What do quantifier particles do?

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Abstract

In many languages, the same particles that form quantifier words also serve as connectives, additive and scalar particles, question markers, roots of existential verbs, and so on. Do these have a unified semantics, or do they merely bear a family resemblance? Are they aided by silent operators in their varied roles -- if yes, what operators?

I dub the particles "quantifier particles" and refer to them generically with capitalized versions of the Japanese morphemes. I argue that both MO and KA can be assigned a stable semantics across their various roles. The specific analysis I offer is motivated by the fact that MO and KA often combine with just one argument; I propose that this is their characteristic behavior. Their role is to impose semantic requirements (postsuppositions), which can be satisfied when the immediately larger context is interpreted as the meet/join of their host's semantic contribution with something else. They do not perform meet/join themselves. Meet and join are disembodied (silent) operations. The appearance of the particles is conditioned by whether meet or join is the default operation in the given constellation. I formalize the proposal using the toolkit of basic Inquisitive Semantics.

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

1.1 Quantifier particles cross-linguistically

This paper is part of a larger project to investigate the compositional semantics of quantifier words. Taking apart someone and everyone and specifying what some, every, and one mean are not daunting tasks. But, in many languages, the same particles that form quantifier words also serve as connectives, additive and scalar particles, question markers, roots of existential verbs, and so on. I will dub these particles "quantifier particles." The interesting part of the project begins when we set out to investigate whether and how the same interpretations of the particles that work well inside the quantifier words extend to their wider 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. Consider the following samples. Hungarian ki and Japanese dare, usually translated as `who', are indeterminate pronouns in the terminology of Kuroda 1965. Ki and dare form `someone' and `everyone' with the aid of morphemes whose more general distribution is partially exemplified below. The joint distribution of Hungarian vala/vagy and etymologically unrelated -e corresponds, roughly, to that of Japanese -ka. The joint distribution of mind and etymologically unrelated is corresponds to that of -mo.

(1)	a.	**vala**-ki	dare-**ka**	`someone'
	b.	A **vagy** B	A-**ka** B(-**ka**)	`A or B'
	c.	**vagy** száz	hyaku-nin-to-**ka**	`some one hundred = approx. 100'
	d.	**val**-, **vagy**-	--	`be' participial & finite stems
	e.	--	dare-ga V-**ka**	`Who Vs?'
	f.	S-**e**	S-**ka**	`whether S'

(2)	a.	**mind**-en-ki	dare-**mo**	`everyone/anyone'
	b.	**mind** A **mind** B	A-**mo** B-**mo**	`A as well as B, both A and B'
		A **is** (és) B **is**		`A as well as B, both A and B'
	c.	A **is**	A-**mo**	`A too/even A'

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), Szabolcsi (2012), and Szabolcsi, Whang & Zu (2014) discuss similar data from a syntactic, semantic, and typological perspective, and raise various questions for compositionality.

(3) a. Do the roles of each particle form a natural class with a stable semantics?
b. Are the particles aided by additional elements, overt or covert, in fulfilling their varied roles? If yes, what are those elements?
c. What do we make of the cross-linguistic similarities and differences in the distribution and interpretation of the particles?

These questions are important for two general reasons.

First, if multiple languages employ the same morphemes for the above roles and, conversely, languages do not mix and match such morphemes arbitrarily, then we would miss significant generalizations by not taking clusters like (1) and (2) seriously.

I believe that there is solid evidence for the cross-linguistic robustness of the clusters.[1] But there is also evidence for important cross-linguistic differences regarding exactly what roles the individual particles play. Ultimately, the contrast between the two extremes -- Japanese/Hungarian-type languages vs. English/French-type languages -- comes under the same heading.

The second reason to take the clusters seriously is that theories have emerged in the past two decades that do not draw a demarcation line between morphology and syntax. Distributed Morphology, Nanosyntax, and certain varieties of Minimalist syntax are cases in point.[2] Unlike traditional Chomskyan lexicalism, these theories build sentences direct-

[1] Haspelmath (1995) claimed that the Japanese-style identity of the morphemes occurring in indefinites and in disjunctions, cf. (1a,b), is a rare phenomenon. But Jayaseelan (2001, 2008) and Slade (2011) present extensive data that contradict the rarity claim, and Szabolcsi, Whang and Zu (2014) point out that Haspelmath's survey missed critically relevant data even in one of the languages in his closely scrutinized sub-sample: Hungarian. Cable (2010) also argues that Japanese ka represents a case of massive homonymy, based on Tlingit, a language in which only the markers of indefinites and wh-questions coincide in form. But Slade (2011) offers a historical analysis of Japanese, Sinhala, and Malayalam that shows the homonymy claim to be unwarranted. Slade himself accounts for the cross-linguistic differences with reference to syntactic features, epistemic semantics, and the incorporation of existential closure into certain indeterminate pronouns. Intriguing mix-and-match cases also exist: Zimmermann (2009) discusses Korean and Hausa, languages in which disjunction morphemes participate in universal readings. Zimmermann offers careful analyses but does not make a final choice.

[2] For Distributed Morphology, see Halle & Marantz 1994; Harley 2012; and Bobaljik 2012. For Nanosyntax, see Starke 2009 and Caha 2009. For versions of Minimalism that do not recognize words as building blocks, see Koopman & Szabolcsi 2000; Julien 2002; Sigurðsson 2004; Koopman 2005; and Kayne 2005, 2010. Certain analyses of superlatives are also good examples of the "no word boundaries" approach, see Hackl 2009 and Szabolcsi 2012. Szabolcsi, Whang & Zu (2014) offer an overview and general discussion.

ly from morphemes or even features, and do not have a level of "words." If these theories are on the right track and morpho-syntax does not deal in words, then we cannot take complex word meanings to be compositional primitives. When the same particles that occur in `someone' and `everyone' lead busy lives outside quantifier words, compositional semantics should strive to account for the full array.

The two kinds of motivation bear on each other. The task of dealing with patterns of cross-linguistic variation is somewhat new in formal semantics, but it is very familiar in morphology and syntax. For example, some of the variation that we see in the distribution of the particles is highly reminiscent of patterns of syncretism and grammatically conditioned allomorphy. The fact that the present project is partially motivated and definitely supported by theories of morpho-syntax holds out the hope that we can learn from how those theories interpret and account for patterns of variation.

This paper begins to answer the questions in (3) but does not undertake to accomplish it all in one fell swoop. It seeks to identify the common core in the semantics of "quantifier particles" in languages of the Japanese/Hungarian type, and to explain certain fundamental facts about the distribution of KA and MO particles. Accounting for the finer distribution of the particles within individual languages and across languages is left for further research, although some pointers are provided, based on recent literature.

1.2 A promising perspective: join and meet

Regarding the question whether the roles of each particle form a natural class with a stable semantics, a beautiful generalization caught the eyes of many linguists working with data of this sort (Gil 2008, Haspelmath 1997, Jayaseelan 2001, 2008, 2011, among others; see Szabolcsi 2010: Ch 12). In one way or another, the roles of KA involve existential quantification or disjunction, and the roles of MO involve universal quantification or conjunction. Generalizing, the suggestion is this:[3]

(4) KA is lattice-theoretic join ($\cup$), MO is lattice-theoretic meet ($\cap$).

Alternative Semantics has thrown a new light on the signature environments of KA. Hamblin (1973), Kratzer & Shimoyama (2002), Simons (2005a,b), Alonso-Ovalle

[3] Existential quantification, disjunction, and set union are special cases of lattice-theoretic join. Universal quantification, conjunction, and set intersection are special cases of lattice-theoretic meet. Join and meet can be equivalently defined as algebraic operations and as least upper bounds and greatest lower bounds in partially ordered sets. See Szabolcsi (1997a) for a brief introduction, and Landman (1991) for a thorough one. The present paper will use the partial ordering perspective. Keenan & Faltz (1985), Szabolcsi & Zwarts (1993), and Katzir & Singh (2013) generalize over subsets of KA's and MO's contexts in that spirit.

(2006), Aloni (2007), AnderBois (2012), and others proposed that not only polar and wh-questions but also declaratives with indefinite pronouns or disjunctions contribute sets of multiple classical propositions to interpretation. They contrast with declaratives that are atomic or whose main operations are negation, conjunction, or universal quantification; these contribute singleton sets of classical propositions. If the universe consists of Kate, Mary, and Joe, we have,

(5) a. Who dances?, Someone dances, Kate or Mary or Joe dances
{{w: dance_w (k)}, {w: dance_w (m)},{w: dance_w (j)}}
b. whether Joe dances
{{w: dance_w (j)}, {w: not dance_w (j)}}

(6) a. Joe dances
{{w: dance_w (j)}}
b. Everyone dances
{{w: dance_w (k) & dance_w (m) & dance_w (j)}}

Inquisitive Semantics (see Ciardelli et al. 2012, 2013) develops a notion of propositions as non-empty, downward closed sets of information states. The sentences in (5) and (6) are recognized as inquisitive and non-inquisitive propositions, respectively, and disjunction and conjunction re-emerge as (Heyting-algebraic) join and meet. In particular, letting [[φ]] be an Inquisitive Semantic proposition, (5)--(6) re-emerge as (5′)--(6′).[4] See details in Section 2.

(5′) a. Who dances?, Someone dances, Kate or Mary or Joe dances
[[Kate dances]] ∪ [[Mary dances]] ∪ [[Joe dances]]
b. whether Joe dances
[[Joe dances]] ∪ [[¬ Joe dances]]

(6′) a. Joe dances
[[Joe dances]]
b. Everyone dances
[[Kate dances]] ∩ [[Mary dances]] ∩ [[Joe dances]]

The upshot is that the linguistic insights of Alternative Semantics and their reincar-

[4] For simplicity, assume that wh-questions carry an existential presupposition and do not have a partition semantics. Inquisitive Semantics supports different linguistic implementations; this one allows us to bring all three examples under the same heading for initial illustrative purposes.

nation in Inquisitive Semantics offer an even more interesting way to unify KA's environments than classical theories. Moreover, the possibility to treat KA as a join and MO as a meet operator is maintained, although in a slightly modified algebraic setting. In other words, it looks like the core roles of KA and MO can be assigned a stable semantics, and a simple one at that.[5]

1.3 Mismatch problems: Too few arguments, too many operators

There are general linguistic problems with this beautiful approach. First, in many unrelated languages the same MO particle occurs in each conjunct. (In three-way conjunctions, there are three MOs.) Hungarian is, Russian i, Romanian şi, and Japanese mo are among the examples.

(7) Schematically	Hungarian
John MO Mary MO danced.	János **is** Mari **is** táncolt.
`John danced and Mary danced'	`John danced and Mary danced'

If all MOs are doing the same thing, then MO cannot be a meet (conjunction) operator.

Likewise, in some languages the KA-style particle obligatorily occurs in each disjunct, but the whole construction has the same meaning as a plain English inclusive disjunction.[6] Slade (2011) was the first to identify the pattern in (8) as a critical one to account for. Sinhala hari (declarative disjunction) and də (interrogative disjunction) and Malayalam -oo are among the examples. Japanese ka is not obligatory in the second disjunct (Kuroda 1965: 85-86), but recall that I am using capitalized KA as a generic representative of the class.

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[5] There is a line of research (Hagstrom 1998; Yatsushiro 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 is that KA occurs in the presence of alternatives, lets them project up across island boundaries and, according to Cable and Slade, serves, so to speak, to "domesticate alternatives." Especially interesting is Slade (2011), because he extends the approach to KA in yes/no questions and disjunctions. For a brief comparison between the Inquisitive approach and the choice functional one, see Section 2.

[6] Many better-known languages iterate disjunctions with an exhaustifying effect, e.g. French ou A ou B; Russian ili A ili B, Hungarian vagy A vagy B. The Sinhala and Malayalam constructions discussed in the text do not fall into this category (B. Slade, p.c. and K.A. Jayaseelan, p.c.). Either... or... will be compared to both constructions in Section 3.2.5.

(8) Schematically	Sinhala (Slade 2011)
John KA Mary KA danced.	Gunəpālə **hari** Chitra **hari** gaməṭə giyā.
`John or Mary danced'	`G or C went to the village'

If all KAs are doing the same thing, then KA cannot be a join (disjunction) operator.

The critical question is, should we take each instance of MO and KA seriously? There is good reason to do so. In all the above languages, MO can occur unarily, in which case it plays the role of an additive particle like too.

(9) Schematically	Hungarian
John MO danced.	János **is** táncolt.
`John, too, danced'	`John, too, danced'

The time-honored analysis of too is that it adds the presupposition that the predicate holds of some discourse-salient entity other than the one in focus. Although ultimately the truth of (9) entails that John danced **and** someone else danced, it would be a stretch to say that English too, Hungarian is, and the other additive particles are meet (conjunction) operators.

Similarly, KA can occur unarily and form an approximate numeral. Hungarian vagy (plain-vanilla `or') and Japanese ka are examples.

(10) Schematically	Hungarian
The distance is 100 KA meter.	A távolság van **vagy** száz méter.
`The distance is some 100m'	`The distance is some 100m'

Lest the unary KA and reiterated KA data seem too exotic, note that alternative questions in the sense of Krifka (2001) illustrate both cases. This can already be seen from English (11a,b), which Karttunen (1977) treated as equivalent, without any comment on compositionality:

(11) a.	**if/whether** Mary danced	{^dance(m), ^not-dance(m)}
b.	**if/whether** Mary danced **or** not	{^dance(m), ^not-dance(m)}

Russian li and Hungarian -e and vagy are KA-particles that occur in such alternative questions, in main as well as in complement clauses. (12a) and (12b) demonstrate that unary, clausal KA alternates with `or(=KA) not,' just as Karttunen (1977) would predict. But in (12c), both are present. The equivalence of these variants will be taken up in some detail in Section 3.2.3.

(12) Schematically	Russian
a. (...) Mary danced KA	(Ja sprosil) tancevala-**li** Masha
b. (...) Mary danced or(=KA) not	(Ja sprosil) tancevala Masha i**li** net
c. (...) Mary danced KA or(=KA) not	(Ja sprosil) tancevala-**li** Masha i**li** net
`Did M dance or not?' and	`Did M dance or not?' and
`whether M danced or not'	`(I asked) whether M danced or not'

In sum, both the iterated and the unary MO and KA examples indicate that MO and KA cannot embody meet and join operators. Where does that leave us with respect to the optimistic conclusions of the previous section?

I believe that the optimistic conclusions are correct -- but they pertain to the meanings of the **larger constructions** in which the KA and MO particles occur. They do not and cannot pertain to **semantic composition**, in particular, to exactly what the particles contribute. Their contribution remains a puzzle. The central claim of this paper will be this:

(13) *MO and KA "point to" meets and joins, but are not meet and join operators*
MO and KA occur in "meety" and "joiny" contexts, but they do not embody meet and join operators themselves. Instead, MO and KA impose semantic requirements whereby they force their contexts to be interpreted as the meet (greatest lower bound) and the join (least upper bound) of the contribution of their hosts and something else.

The rest of this paper will outline how MO and KA accomplish this. Before that, we situate the claim in a bigger picture.

1.4 Is the behavior of KA and MO unusual?

Pending details, the proposed view of KA and MO is similar to a widely held view of negative concord markers. Most analyses do not consider NC markers to be negations, although they signal the presence of a real negation which, following Ladusaw (1992), is considered to be phonetically null; on this view even the pre/post-verbal negative particle itself may be just a negative concord marker.[7] 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

[7] But see de Swart and Sag (2002) for the view that the negative concord reading is a product of polyadic (resumptive) quantification applied to multiple genuinely negative quantifiers.

operator PAST that sits much higher in the structure. Horvath (2010, 2012) proposed a heavily mediated relationship between focus accent, the exhaustive operator, and a dedicated syntactic position.

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. Such a claim was first made by Carlson (1983, 2006).[8] 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. Carlson's 1983 list interestingly overlaps with my list, based on more recent literature, and with some of the data I will discuss later.

1.5 Are the requirements imposed by MO and KA syntactic or semantic?

Carlson does not offer detailed analyses, but he forcefully makes a general point. There is a 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. The iterated KA and iterated MO cases could be approached in that way as well. One could say that KA and MO are meaningless syntactic elements that merely point to phonetically null join and meet operators higher in the structure. On that approach, the requirements of KA and MO

[8] 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.

would be **syntactic requirements**. That is in fact the position taken by Kratzer (2005).[9]

In this paper I follow a different path. I will attempt to formulate **semantic requirements** to achieve a similar effect. 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 may have some truth to it. Like Carlson, I will invoke various phonetically null operations but, as we shall see later, the need for those is independent of whether KA and MO carry syntactic or semantic requirements.

MO is a good starting point, because we have a standard analysis of too that easily extends to MO in John MO ran `John, too, ran' (I put MO as scalar `even' aside). John MO ran is thought to assert that John ran, and to **presuppose** that a salient individual distinct from John ran. So MO can be seen as a "semantic pointer" -- it points to a fact not mentioned in the sentence, and ensures that the context is such that both John and another individual ran.

The next step is to see how this approach deals with the iterated particles. Kobuchi-Philip's (2009) analysis of the real Japanese morpheme mo offers a good model. Kobuchi-Philip's insight is that in John MO Mary MO ran `John as well as Mary ran', both MO's can be seen as doing the same thing. John's running and Mary's running mutually satisfy the requirements of the two MOs. Similarly for Person-MO ran `Everyone ran', with generalized conjunction.

Mutual satisfaction of requirements is reminiscent of presupposition projection, and so a small amendment is called for. Presupposition projection works left-to-right, at least when it is effortless (Chemla & Schlenker 2012). I reclassify MO's definedness condition as a **postsupposition** in the sense of Brasoveanu (2013). Postsuppositions are tests that are delayed and checked simultaneously after the at-issue content is established. This is utilized in John MO Mary MO ran. In contrast, if nothing in the at-issue content satisfies the test, it is imposed on the input context and emerges as a presupposition. The tradi-

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[9] "Suppose we imported the Japanese perspective and assumed that Indo-European indefinites, too, associated with independent quantificational operators. Their distinctive morphology might then tell us something about the nature of those operators. It might indicate syntactic agreement with matching non-overt propositional operators, as proposed in Beghelli and Stowell (1997). That speakers of Latvian, German, or Spanish, for example, perceive the pronouns and determiners of the *kaut-*, *irgendein* or *algun* series as existentials would no longer mean that those expressions are themselves existentials. Their existential look would be the overt expression of syntactic agreement with propositional [∃], the true carrier of existential force. Those indefinites might have an uninterpretable but pronounced [∃] feature, then, that must enter an agreement relation with a matching interpretable feature that happens to be unpronounced. Japanese indeterminate pronouns, on the other hand, would lack such features, and this would be why they are unselective. The same pronouns can 'associate' with the full range of quantificational operators without producing a feature clash." Kratzer (2005: 124) Kratzer goes on to discuss, among other things, negative, interrogative, and existential concord in German.

tional analysis of John MO ran is reproduced. For details, see Brasoveanu & Szabolcsi (2013).

The reasoning carries over to KA without further ado, as far as I can see. I will assume that both particles impose postsuppositions. But, to cut down on the number of novel elements in the proposal, the reader should feel free to think in terms of presuppositions. To simplify even further, I will neutrally refer to "requirements", not to pre- or postsuppositions.[10]

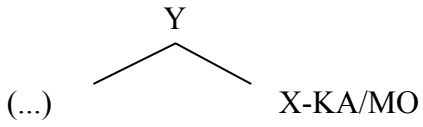
1.6 The proposal in a nutshell and the plan of the detailed discussion

To summarize, the "mismatch cases" offer the best insight into the working of the particles. The particles do not embody algebraic operations, contrary to what examples of the form *A Particle B* would lead us to believe.

Instead, I suggest, the particles require that the semantic contributions of their hosts and of the immediately larger contexts stand in particular partial ordering relations. The "immediately larger context" is meant to be either sentence-internal, e.g. the phrase right above X-KA/MO, or discoursal, as in the case of `John, too, ran'. In this paper I will not define "immediately larger" more precisely (this important concept is not easy to formalize). I will also pretend that KA and MO always attach to full propositions, but the same effects could be achieved by type-lifting the smaller hosts.

Consider the general constellation (14a).

(14) a.

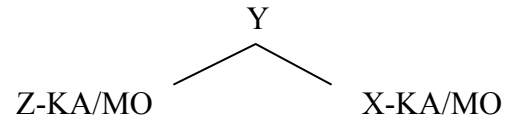


KA/MO only knows about its own host X and the immediately larger context Y. It does not look sideways; it does not know whether or not its host is one of two syntactically represented "juncts". It imposes a requirement on the semantic relation between [[X]] and [[Y]]. If KA/MO occurs on more than one "junct", as in (14b), each instance imposes the same requirement on the relation between the interpretations of its host and the context Y, and the two juncts satisfy the requirements of each other's particles: [11]

[10] Farkas (2002) is a precursor of both the requirement-based (in her terms, constraint-based) semantics and the postsuppositional approach.

[11] Multiple particles, as in (14b), will be additionally be assumed in certain cases where there is only one overt particle present. Executing this requires descriptive caution. See Section 3.1 for cases where the only overt particle in the construction is not MO but J(unction), and 3.2.5 for cases where the construction with overtly reiterated KA particles is not synonymous with the one with a single KA-particle.

(14) b.



It is already clear what MO requires. Momentarily restricting ourselves to classical, non-inquisitive propositions:

(15) MO requires that **another proposition** parallel to [[X]] hold in [[Y]].

MO's requirement is trivially satisfied if [[Y]] is the meet (greatest lower bound) of [[X]] and something else. It thus derives the fact that in the presence of MO, the immediately larger context has a "meety" semantics. "Parallel" is understood in the sense of Asher (1993) and Brasoveanu & Szabolcsi (2013).[12]

How do we achieve the requisite effect for KA, i.e. that in its presence the immediately larger context has a "joiny" semantics? Unlike the case of MO, the linguistic literature does not offer a ready-made answer. But coming up with one does not seem very difficult: [13]

(16) KA requires that the alternatives in [[X]] be **preserved and boosted** in [[Y]].

Preservation means that whatever alternatives [[X]] introduces remain alternatives in the immediately larger context. "Boost" is intended to be a brand-new term that does not have a pre-existing definition; the idea is that [[Y]] has more alternatives than [[X]], in a sense to be specified. KA's requirement is trivially satisfied if [[Y]] is the join (least upper bound) of [[X]] and something else that is not already contained in [[X]]. The term "alternative" is meant to evoke Alternative Semantics; but I am going to explicate my

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[12] In Asher (1993: Ch 7.5), Parallel and Contrast are structural discourse relations that bear on attaching new constituent SDRSs, truth conditions, anaphora resolution, and so on. The particle too signals parallelism. Two constituents are in the Parallel or Contrast relations if there is a bijection from the (modified) embedding tree of the one to that of the other such that the paired nodes have the appropriate polarity. A common theme is among the factors that license common polarity and hence parallelism.

[13] The Hungarian KA family has one notable member not discussed in this paper, the optional question modifier vaj[j]on, literally the 3sg subjunctive form of `be.' Vajon is a semantic relative of the question modifiers oare (Romanian) ob (German), -oo (Kannada), and of epistemic might in the declarative domain; see Amritavalli (2003: 15), Farkas & Bruce (2010), Gärtner & Gyuris (2012) and Szabolcsi, Whang & Zu (2014: 128, 138). A preliminary characterization of vajon is that it requires alternatives to be preserved, but it does not require them to be boosted; alternatively, that it bears on attentive content. Thus the contribution of vajon is related, but not identical, to that of vala/vagy, which points to further avenues of research.

proposal using a version of Inquisitive Semantics in Section 2. In the mean time "alternative" should be taken informally, like "boost".

(15)-(16) can be stated succinctly as follows:

(17) Let X be the expression hosting MO/KA, and Y the immediately larger context.
   a. MO requires [[Y]] ⊂ [[X]]
   b. KA requires [[X]] ⊂ [[Y]]

Note that the proper inclusion requirement is applicable to both classical and inquisitive meanings. One can think of (17a,b) as partial ordering relations between semantic values or, as F. Roelofsen points out, as entailment relations.

Taking (8)-(9) to be paradigmatic, I assume that the particle occurs on each syntactically represented junct, even if (in some languages) not all occurrences are overt. This assumption ensures that the particles' requirements can be checked by looking up, as in (14), without looking sideways. Suppose we have,

(18) $[_Y$ Z-KA X-KA], where [[Z]] ⊂ [[X]]

Given [[Z]]⊂[[X]], we have [[Z]]⊂[[Y]] and [[X]]=[[Y]]. The KA of Z cannot tell that something is wrong by just looking up to [[Y]], but the KA of X will ring the alarm. Given the postsuppositional setup, the requirements of the two KAs are checked simultaneously, so the linear order does not matter.

On this view, KA and MO are not looking for particular expressions or abstract operators in their environment. They simply check whether a certain kind of semantic relation holds between the interpretation of the host and that of the larger context. They do not care how that relation might have come about. This is key in providing a uniform analysis for cases where "the other junct(s)" may be facts or possibilities in the non-linguistic context and cases where "the other junct(s)" may be part of the linguistic construction. It also allows for a certain flexibility in the grammatical implementation.

The plan of the discussion is as follows.

Section 2 spells out the definitions of "preserve" and "boost" in terms of basic **Inquisitive Semantics**, as in Ciardelli et al. (2012, 2013), and touches on Hurford's constraint. It serves as a background for the more linguistic discussion in Section 3.

Section 3 focuses primarily on how coordinations work. It introduces two innovations and also goes into some detail with various constructions. One of the innovations is to import den Dikken's (2006) **Junction head** and to interpret it as Winter's (1995, 1998) **pair-forming bullet**, in the analysis of both disjunctions and conjunctions. The other innovation is to recognize **disembodied meet as the default operation on pairs (tuples), and disembodied join as the default operation on sets of alterna-**

tives computed from open propositions. These defaults correspond to the time-honored assumptions of theories of discourse regarding meet (cf. dynamic conjunction as a sequencer) and of many theories of indefinites and questions regarding join (cf. existential closure in the absence of any morpho-syntactic exponent). Their significance in the present theory is that they will be used to predict when MO and KA particles **must** occur, cross-linguistically. The particles must occur when they serve to **bleed the default** in the given construction. Otherwise their presence is optional (cross-linguistically and language-internally variable) and possibly signals additional semantic content.

Beyond such general considerations, Section 3.2.3 discuses polarity questions vs. alternative questions, 3.2.4 approximate numerals, 3.2.5 English either... or... in a cross-linguistic context, and 3.3 briefly comments on the morpho-syntax of J, MO, and KA. Section 4 concludes.

2 Formalization using Inquisitive Semantics

2.1 A Pocket Inquisitive Toolkit (InqB)

The linguistic insights that unite the signature environments of KA (questions, disjunctions, indefinites) originate with Alternative Semantics. On the other hand, Inquisitive Semantics offers an explicit theory that specifies how algebraic operations work and also offers operators like non-inquisitive closure (!) and non-informative closure (?) that seem to be useful, if not necessary, in dealing with the linguistic phenomena I am concerned with. There is moreover an important difference that has been stressed in the literature, in AnderBois (2012) among others. Although both Alternative Semantics and Inquisitive Semantics start out with alternatives, Alternative Semantics quantifies alternatives away in declaratives. In that way alternatives are used in the compositional process but only in questions do they survive in the final result. In contrast, Inquisitive Semantics defines both inquisitive content and informative content for all sentences, where inquisitive content may contain multiple alternatives even in declaratives. Informative content can be retrieved from inquisitive content, but it is not regarded as the ultimate result of semantic computation. I will explicate the key notions of my proposal using Inquisitive Semantics, given the combination of algebraic detail and maintenance of alternatives in the semantic output.[14]

[14] The choice-functional approach to KA in Cable (2010) and Slade (2011) belongs to the Alternative Semantics paradigm. It assumes that interpretation cannot proceed with a set of alternatives; a choice-function is invoked to pick one alternative, and the choice-function will be existentially closed. In addition to the attraction of the Inquisitive Semantic perspective, I am worried by the problems with the choice-functional analysis of indefinites that have been discovered in the last decade; generalizing the analysis further will not help. (For one, Heim (2011) is almost ready to bury that analysis, with reference to

Inquisitive Semantics is itself a theory under construction. I will use the version InqB (B for basic) employed in Ciardelli, Groenendijk & Roelofsen (2012, 2013) and Roelofsen (2014), because this version is published and relatively well-known. It is quite possible that other versions, for example Roelofsen (2013) that divides non-informative content into inquisitive and attentive content and does away with downward closure, will be eventually better suited for my purposes. I hope to explore that in future work. But InqB will be perfectly sufficient for the purpose of giving an idea of how my proposal can be made concrete.

I will assume that the reader is familiar with the basic ideas and formalism of Inquisitive Semantics, and I merely recap some definitions from InqB, using as small a vocabulary as possible.

(19) A **proposition** is a non-empty, downward closed set of possibilities.
A **possibility** is a set of worlds.
E.g. $[\phi] = [[\text{Joe dances}]] = \wp\{w: \text{dance}_w(j)\}$ (powerset for downward closure).
An **alternative** is a maximal possibility.
The informative content of ϕ, **info(ϕ)** $= \cup[\phi]$.
Meet: $A \cap B$.
Join: $A \cup B$.
Pseudo-complement: $A^* = \{\beta: \text{disjoint}(\beta, \cup A)\}$.
$A \cap A^* = \bot$, but $A \cup A^*$ may or may not be T (Heyting-algebra).
ϕ is **informative** iff $\text{info}(\phi) \neq W$; ϕ excludes something in W, the set of all worlds.
ϕ is **inquisitive** iff $\text{info}(\phi) \notin [\phi]$; ϕ has more than one maximal possibility.
Non-inquisitive closure: **[!ϕ]** $= ([\phi]^*)^* = \wp(\text{info}(\phi))$.
Non-informative closure: **[?ϕ]** $= [\phi] \cup [\phi]^*$.

The proposition [[Kate dances or Mary dances or Joe dances]] is inquisitive: it has three alternatives (maximal possibilities), the three enclosed sets of worlds below. E.g., the red

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Schwarz.) The two versions differ from each other semantically in that Cable (2010) follows Beck (2006) in assuming that wh-words (indetermine pronouns) only have a focus-semantic value, and so they crash unless a choice-function imports them into the ordinary-semantic dimension. Slade (2011) has two arguments against the focus-alternatives part. First, according to Rooth (1992), focus alternatives are only constrained by type. 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 points out that although wh-words are focused in wh-questions, they are not focused when they serve as indefinites. 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.

area contains all the worlds in which Kate dances is true (1xy). [[Kate dances or Mary dances or Joe dances]] is also informative: it excludes the possibility that not one of them dances (000). Propositions are downward closed sets of possibilities; this can be expressed by using powersets, cf. [[John dances]] = $\wp${w: $dance_w(j)$}. Thus [[Kate dances or Mary dances or Joe dances]] is the join of three such powersets, $\wp${w: $dance_w(j)$} $\cup$ $\wp${w: $dance_w(j)$} $\cup$ $\wp${w: $dance_w(j)$}.

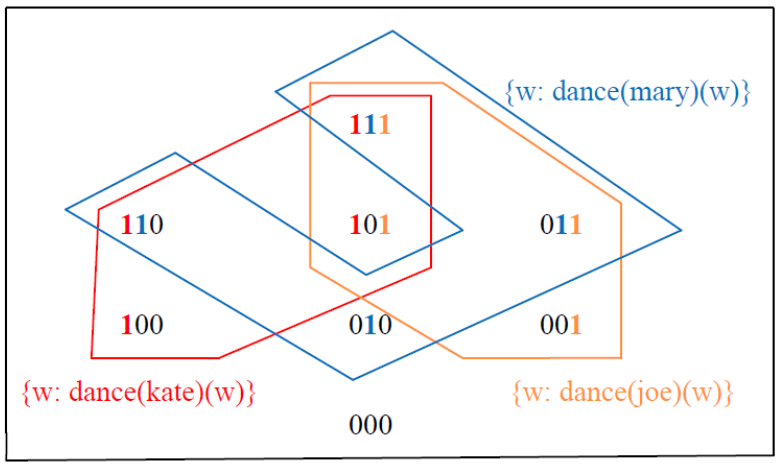

Fig. 1.

The treatment of MO-style particles does not seem to raise special questions in this framework, given the availability of the meet operation, [[A]]$\cap$[[B]], so I will not dwell on it below.

2.2 "Preserve and boost" is one-way inquisitive and informative entailment

Now recall the informal requirement (16), repeated as (20):

(20) KA requires that the alternatives in [[X]] be **preserved and boosted** in [[Y]].

Let us write [[X]]<[[Y]] to express the requisite relation. Just like the term "boost", the symbol "<" is intended to be a fresh one that can be defined to satisfy our needs. The definition of [[X]]<[[Y]] must ensure at least the following things, where [[Z]]$\not\subseteq$[[X]].

(21) If [[Y]] = [[X]] $\cup$ [[Z]], then [[X]]<[[Y]] holds.
(22) If [[Y]] = [[X]] $\cap$ [[Z]], then [[X]]<[[Y]] does not hold.
(23) If [[Y]] = (([[X]] $\cup$ [[Z]])*)*, then [[X]]<[[Y]] holds.
(24) If [[Y]] = (([[X]])*)*, then [[X]]<[[Y]] does not hold.

(21)-(24) are empirical claims about the contexts that make KA happy.

(21) says that if KA attaches to X, and [[Y]] is obtained by joining [[X]] with some distinct [[Z]] in an "inquisitive fashion," then KA's requirement is satisfied. The desirability of this goes without saying -- questions, inquisitive disjunctions and inquisitive indefinites are formed by such join.

(22) says that that combining [[X]] and a distinct [[Z]] by meet does not satisfy KA's requirements. This corresponds to the claim that the presence of KA forces JOIN and overrides the default operation MEET.

(23) says that KA does not actually demand inquisitiveness. If [[X]] and [[Z]] are combined using one-fell-swoop non-inquisitive join, KA is still happy. For example, in Hungarian, KA is the stem of the existential verb, and at least that occurrence is likely to have a classical Boolean semantics, i.e. to involve both join and non-inquisitive closure.[15] (23) also allows for other non-inquisitive occurrences of KA.

Based on the above three requirements, [[X]]<[[Y]] looks like [[X]] $\subset$ [[Y]], where [[φ]] is the proposition associated with the sentence φ; in other words, the inquisitive content of φ. But there is a little difficulty here, noted in (24). Suppose we start out with an expression that is inquisitive. Does simply subjecting it to non-inquisitive closure -- !ϕ, interpreted as ([ϕ]*)*, viz. $\wp$(info(ϕ)) -- justify an extra occurrence of the KA morpheme? No such rogue KAs have been reported, to my knowledge. For example, emphatic assertion, i.e. verum focus, can be reasonably analyzed as double negation. But I am not aware of languages in which the verum focus step justifies attaching an extra KA to the inquisitive expression from the outside:

(25) a. He did invite [John-KA Mary-KA] (# KA)
`He **did** invite John or Mary = It isn't so that he didn't'
b. He did invite [wh(-KA)] (#KA)
`He **did** invite someone = It is not so that he didn't'

But the following holds, due to the fact that propositions in InqB are downward closed:[16]

(26) [[ϕ]] $\subset$ (([[ϕ]])*)*

[15] Consider the following stems of the existential verb in Hungarian that the Historical-Etymological Dictionary recognizes as identical to the vala and vagy that form indefinite pronouns and disjunctions:

val-ó	`be, present participle'	
vagy-ok	`be, present indicative 1sg'	
vagy	`be, present indicative 2sg'	
vagy-on, van	`be, present indicative 3sg'	etc.

[16] Observe that [!ϕ] = $\wp$(info(ϕ)), where info(ϕ) is obtained by joining all the possibilities in [ϕ]. The powerset of this big flat set contains all the possibilities that the inquisitive version [ϕ] raised, plus we have all the joins of the original maximal possibilities, including the big flat one itself, that were not there before.

This would predict that the non-inquisitive closure by itself merits its own KA.

The undesirable situation can be characterized as "endogamy." There are new possibilities, but they are all joins of old possibilities. Various solutions come to mind to eliminate endogamy. Szabolcsi (2013) proposed a definition of "boost" that requires for [[Y]] to contain a possibility that is excluded in [[X]]. Here I will simply present a formulation suggested to me by F. Roelofsen (p.c.). In addition to requiring that the inquisitive content of X be a proper subset of that of the immediately larger context, Y, add the requirement that the informative content of X be also a proper subset of the informative content of Y:

(27) The desired [[X]]<[[Y]] is strict inquisitive and informative entailment,
[[X]] $\subset$ [[Y]] plus info(X) $\subset$ info(Y).

Notice that if Y=!X, then their informative contents are by definition identical. Moreover, info(X) $\subset$ info(Y) ensures that [[X]] $\subseteq$ [[Y]] is in fact [[X]] $\subset$ [[Y]].

Naturally, another possibility is to opt for a system without downward closure; but consideration of that would go way beyond the scope of this section.

I demonstrate that this definition works well for (21)-(24). Assume a universe with just Mary and Kate. mk is a world in which both of them run, and {mk} is the corresponding possibility. m¬k is a world in which Mary runs but Kate does not run, and {m¬k} is the corresponding possibility. And so on. In the examples below I add KA to both disjuncts, but I only comment on the well-being of the one attached to Mary runs; this suffices for the formal demonstration, since each KA does the same thing.

(28) [[Y]] = [[**KA**(Mary runs)]] $\cup$ [[**KA**(Kate runs)]]
= $\wp$ {w: $\text{run}_w(m)$} $\cup$ $\wp$ {w: $\text{run}_w(k)$}
= {$\varnothing$, {m¬k}, {mk}, {m¬k,mk}, {k¬m}, {k¬m,mk}}

(29) [[Y]] = (([[**KA**(Mary runs)]] $\cup$ [[**KA**(Kate runs)]])*)*
= $\wp$ {w: $\text{run}_w(m) \vee \text{run}_w(k)$}
= {$\varnothing$, {m¬k}, {mk}, {m¬k,mk},
{k¬m}, {k¬m,mk}, {m¬k,k¬m}, {m¬k,k¬m,mk}}

In both (28) and (29), we have that [[Y]] preserves all the possibilities in [[Mary runs]], and has a possibility excluded in [[Mary runs]], e.g. {k¬m} = only Kate runs. KA is happy. Not so in (30) and (31).

(30) [[Y]] = [[**KA**(Mary runs)]] ∩ [[**KA**(Kate runs)]]
= $\wp${w: run_w(m) ∧ run_w(k)} =
= {∅, {mk}}

In (30), the meet operation is performed on the two juncts. Possibilities are shrinking! ∩ eliminates {m¬k} from [[Mary runs]]. KA is deemed unacceptable.

(31) [[Y]] = (([[**KA**(Mary runs or Kate runs)]])*)*
= (($\wp${w: run_w(m)} ∪ $\wp${w: run_w(k)})*)*
= {∅, {m¬k}, {mk}, {m¬k,mk}, {k¬m}, {k¬m,mk} ,
{m¬k,k¬m}, {m¬k,k¬m,mk}}

In (31), non-inquisitive closure ! preserves the possibilities in inquisitive [[Mary or Kate runs]], but the new possibilities are all joins of old possibilities: we have endogamy. Info(X) = info(Y). Again, KA is deemed unacceptable.

2.3 Hurford's constraint built into KA's and MO's requirements

As an anonymous reviewer observes, the [[X]]<[[Y]] requirement I attribute to KA, viz. that the alternatives introduced by its host X be preserved and moreover boosted in the immediately larger context effectively incorporates Hurford's (1974) constraint:

(32) A disjunction A or B is unacceptable if A entails B, or B entails A.

The following examples illustrate the constraint. They are only acceptable if the disjuncts are construed as independent. Construing (33) as intended to say `only Mary or both Mary and Sue' is fairly easy, as Chierchia, Fox, & Spector (2012) point out in their discussion of exhaustification. Construing (34) as `in Paris or elsewhere in France' is more difficult, and so (34) is more likely to be perceived as unacceptable than (33).

(33) John invited Mary, or Mary and Sue.
(34) # John vacationed in Paris or in France.

The [[X]]<[[Y]] requirement derives the effect, because if [[Z]]⊆[[X]], then [[X]]<[[X]]∪[[Z]] cannot hold.

Singh (2008) observes that exhaustification in disjunctions is order-sensitive:

(35) a. John invited Mary, or Mary and Sue.
ok `only Mary, or both Mary and Sue'

b.# John invited Mary and Sue, or Mary.
cannot be interpreted as `Mary and Sue or only Mary'
c. John invited Mary and Sue, or only Mary.

My proposal definitely does not predict the asymmetry; I do treat and must treat the juncts symmetrically, so they can satisfy the requirements of each other's particles. This is precisely the purpose for which I invoke postsuppositions (but see Brasoveanu & Szabolcsi 2013 for some puzzling ordering effects). Singh (2008) proposes an incremental evaluation procedure, which might be adopted here.

Levy, Bergen, & Goodman (2014) report that naturally-occurring examples like (36) are widespread and are interpreted, roughly, as `roses and other flowers':

(36) We sell roses and flowers for Mother's Day.

I take the need for the `other flowers' interpretation to indicate that Hurford's constraint is also present in conjunctions. (Levy et al. do not formulate their analysis in such terms.)

Given that I attribute a [[X]]>[[Y]] requirement to MO (one-way inclusion), Hurford's constraint is predicted to be operative in conjunctions as long as they contain some version of the particle, although not for ones without MO-like particles. (37) is predicted to be bad, unless something prevents the entailments. No prediction is made for (38).

(37) a. John has invited both Mary, and Mary and Sue (on different occasions).
b.# John has vacationed both in Paris and in France (on different occasions).
(38) Mrs. Smith and the Smiths have lifted up the table (on different occasions, # together).

The raw facts are not entirely clear. A simple Google-search has returned the following results for bare plurals of the kind Levy et al. investigated. It is remarkable that, at least in this domain, (i) disjunctions and conjunctions behave fairly similarly, (ii) surprisingly, if anything, supercategories tend to precede subcategories, and (iii) either... or... and both... and... practically do not allow for covert adjustments of interpretations.

(39)	a.	"roses or flowers"	330,000
	b.	"flowers or roses"	360,000
	c.	"cars or vehicles"	940,000
	d.	"vehicles or cars"	645,000

(40)	a.	"roses and flowers"	336,000
	b.	"flowers and roses"	14,800,000
	c.	"cars and vehicles"	837,000
	d.	"vehicles and cars"	8,710,000

(41)	a.	"either roses or flowers"	<20	e.	"both roses and flowers"	<20
	b.	"either flowers or roses"	<20	f.	"both flowers and roses"	0
	c.	"either cars or vehicles"	<20	g.	"both cars and vehicles"	<20
	d.	"either vehicles or cars"	<20	h.	"both vehicles and cars"	<20

Localizing the source of Hurford's constraint and identifying when exhaustification and other refinements may circumvent it will have to be left for another occasion.

3 If MO and KA do not perform meet and join, who does?

3.1 Junction, silent MEET, and MO

3.1.1 Inspiration: Winter, den Dikken, and Dekker

On the present view any semantic action of meeting and joining has to be performed by actors other than MO or KA. Who are they?

My proposal divides the labor traditionally performed by meet and join operators between silent actors and (overt or null) helpers. In doing so it incorporates insights from Winter (1995, 1998) and den Dikken (2006). These authors postulate, for entirely independent reasons, that the members of conjunctions and disjunctions are held together, so to speak, by otherwise meaningless elements. In his early work on conjunction, Winter proposed that the word and in languages like English and its null counterpart in many other languages like Chinese merely form pairs consisting of the two conjuncts, and the semantic action is performed by a universally silent MEET operator. In his recent work on the syntax of the English either... or... construction, including the sometimes unexpectedly high and sometimes unexpectedly low syntactic position of either, den Dikken (2006) argues that the disjuncts are held together by a null J (Junction) head that projects a Junction Phrase, JP. J is entirely distinct from either and from or.[17] My own implemen-

[17] "[T]he present paper's main innovation is its argument to the effect that both either and or are phrasal categories. This entails that neither either nor or is itself a disjunction particle... [T]he surface distribution of either is strongly tied to contrastive focus... Either will be shown to be immobile (cf. also Han and Romero 2004, *contra* Larson 1985); but either's negative and [+WH] incarnations, neither and whether, do have the ability or the obligation to move... (N)or is not a disjunction particle but a phrasal element that needs to establish a local, feature-checking Agree relationship with the abstract functional head J ...:

(3) <either> (...) [$_{JP}$ [$_{XP}$ (...) <either> ...] [J [$_{YP}$ or ...]]]

[T]he approach [extends] to both... and..." (den Dikken 2006: 690-691).

Slade (2011) adopts a slight modification of den Dikken's (3) for the Sinhala hari... hari... and də... də... disjunctions, cf. (8), and briefly extends the same structure to Sinhala ...-t ...-t conjunctions that are

tation of the division of labor will not be identical to Winter's or den Dikken's. I link my proposal to theirs in part to give credit for the ideas, and in part because I believe that their proposals lend some support to mine, despite the partial differences.

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 generalized quantifier-theoretic λP[P(j) & P(m)] via type-shifters. But, in Chapter 8 (based on his 1995 and not included in the 2001 book), Winter says that some issues are not solvable on that view. He proposes that the word and is basically a **tuple-forming operator** (•, **bullet**). The tuples grow pointwise in the derivation (much like alternatives project up in Hamblin/Rooth), and at the desired point a phonetically null intersection (Generalized Conjunction, MEET) operator applies to them. That is 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. Here are the pertinent details from Winter (1995:394):

(42) a. The logic used to represent natural language sentences includes types with a *product constructor* •, where an expression of type $\mathsf{a} \bullet \mathsf{b}$ is *a tuple* $\langle \varphi_a, \psi_b \rangle$ construed of the expressions φ_a, ψ_b of types and a and b by the axiom (R_1) of *product introduction.*

b. Interpreting the complex structure using axiom (R_1):
$[[X_1 \textit{ and}/\varnothing\ X_2]] = [[X_1]]\ [[\textit{and}/\varnothing]]\ [[X_2]] = [[X_1]]\ [[X_2]] \Rightarrow_{R1} \langle [[X_1]], [[X_2]] \rangle$
The coordinator *and*, like zero morphology, lacks any denotation.

c. An optional stage: applying the operator GC:
$\cap \langle [[X_1]], [[X_2]] \rangle \Rightarrow [[X_1]] \cap [[X_2]]$

I adopt both **Winter's bullet** and **Winter's silent MEET, with modifications**.[18] First, Winter does not assign the pair-forming bullet to any syntactic category. But den Dikken (2006) and Slade (2011) already identified the need for an extra player, primarily

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analogous to (7). Slade always adjoins the first particle outside of JP, which for den Dikken is only one of the options, as can be seen in (3).

[18] Winter's 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 and the treatment of alternately and respectively do not fall out of the GQ-theoretic treatment. Champollion (2013) offers an extension of Winter's core theory to interpret Noun-Noun conjunctions. In addition, as Champollion points out, letting silent MEET apply arbitrarily high overgenerates scope; I assume that MEET is constrained. This makes the original division of labor either unnecessary or free to be used for independent purposes. My proposal exploits it for purposes independent of the scoping of and.

for disjunctions and by extension for conjunctions. As mentioned above, den Dikken introduced it for purely syntactic purposes, using a J(unction) head that projects JP. I identify Winter's bullet with den Dikken's Junction.

Second, I replace Winter's null Boolean MEET with Dekker's (2012) null conjunction, which interprets the second conjunct strictly in the context of the first; I will call it **order-sensitive MEET**. In Dekker's theory, it takes the place of function composition as dynamic conjunction. Dekker's MEET will be pleased to operate on pairs formed by Winter's bullet, since the members of pairs are ordered.

Bumford (2013) shows that the generalized conjunction that defines distributive universal quantifiers also exhibits dynamic effects. Critical examples involve temporal-order-sensitive adjectives that are only possible within the scope of every and each, and Bumford uses a simpler version of the same mechanism to account for singular sentence-internal a different, likewise confined to the scope of distributives:

(43) a. Every year I buy {another / a new / a faster} computer.
b. Each generation inhabits a more Orwellian world.
c. Every/each boy read a different book.

3.1.2 Order-sensitive silent MEET is the default that applies to pairs

Third, I declare order-sensitive MEET to be the **default silent operation on pairs (tuples)**. Its qualification as a default will become critical in my treatment of KA, but it has solid motivation independently of disjunction. All languages interpret sequences of sentences as texts using a disembodied MEET operation, and that interpretation is always order-sensitive. This is a descriptive fact that dynamic semantics aim to capture.

(44) A man walks in the park. He whistles. ...

This effect can be achieved if order-sensitive MEET is the default, or if the grammar uses a general continuation-style combination strategy with left to right asymmetry, independently of the lexical details of any operator, as in Barker & Shan (to appear).

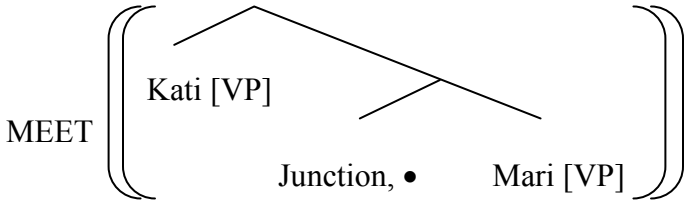
In sum, silence, meety semantics, and order-sensitivity all go together in justifying the default status of this operation.

3.1.3 Spelling out some examples

To spell out what we have so far, compare Hungarian (45) and (46). The word és `and' is optional in both cases (it is more frequent in (45) than in (46)). I analyze és as Junction and interpret it as the pair-forming bullet. The interpretation of the pair undergoes silent MEET in both cases. (45) is ambiguous, it supports a distributive as well as a collective

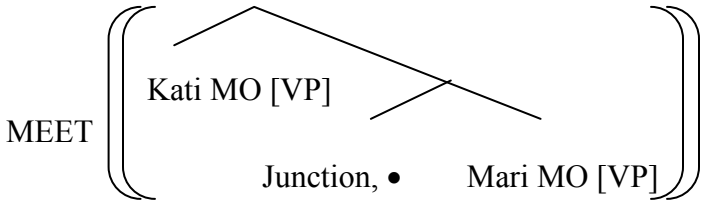
reading; the latter is obtained by subsequent type-shifting, as in Winter (1998, 2001).

(45) Kati **és** Mari felemelte az asztalt. Hungarian
Kate and Mary up-lifted the table-acc
`Kate and Mary lifted up the table, **individually or together**'



(46) differs from (45) in that both members of the pair bear MO-particles (is). These impose postsuppositional requirements, which effectively means that the conjunction must be interpreted as propositional. This makes the construction irrevocably distributive.[19]

(46) Kati **is** (**és**) Mari **is** felemelte az asztalt. Hungarian
Kate MO and Mary MO up-lifted the table-acc
`Kate as well as Mary lifted up the table, **individually**'



This analysis jibes with the fact that Japanese mo acts as an additive particle, as a marker of distributive conjunctions, and as a critical component of every/any-style distributive universals, e.g. dare-mo, cf. (2). The analysis effectively attributes their strict distributivity to the presence of MO-style particles. The $[[Y]] \subset [[X]]$ requirement imposed by MO particles, which effectively forces propositional conjunction at the level of interpretation, accounts for the distributive nature of all the constructions involving MO. Bumford's (2013) analysis of every and each in terms of iterated dynamic update squares well with Kobuchi-Philip's (2009) less formal analysis of mo in universals (dare-mo, etc.) and enhances it.

Hungarian groups all distributive expressions listed in (2) together in surface constituent order as well. As discussed in a large body of literature (Brody 1990; Szabolcsi 1997b, 2010; Kiss 2002; a.o.), the Hungarian preverbal field has distinct "regions" for

[19] Thus, if the collective shift were to apply to a phrasal conjunction with MOs, the result would not be able to satisfy the requirements of the MO particles. I leave the question of how to implement this kind of "bleeding" in the grammar to future work.

distinct quantifier classes. One of the regions is reserved exclusively for phrases whose distributivity is obligatory and does not depend on the predicate. In the terminology of Beghelli & Stowell (1997), such phrases appear in the specifiers of DistPs. In addition to universals like mindenki `everyone', this region accommodates phrases such as mind Kati mind Mari `Kate as well as Mary,' Kati is (és) Mari is `Kate as well as Mary,' and Kati is `Kate too'. Szabolcsi (1997b: 127) points out that `too'-phrases belong to the irrevocably distributive class:

(47) Kati is felemelte az asztalt. Hungarian
Kate too up-lifted the table-acc
✓`Kate lifted up the table on her own, and someone else lifted up the table on their own'
`Kate and someone else collectively lifted up the table'

Shimoyama (2006) observes that mo `every/any' and mo `too/even' may be distinct, in view of the fact that intervention of mo `too' does not block the association of an indeterminate pronoun within a relative clause with mo `every' outside the relative clause. Shimoyama does not specify exactly how the two mo's have to be distinct in order not to interfere with each other -- lexically? syntactically? semantically? But the fact that Hungarian covers the territory of mo with two distinct segments, mind and is, is consonant with Shimoyama's suggestion that there is some difference. See (2), repeated as (48):

(48) a.	**mind**-en-ki	dare-**mo**	`everyone/anyone'
b.	**mind** A **mind** B	A-**mo** B-**mo**	`A as well as B, both A and B'
	A **is** (és) B **is**		`A as well as B, both A and B'
c.	A **is**	A-**mo**	`A too/even A'

The relation between mind and is has not been investigated and I have nothing useful to add. But, mind A mind B is synonymous with A is (és) B is. This suggests that, by transitivity, mind(enki) and is legitimately belong under the same semantic umbrella.

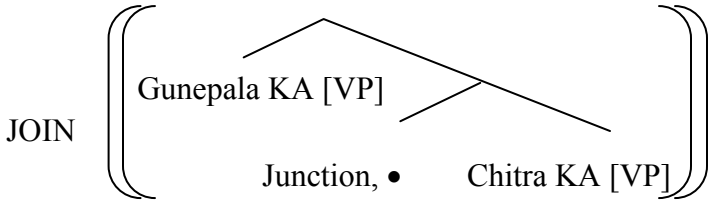
3.2 Junction, silent JOIN, and KA

3.2.1 KA bleeds default MEET in applying to pairs

Based on the fact that cross-linguistically, OR is obligatory in disjunctions, Winter attributes a completely different structure to Kate or Mary than to Kate and Mary. I propose that they have the same structure, contain the same pair-forming Junction, and differ only in JOIN vs. MEET. [20,21] Just like MEET, JOIN is a silent -- disembodied -- operation.

[20] Slade (2011) adopts Junction to deal with Sinhala alternative questions such as John-də Mary-də ran?

(49) Gunəpālə **hari** Chitra **hari** gaməṭə giyā. Sinhala
G decl.or C decl.or to.the.village went
`G or C went to the village'



The morpho-syntax of Junction in disjunctions will be discussed further in Section 3.3.

Now that we have two silent operations, MEET and JOIN, how do we know which of them applies in the interpretation of a given construction? The answer rests on the default status of MEET in the interpretation of pairs, whether they are pairs of phrases, or pairs of sentences forming a text.

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and declaratives such as John-hari Mary-hari ran, where the choice-functional view of də and hari does not work by itself. I do not adopt his specific use of J, but Slade deserves credit for highlighting the fact that the appearance of KA-particles on all disjuncts is a critical challenge for compositional semantics. Slade interprets 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/HARI, 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/hari back into a set, then John into a singleton set, and finally forms the set {John, Mary}. The choice-function contributed by the də/hari 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.

[21] Simons (2005b) already put forth a very interesting extension of Winter (1995, 1998) to disjunctions, in order to account for some of the interactions of or with modals and negation that the classical alternative semantics view does not generate. An important ingredient of Simons's theory is that "a set originally introduced by or can be simplified at any point via set union" (Simons 2005b: 207), with undesirable readings filtered out by her Symmetry condition. Simons does not say where the simplifying union comes from, but the parallel with Winter's theory suggests that it is the analog of Winter's null intersection. I would like to propose that the Boolean union operation that Simons exploits so beautifully is unrelated to the presence of the word or -- it is nothing but the alternative-flattening of Inquisitive Semantics that retrieves the information content of any proposition, inquisitive or not (see Section 2). The non-inquisitive closure operator ! has the "simplify by union" semantics that Simons invokes, and negation has the same flattening effect on its immediate scope. This re-interpretation allows one to replicate Simons's results within Inquisitive Semantics, without adopting all details of her extension of Winter. -- It should be emphasized that Simons (2005) predates the beginnings of Inquisitive Semantics, and so there is no suggestion that she should have framed her theory in the terms that I am proposing.

(50) Default MEET, KA and MO in pairs

a. The presence of KA forces JOIN by requiring that [[X]] be preserved and boosted in [[Y]].

b. The presence of MO forces MEET by requiring that [[X]] and a parallel [[Z]] be included in [[Y]].

c. Elsewhere MEET applies to pairs, by default.

The default status of MEET makes **the presence of KA mandatory if the pair is to undergo JOIN** (i.e. if [[Y]] is to be a least upper bound, not a greatest lower bound). MO has a similar effect in that it forces the pair to undergo MEET, but that is not its mission in life: MEET would apply to the pair anyway. The mission of MO is to create distributivity and a parallel flavor. (We come back to MO in universals below.)

The above reasoning accounts for the "no asyndetic disjunctions" fact that Winter pointed out based on the typological literature. But we must account for more, since our attention here is not restricted to the connective OR. The ambiguity of the term "disjunction" may blur an important distinction. KA particles generally correlate with "disjunction" qua least upper bound, but only some KAs mark "disjunction" as a grammatical connective, corresponding to English <u>or</u>.

The crucial thing to observe is that **the only case in which KA seems cross-linguistically mandated is in its role as OR**. Consider other typical roles of KA, such as marking **indefinite pronouns** and **wh-questions**. There are languages in which KA is either optional or non-existent in these roles. For example, in German both of these constructions may go **without** a dedicated particle. German <u>was</u>, an indeterminate pronoun that participates in forming <u>etwas</u>, <u>irgendwas</u>, and so on, can serve as an indefinite pronoun or as a question word, without any overt KA-particle present (Haida 2007 points out the correlation with stress). In contrast, KA as the connective OR is not optional, see (53):

(51) Wer MAG **was**? <u>was</u> unstressed
who likes **what**
`Who likes **something**?'

(52) Wer mag **WAS**? <u>WAS</u> stressed
who likes **what**
`Who likes **what**?'

(53) Hänsel Gretel
`Hansel **or** Gretel'

3.2.2 JOIN is the default applying to open propositions, and is bled by MO

Indefinites and wh-questions differ from disjunctions in that their sets of alternatives are computed from open propositions, with the help of indeterminate pronouns serving as restricted variables. I propose that in this case **the default operation applying to the alternatives is JOIN**. Formal semanticists have been using existential closure as a variable-binding operation without any morpho-syntactic exponent for decades, in the interpretation of indefinites and many other constructions. If there is something to those proposals, JOIN must be available as a default operation applied to open propositions.

The default status of JOIN will explain why KA particles can be absent, and are cross-linguistically rather frequently absent, from wh-questions and from indefinites. We do not yet explain the concrete cases in which KA-particles do occur in such contexts, optionally or obligatorily. There is the interesting possibility that the dedicated KA-particles that appear in indefinites and in wh-questions are triggered by the presence of additional semantic content. This would be especially natural in the case of free-choice or epistemic indefinites. In the case of wh-questions, focus and existential presupposition may be among the relevant kinds of additional content. The less interesting possibility is that some of these particles are redundant, and they can be there because there is nothing wrong with them being there.

These assumptions make another prediction, however. I observed in (50) that while the presence of MO does force MEET in the interpretation of pairs, MO may as well be absent from pairs. The pair will be interpreted via MEET anyway (and the result will be able to shift further and obtain a collective interpretation). On the other hand, I have just argued that JOIN is the default when the alternatives are computed from open propositions. This predicts that **in the absence of a (local or less local) MO particle, an indeterminate pronoun will not be interpreted as a universal**: hypothetical John saw whom will not mean `John saw everyone'. So far as I know, this is empirically correct. Universal closure is mathematically as good as existential closure, but natural languages do not seem to invoke it.

(54) If MEET is the default in the interpretation of pairs, and JOIN is the default in the interpretation of open propositions, then MO is free to be absent from conjunctions, but MO (or some other element) is needed to bleed JOIN in quantification. MO will force MEET and contribute distributivity to the quantifier.

The above remarks barely scratch the surface. This is an important area that calls for serious further research.

3.2.3 Polarity questions and alternative questions

It will be useful to underscore that not all "question particles" (i.e. particles whose characteristic habitat is in main-clausal or complement interrogatives) need to be KA-particles in our sense. The formation of a set of multiple alternatives is just one step in the derivation of questions: a step that is shared by the derivation of declaratives involving disjunctions and indefinites. According to Ciardelli, Groenendijk & Roelofsen (2012) and AnderBois (2012), questions are distinguished from declaratives, including inquisitive ones, by the fact that the alternatives fully cover the logical space. These works introduce two operators, open non-informative closure $?_o$ and presuppositional, closed non-informative closure $?_c$ to achieve that effect. Shih-Yueh Lin (2014) proposes that among the Mandarin Chinese question particles recognized in the literature, ∅ corresponds to $?_o$, ne to $?_c$, and ma to a combination of $?_o$ with the non-inquisitive closure operator !. For example, he argues that ne operates on an independently defined set of multiple alternatives and serves to shrink the logical space to just that set. If this is correct, then ne is **not a KA-particle in our sense, although it is a "question particle."** The set of multiple alternatives it operates on is created by silent JOIN.

"Yes/no" questions deserve special attention in the context of the present theory. Sometimes they are segmentally unmarked, at other times they carry KA-particles. This section proposes that there is a principled reason why that is possible.

Investigating main clauses, Krifka (2001) distinguishes polarity questions, which may be answered by plain Yes or No, from alternative questions, which require repeating an alternative, possibly accompanied by Yes or No. Krifka differs from Karttunen (1977), who considers polarity questions a subclass of alternative questions. Based on Hungarian data, I will argue that polarity questions are formed directly with the ? operator of Inquisitive Semantics, whereas alternative questions are built as disjunctions. While the resulting semantics is basically the same in the two cases, they differ in that only in the latter case is KA needed to bleed default MEET.

Specifically, I argue that (55a) is a polarity question, whereas (55b,c,d) and (56b,c,d) involve alternative, i.e. disjunctive questions.[22]

In (55a), the uparrow ↑ indicates final rising intonation, and the downarrow ↓ falling, declarative intonation; no intonational distinction exists in complement interrogatives. Hogy is the invariant subordinating complementizer. Note the -e suffix in (c)-(d), which I analyze as a KA-particle.

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[22] Data from Russian are extremely similar, although the counterpart of (55c), with -li, may also have a rising intonation, and the distribution of -li is wider than that of -e. In addition to the counterparts of the (c) and (d) examples, already given in (12), (i) -li attaches to foci in questions and (ii) serves to indicate puzzlement, perhaps like Hungarian vajon. I thank M. Esipova, M. Gouskova, and S. Kasyanenko for discussion. Caveat: South Slavic languages do not use -li in quite the same way as Russian.

(55) Main clause question

a.	Táncolt Mari? ↑	`Did Mary dance ?'
b.	Táncolt Mari vagy nem?	`Did Mary dance or not?'
c.	Táncolt**-e** Mari? ↓	`Did Mary dance-KA?'
d.	Táncolt**-e** Mari vagy nem?	`Did Mary dance-KA or not?'

(56) Interrogative complement

a.	*... hogy táncolt Mari.	`... lit. that Mary danced'
b.	... hogy táncolt Mari vagy nem.	`... that Mary danced or not = whether M danced'
c.	... hogy táncolt**-e** Mari.	`... whether Mary danced-KA'
d.	... hogy táncolt**-e** Mari vagy nem.	`... whether Mary danced-KA or not'

Main clausal (55a), which has just final rising intonation ↑, is the most common way of asking a yes/no question. (55a) can be readily answered in any of the following ways (Hungarian is a language with V-stranding VP-ellipsis):

(57)

a.	Igen.	`Yes'
b.	gesture: nod of the head	
c.	Táncolt.	`She danced'
d.	Igen, táncolt.	`Yes, she danced'

Such a segmentally unmarked interrogative is sharply ungrammatical as a complement; see (56a).

I propose that Táncolt Mari? ↑ is a **Krifkean polarity question**, and that polarity questions are a main-clause phenomenon, interpreted via the Inquisitive Semantic ? operator (open, i.e. non-presuppositional non-informative closure, see Section 2). Final rising intonation ↑ seems like a prosodic exponent of the ? operator.[23]

The non-informative closure operator of Inquisitive Semantics, ?φ is defined as φ∨¬φ. Therefore, (55a) **is equivalent to a disjunction, but compositionally speaking it is not one**. According to the proposal developed above, if [[Y]] preserves and boosts the alternatives in [[X]], X could bear a KA particle, because KA's requirements would be satisfied. But KA is stricly needed only when a default operation has to be bled. This is not the case here, so ?φ can go without KA.

Rising intonation in the main clause alternates with `or not' (55b) and with the suffix

[23] See also Greenberg's (1964) Universal 8, "When a yes-no question is differentiated from the corresponding assertion by an intonational pattern, the distinctive intonational features of each of these patterns are reckoned from the end of the sentence rather than from the beginning."

-e (55c); moreover, the latter two, `or not' and -e, also co-occur (55c). The same three options exist in complement clauses, see (56b,c,d). I argue that they are all alternative, i.e., disjunctive questions.[24]

Neither (55b), nor (55d) can be answered with `Yes' or with a nod. (55b) and (55d) are clearly alternative questions that require repeating (the elided version of) the chosen alternative. Interestingly, (55c) with particle -e follows the same pattern as a preference. The strength of the preference varies with speakers, possibly with regional dialects; for some speakers the plain `Yes' or nod response to the -e question (55c) is quite unnatural. Furthermore, the three main-clause questions (55b,c,d) are alike in exhibiting a "cornering effect" that Biezma & Rawlins (2012) ascribe to or not questions in English. These facts suggest that (55c) is more likely an **alternative question** than a polarity question. I analyze -e as a KA-particle, although it is etymologically unrelated to vala/vagy.[25]

We may note that no cornering effect is present in complement questions with (56b,c,d). For example, (58) is entirely natural, and (59) can describe a respectful and gentle interaction. The same seems true of English whether or not interrogative complements, in contrast to main-clausal or not questions. This indicates that the cornering effect that exists only in main clauses is a discourse-pragmatic one.

(58) Kíváncsi vagyok, hogy { táncolt vagy nem / táncolt-e / táncolt-e vagy nem }.
`I am curious whether she danced (or not)'

(59) Megkérdeztem a királyt, hogy { nehéz a koronája vagy nem / nehéz-e a koronája / nehéz-e a koronája vagy nem }.
`I asked the king whether his crown was heavy (or not)'

Let us turn to the analysis of (55b,c,d) and (56b,c,d). Alternative questions, being true disjunctions, contain either one KA *(*-e or vagy) or two (-e and vagy). The KA-

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[24] The same patterns are attested in `tea or coffee' style alternative questions.

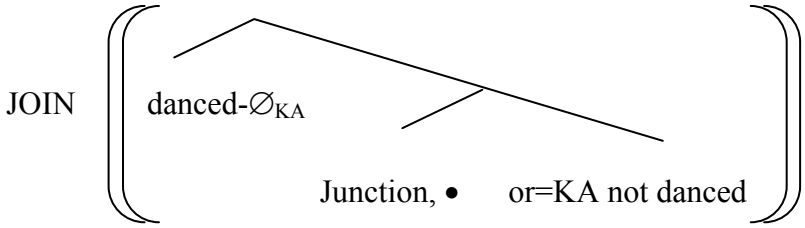
(i) b. (Kíváncsi vagyok, hogy) TEÁT vagy KÁVÉT akar.
c. (Kíváncsi vagyok, hogy) TEÁT akar-e.
d1. (Kíváncsi vagyok, hogy) TEÁT vagy KÁVÉT akar-e.
d2. (Kíváncsi vagyok, hogy) TEÁT akar-e vagy KÁVÉT(*-e).
all: `(I am curious whether) he wants TEA or { COFFEE / the OTHER option }'

Here JOIN must be followed by an application the closed non-informative closure operator $?_c$ that shrinks the presupposed logical space to the alternatives given. See Ciardelli et al. (2012) and AnderBois (2012). The same $?_c$ may also top off (55b,c,d) and (56b,c,d).

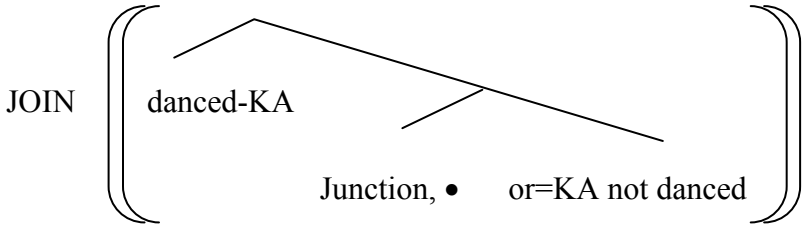
[25] The particle -e only occurs in alternative questions. It derives from a Uralic negative auxiliary. Its origin may help explain how it acquired its role, but its being negative became opaque several thousand years ago. Therefore I do not hesitate to classify it as one allomorph of the KA-particle, similar to Russian -li.

particle -e requires, as usual, that the contribution of its host be preserved and boosted in the immediately larger context. In (55b,d)-(56b,d), both alternatives are spelled out:

(60) Cf. (55b), (56b), and Russian (12b)



(61) Cf. (55d), (56d), and Russian (12c)



In (55c)-(56c), `did not dance' is recovered as the only possible exclusive alternative. I do not attribute a JP structure to (62), because that would commit to the syntactic presence of the recovered content, which I wish to remain neutral about.

(62) Cf. (55c), (56c), and Russian (12a)

[[danced KA]] JOIN [[did not dance]]$_{\text{recovered}}$

This account has the advantage that it does not make `or not' a meaningless flourish, which is essentially what Karttunen (1977) does. The fact that (55b)-(56b) with vagy nem and (55c)-(56c) with -e are equivalent indicates that both need to be taken seriously, and their co-occurrence must be analyzed in a way that is compatible with that. Notice that this is the key problem that this paper aims to account for. AnderBois (2012) offers a similar analysis for Yucatec Maya alternative questions.

The partition theory of questions, according to which questions strictly speaking require complete and true answers (Groenendijk & Stokhof 1984), and therefore always want to choose among mutually exclusive alternatives, would make it easy to formulate how `or not' is recovered in (55c)-(56c).[26]

[26] As Ciardelli et al. (2012: 41) point out, both a Hamblin/Karttunen-style interpretation and a Groenendijk & Stokhof-style interpretation can be expressed in Inquisitive Semantics: the former as ?∃x.φx and the latter as ∀x.?φx. The partition theory encounters the problem of `mention-some' readings, especially if

In sum, "yes/no" questions are compatible with the claim that disjunctions and only disjunctions require a KA-style particle cross-linguistically, mandated by the need to override silent MEET, the default operator on pairs. The fact that polarity questions in the sense of Krifka (2001) only have a rising final intonation in Hungarian, Russian, and other languages need not be seen as a counterexample to the generalization, nor immediately force us to qualify rising intonation as an instance of KA.

3.2.4 Further examples of unary KA?

(62) examplifies unary KA in the domain of questions. The alternative that satisfies the boosting requirement is semantically recovered as the only exclusive alternative to the content of KA's host. The "approximate numeral" construction in (10), repeated below with glosses as (63), is another example of unary KA:

(63)

Schematically	Hungarian
The distance is 100 KA meter.	A távolság van **vagy** száz méter.
`The distance is some 100m'	the distance is or 100 meter
	`The distance is some 100m'

Vagy száz is literally `or 100'. I take it that the disjunction is `100 or another number in the vicinity of 100'. It is difficult to say whether vagy száz amounts to `at least 100' or `around 100, possibly a little less' or maybe it is ambiguous. What interpretations we predict depends on whether száz means `at least 100' or `exactly 100'.

It is striking, though, that while unary MO, i.e. `too' is present in all major syntactic categories, the distribution of unary KA is much narrower. For example, vagy Mari `or Mary' does not exist by itself in Hungarian. But Dutch and Modern Hebrew provide suggestive examples if we cast a wider net for particles. Note that English has some one hundred; Hungarian also offers valami száz `some(thing) 100' in addition to vagy száz `or 100'. (64) was pointed out to me by M. den Dikken, p.c., and (65) by D. Farkas, p.c. with reference to Kagan & Spector (2008).

(64)

Neem	een	Chomsky.	Dutch
take	a	Chomsky	

`Take for example Chomky = Take Chomsky or someone like him'

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they also exist in complements of know, as has been observed by Cremers & Chemla (2014). This problem can be sidestepped if know wh/that is defined as knowing a proposition that constitutes a contextually acceptable answer to the question. That would be consistent with Groenendijk & Stokhof's (1984) claim that `mention-some' is a pragmatic phenomenon, even if it seeps into the semantics.

(65) Kxi eyze tapuax! M. Hebrew
take some apple
`Take an apple or something = Take an apple or some other fruit'

It is remarkable that the complements of een and eyze in these contexts (Chomsky, and tapuax `apple') do not constitute their restrictions. Rather, they serve as orientation points that help define the restrictions, plausibly by disjunction. Therefore the existence of (64) and (65) suggests that the non-existence of vagy Mari is more of an accidental gap than a principled one.

3.2.5 Either... or...[27]

Hungarian, Russian, French, and other unrelated languages exhibit two different disjunction constructions. One has `or' preceding the non-initial disjuncts, typically the last one, as in (66). The other has `or' preceding each disjunct, as in (67). In the second construction the disjuncts seem to be individually exhaustified. (As was shown by Simons (2000), simple exclusive disjunction would not delivere the correct results for more than two disjuncts.)

(66) a. Kati (vagy) Mari vagy Juli
b. Katja (ili) Masha ili Iulia } `K (or) M or J'
c. Catherine (ou) Marie ou Julie

(67) a. vagy Kati vagy Mari vagy Juli
b. ili Katja ili Masha ili Iulija } `only K, or only M, or only J'
c. ou Catherine ou Marie ou Julie

As noted in Section 1.3, the Sinhala and Malayalam iterated KA examples that are in the center of this paper are not of the (67) sort; their meanings are as inclusive as that of plain English `or', cf. (66).

(68) a. Gunəpālə **hari** Chitra **hari** gaməṭə giyā. Sinhala
G or C or to.village went
`G or C went to the village' (Slade 2011: Ch.2, (26))

[27] The investigation reported in this section was prompted by an anonymous reviewer's request for comments on English. Both... and... must be left for another occasion. Notice that both does not force distributivity; see Szabolcsi (2010: 117-121). That is one reason why I translate iterated MO using `as well as'. On English and and or, see Zhang (2014) in a similar spirit. Note that theoretical focus of the present paper is not on English and English-like phenomena in other languages.

b. Mary John-ine-(y)**oo** Bill-ine-(y)**oo** cumbiccu. Malayalam
Mary John-acc-or Bill-acc-or kissed
`Mary kissed John or Bill' (Jayaseelan 2008: (2))

As Amritavalli (2003) discusses in detail, Kannada has both kinds of fully-iterated particle constructions. (69), with chess-**oo** checkers-**oo**, appears to be equivalent to Malayalam (68b). (70), with **illa** chessu, **illa** checkerssu, appears to be equivalent to Hungarian/Russian/French (67).

(69) naanu chess-**oo** checkers-**oo** aaDutta kaala kaLey-utt-id-e. Kannada
I chess DISJ checkers DISJ playing time lose-PROG-PST-AGR
'I used to spend my time playing chess or checkers' (Amritavalli 2003: (18a))

(70) naanu **illa** chessu, **illa** checkerssu aaDutta kaala kaLey-utt-id-e.[28] Kannada
I NEG chess NEG checkers playing time lose-PST-AGR
'I spent my time alternately playing either chess or checkers.'(Amritavalli 2003: (18b))

I will propose that English either... or... serves as a counterpart of both fully-iterated particle constructions.[29]

One part of this claim is fairly straightforward. (68)-(69) correspond to (66), i.e. they represent cases where the iteration of KA on all the disjuncts yields plain-vanilla disjunction. English clearly has constructions in which the presence of either does not make much difference. For example, (71a) and (71b) both have a de Morganic ("conjunctive") meaning: `I don't think that John ate rice and I don't think that John ate beans.'

(71) a. I don't think that John ate rice or beans.
b. I don't think that John ate either rice or beans.

This is already an important conclusion. The efforts to interpret Sinhala and Malayalam disjunctions with KA particles on each junct may turn out to be relevant to English as well.

Interestingly, the presence of either does make a difference when it is attached to TP. Consider:

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[28] Kannada illa (in a sentence-final position) is negation. This fact does not play a role in this section. The case of Kannada serves to illustrate the fact that both types of fully-iterated particle constructions may co-exist in one language.

[29] Jayaseelan (2008) and Slade (2011) point out that according to the Oxford English Dictionary, earlier stages of English had or... or... . The significance of the difference between or... or... and either... or... remains to be investigated.

(72) a. I think that Mary smoked a cigar or John gambled.
b. I don't think that Mary smoked a cigar or John gambled.
OK `I don't think that M smoked a cigar and I don't think that J gambled'

(73) a. I think that either Mary smoked a cigar or (that) John gambled.
b. I don't think that either Mary smoked a cigar or (that) John gambled.
`I don't think that M smoked a cigar and I don't think that J gambled'

If (73b) with sentence-initial either under extra-clausal negation is acceptable at all, it means something like this:

(74) Someone proposed or concluded that either Mary smoked a cigar or (that) John gambled. I disagree with that proposal or conclusion.

Exactly the same unacceptability or special interpretation obtains when Hungarian vagy... vagy..., Russian ili... ili..., and French ou... ou... (see (67)) are placed under extra-clausal negation, and Amritavalli in fact notes that "[D]eclarative-clause disjunction [with illa] in Kannada does not have a conjunctive reading, which appears to be the correct prediction. In English as well, when either appears in initial position with the entire clause in its scope, it seems to me to lack the conjunctive reading: cf. 'Either John plays chess, or he plays checkers.'" (Amritavalli 2003: 9).

Most relevant for present purposes is to point out the existence of two distinct varieties of either... or..., corresponding to two distinct fully-iterated KA constructions in other languages. But we may preliminarily ask what causes the de Morganic problem. Exhaustification of the individual disjuncts does not seem to be the culprit because, clear as it seems in Hungarian, Russian, French, and Kannada, it is merely possible but not nearly as obligatory in English "high either... or...". On the other hand, the English construction shares another feature with its cross-linguistic brothers, namely, that the disjuncts that are mentioned are construed as listing all the possible options. This is clear from cases where the disjuncts are logically incompatible in any case:

(75) a. ?? You are right, or you are wrong.
b. Either you are right, or you are wrong.

(75b) is effectively a statement of the Excluded Middle, and idiomatically it amounts to claiming ignorance. I conjecture that this variety of disjunction has an epistemic or evidential flavor, in addition to possible exhaustification, and that is what causes its de Morganic troubles.

Why the syntactic size of the scope of either... or... is relevant in English remains to be investigated. As the Hungarian/Russian/French/Kannada examples show, in other languages disjunctions with small-size syntactic scope may also be construed as having listed all the possible options.

To summarize, disjunctions with particles on each disjunct come in two flavors. One is by and large synonymous with disjunctions that get by with one particle. The other is semantically distinct. It is construed as listing all the possible options, and in several languages the disjuncts themselves are also clearly exhaustified. English either... or... has both flavors.

(76)

Sinhala / Malayalam / Kannada	Hungarian	English
DP_1 hari DP_2 hari (S) DP_1 oo DP_2 oo (M, K)	XP_1 vagy XP_2	XP_1 or XP_2 either DP_1/VP_1 or DP_2/VP_2
illa DP_1 illa DP_2 (K)	vagy XP_1 vagy XP_2	either TP_1 or TP_2

3.3 The morpho-syntax of J, MO and KA

This section addresses two issues, in a preliminary fashion. Section 3.3.1 argues, based especially on work by Arsenijević and Mitrović, that the co-existence of Junction with MO and KA particles can be detected in morphologically complex connectives in multiple languages. Section 3.3.2 formulates working hypotheses regarding null MO/KA particles.

3.3.1 Complex connectives with J and MO/KA

Recall from (21)-(22), repeated in (77), that one of the iterated MO particles in Hungarian (is, though not mind) co-occurs with the connective `and' that I analyze as Junction:

(77) a. Kati **és** Mari `Kate and Mary' Hungarian
b. Kati **is** Mari **is** `Kate as well as Mary'
c. Kati **is és** Mari **is** `Kate as well as Mary'

Mitrović (2014) and Mitrović & Sauerland (2013) quote a similar alternation from Avar (without commenting on distributivity):

(78) a. keto **va** hve `cat and dog' Avar
b. keto **gi** hve **gi** `cat and dog'
c. keto **gi va** hve **gi** `cat and dog'

The co-occurrence of the three morphemes support the Winter/den Dikken-style analysis. Morphologically complex connectives lend further support to the claim that Junction co-occurs with MO and KA style particles.

Arsenijević (2011) observes that the Serbo-Croatian **disjunction** ili `or' is composed of i `and/also/even' and li `polarity particle'. The same holds for Russian, which I will use for illustration.

(79) a. Ivan **i** Petr
`Ivan and Peter'
b. Tancevala-**li** Masha?
`Did Mary dance?'
c. Ivan **ili** Petr
`Ivan or Peter'
d. **i** Ivan **i** Petr
`Ivan as well as Peter'

Mitrović (2014) and Mitrović & Sauerland (2013) point out copious relevant Indo-European examples. I use Classical Latin for illustration, based on Zumpt (1856). -que is a second-position clitic within its own conjunct. (80a) has -que only in the second conjuct; (80b) in both; in (80c) -que cliticizes to at, forming atque. [30]

(80) a. arma virum**que** cano
`Of arms and the man I sing' (Virgil)
b. me**que** regnum**que** meum gloria honoravisti
`honor upon me and my realm of glory' (Sallust)
c. socii **atque** exterae nationes
`allies and foreign nations' (Cicero)

I assume, in line with the previous sections and with Mitrović (2014), that Latin -que is a MO particle and ac/at represents pair-forming Junction. Departing from Arsenijević (2011), I assume that Serbo-Croatian/Russian i plays both roles, Junction and MO, and in ili, it appears in its Junction role. Li is at least partially similar to Sinhala də and Japanese ka; I take it to be a KA particle. As argued above, the MEET and JOIN operations them-

[30] Thanks to P. Elbourne, who pointed me to http://www.logicmuseum.com/latin/conjunctions.htm, where the examples come from. I refer the reader to this source for discussion of the data. According to Zumpt, iterated -que is used only in poetry, other than by the prose writer Sallust. Unfortunately, I am not aware of literature on the semantic differences between et, single que, and iterated que. Given the large corpora, it should be possible to investigate their meanings.

selves are always silent; note that they are not indicated below. Mitrović proposes that -que and -li attach to J by possibly post-syntactic head-movement from an initial position within the junct to J's right.

(81)	arma	**et**	virum	
	arms	J	man	`arms and [the] man'
(82)	arma-**que**/∅	∅	virum-**que**	
	arms-MO	J	man-MO	`arms and [the] man'
(83)	socii-∅	**at-que**	~~que~~ nationes	
	allies-MO	J-MO	nations-MO	`allies and nations'
(84)	Ivan	**i**	Petr	
	Ivan	J	Peter	`Ivan and Peter'
(85)	Ivan-∅	**i-li**	~~li~~ Petr	
	Ivan-KA	J-KA	Peter-KA	`Ivan or Peter'

The extraordinary interest of the composition of ili is that it contains both i, which serves as Junction in conjunctions, and the KA-particle -li. It offers direct evidence that the same overt J morpheme may occur in both conjunctions and disjunctions.

Why is it so rare to see to see the same J morpheme in disjunctions as in conjunctions? Let me mention some potential factors. For some reason or other, J tends to be phonetically null. Den Dikken (2006) and Jayaseelan (2014) basically stipulate that this is so. The stipulation is too strong, in view of conjunctive (77)-(78) and disjunctive (85), and it requires analyzing and, és, and their counterparts as belonging to the second (last) conjunct, even though they differ from MO particles in that they do not force distributivity. But the nullness of J is definitely a strong tendency that itself calls for an explanation. In any case, suppose that J is null. There are two main possibilities then. One is that the J that occurs in (typical) disjunctions is indeed the same as the one that occurs in (typical) conjunctions -- null in both cases. The other main possibility is that, in languages that appear to have just one, medial particle, the KA of the second (last) disjunct cliticizes to null J, or enters into an agreement relation with null J (see den Dikken 2006, Mitrović 2014, and Jayaseelan 2014), i.e. it determines the spell-out of J in some way. These issues require further thought.

3.3.2 Working hypotheses relating to null MO/KA

The analyses make plain that I hypothesize the following:

(86) Hypothesis: When MO and KA are present, they are present in all the juncts, although it is possible for only the last MO/KA to be overt.

This hypothesis is motivated by my general account, which treats the semantic contributions of MO and KA as identical in all their occurrences (recall Section 1). Each MO/KA particle checks the same partial ordering or entailment relation between its host and the immediately larger context. The discussion of (18) demonstrated that in the case of more than one syntactically represented junct it is critical for the particle to occur on each junct; otherwise the existence of the required relation could not be checked without looking sideways. I am not aware of interpretive facts that contradict (86), but the morpho-syntactic aspects (why non-last MO/KA can fail to be spelled out) obviously require further research.

While hypothesis (86) allows for null allomorphs of MO/KA on non-final juncts, I hypothesize that the presence of MO/KA must not be assumed in the total absence of phonological evidence. This is a reality-check hypothesis and may need to be refined.

(87) Hypothesis: The presence of MO/KA is realized by at least one overt morpheme or suprasegmental element (e.g. tone or contrastive stress).

Szabolcsi & Haddican (2004) point out that English John AND Mary, with stressed AND, is a strictly Boolean, distributive construction, in various respects similar to John as well as Mary and both John and Mary. It does not serve as a subject of collective predication, and it only receives a `not both' interpretation within the scope of negation:

(88) a. # John AND Mary are a good couple.
b. # John AND Mary solved the problem together.

(89) I didn't study math AND physics.
`not both'; #`neither'

One analysis could be that this kind of stress is a MO-particle that cliticizes to the J morpheme and. I do not wish to defend such an analysis here, but (87) is meant to allow for it in principle. However, (87) is meant to not allow for John and Mary are tall to receive its distributive interpretation from segmentally and supersegmentally undetectable MO particles. The distributive interpretation here should come from the predicate, as is generally assumed.

4 Conclusion

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 larger context is interpreted as the meet/join of their host's semantic contribution with something else. They do not perform meet/join themselves. I formalized the semantics using the toolkit of basic Inquisitive Semantics.

In the course of making that argument I 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. Hopefully, they will live together happily ever after.

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