

What do quantifier particles do?

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Work in progress. Comments are very much appreciated ¹

1. To meet and join, or not to meet and join?

Szabolcsi (2010: Ch 12.5) and Szabolcsi, Whang & Zu (2013) outline a program to investigate the compositional semantics of quantifier words. Taking apart someone and everyone and specifying what the quantifier particles and the indeterminate pronoun mean are not daunting tasks. The interesting part of the project begins when we observe that in many languages, the “quantifier particles” also serve as connectives, additive and scalar particles, question markers, existential verbs, and so on, and set out to investigate whether and how the same interpretations of the particles that work well inside the quantifier words extend to those contexts.

English, German, and French may not make this task seem urgent, but many other languages do. I am aware of good literature pertaining to various languages that belong to a vast Sprachbund (linguistic alliance) comprising Athabaskan, East Asian, South-East Asian, Slavic, and Finno-Ugric languages. Best-known is the case of Japanese, where “someone” (dare-ka) is formed with the morpheme ka and “everyone/anyone” (dare-mo) with the morpheme mo, both of which have busy lives of their own. In addition to indefinites, ka shows up in disjunctions and questions. In addition to universals, mo serves as an additive and scalar particle and shows up in distributive conjunctions.

In this draft I will use the capitalized versions KA and MO as generic representatives of these particles, not as specifically Japanese morphemes.

Szabolcsi (2010: Ch 12.5) and Szabolcsi-Whang-Zu (2013) survey data from Japanese, Malayalam, Mandarin, and Hungarian, and discuss two preliminary unifying proposals, based on the literature. One unifying perspective may be the Boolean/Heyting algebraic one. On this view, KA is a join (least upper bound, union, disjunction) operator, whereas MO is a meet (greatest lower bound, intersection, conjunction) operator. Another unify-

¹ This paper is a difficult one to read. Even though the components of the theory are simple, they come from many different walks of semantics and involve less-known cross-linguistic data. I am very grateful to Adrian Brasoveanu, Dylan Bumford, Marcel den Dikken, Roni Katzir, Moreno Mitrović, Floris Roelofsen, and Benjamin Slade for recent discussions. The many remaining faults are my own.

ing perspective, especially suited to the KA family, is the Inquisitive Semantic one. The crucial observation is that KA’s signature environments are disjunctions, indefinites, and questions. Drawing from results of the semantics of alternatives, Inquisitive Semantics (InqS) generalizes over these. The sentences in (1a) and (1b) are interpreted as non-singleton sets of sets of worlds. They are “inquisitive propositions” in the InqS terminology: “issues” with multiple “maximal possibilities” (alternatives). They contrast with the “non-inquisitive proposition” in (1c): an issue with a single maximal possibility.

- (1) a. Does Joe dance? (Hamblin 1973, Karttunen 1977)
 $\{ \{w: \text{dance}(w)(\text{joe})\}, \{w: \text{not dance}(w)(\text{joe})\} \}$
- b. Who dances? (Hamblin 1973, Karttunen 1977)
 Kate dances or Mary dances. (Alonso-Ovalle 2006)
 Someone dances. (AnderBois 2012)
 $\{ \{w: \text{dance}(w)(\text{kate})\}, \{w: \text{dance}(w)(\text{mary})\} \}$
- c. Kate dances. (Hamblin 1973, Kratzer & Shimoyama 2002)
 $\{ \{w: \text{dance}(w)(\text{kate})\} \}$

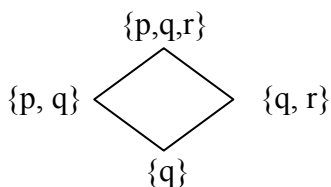
As Roelofsen (2012) points out, this perspective allows existential quantifiers, disjunctive connectives, and yes/no question particles to be united under the rubric of Heyting-algebraic join. For example, $\{ \{w: \text{dance}(w)(\text{kate})\}, \{w: \text{dance}(w)(\text{mary})\} \}$ is the join of $\{ \{w: \text{dance}(w)(\text{kate})\} \}$ and $\{ \{w: \text{dance}(w)(\text{mary})\} \}$.² A Heyting algebra mainly differs from a Boolean one when complementation is considered; not relevant to us at the moment. In other words, Inquisitive Semantics changes the notion of a proposition (formerly a set of worlds, now a set of sets of worlds) and thus it allows for finer articulation, but it does not change the algebraic character of the operations on propositions.

This draft will argue that the spirit of the above approach is correct, but the linguistic implementation is not. KA and MO are **not** join and meet operators. Instead, they impose the requirement that **the interpretations of their immediate contexts be the join and respectively the meet** of the relevant contributions of their hosts with something else of the same kind.

Before going into any concrete details, let me elaborate on the distinction I am making by way of a small example. Lattices can be equivalently defined as partial orders and as algebras.³ The familiar Hasse-diagram depicts partial ordering relations:

² More precisely, this holds of the downward closures of the those issues, where the classical propositions representing maximal possibilities (alternatives) are replaced by the powersets of the respective sets of worlds minus the empty set. See Section 3.

³ A lattice is a partial order $\langle A, \leq \rangle$ where for any non-empty finite subset X of A , X ’s least upper bound (supremum) and X ’s greatest lower bound (infimum) are in A : $\forall X \in A$ and $\wedge X \in A$. The



The set $\{p,q,r\}$ is the join of $\{p,q\}$ and $\{q,r\}$. That just means that $\{p,q,r\}$ is the least upper bound of $\{p,q\}$ and $\{q,r\}$. We do not need to look upon $\{p,q,r\}$ as being “obtained” from $\{p,q\}$ and $\{q,r\}$ by some operation and ask who performed it. Likewise, $\{q\}$ being the meet of $\{p,q\}$ and $\{q,r\}$ just means that $\{q\}$ is their greatest lower bound. In contrast, the algebraic presentation identifies the join and meet operations that could “obtain” $\{p,q,r\}$ and $\{q\}$ from $\{p,q\}$ and $\{q,r\}$. I claim that KA and MO simply impose requirements that pertain to there being a particular ordering relation between the interpretations of their hosts and of their larger contexts. If the requisite partial ordering relations came about through performance of join/meet operations on the interpretation of the host and something else, it was not KA/MO that did the job.⁴ But, given the equivalence of the two presentations, we can be sure that if another agent performs a join/meet operation on the appropriate arguments in the step-by-step derivation of the sentence, then KA/MO’s requirements are satisfied.

The rest of Section 1 provides an informal preview of some general aspects of the argument by commenting on the following questions.

- 1.1 Why say that KA and MO only impose requirements?
- 1.2 Is the alleged behavior of KA and MO unusual?
- 1.3 What is the nature of the semantic requirements?

Subsequently, Section 2 comments on the choice-functional analyses of KA, especially Cable (2010) and Slade (2011). Section 3 sketches my analysis in terms of what I will call **possibility-increasing**. Section 4 discusses some aspects of MO, based on Kobuchi-Philip (2009) and proposes a postsuppositional analysis. Section 5 introduces the active ingredients **J(unction)**, **silent MEET** and **silent JOIN**, building on den Dikken (2006) and Winter (1995, 1998), and makes crucial assumptions about their **division**

supremum of a two-element set is called its join, and the infimum of a two-element set is called its meet. That is, the join of a and b , $a \vee b := \bigvee\{a,b\}$, and the meet of a and b , $a \wedge b := \bigwedge\{a,b\}$. A lattice is an algebra $\langle A, \wedge, \vee \rangle$ where \wedge and \vee are two-place operations satisfying idempotency, commutativity, associativity, and absorption. The use of identical symbols “ \wedge ” and “ \vee ” in the two presentations reflects their correspondence, but it remains a fact that in the partial ordering presentation $a \vee b$ is merely another way to write $\bigvee\{a,b\}$, and here “ \vee ” does not represent an operation on a and b .

⁴ This perspective also squares well with the program in Katzir & Singh (2013); the modifications to be proposed in this paper raise interesting new questions.

of labor. Section 6 highlights independent **morphological evidence** for the co-existence of the J(unction) head with MO and KA style particles, due to Mitrović (2012, 2013). Section 7 offers an interim summary with reference to the Hungarian counterparts of KA, vala-/vagy.

The second half of the paper is concerned with the role of KA-style particles in questions. Section 8 points out the need for **speech act operators ANSWER and PUZZLE**, and discusses the Hungarian KA-particle vajon, drawing from Gärtner & Gyuris (2012). Sections 9 and 10 discuss the role of **focus in questions**, based on Haida (2007), Slade (2011), Horvath (2012), and propose that questions present **mutually exclusive alternatives**. Against this background Section 11 turns to the role of KA-style particles in **yes/no questions** (polar questions). It observes that they co-occur with as well as alternate with “or not” clauses, and supports the **possibility-increasing analysis of KA** proposed in Section 3 in combination with accommodation. Section 12 concludes.

1.1 What is the evidence that KA and MO only impose requirements and do not perform operations?

One important argument comes from languages where the KA-style particle obligatorily occurs on both disjuncts, but the whole construction has the same meaning as a plain English disjunction. (Sinhala is one such language, Japanese is not, but recall that I am using capitalized KA as a generic representative of the class.)

(2) John-KA Mary-KA danced. `John or Mary danced`

If we assume that both KA’s do the same thing (and that is what I am assuming), then KA cannot be a join operator.⁵ Section 11 will show that other phenomena in the domain of yes/no questions present the same problem: too many potential actors for one role.

Next, consider MO in its additive particle role:

(3) John-MO danced. `John, too, danced`

The time-honored analysis is that too adds the presupposition that someone other than John danced. But although at the end of the day (3) says that John danced **and** someone else danced, it would be a stretch to claim that too and MO are conjunction operators.

Such cases show that although KA (MO) occurs in contexts interpreted as the join (meet) of things contributed by the host of KA (MO) and something else, KA (MO) cannot be a join (meet) operator. It merely imposes the requirement that the context be such.

⁵ Slade (2011) was the first to recognize that the occurrence of such morphemes on both disjuncts was a big issue and to attempt to make sense of it. I am not following his actual analysis, but I am indebted to his work.

1.2 Is the alleged behavior of KA and MO unusual?

Pending details, this view of KA and MO is similar to a widely shared view of negative concord markers. NC markers are not considered to be negations, although they signal the presence of a real negation, which, following Ladusaw (1992), is often considered to be phonetically null; on this view even the pre/post-verbal negative particle itself may be just a negative concord marker. Beghelli & Stowell (1997) proposed a similar approach to *each* and *every*: they signal the presence of a distributive operator, but are not distributive operators themselves. Kusumoto (2005) proposed that past tense morphology on the verb merely contributes a time variable, to be quantified over by the operator PAST that sits much higher in the structure. Horvath (2012) proposed a heavily mediated relationship between focus accent and the exhaustive operator.

In other words, the claim that KA and MO only “point to” join and meet is not outlandish; it may well represent the norm in the morpho-syntactic realization of logical operators. The general observation was first made by Carlson (1983, 2000), and in fact the examples that Carlson uses to make his case significantly overlap with my list above and some of the data I will turn to later.⁶ Carlson argues that functional elements often present a mismatch in form and interpretation. Multiple elements correspond to one bit of meaning, or an element occurs in a different place than where it is interpreted, or an element does not seem to make the same contribution everywhere it occurs, or an element seems to be meaningless or, conversely, a bit of meaning seems to be contributed by a null element. His examples include the second-position clitic conjunction *-que* of Latin, past tense marking in English, haplology of postpositions in Japanese, negative concord in Romance, the multiple marking of number in English *these horses*, dependent plurals, spurious *se* in Spanish, habitual markers in Hindi counterfactuals that do not indicate habituality, the obligatory presence or absence of the definite article in *in prison* and *on the radio* (for particular meanings, in American English), and so on.⁷

Carlson does not offer detailed analyses, but he forcefully makes a general point. There is a big learning problem if the learner is supposed to figure out functional meanings from what he/she hears. Carlson’s solution to the problem is that functional elements themselves are meaningless. The functional meanings are carried by features or other phonetically null operators that appear on the phrases over which they scope, and their effects percolate down to heads in order to receive expression, in one way or another. Thus, on Carlson’s view, functional elements merely give the learner clues as to what real carriers of meaning are silently lurking in the structure, and where they might be lurking. Notice now that the specific proposals by Ladusaw, Beghelli & Stowell, Kusumoto, and Horvath cited above are all in the same spirit. (Strong semantics credentials side-by-side with

⁶ I thank Roni Katzir for making me aware of this work by Carlson and its relevance to my project. See also Katzir (2011) on “poly-(in)definiteness” in Danish, Icelandic, and Greek.

⁷ This view seems to square with that of Distributed Morphology in interesting ways.

strong syntax credentials!)

This could be a way to approach the multiple KA and multiple MO cases as well. One could say that KA and MO are meaningless syntactic elements that merely point to phonetically null join and meet operators (and probably other things) higher in the structure. On that approach, the requirements of KA and MO would be **syntactic requirements**. I believe that would work, although I have not developed the details.

In this paper I follow a different path. I will attempt to **formulate semantic requirements** to achieve a similar effect. On my proposal the requirements are essentially presuppositions (with a twist, to be discussed in 1.3). The traditional analysis of the particle too should suffice to evoke the relevant intuition. In John, too, danced the particle too is not meaningless, although it cannot be said to *mean* that someone else danced. It points to that fact -- it presupposes that fact. If the semantic approach looks harder than the syntactic one, it is worth showing that it is viable. In fact, I hope to show more, namely, that the execution is actually not that hard, and therefore hopefully has some truth to it.⁸

What is the relation between the syntactic and the semantic approaches here? Should we try to choose between them? Should we simply take them to be matters of taste, different ways of thinking favored by different camps in linguistics? In my experience the viability of both syntactic and semantic approaches is a systematic fact, and I view it as strong support for a natural logic approach to functional meanings and other “shallow semantic features” (Geurts & van der Slik 2005). The fundamental idea of **natural logic** is that linguistic structures serve as the vehicle of inference.⁹ But the present paper will not pursue this further.

1.3 What is the nature of the semantic requirements?

Taking our cue from MO in its incarnation (3) [repeated] we would want to say that the requirements we are dealing with are presuppositions. But MO has another cross-linguistically typical use that parallels KA’s in (2) in that the particle occurs on both junct:

- | | |
|-----------------------------|---|
| (3) John-MO danced. | ‘John, too, danced’ |
| (4) John-MO Mary-MO danced. | ‘Both John and Mary danced;
John danced and Mary danced’ |

⁸ Like Carlson, I will invoke various phonetically null operators. The need for those is independent of whether KA and MO carry syntactic or semantic requirements.

⁹ For some linguistic (as distinct from logical or computational) reasons to explore a natural logical approach, see Szabolcsi (2007).

(4) is a strictly distributive construction that is based on the “too” incarnation of MO. So far as I know, if a language formally distinguishes “and” and “even/also”, the morpheme that is reiterated in (4) is “even/also”. Only when a language uses the same morpheme in both roles (e.g. Russian *i*) does it look like that (4) has two occurrences of “and”. For example, Japanese and Hungarian distinguish these: *to* “and” vs. *mo* “even/also”; *és* “and” vs. *is* “even/also”. The latter two items are etymologically related but are never interchangeable.

So (4) is “John and someone else danced, and Mary and someone else danced”. But then, at least in (4), MO’s contribution cannot be a presupposition! **Presupposition projection works left-to-right**, so on that analysis we would predict that there are three dancers on the scene. A presupposition induced by *John-MO [danced]* cannot be satisfied by the later-mentioned fact that Mary danced. But in (4) no third dancer is needed.¹⁰

It is important to stress that the processing of *X-MO Y-MO* style constructions in Japanese, Russian, Hungarian, and other languages is entirely effortless, just as the processing of *both John and Mary* and *John as well as Mary* is effortless in English. As P. Schlenker (p.c.) points out, in that respect this case differs from the cases of symmetrical presupposition processing discussed in Chemla & Schlenker (2011).

I propose to formulate MO’s requirement as a **postsupposition**, in the sense of Brasoveanu (2013: 169). Readers who do not care about the left-to-right problem and find the addition of postsuppositions to the theoretical mix too much are welcome to skip ahead to Section 2, and just read “postsupposition” as “presupposition” below.

Briefly, a postsupposition is a condition (test, in dynamic semantic terms) whose evaluation is delayed till the output context is consulted. If the sentence contains multiple postsuppositions, they are collected and evaluated at the same time, in the end. Their satisfaction is insensitive to left-to-right order within the sentence, even though they are added by dynamic, non-commutative conjunctions. As a consequence, if John danced and Mary danced, then sentence (4) is true; if at least one of them failed to dance, it is false and not a presupposition failure.

As Brasoveanu’s theory predicts, when the host of MO contains an order-sensitive item such as *next*, that retains its traditional left-to-right behavior. I provide Hungarian examples that I can vouch for, but I do not expect cross-linguistic variation here.

¹⁰ The elegant analysis that the two MO-phrases mutually satisfy each other’s requirements is due to Kobuchi-Philip (2009), and I am following her. But she did not raise the question of what kind of theoretical construct may those requirements be that I am addressing in this section.

- (5) a. Mari is (és) a következő vásárló is elégedetlen volt.
 Mary too and the next(=succeedent) customer too dissatisfied was
 `Both Mary and the customer after her were dissatisfied'
 (two people on the scene)
- b. A következő vásárló is (és) Mari is elégedetlen volt.
 the next(=succeedent) customer too and Mary too dissatisfied was
 `Both the next customer and Mary were dissatisfied'
 (three people on the scene, the first a contextually salient customer, who was perhaps satisfied)

Now consider (3), “John, too, danced”. In this case the content of the sentence does not change the input context by mentioning any dancer besides John. Thus the output context remains identical to the input context in the relevant respect. In such cases postsuppositions act in the same way as traditional presuppositions: the fact that satisfies them must be present already in the input context. Therefore, by qualifying MO’s requirement as a postsupposition, we completely preserve the results of the classical presuppositional analysis of too and at the same time cater to the needs of (4) with reduplicated MO.¹¹

The reasoning carries over to KA without further ado, as far as I can see. I will assume that both particles impose postsuppositions. But, as mentioned above, the reader should feel free to simplify and think in terms of presuppositions.

2. Previous analyses: KA is a choice-function variable

There is a line of research (Hagstrom 1998; Yatsushiro 2002, 2009; Cable 2010; Slade 2011) that analyzes KA and its cross-linguistic counterparts as choice-function variables, to be bound by structure-building existential closure. This literature takes KA’s occurrence in indefinites and wh-questions as a point of departure. The basic intuition of the approach is that KA occurs in the presence of alternatives, lets them project up across island boundaries, and serves to “domesticate alternatives” (my own label). Especially interesting is Slade (2011), because he shows that the approach can be made to work for all the various functions of KA, including its occurrence in yes/no questions and disjunctions.¹² My view is similar to these authors’ in that it does not make KA a join operator;

¹¹ I am grateful to Adrian Brasoveanu for discussion confirming that indeed the properties of MO lend themselves to a postsuppositional analysis. His 2013 uses postsuppositions in connection with a quite different linguistic issue: the cardinality condition of modified numerals. The present application of the idea raises important general question; I do not investigate them here.

¹² The distribution of Tlingit sá is restricted to indefinites and wh-questions. Cable (2010) proposed a syntax and semantics that does not extend to the other roles of KA, arguing that Japanese presents massive homonymy. Slade offers a detailed argument against the homonymy hypothesis based on synchronic and diachronic data in Sinhala, Japanese, and Malayalam. The

the question is whether making it a choice-function variable is the way to go.

Cable and Slade differ as to the details, but basically both assume that interpretation cannot proceed with a set of alternatives; a choice-function is invoked to pick one alternative. I see two kinds of reason to not follow this line.

One is the fact that problems with the choice-functional analysis of indefinites have been discovered in the last decade, and generalizing the analysis further will not help. (For one, Heim (2011) is almost ready to bury that analysis, with reference to Schwarz.) The other, more important reason has to do with the assumption that having to deal with a set of alternatives is a problem. Rooth (1992) and especially Beck (2006) are effectively set up so as to achieve this effect. According to Rooth, focus alternatives live in a separate dimension. According to Beck, wh-words only have a focus-semantic value, and so they crash unless they are imported into the ordinary semantic dimension. Cable accepts this reasoning and employs a choice function to pick an alternative.

Slade (2011) has two arguments against the focus-alternatives part. First, according to Rooth, focus alternatives are only constrained by type. Witness: Mary can be an alternative to Fido or to the Eiffel Tower.

- (6) I wanted to hear your opinions about Mary, Fido, and the Eiffel Tower, but you only told me what you thought of MARY.

In contrast, Slade observes, wh-words always have some descriptive content, e.g. +/-human, as in who vs. what, which now has to be stipulated. Second, following Haida (2007), Slade observes that although wh-words are focused in wh-questions, they are not focused when they serve as indefinites.

- (7) a. Wer mag WAS? (was in focus)
 who likes what
 `Who likes what?`
- b. Wer MAG was? (was not in focus)
 who likes what
 `Who likes something?`

Both considerations suggest that the alternatives associated with wh-words cannot be identified with focus-induced alternatives. Therefore Slade doesn't follow Cable and Beck in this respect. But he subscribes to the view that quantifiers can only operate on individual variables, not on sets of individuals, and so a choice-function must be invoked.

Hungarian data discussed in Szabolcsi, Whang, and Zu (2013) also argue against the homonymy hypothesis.

I beg to disagree here. The necessity for quantifiers to operate on individual variables was not quite right even before Alternative/Inquisitive Semantics; generalized quantifier theory classically treats quantificational determiners as relations between sets of individuals. Therefore, if KA is just a choice-function, then natural language after natural language dedicates a morpheme to a playing a role that is not necessary to play. In addition, if the reasoning that led to the recent developments in alternative semantics and Inquisitive Semantics (InqS) is correct, then keeping alternatives alive and presenting bundles of them as issues is not only viable but also important.

3. The postsupposition of KA-style particles: possibility-increasing

In keeping with Alternative Semantics (Kratzer & Shimoyama 2002) and InqS (Ciardelli, Roelofsen and Groenendijk 2012, Lecture 1), I assume that all sentences are interpreted as **issues**: sets of possibilities. A **possibility** is a set of worlds. A **maximal possibility** corresponds to a classical proposition that plays the role of a linguistic **alternative**. Inquisitive and non-inquisitive issues are of the same logical type; they differ in that **inquisitive issues** are **non-singleton** sets of maximal possibilities (alternatives), whereas **non-inquisitive** ones are **singleton** sets of maximal possibilities (alternatives).

I adopt the InqS terms “possibility” (a non-empty set of worlds) and “issue” (a non-empty, downward closed set of sets of worlds that jointly cover what we may call the world-universe of discourse). I will however steer clear of “proposition”, a term that InqS redefines and so it could lead to confusion, and generally avoid introducing more InqS vocabulary. I refer to maximal possibilities as alternatives, where it seems innocuous.

The proposal, then, is that multiple alternatives are healthy, and KA occurs when multiple alternatives are present. But KA doesn’t bring them about. KA is not a join operator that creates a multiple-alternative issue from single-alternative issues, for example. As was indicated in Section 1, the idea is that KA imposes the requirement that the interpretation of its immediate context $[[YP]]$ be the **join** of the relevant contribution of its host $[[XP]]$ with something else of the same kind. This will hold if $[[XP]] \subset [[YP]]$.¹³

For the moment I pretend that KA only attaches to sentences; this could be generalized to subsentential host, perhaps along the lines of Shan (2002). Here is a first approximation:

- (8) a. KA requires to be in a “possibility-increasing” environment.
- b. Let XP and YP denote (be interpreted as) the issues $[[XP]]$ and $[[YP]]$. KA attaches to XP, and YP is the next issue-denoter above.

¹³ $[[XP]] \subset [[YP]]$ means that there is a one-way entailment relation between the issues $[[XP]]$ and $[[YP]]$. But I am simply using the proper subset relation to capture the fact that $[[YP]]$ has all the possibilities of $[[XP]]$, and some more. I do not at this point see what linguistic insight would derive from looking at the situation from the perspective of entailments.

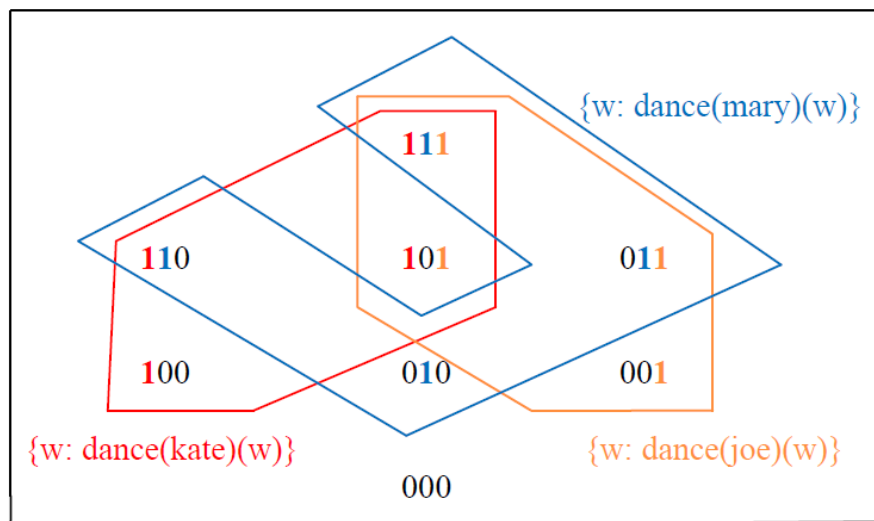
- c. We say that KA is in a **possibility-increasing environment** if all the possibilities in $[[XP]]$ are preserved in $[[YP]]$, and $[[YP]]$ contains other possibilities as well. The set of possibilities in $[[XP]]$ is a proper subset of the set of possibilities in $[[YP]]$, i.e. $[[XP]] \subset [[YP]]$.

Consider (9), where $[[XP]] \subset [[YP]]$ holds, and (10), where it does not hold.

(9) $[[\text{Joe dances}]] \subset [[\text{Joe dances or Kate dances}]]$

(10) $[[\text{Joe dances}]] \not\subset [[\text{Joe dances and Kate dances}]]$

Let us spell out how this works. In the diagram below (recycled from Szabolcsi, Whang, & Zu 2013), every world is represented with three digits that specify the truth values of three atomic sentences, the only sentences that we care about. For example, “100” stands for “Kate dances, Mary does not, Joe does not,” and the red box encloses the set of all those worlds in which Kate dances is true. Each of the boxed areas constitutes a maximal possibility (alternative), and the three maximal possibilities (alternatives) together constitute the issue: we are uncertain as to which area the actual world lies in.¹⁴



Boxed areas in the diagram represent maximal possibilities, but checking $[[XP]] \subset [[YP]]$ requires attention to **all** possibilities, cf. the downward closure of issues.

Downward closure: If $t \in I$ and $t' \sqsubseteq t$, then $t' \in I$.

¹⁴ Notice that $\{w: \text{dance}(w)(\text{joe})\}$ is parallel to $\{P: P(\text{joe})\}$ -- the structures of classical propositions inherit the structures of their main quantifiers. I hope to exploit these parallels, at least for exposition, perhaps also for insight, in later versions of this ms.

That is, if possibility t is in issue I , then all its subpossibilities t' are also in issue I . Therefore $[[\text{Joe dances}]]$ is not $\{\{w: \text{dance}(w)(\text{joe})\}\}$ as in Alternative Semantics, but $\{\text{POW}\{w: \text{dance}(w)(\text{joe})\}\}$, the singleton set whose only element is the powerset of $\{w: \text{dance}(w)(\text{joe})\}$ minus the empty set.

Writing POW for “powerset minus the empty set”, we see that every element of $[[\text{Joe dances}]]$ is an element of $[[\text{Joe dances or Kate dances}]]$, and the latter also has other elements. It will suffice to check that every little three-digit world that falls within a maximal possibility in $[[\text{XP}]]$ is preserved in $[[\text{YP}]]$.¹⁵

$$\begin{aligned}
 (11) \quad & [[\text{XP}]] \subset [[\text{YP}]] \\
 & [[\text{Joe dances}]] = \{ \text{POW}\{w: \text{dance}(w)(\text{joe})\} \} \\
 & \quad = \{ \text{POW}\{001, 011, 101, 111\} \} = \\
 & \quad = \{ \{001\}, \{011\}, \{101\}, \{111\}, \dots, \{001, 011, 101, 111\} \} \\
 & [[\text{Joe dances or Kate dances}]] = \\
 & \quad = \{ \text{POW}\{w: \text{dance}(w)(\text{joe})\}, \text{POW}\{w: \text{dance}(w)(\text{kate})\} \}
 \end{aligned}$$

Now consider the case where $[[\text{XP}]] \subset [[\text{YP}]]$ does **not** hold:

$$\begin{aligned}
 (12) \quad & [[\text{XP}]] \not\subset [[\text{YP}]] \\
 & [[\text{Joe dances}]] = \{ \text{POW}\{w: \text{dance}(w)(\text{joe})\} \} \\
 & \quad = \{ \text{POW}\{001, 011, 101, 111\} \} \\
 & \quad = \{ \{001\}, \{011\}, \{101\}, \{111\}, \dots, \{001, 011, 101, 111\} \} \\
 & [[\text{Joe dances and Kate dances}]] \\
 & \quad = \{ \text{POW}\{w: \text{dance}(w)(\text{joe}) \ \& \ \text{dance}(w)(\text{kate})\} \} = \\
 & \quad = \{ \text{POW}\{101, 111\} \}
 \end{aligned}$$

$[[\text{Joe dances}]]$ has elements that are not in $[[\text{Joe dances and Kate dances}]]$. For example, $\{001\} \notin \{\{101\}, \{111\}, \{101, 111\}\}$. The original possibility where only Joe dances is lost in the conjunction.

Likewise, in (13), even though A girl dances carries multiple maximal possibilities, and KA would in fact participate, sentence internally, in the formation of indefinites (cf. dare-ka), by conjoining A girl dances with Joe dances we lose some of the original possibilities, namely those in which only Joe dances and those in which only a girl dances.

$$\begin{aligned}
 (13) \quad & [[\text{XP}]] \not\subset [[\text{YP}]] \\
 & [[\text{Joe dances}]] = \{ \text{POW}\{w: \text{dance}(w)(\text{joe})\} \} \\
 & [[\text{A girl dances}]] = \{ \text{POW}\{w: \text{dance}(w)(\text{joe}) \ \& \ \text{dance}(w)(\text{mary})\}, \\
 & \quad \text{POW}\{w: \text{dance}(w)(\text{joe}) \ \& \ \text{dance}(w)(\text{kate})\} \}
 \end{aligned}$$

In sum, suppose we have KA(Joe dances). KA is appropriate if Joe dances is going to get

¹⁵ I am grateful to Floris Roelofsen for comments that have, hopefully, led to more clarity.

disjoined with another sentence (Joe dances or Kate dances), but not if it is going to get conjoined with one (Joe dances and Kate/a girl dances). Similarly, KA(Joe dances) is appropriate in forming a yes/no question, which is standardly interpreted using disjunction of two polar opposites (Does Joe dance? presents the same issue as Joe dances or Joe doesn't dance). The requirement of a “possibility-increasing environment” achieves these effects without making reference to syntactic elements such as connectives, or to algebraic operations such as join. We just check the interpretations (the issues) and can see if KA is legitimate.

“Possibility-increasing” is just a label that I made up. Notice that it is not the same as forming a more inquisitive issue, in the sense of Ciardelli et al. (2012). The meet of the sets of maximal possibilities $\{\{w1, w2\}, \{w3, w4\}\}$ and $\{\{w1, w3\}, \{w2, w4\}\}$ is $\{\{w1\}, \{w2\}, \{w3\}, \{w4\}\}$, which is more inquisitive than the inputs, but is not what we are looking for.

I assume that a similar reasoning will carry over to KA’s other signature environments, namely, its attachment to indefinites and wh-questions, although the formulation of (8) may have to change, in addition to being made precise.

In contrast, KA remarkably does not occur in the presence of purely focus-induced alternatives. (Or perhaps in some languages it does? I haven’t investigated this.)¹⁶ Consider:

(14) JOE_{focus} dances.

Based on the parallelism between questions and focus discussed in Rooth (1992), (14) raises the same issue as Who, in a domain that contains Joe, dances? I do not attempt to answer the focus question here. (8) will have to be made precise in a way that explains why focus alternatives do not make KA happy.

Another context in which one might perhaps expect KA to occur but it does not, is accompanying MO in its ‘too, also’ role. Mary, too, dances presupposes that someone salient other than Mary dances. We do not know who that is; it may be that Kate dances and Mary dances, or that Joe dances and Mary dances. I suppose this will be excluded by the reasoning applied to the conjunction example above.

As was pointed out, (8) deals easily with the fact that some of the cross-linguistic realizations of KA, Sinhala də and hari and Malayalam -oo among them, occur on both disjuncts.^{17,18} (Real Japanese ka is not obligatory on the second disjunct.) Slade (2011) de-

¹⁶ Some languages have overt markers attached to the XP in focus, e.g. the Kru language Vata, or to the verb, e.g. Sinhala. But these may well be EI-Op heads or EI heads in the terminology of Horvath (2012), and so far as I know superficially they do not belong to the KA-families of the given languages.

¹⁷ Notably, they do so without inducing an exclusive ‘or’ interpretation, which will be discussed in section 7.

serves the credit for recognizing that this is a big issue and being the first to try to make sense of it. My proposal follows some of his steps, but not all the way, as his solution is very complicated (see section 5), in addition to being choice-functional. On my proposal, each KA imposes the same requirement on the next issue-denoter up, which I take to be the whole disjunction. They act independently, and each of them is satisfied.

4. MO in three contexts

Recall that the idea of mutual satisfaction of requirements is borrowed directly from Kobuchi-Philip's (2009) analysis of Japanese X-mo Y-mo 'both X and Y, X as well as Y'. Kobuchi-Philip starts from the basic 'also, too' interpretation of mo. A sentence like (3) asserts that John danced and presupposes that someone else danced. The presupposition is satisfied contextually, as usual.

(3) John-MO danced. 'John, too, danced'

But (4) and (15) do not impose any further requirement on the context. Kobuchi-Philip argues that this is because their requirements are satisfied construction-internally.

(4) John-MO Mary-MO danced. 'Both John and Mary danced'

(15) Person-MO danced. 'Everybody danced'

On the present postsuppositional analysis, a "someone else danced" requirement will be associated with each of the conjuncts that make up the quantifier, they are collected, and the conjuncts satisfy each other's requirements in a neighborly manner.

As Szabolcsi-Whang-Zu (2013) explain, Hungarian exhibits the same (3)-(4)-(15) pattern, although with two distinct particles that overlap in distribution:

	Japanese	Hungarian	
universal/negative pronoun	dare-mo	mind-en-ki	
floating universal quantifier	--	mind [vp ...]	
distributive conjunction	X-mo Y-mo	mind X mind Y	X is Y is
additive/scalar particle	X-mo		X is
number is large	10-CL-mo		10 N is

Given the overlap, Hungarian demands a solution for the same problem as Japanese. Especially interesting is that in both Japanese and Hungarian, the same item participates in the formation of strictly distributive conjunctions and strictly distributive universals corresponding to every and each that have received attention in Beghelli & Stowell (1997), and in much recent work by Brasoveanu, Solomon, Charlow, and others. I conclude that

¹⁸ Də is interrogative disjunction, i.e. forms alternative questions. Hari is declarative disjunction. Slade (2011) relates the distribution to their different epistemic flavors, see below.

their strict distributivity is a consequence of MO being their recurrent building block. Notice that MO is strictly distributive already in its additive and scalar senses, as discussed in Szabolcsi (1997: 127).

- (16) a. Kati is felemelte az asztalt.
 Kati also up-lifted the table-acc
 `Kati lifted up the table, too`
 cannot mean: along with others, Kati was a member of a table-lifting collective
- b. Hat fiú is fel-emelte az asztalt.
 six boy also up-lifted the table-acc
 `As many as six boys lifted up the table`
 cannot mean: there was a table-lifting collective with as many as six boys in it

Very informally, in all its contexts MO demands, “check one by one”.

Recall now that we have both a narrower and a broader project. The narrower project is to figure out what particles such as KA and MO contribute across the varied environments (larger expressions) in which they occur. The broader project is to build the semantics of those environments compositionally, using the invariant contribution of the particles as well as other necessary ingredients.

The interpretation of distributive conjunctions (both Joe and Kate, Joe as well as Kate) and distributive universals (every boy, each boy) definitely has a meet component, in the spirit of Boolean semantics. In the next section I will argue that the default, null MEET operation that builds the denotations of conjunctions is Dekker’s MEET. The null hypothesis is that the definition of every and each employs the same operation. Is there evidence for quantifier-internal MEET being Dekker’s MEET?

Bumford (2013) discovered that English universals are quantifier-internally dynamic:

- (17) Every/each generation inhabits a more Orwellian world.
 Every/each day I buy a new book.

Bumford therefore interprets every-sentences via conjunction of propositions -- but via **dynamic conjunction**. In (17) the order comes from the temporal sequence of events. Bumford argues that the classical (18) is but a special case, where the order is arbitrary:

- (18) Every/each boy likes a different book.

I take this to indicate that Bumford’s semantics for distributive universals will combine unproblematically with the assumptions in the present paper, and I do not pursue univer-

sals further.¹⁹

5. J(unction), silent MEET and silent JOIN

On this proposal all the semantic action of joining and meeting issues has to be performed by actors other than KA or MO. Who are they?

Start with Winter (1995, 1998). In the first 7 chapters of his dissertation Winter presents a thoroughly Boolean approach to conjoined noun phrases, which among other things derives the sum interpretation of John and Mary from GQ-theoretic $\lambda P[P(j) \ \& \ P(m)]$. But, in Chapter 8 (based on his 1995 and not included in the MIT Press book), Winter says that several issues are not solvable on the GQ-theoretic view. He proposes that the word and is basically a pair-forming operator (\bullet , bullet). The pairs grow pointwise in the derivation (much like alternatives project up in Hamblin/Rooth), and at the desired point a phonetically null intersection (MEET) operator applies to them. That's where and appears to take scope, but it is not really and itself. Winter assumes that the MEET operator is always null, and notes that the bullet is also often phonetically null across languages. This contrasts with disjunctions, which are practically never phonetically null across languages (Winter discusses a few special cases).

I adopt both **Winter's bullet** and **Winter's null MEET, with minor modifications**. I stress that I am adopting the proposal to divide up the task classically performed by one operator between a pair-former and a null version of that operator; I am not particularly concerned with Winter's motivation for proposing it and I do not necessarily subscribe to its details.²⁰

It makes sense to replace Winter's null MEET with **Dekker's (2012) null conjunction**, which strictly interprets the second conjunct in the context of the first. In Dekker's theory this replaces dynamic conjunction as function composition. Dekker's MEET will love to

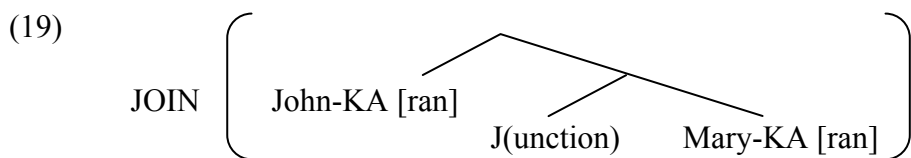
¹⁹ Bumford's (2013: 12) entry for every is $\lambda PQ. \ \underline{\Delta}\{m \star k \mid m \in \ulcorner P \urcorner\}$, where $\underline{\Delta}$ is infimum based on dynamic conjunction, \star is an operation that combines two arguments, a monadic value and a function from normal values to monadic values, and the corners around P turn P into a characteristic function that works with denotation--state pairs.

²⁰ Winter's initial motivation for invoking pair-formation plus a silent MEET that kicks in higher than the position of and is that the 'every man and every woman' interpretation of every man and woman does not fall out of the GQ-theoretic treatment. He does not discuss why he does not adopt Dowty's (1988) idea to lift the common nouns into functions over determiners and thus let every distribute into the two conjuncts: $\lambda D[D(\text{man}) \ \& \ D(\text{woman})](\text{every})$. This seems like a perfectly good solution to the problem at hand. It may well be that the treatment of alternately and respectively indeed require pair-formation.

operate on the pair formed by Winter's bullet, since the members of pairs are ordered.²¹ This modification will also be important in identifying null MEET as the **default** conjunction operator in natural language, which plays a role below.

Back to Winter's pair-forming bullet, which may be phonetically null or pronounced as AND, with cross-linguistic variation. I propose to **locate the bullet in the J(unction) head** that den Dikken (2006) introduced in his syntactic analysis of English either... or. Slade (2011) already invoked J(unction) as a silent presence in disjunctions (and possibly conjunctions), specifically in order to deal with examples like Sinhala alternative questions, John-də Mary-də ran?, where the choice-functional view of də does not work by itself. Slade interpreted J as a fairly heavy lifter, which seems like an artifact of his theory. His J takes three arguments: (i) the second disjunct (Mary), which it turns into the singleton set {Mary}, (ii) the choice function DA, which will pick the unique element of that singleton, and (iii) the first disjunct (John). In a bit of a Duke of York action, J turns Mary-də back into a set, then John into a singleton set, and finally forms the set {John, Bill}. The choice-function contributed by the də that is seemingly attached to the first disjunct but, on Slade's analysis, is structurally attached to the whole big phrase JP, chooses from this set; the choice-function is existentially closed.²²

I propose that J(unction) is Winter's bullet. It pairs up two things, perhaps any two things, but definitely two issues (each with a single maximal possibility or multiple maximal possibilities inside). The output is subjected to **phonetically null JOIN**, modeled after **Winter's null MEET**.



(20) $\text{John-KA (ran)} \bullet \text{Mary-KA (ran)} =$
 $\langle \{\text{POW}\{w: \text{ran}(w)(\text{john})\}\}, \{\text{POW}\{w: \text{ran}(w)(\text{mary})\}\} \rangle$

(21) $\text{JOIN}(\langle \{\text{POW}\{w: \text{ran}(w)(\text{john})\}\}, \{\text{POW}\{w: \text{ran}(w)(\text{mary})\}\} \rangle) =$
 $\{\text{POW}\{w: \text{ran}(w)(\text{john})\}, \text{POW}\{w: \text{ran}(w)(\text{mary})\}\}$

²¹ The result of MEET will be the GQ-theoretic interpretation that Winter argued for in the body of the dissertation. That is quite compatible with the Japanese and Hungarian data; all these conjunctions are distributive. In Hungarian the connective that produces collective and cumulative readings and serves as a sequencer is medial és (not is or mind). És optionally co-occurs with ...is ...is, as in Kati is (és) Mari is 'both Kate and Mary'. See Szabolcsi-Whang-Zu (2013).

²² Some syntactic worries. (i) I'm not sure if Slade has evidence for the semantically crucial constituent structure [DA JP]. (ii) He derives linear order by an analog of affix-hopping; I'm not sure a head can hop onto the specifier of its sister. But these worries are not the main point.

But wait. Null join must not come for free. Winter taught us that cross-linguistically, disjunctions do not go unmarked. Here's my reasoning.

KA requires the presence of increasing possibilities that may arise, at least, in indefinites, questions, and disjunctions. Of these core cases, **only the overt marking of disjunctions is obligatory cross-linguistically**. Many languages have bare wh-words that function as indefinites, whether or not the same language also has overt morphemes to form indefinite pronouns (e.g. German (7)). Likewise, wh-questions and at least matrix yes/no questions often fail to carry a DA/KA-style morpheme (again, German), although it is true that matrix yes/no questions typically have a cross-linguistically fairly stable intonation contour, which should count as much as segmental material.

I attribute the obligatoriness of the morphological marking of disjunctions to the existence of null MEET: if the construction is morphologically unmarked, it would be interpreted via null MEET. This is especially clear if this operation is Dekker's MEET, which is also a text-level sequencer. Plain text-level sequencing is always asyndetic (connectiveless). So it makes sense to postulate that null MEET is the **default**. Then the presence of a KA-style marker, with its $[[XP]] \subset [[YP]]$ requirement, forces the pair to be fed to JOIN and thus pre-empts MEET.

The $[[XP]] \subset [[YP]]$ requirement is well-suited to check the legitimacy of KA by looking at the next issue-denoter, YP above the host of KA, XP, and to put its veto to it if $[[XP]] \not\subset [[YP]]$. This is the case if YP is a conjunction of XP and something else, as was shown in (12)-(13).

In contrast, null MEET does not by default produce universally quantified sentences with bare indeterminate pronouns (Wer MAG was? does not get to mean 'Who likes everything?'), nor does it produce contradictions by accommodating the polar opposite (John left doesn't get to mean 'John both left and did not leave'). Therefore, the presence of an overt KA-style marker is not strictly necessary in indefinites and questions. **Here null JOIN seems to be the default**. This converges with the prevalent assumption that existential closure comes "for free". (Recall that, according to the analysis in Section 4, distributive universals are built with Dekker's MEET and MO.)

In due course I will have to address the cross-linguistic variation in the division of labor among KA-style morphemes. For example, Tlingit sá only occurs in wh-questions and wh-indefinites (Cable 2010); it is complemented by gé and other markers in other contexts. Slade (2011) proposes a syntactic feature checking account of the variation. That account is elegant and attractive, but it seems to me that it will make it accidental which exponents are null. A morpho-syntactic feature checking account does not predict that some markers can be null, but others can never be null. (Or so I believe -- I may be wrong.) The present proposal may have a little edge there.

6. Complex conjunctive and disjunctive connectives

Mitrović (2012) presents extensive Indo-European conjunction data that can be nicely interpreted with a combination of den Dikken's, Winter's, and Kobuchi-Philip's proposals. E.g., Latin -que as in arma(que) virumque 'arms and a man' is analogous to MO, with a phonetically null J(unction), whereas the CP-connective atque is a combination of at for J(unction) and the same -que, formed by head movement or post-syntactically.

Arsenijević (2011) observes that Serbo-Croatian constructs what we traditionally call the disjunctive connective out of a combination of 'and' and a question-marker. I exemplify it with Russian here, just because that is a language I know.

(22) ili 'or' = i 'and, also' + -li 'yes/no question marker'

Arsenijević constructs an algorithm that derives the classical (not inquisitive) interpretation for disjunctions.²³ In line with the previous sections, the interpretation of i 'and' should be Winter's bullet. Li seems at least partially similar to Sinhala də and Japanese ka. According to the reasoning above, li contributes a requirement, and then something else performs the actual semantic action.

Interestingly, ili serves both as a medial connective, as in (23) and as a reduplicated connective, as in (24), similarly to French ou, Hungarian vagy, and parallel examples from many languages. As the translations show, the reduplicated examples in (24) are not counterparts of the Japanese/Sinhala ones discussed above. In those languages the fact that ka/də/hari occurs on both disjuncts does **not** induce an exclusive interpretation, whereas the examples in (24) are exclusive disjunctions (although this is just an approximation of their meaning).

(23) X ili Y '(either) X or Y' ≈ X-ka/də/hari Y-(ka)/də/hari
 X ou Y
 X vagy Y

(24) ili X ili Y 'either X or Y, not both'
 ou X ou Y
 vagy X vagy Y

²³ Apart from the fact that the interpretation Arsenijević obtains is not the inquisitive semantic one, the algorithm has a problematic aspect. For negated disjunctions it derives a wide scope OR reading. This is factually correct, since S-C ili is a positive polarity item (see Szabolcsi 2002). But Arsenijević seems to be under the impression that his algorithm derives the classical de Morganic result, which is false; he does not comment on PPI-hood at all -- The question of what the PPI character of disjunction correlates with cross-linguistically was addressed in Szabolcsi (2002) but no satisfactory descriptive generalization was found. Maybe PPI-hood and the requirement to be in a possibility-increasing local environment are related and are part of the solution.

Mitrović (2013) develops an analysis for both (23) and (24). Mitrović assimilates (23) to the case of Japanese/Sinhala, with *i* as J(unction), i.e. Winter's bullet, as in (27).

(25) Marija i Ivan `Mary and John'

In contrast, he innovatively argues that in the exclusive (24) case, the morpheme *i* is not J(unction), but a scalar particle, essentially MO, as in (26).²⁴

(26) i Marija `even/also Mary'

Mitrović implements his analysis within the frames of Chierchia (2013).

Without going into details, the interpretive difference between *X-də/hari Y-də/hari* and *ili X ili Y* seems compatible with the general story developed here.

7. Interim taking stock, with reference to Hungarian

Following Cable and Slade, I proposed that KA and brothers appear in the presence of increasing possibilities (alternatives), but unlike them I proposed that KA does not choose one of the alternatives. It postsupposes and (by markedness) highlights their presence. It might in principle make sense to say that KA is a join operator and therefore pulls the separate alternatives together into a menu, so to speak. The reason we didn't want to do that has to do with the appearance of KA-style morphemes on both disjuncts. If both instances contribute, and they contribute in the same way, then it is not likely that they serve as join operators. We could allow KA to operate on a single alternative, but then we'd miss the fact that in the slightly broader environment there must always be multiple alternatives. Another advantage of this view will be its easy applicability to Hungarian *-e* and *vajon*, elements of interrogatives to be discussed in sections 8 and 11.

Before turning to questions, let me survey the other uses of KA's relatives in Hungarian. Szabolcsi-Whang-Zu (2013) discuss the following uses of the morpheme that roughly corresponds to KA. The *Historical-Etymological Dictionary of Hungarian* recognizes all these items as being related to the existential verb (27g).

- (27) a. **valaki** 'someone'
 b. **vala**-mi diák 'some student (=whose identity is unknown or irrelevant)'
 c. **vala**-mi tíz diák 'some ten students (=approx. ten)'
 d. Kati **vagy** Mari 'Kate or Mary'
 e. **vagy** Kati **vagy** Mari 'either Kate or Mary, not both'
 f. **vagy** tíz diák 'some ten students (=approx. ten; at least ten)'
 g. **vagy**-, **val**- allomorphs of 'be' (existential, locative, predicative copula)
 h. **vajon** 'puzzlement' (optional modifier)

²⁴ That is, *i* collapses Hungarian *és* (Winter's bullet) and *is* 'even/also' into one item.

Re: (27a,b) *valaki* 'someone' and *valami diák* 'some student'

The determiner SOME that forms an epistemic indefinite has been discussed widely in the literature. What may not have been noted before Szabolcsi-Whang-Zu (2013) is that this item is probably not quite the same as the component of "someone". Note the German equivalents:

- (28) *irgend-wer* **irgend-ein-wer* 'someone'
 **irgend Doctor* *irgend-ein Doctor* 'some doctor'

We see the same contrasts in Hungarian:

- (29) *vala-ki* **vala-mi-ki* 'someone'
 **vala doktor* *vala-mi doktor* 'some doctor'

I assume that free-standing English epistemic some contains a null counterpart of German ein, Hungarian mi. Compare also (all these form a constituent):).²⁵

- (30) *vala-milyen doktor* 'some kind of a doctor'
 vala-melyik doktor 'one of the doctors'
 vala-hol Európában 'somewhere in Europe'
 vala-mikor tavaly 'some time last year'

I suppose the reason is that KA-style operators always attach to indeterminate pronoun bases as alternative-generators -- or other units that supply multiple alternatives.

Slade (2011) makes very interesting comments on Sinhala epistemic indefinites.

- (31) a. I saw Sanath buy Jean-Baptiste Greuze's painting *The White Hat*.
 b. I saw Sanath buy some piece of artwork, but I don't really know what it was. (I.e. I might be able to describe it, but I don't know what it's called, who painted it, etc.
 c. Sanath told me that he bought something, but I have no direct experience of the event.

²⁵ In the epistemic cases the case marker is always on the noun or adjective, never on the indeterminate pronoun, even when that item could stand on its own and take a case marker:

- (i) *vala-mi doktor-nak* 'some doctor-dative'
 **vala-mi-nek doktor(-nak)*
 (ii) *valami-nek* 'something-dative'

	<u>deyak</u> 'thing' is felicitous	what- <u>hari</u> is felicitous	what- <u>də</u> is felicitous
In scenario (31a)	✓		
In scenario (31b)	✓	✓	
In scenario (31c)	✓	?	✓

According to the table, Sanath bought wh-də is only felicitous in the epistemically most uncertain context, (31c), whereas Sanath bought wh-hari is ideal in a mid-level uncertain context, (31b). Slade makes an important connection between these facts and the occurrence of də and hari elsewhere. Only hari occurs in declarative disjunctions, whereas only də occurs in interrogative disjunctions (i.e. alternative questions). Də (and not hari) occurs also in wh-questions as well as yes/no questions. Slade uses the epistemic difference between hari and də to explain the fact that hari occurs in disjunctions in declaratives and in antecedents of conditionals, whereas də forms alternative questions.

But Slade (2012) modifies this description: the wh-də vs. wh-hari distinction seems to hang more on modes of identification than on degrees of ignorance. If that is so, then it is not clear if the interrogative vs. declarative disjunction contrast can be derived from the epistemic considerations.

Wh-də and wh-hari contrast with bare deyak 'thing' that occurs in both contexts as well as in his (13a), where the speaker who says Sanath bought deyak would know perfectly well what Sanath bought. English something and Hungarian valami would be similar to deyak (they cover the whole range), whereas some picture and valami kép would probably cover both wh-hari and wh-də (the speaker either doesn't know or pretends not to know the specifics of the thing).

Re: (30c,f) valami tíz diák 'some ten'

Although English has the construction, I have rarely seen it discussed (but see Farkas):

- (32) They have some ten students.
The rod is some ten feet long.

Clearly related to the epistemic indefinites discussed above. Hungarian has two ways of expressing (32): (27c) contains valami 10, whereas the (27f) version contains vagy 10, the plain-vanilla disjunction. I am not sure what the semantic difference is, if any. The Historical-Etymological dictionary treats vagy+numeral as polysemous, one interpretation being 'at least n' and the other 'approximately n', and gives one historical context each in which these are plausible. If valami+numeral is any different, then it's probably approximate, although it's difficult to argue for the distinction.

I am assuming that in both cases vala/vagy requires the presence of increased possibilities and thereby forces the 'approximately/at least n' reading on the numeral. I speculate that the reason why this is possible with numerals but not with, let's say, names is that if vagy

Kati were acceptable, it would have to completely rely in the context to come up with the alternatives. It would effectively mean ‘Kate or someone else’, which isn’t very useful (why mention Kate?). This is different from even Kate, only Kate, and also Kate. The latter expressions invoke focus alternatives, but we are at least saying something solid about Kate, so it makes sense to mention her explicitly. In contrast, numbers come with their own alternatives (the other numbers in their neighborhood).²⁶

Re: (27d,e) vagy ‘or’ and vagy ... vagy ... ‘not both’

Nothing special to add here, see the discussion of Mitrović in Section 6; I assume that his analysis carries over to Hungarian. I do not think it is a problem that Hungarian vagy does not contain a specific scalar component like i in ili... ili.... Stress by itself can invoke a scale. E.g.

- (33) Ten HORSES can’t drag me there!
‘even ten horses’
- (34) A LELKEMET kitettem érte!
the soul-1sg-acc out-put-1sg for-him
‘I put out my soul (=even my soul) for him’

Hungarian uses the same vagy in both declaratives and alternative questions. In other words, it makes no distinction parallel to Sinhala hari and ho: (declarative disjunction) vs. də (interrogative disjunction, forms alternative questions).

Re: (27g) val-, vol-, vagy-, va[n]- ‘be, exist’

The *Historical-Etymological Dictionary* relates all the items discussed above to the participial and finite stems of the copula BE (predicative, locative, existential=possessive), exemplified below. (Vagyon/vagynak became van/vannak in the last 300 years; -n marks 3rd person, and it is not historically part of the stem.)

- | | | |
|------|--|--|
| (35) | Hat fiam vala / volt.
six son-1sg was
‘I had six sons’ | Voltak kicsi dinoszauruszok.
were small dinosaurs
‘There were small dinosaurs’ |
|------|--|--|

²⁶ But Marcel den Dikken (p.c.) points out that vagy Mari could still mean “at least Mari” or “for example Mari”. Likewise, although vagy tíz means “at least/approximately ten”, speakers do not seem inclined to accept vagy hány, although it could mean “approximately how many”. I have no idea why these gaps exist.

- (36) Hat fiam vagyok / van. Vannak kicsi dinoszauruszok.
 six son-1sg is are small dinosaurs
 'I have six sons' 'There are small dinosaurs'
- (37) Örülök, hogy vagyok.
 rejoice-1sg that am
 'I'm glad I'm alive (lit. exist)'

In the other languages I have information about, only the Modern Literary Sinhala ho: also has a life as an existential verb (Slade 2011; he gives no example sentences). Slade says it is not known whether ho: is related to hari, but it is similar to hari in being a declarative disjunction (unlike da). Since Hungarian vala/vagy never carries a high level of epistemic uncertainty, it seems unsurprising that it stretches itself all the way to the Boolean join, i.e. serving to assert existence, and it is good to know that at least Sinhala ho: does the same thing.

More formally, I suppose that at least in its existential verb reincarnation vala/vagy is irrevocably bundled up with InqS's de-inquisitivizing operator (officially: informative closure). That operator, abbreviated as *!*, unions the maximal possibilities (alternatives) in the issue. The result is non-inquisitive: a singleton set of alternatives:

$$(38) \quad !\{\{w: p(w)\}, \{w: q(w)\}\} = \{\{w: p \vee q(w)\}\}$$

If the verbal version of vala/vagy spells out a composition of the basic KA-meaning with *!*, viz., *! ° KA*, then it will assert existence. (Whether a sentence that contains an existential verb is overall inquisitive depends on whether the verb is its main operator.)

In general, I assume that *!* can be an obligatory or optional component of various constructions or surface words, originating as a phonetically null morpheme or as a shifter. Ciardelli et al. (2012: 44) briefly suggest that *!* may be the declarative complementizer. I do not find that likely, because the possibilities introduced by indefinites project right past the complementizer that when the indefinite scopes out of its clause. On the other hand, if certain operators *O* trap the inquisitive potential of their complements, similarly to how externally static operators trap the context change potential of indefinites in their scope in dynamic semantics, that can be expressed by composing them with *!* as the minor function (viz., *O °!*). More work to do here, but not now.

Now we turn to vajon (27h), the last item in the Hungarian list.²⁷

²⁷ In some of the Slavic languages (not Russian, Gouskova p.c.) the KA-morpheme -li also serves as something like a domain widener. For example (Veselinović 2013),

- (i) a. Gdje je Marko? Bosnian/Serbian/Croatian
 'Where is Marko?'

8. VAJON ‘I wonder’ and the speech act operators ANSWER and PUZZLE

This section argues that vajon is an adjunct that occurs exclusively in interrogative clauses (main or complement) and is incompatible with answer-seeking. It is a member of the vala/vagy family and has the characteristic semantics of KA-particles: it needs to be in a possibility-increasing environment. The relation between vajon and might is briefly discussed at the end.

Let us start with some descriptive background on Hungarian interrogatives. Much like Japanese, Korean, and Kashmiri, and unlike English, Hungarian has two kinds of overt finite “complementizers”: a subordinator and a clause-type indicator. Clause-initial hogy is a pure subordinator, invariant across declarative/interrogative and indicative/subjunctive clausal complements. Clause-type indicators occur in both complement and main clauses. Unlike Japanese, Korean, Sinhala, or Tlingit, and like English, Hungarian has no overt interrogative clause-type indicator in constituent questions. It has a morpheme -e, suffixed to the finite verb, that can come under the rubric of a clause-type indicator for yes/no questions. It is in complementary distribution with yes/no question intonation in main-clause questions. I will discuss -e at some length in Section 11. Here we only need to distinguish it from vajon.

Vajon occurs equally in main and complement questions; in the latter case it co-occurs with hogy. It only occurs in clauses that are independently identifiable as interrogatives by the presence of a question word, -e, or question intonation. Thus vajon is neither a subordinator, nor a classical clause-type indicator. It seems like an optional question modifier. It expresses that I will call “puzzlement”. Gärtner & Gyuris (2007, 2012) discuss the distribution and the pragmatics of vajon in detail; I will supplement their observations with some of my own in the discussion below.

Vajon is acceptable when the answer is neither known, nor is directly requested. Consider first main clause questions. When the speaker wants an answer and the addressee could straightforwardly answer the question, vajon is nonsensical (39a) or extremely rude (39b). (39a) is nonsensical because it shares the speaker’s interests with the policeman, instead of asking for directions, an unusual thing to do. (39b) is rude, because it effectively talks *about* the hearer, as though that person were dumb or presumed to be a fraud. In contrast, (39c) with vajon is appropriate on the natural assumption that the hearer does not know for sure what he/she will be doing ten years after the ongoing conversation.

-
- b. Gdje li je Marko?
‘Where could Marko be?’

It seems to me that in (i) corresponds to English Where EVER is he? Where on earth is he?. I suppose that signalling that there are multiple live alternatives can be stretched into domain widening, but I won’t speculate about how that works. I don’t suppose that this extension happens by default (Hungarian doesn’t do it...).

But, I note, the vajon-less version of (39c) can be used to the same effect, maybe with a slightly different intonation.

- (39) a. To policeman: (# Vajon) Merre van az Erzsébet-híd?
 `Which way is the Elizabeth Bridge (# I wonder)´
- b. (# Vajon) Mi a neved?
 `What is your name (# I wonder)´
- c. (Vajon) Mit fogsz csinálni tíz év múlva?
 `What will you be doing ten years from now (I wonder)´

Gärtner & Gyuris propose that vajon “puts an issue on the table” in the sense of Farkas and Bruce (2010), who briefly discuss oare, a close Romanian counterpart.²⁸ That is a prudently cautious position, but I believe it is a bit too weak for vajon. In my judgment, vajon does not simply allow for the question to be left unanswered; it excludes answer-seeking. This is especially clear when embedding is considered. In main clauses, it is somewhat difficult to separate literal meaning from all the polite, sarcastic, etc. uses that the sentence can be put to.

A vajon-modified clause happily embeds under “be curious”, “would like to know”, or “make guesses at”.

- | | | | | |
|------|---|---|---|--|
| (40) | { | Kíváncsi vagyok `I am curious´
Szeretném tudni `I'd like to know´
Találgattuk `we were making guesses at´ | } | hogy (vajon) félnek-e.
subord VAJON afraid.3pl-Y/N
`whether they are afraid´ |
|------|---|---|---|--|

²⁸ “The most often discussed non-default questions are those involving some type of bias. Here, we mention another non-default question, special in that it indicates that settling the issue is not necessarily a projected conversational future and therefore that answering the question is optional. In Romanian, such questions are signalled by the presence of the particle oare:

- (14) Oare Petru a sosit deja?
 oare Peter has arrived already
 Has Peter arrived already?

We can accommodate oare questions in our system by assuming that the output *ps* includes not only projected common grounds in which the question is decided but also a copy of the elements of the input *ps*, thereby indicating that not answering the question is one of the projected discourse futures. Such questions are special in that for them removal from the Table without change in the current *cg* is a projected option. Our characterization correctly predicts that oare questions are not appropriate on forms, as exam questions or as questions asked in court or by a policeman.” (Farkas & Bruce 2010)

- (41) { Kíváncsi vagyok 'I am curious'
Szeretném tudni 'I'd like to know'
Találgattuk 'we were making guesses at' } } hogy (vajon) ki fél.
subord VAJON who afraid.3sg
'who is afraid'

The matrix verbs that are not happy with vajon-complements require more careful consideration. Embedding under tud 'know' is unacceptable. Embedding under imperative meg-mond 'tell, perfective', meg-kérdez 'ask directly, perfective' and meg-tudakol 'inquire and find out, perfective' is highly degraded. More precisely, I believe, it is only acceptable to the extent the verb allows the complement to function as an "embedded main clause" (a phenomenon subject to much research in syntax). If there are no plain syntactic clues, "embedded main clause questions" may be recognized by exhibiting a quotation-like wording: a rhetorical flavor, a roundabout way of posing the question that the main clause subject would use but the speaker who reports the situation would have no reason to use, and so on. In my judgment meg-tudakol is the least likely to tolerate "embedded main clause questions".

- (42) { Tudom 'I know'
Mondd meg 'tell me'
Megkérdeztem 'I asked'
Megtudakoltam 'I inquired and found out' } } hogy (# vajon) félnek-e.
subord VAJON afraid.3pl-Y/N
whether they are afraid'

- (43) { Tudom 'I know'
Mondd meg 'tell me'
Megkérdeztem 'I asked'
Megtudakoltam 'I inquired and found out' } } hogy (# vajon) ki fél.
subord VAJON who afraid.3sg
'who is afraid'

Notice that meg-kérdez and meg-tudakol strictly subcategorize for interrogative complements.²⁹ Finally, fel-sorol 'enumerate, perfective' that only takes interrogative complements with "what (all)", "who (all)", and other appropriately listable ingredients is entirely incompatible with vajon.

- (44) Felsoroltam, hogy (#### vajon) ki volt jelen.
enumerated-1sg that VAJON who was present

Based on these data I would like to experiment with the stronger position that vajon-modified interrogatives do not merely leave it open whether the question will be answered; they want the question not to be answered, and at least not locally.

The distinction between the two classes of (verbs and) interrogatives is highly reminiscent of Groenendijk & Stokhof's (1984) (verbs that take) **extensional vs. intensional interrogative** complements. But their criteria and mine **cross-classify** the data. In the

²⁹ In checking intuitions about other languages, the gentle reader should discount "ask self" locutions, which many languages dedicate to expressing "wonder". Hungarian does not have "wonder" but neither does it have "ask self".

G&S theory the decisive factor is whether a given verb takes both interrogative and that-complements, or only interrogative complements. For example, the complements of tell and know always denote a classical proposition, the set of worlds in which $\lambda x.f(x)$ is the same as in the world of evaluation. This clause may either be a factive that-clause or an interrogative; in the latter case the proposition is the answer.

(45) G&S complements of tell, know, etc.: $\lambda i[\lambda x[f(x)(i)]=\lambda x[f(x)(w^*)]]$

In contrast, ask, inquire, be curious, and wonder never take that-clause complements, and so their complement is always the intension of the above: the set of pairs of worlds in which the sets $\lambda x.f(x)$ are the same (the famous partition, a proper question meaning):

(46) G&S complements of be curious, wonder, ask, etc.: $\lambda j\lambda i[\lambda x[f(x)(i)]=\lambda x[f(x)(j)]]$

The finer distribution of vajon-complements cannot be captured in terms of the 1984 theory: whether or not the embedding verb also takes a that-complement does not fully predict whether the interrogative complement can be modified by vajon. On the other hand, the semantic insight in (45)-(46) could be very useful if the interpretation of sentences with (the relevant versions of) megkérdez, megtudakol, and felsorol proceeded in two steps, somewhat like the decomposition of seek into TRY and TO FIND. The first step involves resolution, i.e. “answer” operator, cf. TO FIND. It is shared with the interpretation of the complement of tud ‘know’, which is now complete. But the interpretation of the complement of megkérdez and megtudakol ‘ask, inquire and find out’ involves a further step that eliminates access to the answer, cf. TRY. In contrast, the interpretation of the complement of kíváncsi and találgat would not involve the same resolution step (“answer” operator). It either involves nothing special, or it involves an operator that I will dub “puzzle.” Whatever “puzzle” does with the issue it operates on, it does not resolve it, even temporarily. Finally, let us suppose, for the sake of argument, that the interpretation of main clause interrogatives also involves either “answer” or nothing”puzzle”, depending on whether we are dealing with an answer-seeking question or not.

This very rudimentary sketch will allow me to unify vajon with other members of the vala/vagy family. The idea is that vajon, like those expressions, wants to occur in a **locally possibility-increasing (or, at least, possibility-preserving)** environment. **Resolution of the issue** introduced by the interrogative that vajon modifies **eliminates possibilities**.

Although “answer” and “puzzle” may seem like inventions that merely serve to bring vajon into the fold, I believe there is good independent motivation for something of this sort. Notice that Inquisitive Semantics attributes the same inquisitive content to questions and sentences with indefinites/disjunctions:

(47) Who dances?

(48) Someone dances / Joe dances or Mary dances.

Even if the two classes differ as to informative content and can thus be globally distinguished (see AnderBois 2012 for further refinements), the theory does not give us the difference between uttering Someone dances while looking very, very insistently in the eyes of the interlocutor and uttering Who dances?. But Who dances? is really a question, it does not merely manage to pass as a question. So far as I understand, the theory does not have this effect. That is perfectly alright, Inquisitive Semantics is not intended to cater to all aspects of the meanings of natural language sentences (maybe it is not intended to cater to any specifically linguistic phenomena directly). But linguists need to supplement it, then. A theory of speech acts as formulated in Krifka (2013), may be a good supplement, especially because it subsumes the embedding of speech acts.

The long and short of it is that I assume that the operators “answer”, “puzzle”, and whatever else is needed are speech act operators.

- (49) a. The speech act operators ANSWER and PUZZLE are in complementary distribution.
 b. Both ANSWER and PUZZLE require for their arguments to present multiple alternatives.
 c. ANSWER demands to pick the true alternative.³⁰
 d. PUZZLE demands to preserve the live alternatives.

Vajon is receiving much attention here, because it belongs to the vala/vagy family. The *Historical-Etymological Dictionary of Hungarian* gives a full and solid account of its composition. (For many centuries the spelling reflected the geminate [j]; current orthography mandates one j, although many speakers pronounce a geminate)

- (50) vaj -j -on
 be subjunctive 3sg
 ‘may/let be’

The morphosyntax receives a special significance in view of M. den Dikken’s observation that vajon has parallels in Germanic that are based on “happen” and modals:

- (51) “I’ve always wondered whether vajon could be likened to English perhaps, Dutch misschien, Scandinavian kanske when used in yes/no-questions: “I wonder whether they are perhaps afraid”; “Would you perhaps have a pair of tweezers?” The kinds of y/n-questions that English perhaps is used in are typically not the kinds of questions that would call for an answer; if they call for a reaction on the interlocutor’s part at all, it is typically not a yes-or-no answer (but an action instead). What’s noteworthy about perhaps, Dutch misschien and Scandinavian kanske is that they’re all based on happen (hap in English, (ge)schie(de)n, ske in

³⁰ Kobuchi-Philip (2010) expresses a similar intuition in invoking a silent CHOOSE function in turning KA-phrases into actual questions. -- Benjamin Slade (p.c.) has raised the possibility that ANSWER is (defined in terms of) the ! operator.

Scandinavian), plus a modal element (mis goes back to the same modal that English epistemic may also represents; Scandinavian kan is the cognate of can; I don't know about English per). Happen is, of course, an existential verb -- very much like the vaj part of vajon (with -[j]on probably a subjunctive inflectional form(?), which will give you the rough equivalent of the modal of Dutch and Scandinavian). I don't think Gaertner & Gyuris mention this link -- perhaps they didn't catch it because German "perhaps" (i.e., vielleicht) happens not to be based on "happen". (Alongside perhaps, English of course also has maybe, which is based on be plus a modal -- closer, morphologically, to Scandinavian kanske than perhaps. But I don't think maybe has quite the same kind of effect in a y/n-question as the one that perhaps gives rise to. That's why I concentrated the above discussion on perhaps, not maybe.)” (M. den Dikken, p.c., May 2013)

Even if happen-based elements are used to a similar effect in questions as Hungarian vajon, the modal connection is important. Connection could be sought, especially, with epistemic might in declaratives. Informally, Hungarian vajon is the interrogative version of declarative epistemic might.

On the semantics of might see, among others, Groenendijk-Veltman-Stokhof (1996), and Ciardelli-Groenendijk-Roelofsen (2010). The latter team accounts for might by adding **attentive content** to informative and inquisitive content as a third component of the meaning of a proposition.³¹ They even make a connection between might and German ob, another relative of vajon and oare.³² (We do not yet know whether these items are merely similar or identical.) I leave the possibility of combining or even replacing the speech act theoretic approach with theirs entirely open here.

³¹ The attentive content of ϕ is $\Pi(\phi)$, which includes the non-maximal possibilities. Might is formalized using $[[\diamond\phi]]$, which abbreviates $\phi \vee T$, the latter any tautology.

³² “Another phenomenon that seems to require an account of attentive content is that of *in subordinate interrogatives*. Truckenbrodt (2006) provides the German example in (48), which contrasts with the non-in subordinate interrogative in (49):

(48) Ob es ihm gut geht?
Whether it him well goes
'I wonder whether he is doing well.'

(49) Geht es ihm gut?
Goes it him well
'Is he doing well?'

Again, sentences like (48) are reported to 'present' a certain issue, without really requesting an informative response from other participants. There is a sharp contrast in this respect between (48) and (49): the latter does request an informative response. These are precisely the type of distinctions that the framework developed in this paper could help to elucidate.” (Ciardelli-Groenendijk-Roelofsen 2010: 46).

To summarize, the descriptive aspect of my semantic analysis of vajon is inspired by and rather similar to Gärtner & Gyuris's pragmatic analysis. But rather than moving right into the pragmatics, I attempt to capture what is common to vagy, vala, and vajon. The requirement of a possibility-increasing (or, possibility-preserving) environment seems to do the job.

*

We are now moving on to the application of the theory to the yes/no question particle -e of Hungarian, which I regard as part of the KA-family, even though it is not etymologically related to vala/vagy. But that cannot be done directly. Sections 9 and 10 feed into the analysis of yes/no questions.

9. Questions and focus

So far I have simply been assuming that interrogatives get the standard Hamblin--Karttunen--InqS interpretation in some way or other. How does that work? How are issues generated and collected together, and what role does focus play?

9.1 Basic data about questions and focus

In many languages that have a syntactically recognizable "focus position", wh-questions have one question-word in that position; in other languages the question word receives phonological focus accent. These facts are traditionally attributed to question-answer congruence. In addition, alternative questions always have each of the disjuncts focussed (in whatever way the language does focusing). This is traditionally attributed to the exclusivity of the alternatives.

In contrast, yes/no (=polar) questions don't by default involve focusing, i.e. unless the proposition we are asking about happens to contain focus.

Some nice Sinhala examples from Slade (2011). Sinhala verbs have an E-ending form when the sentence has focus and an A-ending form when there is no focus. The overt movement of the phrase with focus accent to the right is optional. We don't need to indicate movement, since the -E (focus) vs. -A (no focus) distinction already makes things clear for present purposes. I underline the phrases that could move to the right.

Note that all four sentences have particle DA, Sinhala for KA. In the plain yes/no question DA is IP-final. (Please do not confuse the Sinhala focus particle with the Hungarian yes/no particle, even though both are suffixed to the verb.)

- (52) $\frac{X \text{ DA}}{X \text{ DA}} \quad \frac{Y \text{ DA}}{Y \text{ DA}} \quad \text{gametə} \quad \text{giy-E} \quad / \quad * \text{giy-A} \quad \text{Was it X or was it Y}$
 $\text{village-dat} \quad \text{went-E} \quad \text{went-A} \quad \text{who went to the v?}$
- (53) $\frac{[\text{kau DA}]}{\text{who DA}} \quad \text{aaw-E} \quad / \quad * \text{aaw-A} \quad \text{Who came?}$
 $\text{came-E} \quad \text{came-A}$
- (54) $[\text{mokok DA}] \quad \text{waetun-A} \quad / \quad * \text{waetun-E} \quad \text{Something fell.}$
 $\text{what DA} \quad \text{fell-A} \quad \text{fell-E}$
- (55) $\text{Chitra ee potə} \quad \text{kieuw-A DA} \quad / \quad * \text{kieuw-E} \quad \text{Did Chitra read}$
 $\text{Chitra that book} \quad \text{read-A DA} \quad \text{read-E} \quad \text{that book?}$

Sinhala focus (as indicated by V-E) has an existential presupposition and is exhaustive. “Even/also” associates with focus accent but doesn’t co-occur with V-E and does not allow rightward movement. These properties have direct equivalents in Hungarian.

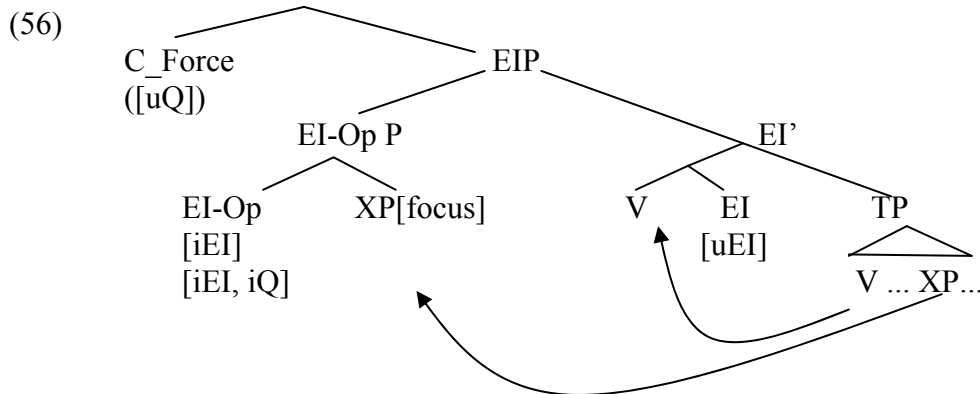
Slade (2011) points out that in Sinhala, not all wh-questions contain focus: some don’t involve V-E, and don’t have an existential presupposition. These can occur embedded under verbs like “know,” “understand,” “examine,” and in main clause “how many” questions. This phenomenon is not yet understood.

I note that in Wolof wh-questions are formed with gaps instead of wh-word (Torrence 2012); it remains to be seen how that strategy fits into the general picture.

9.2 A little literature review (rewrite)

There was a period in generative syntax when the movement of question words in languages in which they occupy a special position was thought to be driven by a syntactic focus feature. Horvath (2000, 2007, 2012) and Cable (2010) both argue that this is wrong: focus per se is intonational, and not a syntactic feature. Horvath argues that focus-accented phrases move when they are attracted by a focus-sensitive operator. They move obligatorily when this operator has a truth-conditional impact: csak ‘only’ and EI-Op ‘exhaustive identification’. When focus-accented phrases associate with is ‘even/also’ they move optionally and not to the same position.

Horvath’s operators “only” and EI-Op head their own projection, which in turn occurs in the specifier of EIP. The EI head adjoins to TP and the verb raises to it. The EI head has an uninterpretable [uEI] feature. EI-Op has interpretable [iEI] or [iEI, iQ]. The interrogative complementizer head C_Force has [uQ].



The -E morpheme on Sinhala verbs in sentences with focus is quite straightforwardly Horvath's EI head. Horvath (2012) notes that Hungarian *csak* 'only' is also able to spell out EI when it occurs postverbally, instead of the EI-Op position.

Now, questions. Horvath and Cable, as well as Slade (2011), argue that when question-words move, they do so in order to facilitate the deletion of the [uQ] feature of the Force (interrogative complementizer) head by the [iQ] feature of the question-word; this deletion happens in a syntactic Agreement configuration. For Cable and Slade, the Q morpheme is KA/DA (recall: they interpret it as a choice function variable), and it is the Q morpheme has an [iQ] feature.³³ A "question word" is an indeterminate pronoun base plus a Q-morpheme. The Q morpheme may move on its own or together with the indeterminate pronoun (and overtly or covertly).

How does focus get into the picture? Following Rizzi, Cable and Slade assume that one of the C heads, the one right under Force, is Focus. So the Q morpheme, alone or together with the indeterminate pronoun, moves to C_Focus in order to be close to C_Force and thereby be able to Agree and delete the latter's [uQ]. In this way the specifier of the Focus head is almost accidentally involved. It just serves as a convenient landing site. The focus accent on the question word plays a role for Cable (recall: Beck, focus-alternatives) but not really for Slade (recall: he argues that the alternatives are not focus-alternatives, just plain Hamblinian alternatives).

On Horvath's (2012) account, the Q-feature (about whose semantics she is silent) is bundled with the EI (exhaustive identification) feature in the operator EI-Op. EI-Op must bind the question word, a variable, which has phonological focus. When the question-word is attracted by the focus-sensitive EI-Op, in the same breath [iQ] deletes Force's [uQ] feature; everybody is happy. So on Horvath's account question-words have an exhaustive semantics (she refers to Haida 2007), which however is not the doing of focus (phonology) or Focus (she doesn't talk about Rizzi's C_Focus at all). The relation to focus is the focus-sensitivity of EI-Op (cf. Rooth's *only*). But the movement part on her

³³ Although Cable vigorously argued that KA/DA-like elements are not interrogation-related, since they occur on indefinite pronouns as well, he retained the name "Q" for them.

account is pretty much the same as in Cable's and Slade's. (Historically, Horvath came first.)³⁴

Haida (2007) re: focus. One interrogative wh per clause is focused; indefinite wh is not focused, even when not Given (jemand introduces new referent). Details:

- (57) F-marking, syntax: [wh, F] enables Agree with C[+Q], which erases the uninterpretable [wh]-feature. Just [F] is an interpr. feature. Foc head is meaningless.

F, semantics: \exists -presupposition and maximality (exhaustivity):

$[[F]]i = \lambda \wp \lambda P. \wp(i)(\lambda i \lambda v' (\nu' = \sigma v. P(i)(v)))$

Referent v' has as its value the maximal element of the plural pred P.

So, $[[F]]i(\lambda i. [[who]]i) = \lambda P. \exists u1(u1 = \sigma v. P(i)(v))$

Haida (2007) also gives a dynamic reformulation of partition theory that allows wh-words to be indefinites, and to antecede pronouns:

- (58) John knows who won and that she's British.

Haida utilizes the maximality component for cases of plural anaphora.

10. Mutually exclusive alternatives

Alternative questions are known to involve separate intonational foci on each of the alternatives, whether they are clausal or phrasal.³⁵

- (59) Do you want TEA, or do you want COFFEE? I want TEA.
Do you want TEA, or COFFEE? I want TEA.

- (60) Do you want [tea or COFFEE]? Yes.

This has the effect that the **alternatives are presented as individually exhaustive and thus mutually exclusive**. Notice that mutual exclusivity holds even with three disjuncts, and even if intonation indicates that the alternatives listed do not exhaust the possibilities (rising intonation on the 2nd disjunct in Roelofsen and van Gool 2009):

³⁴ Szabolcsi's (1981, 1994) exhaustivity is the same as G&S's EXH and Chierchia/Fox's O, and is adopted by Haida.

³⁵ Pruitt & Roelofsen (2013) observe that alternative questions are intonationally distinguished by their final contour. But the focus intonation I am concerned with in the text is a crucial fact about alternative questions, even though it is not their distinctive prosodic marker.

- (61) Do you want [tea and nothing else] or [coffee and nothing else] or [juice and nothing else] or [tea and coffee and nothing else] or ...?

Alternative questions also have an existential presupposition. (The latter may be a bit stronger than exhaustivity: Neither may be a more defiant answer than Both.)

Yes/no questions are understood as offering the alternatives $\{\phi, \neg\phi\}$ that are **by definition mutually exclusive**. (Here the existential presupposition is the weaker guy: “neither” is a logical though not a conversational possibility. ϕ itself may be a presupposition failure, to take the simplest case.)

We are left with wh-questions. If we can argue that **wh-questions present mutually exclusive alternatives**, then **all questions** could be seen as presenting mutually exclusive alternatives. I believe this argument **is entirely tenable**, because it is empirically indistinguishable from the non-mutually-exclusive alternatives version. It is only when we consider question-answer pairs that they become distinguishable. But the core semantics of questions should not be mistaken for the whole set of rules that pertain to question answering, semantics and pragmatics and all that.

Compare the classical issue of numerical indefinites and +/- maximal anaphora:

- (62) Three boys were crying. They were scared.

Following Kamp & Reyle (1993), the first clause is represented as,

- (63) $\langle X, \{\text{boys}(X), |X|=3, \text{cry}(X)\} \rangle$

(63) can be embedded in any model with three or more boys crying, cf. “There is a set of exactly three boys crying” is logically equivalent to “At least three boys are crying”. But the fact that the dref X with cardinality exactly 3 is used enables the non-maximal reading of they in the second clause, which means that those three that the speaker had in mind were scared; maybe other boys were also crying and maybe they were not scared. (62) contrasts with texts involving more than three boys and other increasing quantifiers that only enable maximal anaphora (all the boys who were crying were scared). But (62) can also be interpreted with maximal-reference anaphora, and often is.³⁶

³⁶ The exclusive alternatives approach can be extended to questions such as,

How many nails are there in the box?
 Approximately how many nails are there in the box?
 I estimated how many nails there were in the box.

Let’s say that approximately n means “n +/- m”. (This is roughly what some n means.) 5 +/- 2 is still distinct from 6 +/- 2. We have to assume that numerals can have null “approximately” modifiers. Maybe this is what is reflected by the possibility in Sinhala to not use focus (i.e. to use -A,

The question-answer relation is somewhat similar to the antecedent-pronoun relation. They are definitely similar in that the way we set up questions and antecedents does not fully determine how answers and anaphora will work.

Szabolcsi (1981) argued that wh-questions do not require exhaustive answers. It is elliptical answers that get an exhaustive interpretation, because they are interpreted as exhaustive foci of elliptical sentences. If a non-exhaustive answer is intended, either the addition of “for example” is required (“For example, Bill”) or a full-sentential answer in which the constituent corresponding to the wh-word is not focused but contrastively topicalized, etc. Let’s assume that only elliptical answers with focus prosody are strict linguistic answers and, therefore, call for a more complex set of rules to handle non-exhaustive answers.

The **partition theory** of questions was abandoned at the early stages of Inquisitive Semantics (Mascarenhas 2009 and others), it seems, in order to unify questions and disjunctions. Disjunctions were definitely not thought to partition the space. **But the complete identification of question semantics and disjunction semantics cannot be serious anyway.** And the old arguments for partition semantics (if only Mary walks, and John knows who walks, then John knows that only Mary walks) have not been reassessed and invalidated, so far as I know.

So, I am going to assume that interrogatives (embedded and main clause questions) involve a set of mutually exclusive alternatives. In alternative questions and wh-questions exhaustification, commonly implemented by languages by a focus-sensitive operator, has to ensure that. In yes/no questions mutual exclusivity holds automatically.

The requirement that the alternatives be mutually exclusive could be **imposed by the ANSWER or PUZZLE speech act operators**, which are specific to interrogatives.

What are the implications?

First, I am claiming that focus is instrumental in defining mutually exclusive alternatives in wh-questions and alternative questions (via an EXH operator that associates with focus, not directly!), whereas focus is not needed in yes/no questions, whose meaning specifies two mutually exclusive maximal alternatives anyway. The requirement for there to be a set of mutually exclusive alternatives is attributable to the interrogative speech act operators. If all this is correct, then no syntactic agreement relation with C_Force and overt or covert movement that serves that relation needs to be invoked to account for **why focus plays a role in wh-questions and alternative questions**, and the pertinent parts of the Cable/Horvath theory become unnecessary. It also falls out that **focus**

not -E, on the verb) with how many-questions. Slade focuses on the fact that -A questions do not have an existential presupposition and so can be answered in the negative. But he says clearly that Sinhala foci are exhaustive, even though he doesn’t write it into the formalization.

does not play such a role in yes/no questions, something that these authors do not explicitly address.³⁷

Second, the (trivial) fact that yes/no questions present two mutually exclusive alternatives such that one of them is entirely predictable from the other will play a role in the reasoning below. I will argue that KA-style particles in yes/no questions do the same thing as in disjunctions and indefinites: they just postsuppose possibility-increasingness. They do not contribute “or not”. When the question takes the shape KA(John walks), KA demands that an alternative to [[John walks]] be **accommodated**, and under such circumstances there is only one candidate: [[John does not walk]]. Probably, accommodation is not the right notion, what is happening here is semantic, not pragmatic, and it is the grammar, not the hearer, that “accommodates”. Finding a better notion remains on the agenda.

11. KA versus “or not”

Hamblin/Karttunen interpret Does John walk? as $\{\{w: \text{walk}(w)(j), \{w: \neg \text{walk}(w)(j)\}\}$, and InqS’s ? operator serves to abbreviate $\varphi \vee \neg \varphi$ as ? φ .

Recall the brief discussion of the yes/no particle -e from the vajon section. There is a wide-spread belief in the literature that -e is obligatory in embedded yes/no questions. I analyze -e as a KA-style particle, even though it is not etymologically related to vala/vagy. This is not unusual. For example, Slade (2011) has argued, to my mind convincingly, that the various Tlingit morphemes that all correspond to Japanese ka and old Malayalam -oo are syntactically conditioned allomorphs, and Distributed Morphology would also easily deal with such a situation (Neil Myler, p.c.).

(64) Félnek-(e)?
afraid.3pl-Y/N
‘Are they afraid?’

b. Ki fél-(*e)?
afraid.3sg-Y/N
‘Who is afraid?’

(65)a. Kíváncsi vagyok / Mondd meg hogy félnek-*(e).
curious be.1sg tell.imp.2sg perf subord. afraid.3pl-Y/N
‘I am curious / Tell me whether they are afraid’

b. Kíváncsi vagyok / Mondd meg hogy ki fél-(*e).
curious be.1sg tell.imp.2sg perf subord who afraid.3sg-Y/N
‘I am curious / Tell me who is afraid’

³⁷ Is there an interrogative C_Force at all? Hm...

Maria Gouskova (p.c.) points out that Russian -li that superficially seems to be obligatory in embedded polar interrogatives actually alternates with a negated disjunct:

- (66) Ja ne znaju, prishel li Ivan domoj.
I not know came LI Ivan home
'I don't know whether Ivan came home'
- (67) Ja ne znaju, prishel Ivan ili ne prishel.
I not know came Ivan or not came
'I don't know whether Ivan came or didn't come'

(In main clauses without focus ili ne V / ili net is preferred to -li, which sounds formal or old-fashioned.)

All this seems like great justification for assuming that $[[\text{-li}]] = [[\text{ili net}]]$, but here's a glitch: according to Google, **-li happily co-occurs with ili net**. The Russian National Corpus has few examples, but gives one from Nabokov, which is apparently a deal-breaker. Transforming the above,

- (68) Ja ne znaju, prishel li Ivan ili net.
I not know came LI Ivan or not
'I don't know whether Ivan came or not'

The exact same thing happens in Hungarian: the yes/no suffix -e on the verb (please don't confuse this with the Sinhala focus suffix) both alternates with 'or not' and co-occurs with 'or not'. I can attest to the fact, based on my intuitions as well as Google searches, that in Hungarian this is possible in both main and complement interrogatives and without regard to what the embedding verb is. (In Hungarian main clauses -e is in complementary distribution with yes/no question intonation.) In English, both whether and if optionally combine with or not:

- (69) I don't know whether/if he saw it (or not).
I don't know whether or not he saw it.
*I don't know if or not he saw it.

My assessment of the situation is this.

Case (66), with just a particle. These particles (KA, DA, LI, Hung.-E) play **the same role as members of the KA family in general**: they require to be in a possibility-increasing environment and thus indicate that the clause they are attached to is a member of a set of live possibilities. They do **not** mean "or not". When we see just ϕ +particle, another possibility must be accommodated. **$\neg\phi$ is easily accommodated, because it's the only thing that can serve** as a possibility mutually exclusive with ϕ .

Case (67), with just a negative disjunct. Just as in alternative questions, the set of possibilities can be enumerated, without using a particle.

Case (68), with both particle and negative disjunct. There's nothing wrong with combining the two strategies. **Since "or not" is added, there's no need to accommodate.**

Hungarian alternative questions confirm the plausibility of that scenario. Surveying a very small but dedicated set of linguist and philosopher speakers I have found a bewildering cross-speaker variation in what combinations are good under what embedding predicates.³⁸ But, all these speakers, as well as myself, converge on the general judgment that all the interrogative clauses below are perfectly okay:

- (70) (Szeretném tudni, hogy) TEÁT vagy KÁVÉT ivott.
 (Szeretném tudni, hogy) TEÁT vagy KÁVÉT ivott-e.
 (Szeretném tudni, hogy) TEÁT ivott-e, vagy KÁVÉT (ivott) / (*ivott-e) .
 all '(I would like to know) if he/she drank TEA or COFFEE'
- (71) TEÁT vagy KÁVÉT ivott?
 TEÁT vagy KÁVÉT ivott-e?
 TEÁT ivott-e, vagy KÁVÉT (ivott) / (*ivott-e) ?
 all 'Did he/she drink TEA or COFFEE?'

In alternative questions there is no way to avoid listing the alternatives, but this is compatible with also adding -e. Note that two full-sentential disjuncts are possible, but the second one cannot have -e on the verb. The reason may be that Hungarian, unlike Sinhala, never allows the "alternatives particle" to appear on all disjuncts in disjunctions.³⁹

12. Summary

I have argued that both MO and KA-style particles can be assigned a unified semantics across their various roles (well, at least those that I have looked at, a fairly big portion). Their role is to impose postsuppositions, which can be satisfied when the immediate larg-

³⁸ I am not sure why such a variation exists. One trivial reason may be that in many contexts these options are in fact in free variation, and speakers develop stylistic preferences, perhaps under the pressure from the insistent field worker...

³⁹ Ciardelli et al. (2012) suggest that the inquisitive closure operator ? ("or not") is the interrogative complementizer. I am not sure that there are interrogative complementizers, and I have also analyzed "or not" differently. It is not clear that ? is an actual operator that natural languages employ. It is worth noting that Cable (2010) offers strong syntactic arguments against the earlier assumption that KA-style morphemes in interrogatives are complementizers.

er context is interpreted as the meet/join of their host's semantic contribution with something else. They do not perform meet/join themselves. In the course of making that argument I have recast the traditional syntax and semantics of many of the constructions involved. However, most of these innovations built on or drew from existing proposals in the literature. Those proposals were made in isolation from one another and will now, hopefully, live together happily ever after.

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