resolution conditions) (§3.2) factivity, and the negative attitude (§3.3). In the final subsection (§3.4), I integrated the previous facts to motivate a view according to which *wh*-terms do not have undefined ordinary semantic value (Kotek 2014, *int. al.*). A programmatic principle of economy regulating alternative activation/exhaustification was proposed in order to contextualise the Ser-Bo-Croatian RQ/WTF constructions within a broader set of cross-linguistic facts and theoretical considerations.

What may underlie the final piece of the proposal, concerning the admission of ordinary semantic value for *wh*-terms (which still allows them to be Hamblin sets), is a conjectural principle of pragmatic economy pertaining to EVEN- and EVEN-like focus-associating triggers (35).

I leave this next step for further pruning and research, along with the wider theoretical questions that need addressing in light of the novel data presented here and the corresponding inter-modular facts of the grammar of rhetorical questions.

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