What do quantifier particles do?

Anna Szabolcsi
New York University
3-6-2014

Abstract

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. The interesting part 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.

I dub these 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 unified 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. I formalize the proposal using the toolkit of basic Inquisitive Semantics.

Acknowledgements here.

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 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 VP-**ka**	`Who is VP-ing?'
	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. This paper is an attempt to start answering them.

(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?

1.2 A promising perspective: join and meet

As regards the first question, a beautiful generalization caught the eyes of many linguists working with data of this sort (Gil 2008, Haspelmath 1997, Jayaseelan 2001, 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:[1]

(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), Alonso-Ovalle (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 (say, 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′).[2] See

[1] 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.

[2] 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.

details in Section 3.

(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 reincarnation 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.[3]

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 dis-

[3] 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 of the approach is that KA occurs in the presence of alternatives, lets them project up across island boundaries, and serves, so to speak, to "domesticate alternatives." Especially interesting is Slade's (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 3.

junction.[4] 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, but recall that I am using capitalized KA as a generic representative of the class.

(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 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, 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

[4] Many better-known languages iterate disjunctions with an exhaustifying effect; see Section 2.3.2. 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.).

in Section 2.2.2.

(12) Schematically	Russian
a. (...) Mary danced KA	(...) tancevala-**li** Masha
b. (...) Mary danced or(=KA) not	(...) tancevala Masha i**li** net
c. (...) Mary danced KA or(=KA) not	(...) tancevala-**li** Masha i**li** net
`Did M dance? [(Yes,) she danced]'	`Did M dance? [(Yes,) she danced]'
`whether M danced (or not)'	`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.[5] Beghelli & Stowell (1997) proposed a similar approach to each and every: they signal the presence of a distributive operator, but are not distributive operators themselves. Kusumoto (2005) proposed that past tense morphology on the verb merely contributes a time variable, to be quantified over by the operator PAST that sits much higher in the structure. Horvath (2010, 2012) proposed a heavily mediated relationship between focus accent, the exhaustive operator, and word

[5] But see de Swart and Sag (2001) for the view that the negative concord reading is a product of polyadic (resumptive) quantification applied to multiple genuinely negative quantifiers.

order.

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).[6] Carlson argues that functional elements often present a mismatch in form and interpretation. Multiple elements correspond to one bit of meaning, or an element occurs in a different place than where it is interpreted, or an element does not seem to make the same contribution everywhere it occurs, or an element seems to be meaningless or, conversely, a bit of meaning seems to be contributed by a null element. His examples include the second-position clitic conjunction -que of Latin, past tense marking in English, haplology of postpositions in Japanese, negative concord in Romance, the multiple marking of number in English these horses, dependent plurals, spurious se in Spanish, habitual markers in Hindi counterfactuals that do not indicate habituality, the obligatory presence or absence of the definite article in in prison and on the radio (for particular meanings, in American English), and so on. 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 would be **syntactic requirements**. That is in fact the position taken by Kratzer (2005).[7]

---

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

[7] "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,

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.[8]

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): a test that is 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 traditional 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 further, I will neutrally refer to "requirements", not to pre- or postsuppositions.

---

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.

[8] What is the relation between the syntactic and the semantic approaches here? Should we try to choose between them? Should we simply take them to be matters of taste, different ways of thinking favored by different camps in linguistics? In my experience the viability of both syntactic and semantic approaches is a systematic fact, and I view it as strong support for a natural logic approach to functional meanings and other "shallow semantic features" (Geurts & van der Slik 2005). The fundamental idea of natural logic is that linguistic structures serve as the vehicle of inference. But the present paper will not pursue the connection further (see Szabolcsi 2007).

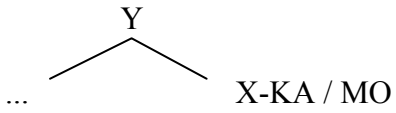
1.6 The proposal in a nutshell and the plan of the detailed discussion

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'. For simplicity, in this paper I will not define "immediately larger" more precisely. I will also pretend that KA and MO always attach to full proposition, but the same effects could be achieved by type-lifting the smaller hosts.

Consider the general constellation (14):

(14)



If KA/MO occurs on more than one "junct," each instance imposes the same requirement on the relation between the interpretation of its host X and the interpretation of the context Y, and the two "juncts" satisfy the requirements of each other's particles.

It is already clear what MO requires:

(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 & Lascarides (1998) and Brasoveanu & Szabolcsi (2013).

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:

(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 proposal using a version of Inquisitive Semantics in Section 3. In the mean time "alternative" should be taken informally, like "boost".

(15)-(16) can be stated succinctly as follows, with [[·]] to be made precise:

(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]]

One can think of (17a,b) as partial ordering relations between semantic values; F. Roelofsen points out that one can also think of them in terms of entailment.

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.

Section 2 focuses on how coordinations work. It argues that the meet and join operations are always silent, and that meet is a semantic default in the interpretation of pairs. Universal quantifiers and polarity vs. alternative questions are discussed in some detail. Issues of morpho-syntax are addressed.

Section 3 reviews some basic notions of Inquisitive Semantics following Ciardelli et al. (2012, 2013), proposes proper definitions for "preserve" and "boost," and briefly indicates the need for the non-informative and non-inquisitive closure operators of Inquisitive Semantics. Section 4 concludes.

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

2.1 Junction, silent MEET, and MO

2.1.1 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) postulated 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. My own implementation of the division of labor will not be identical to Winter's or den Dikken's, and I do not agree with all details of their motivations. 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 sup-

port 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 **pair-forming operator** (•, **bullet**). The pairs grow pointwise in the derivation (much like alternatives project up in Hamblin/Rooth), and at the desired point a phonetically null intersection (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):

(18) a. (R_1) $\dfrac{a \qquad b}{a \bullet b} \qquad \dfrac{\varphi_a \qquad \psi_b}{\langle \varphi_a , \psi_b \rangle}$

b. Interpreting the complex structure using axiom (R_1):
$[[X_1$ *and*/∅ $X_2]] = [[X_1]]\ [[$*and*/∅$]]\ [[X_2]] = [[X_1]]\ [[X_2]] \Rightarrow_{R1} \langle [[X_1]] , [[X_2]] \rangle$
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**.[9] I propose three modifications or enrichments. 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 in **dis**junctions. As mentioned above, den Dikken introduced it for purely syntactic purposes, and analyzed it as a J(unction) head that projects JP. I identify Winter's pair-forming 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

[9] 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.

Winter's bullet, since the members of pairs are ordered.

2.1.2 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**. Its qualification as a default will become critical in my treatment of KA, but it has solid motivation independently of disjunction. All languages employ silent order-sensitive MEET to interpret sequences of sentences as texts -- this is a descriptive fact that all versions of dynamic semantics aim to capture.

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

Moreover, Bumford (2013) shows that the generalized conjunction that defines distributive universal quantifiers must be dynamic. Critical examples involve temporal-order-sensitive adjectives that are only possible within the scope of every and each:

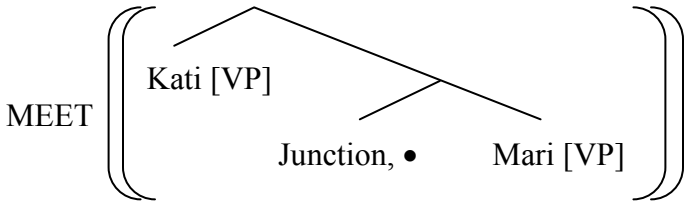
(20) Every year I buy {another / a new / a faster} computer.
Every generation inhabits a more Orwellian world.

Why can the definition of universals avail itself of order-sensitive MEET -- does this have to be stipulated for the sake of examples like (20)? If order-sensitive MEET is the default, then it does not have to be stipulated; a stipulation would be needed if we had to ensure that universals never exhibit internal order-sensitivity. In sum, silence, meety semantics, and order-sensitivity all go together in justifying the default status of this operation.

2.1.3 Spelling out some examples

To spell out what we have so far, compare Hungarian (21) and (22). The word és `and' is optional in both cases (it is more frequent in (21) than in (22)). I analyze és as Junction, the pair-forming bullet, and the interpretation of the pair undergoes silent MEET in both cases. (21) 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).

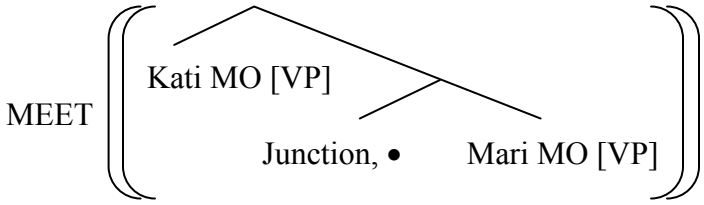
(21) Kati **és** Mari felemelte az asztalt. Hungarian
Kate and Mary up-lifted the table-acc
`Kate and Mary lifted up the table, **individually or together**'



(22) differs from (21) in that both members of the pair bear MO-particles (is). These im-

pose postsuppositional requirements, which effectively means that the conjunction must be interpreted as propositional. This makes the construction irrevocably distributive.[10]

(22) 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 same holds for -um in Malayalam. The analysis effectively attributes their strict distributivity to the presence of MO-style particles. (Japanese and Hungarian have -to and és among the counterparts of English and. I assume that these instantiate J.)

Hungarian groups such distributive expressions 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 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:

(23) 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'

The [[Y]] ⊂ [[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-

[10] 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.

mo, etc.) and enhances it with internal order-sensitivity; see Bumford (2013: 69) below, where *s*, *s′* are variables over stacks. However, Bumford does not divide labor up into pair-formation, MEET, and postsupposition imposing as I do.

(24) every *(ep)(ep)p* $\lambda PQs.\ ;\{\lambda s'.\ Q\ x\ (s' \cdot x) \mid P\ x\ s \neq \varnothing\}\ s,$
where $;\{A_0\ ,\ A_1\ ,\ \ldots\ ,\ A_n\ \} \equiv A_0\ ;\ A_1 ; \ldots ; A_n$

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 (25):

(25) 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.

The above proposal assigns a traditional intersective interpretation to conjunctions. Fine (2013) proposes a fusional interpretation instead. It should be clear that if Fine's approach can be extended to cover all the linguistic data surveyed above (which remains to be investigated), the present proposal should be possible to recast in those terms. Although I am going into some semantic and morphosyntactic detail with the treatment of conjunctions, my proposal is primarily a template for how one can proceed to account for such patterns. The next section applies the template to disjunctions.

2.2 Junction, silent JOIN, and KA

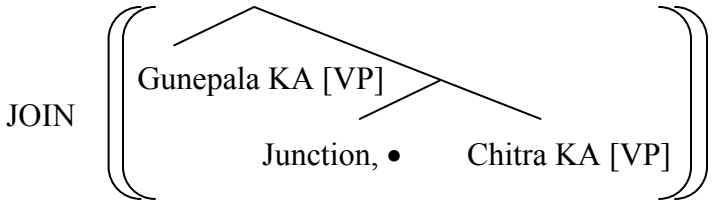
2.2.1 KA bleeds default MEET in applying to pairs

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 pair-forming Junction, and differ only in JOIN vs. MEET. [11] The morpho-syntax of Junction in disjunctions will be discussed fur-

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

ther in Section 2.3.

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



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.

(27) 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]] hold in [[Y]].
c. Elsewhere MEET applies, by default.

The default status of MEET makes **the presence of KA mandatory if the pair is to undergo JOIN**. MO has a similar effect in that it forces MEET, but that is not its mission in life: MEET would apply anyway. The mission of MO is to create distributivity with a parallel flavor.

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 or.

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 a marker of **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 was, an indeterminate pronoun that participates in forming etwas, irgendwas, and so on, can serve as an

---

ments: (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, Bill}. 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.

indefinite pronoun or as a question word, without any overt KA-particle present (Haida 2007). In contrast, KA as the connective OR is not optional, see (30):

(28) Wer MAG **was**? — was unstressed
who likes **what**
`Who likes **something**?'

(29) Wer mag **WAS**? — WAS stressed
who likes **what**
`Who likes **what**?'

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

I assume that in the cases where the KA particle is cross-linguistically not invariably required, JOIN is the default. Semanticists have used existential closure as a structure-building operation without any morpho-syntactic exponent for decades. If there is something to those proposals, JOIN must be available as a default in various contexts.

Indefinite pronouns often do contain dedicated particles (e.g. German **irgend**was `something', Hungarian **vala**mi `something,' etc.) and some languages do use KA-style particles in wh-questions (Japanese ka, Sinhala də, etc.). In some of these cases the particle may indicate that JOIN composes with an additional operator, e.g. in epistemic indefinites. Or, the particle may be present simply because there is nothing wrong with having an exponent when it is not strictly needed.

I will not discuss indefinite pronouns and wh-questions in detail here. There is much to be said about them, but they do not seem to present fundamental puzzles from the perspective of this theory.

2.2.2 Polarity questions and alternative questions/interrogatives

"Yes/no" interrogatives deserve special attention in this context. Sometimes they are segmentally unmarked, at other times they carry KA-particles. I propose that, at least in some languages I am familiar with, there is a principled distinction between the two kinds of cases.

Investigating main clauses, Krifka (2001) distinguishes polarity (not: polar) questions, which may be answered by plain Yes or No, from alternative questions, which require repeating an alternative, possibly accompanied by Yes or No. He differs from Karttunen (1977), who considers polarity questions a subclass of alternative questions. Let us look at Hungarian data; Russian is very similar, recall (12); but not all Slavic languages use their corresponding particles in the same way.

In (31), the uparrow ↑ indicates final rising intonation, and the downarrow ↓ falling, declarative intonation; no intonational distinction exists in complement interrogatives. I consider the -e suffix on the finite verb a KA-particle, although it is etymologically unrelated to vala/vagy. Hogy is the invariant subordinating complementizer.

(31) Main clause question

a.	Alszik? ↑	`Is he asleep?'
b.	Alszik vagy nem?	`Is he asleep or(=KA) not?'
c.	Alszik-e? ↓	`Is he asleep-KA?'
d.	Alszik-e vagy nem?	`Is he asleep-KA or(=KA) not?'

(32) Interrogative complement

a.	*... hogy alszik.	`... lit. that he is asleep'
b.	... hogy alszik vagy nem.	`... lit. that he is asleep or not = whether he is asleep'
c.	... hogy alszik-e.	`... whether he is asleep'
d.	... hogy alszik-e vagy nem.	`... whether he is asleep or not'

Main clausal (31a), which has just final rising intonation ↑, can be readily answered by plain Igen `yes' or Nem `no.' Even clearer than the linguistic answers, (31a) can be answered by nodding or shaking one's head. This leads me to think that it is a polarity question in the sense of Krifka (2001). Such a segmentally unmarked interrogative is not possible as a complement; (32a) is sharply ungrammatical under any interrogative-embedding verb.

Rising intonation in the main clause alternates with both `or not' (31b) and with the KA-particle -e (31c) and, importantly to us, these latter ingredients co-occur in (31d). The same patterns are attested in complements (32b,c,d), and in "tea or coffee" type alternative questions.[12] The main-clause questions (31b,c,d) have a "cornering effect" that Biezma & Rawlins (2012) ascribe to or not questions in English. But no such effect is present in complement questions with (32b,c,d). For example, (33) is entirely natural, and (34) can describe a perfectly respectful (non-cornering) interaction. The same seems true of English whether or not interrogative complements. This indicates that the cornering effect that exists only in main clauses is a discourse-pragmatic one.

(33) Kíváncsi vagyok, hogy { alszik vagy nem / alszik-e / alszik-e vagy nem }.
`I am curious whether he is asleep (or not)'

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

Turning to our central concern, I propose that only Alszik? ↑ is a Krifkean polarity question, and that polarity questions are a main-clause phenomenon, interpreted via the Inquisitive Semantic ? operator (non-informative closure, see Section 3). Final rising in-

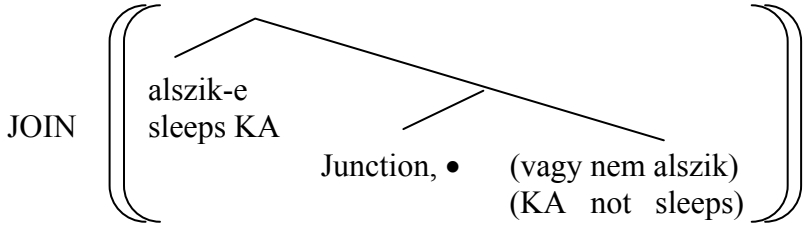
[12] (i) b. ... hogy TEÁT vagy KÁVÉT akar.
c. ... hogy TEÁT akar-e.
d1. ... hogy TEÁT vagy KÁVÉT akar-e.
d2 ... hogy TEÁT akar-e vagy KÁVÉT.
all: `... whether he wants TEA or { COFFEE / the OTHER option }'

tonation ↑ seems like a prosodic exponent of the ? operator.[13]

Now, Inquisitive Semantic ?φ abbreviates φ∨¬φ, and so (31a) is equivalent to (31b). But the polarity question (31a) is compositionally speaking not a disjunction; therefore it does not need to contain a KA-particle (although in principle it could). Recall that my proposal is not, "KA iff disjunction" but, rather, "if disjunction, then KA".

Alternative questions, being true disjunctions, contain either one KA *(*-e or vagy) or two (-e and vagy) in Hungarian. The KA-particle -e requires, as usual, that the contribution of its host be preserved and boosted. In (31b,d)-(32b,d) both alternatives are spelled out. In (31c)-(32c), `does not sleep' is recovered as the only possible exclusive alternative is recovered. Schematically,

(35)



In particular, 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 (31b)-(32b) with vagy nem and (31c)-(32c) 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.

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 (31c)-(32c).[14]

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 some 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.

---

[13] 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."

[14] 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 they also exist in complements of know, as has been observed by Cremers & Chemla (2012). I believe that 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.

2.3 The morpho-syntax of MO and KA

This section addresses three issues, in a preliminary fashion. Section 2.3.1 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 2.3.2 formulates working hypotheses regarding null MO/KA particles. Section 2.3.3 touches on the question of allomorphy, suppletion, and syncretism in particles. Although the answers here are preliminary, it seems to me that the preliminary results are encouraging.

2.3.1 Complex connectives with J and MO/KA

Recall from (21)-(22), repeated in (36), that one of the iterated MO particles in Hungarian (is, though not mind) co-occurs with the connective `and' that I analyze as Junction:

(36)	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 & Sauerland (2013) quote a similar alternation from Avar; the presence of the gi's may make the construction distributive, but the authors do not indicate such nuances:

(37)	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'	

Morphologically complex connectives lend further support to the claim that Junction co-occurs with MO and KA style particles. Mitrović & Sauerland (2013) point out copious Indo-European examples. I illustrate complex **conjunctions** with Classical Latin atque (based on Zumpt 1856):[15]

(38) 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)

Arsenijević (2011) observes that the Serbo-Croatian **disjunction** ili `or' is com-

[15] 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, I suppose that answering this should not be impossible.

posed of i `and/also/even' and li `polarity particle'. The same holds for Russian, which I will use for illustration.

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

I sketch a preliminary analysis; it draws from discussions with M. Mitrović (p.c.) and his (2012, 2013) unpublished work, but I do not think that Mitrović would agree with all the ingredients of my proposal. It definitely differs from Arsenijević's (2011).

Let me assume, in line with the previous sections, that Latin -que is a MO particle and ac/at represents pair-forming Junction. Serbo-Croatian and Russian i plays both roles; 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. Furthermore, as argued above, the MEET and JOIN operations themselves are always silent; note that they are not indicated below.

(40)	arma	**et**	virum	
	arms	J	man	`arms and [the] man'
(41)	arma-**que/∅**	∅	virum-**que**	
	arms-MO	J	man-MO	`arms as well as [the] man (?)'
(42)	socii-∅	**at-que**	nationes-~~que~~	
	allies-MO	J-MO	nations-MO	`allies as well as nations (?)'
(43)	Ivan	**i**	Petr	
	Ivan	J	Peter	`Ivan and Peter'
(44)	Ivan-∅	**i-li**	Petr-~~li~~	
	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 J in conjunctions such as (43), and li, which serves as a question-marker and as a component of indefinite pronouns such as chto-libo. It offers direct evidence that the same overt Junction morpheme may occur in both conjunctions and disjunctions.

2.3.2 Working hypotheses relating to null MO/KA

The analyses make plain that I hypothesize the following:

(45) 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 KA and MO identically in all their occurrences (recall Section 1). I am not aware of interpretive facts that contradict (45).

The morpho-syntactic reasons for non-last particles to be phonetically null are unknown to me. Mitrović & Sauerland (2013) suggest that there is an Indo-European-wide and possibly more general historical change involved, but I cannot determine from the NELS handout that I have access to whether they offer an explanation for the change.

In view of hypothesis (45), when one sees just a medial connective, that may either be overt J (cf. English and, Hungarian és), or it may be a MO or KA particle that originates on the last junct and cliticizes to a null J head, in the manner of the cliticization of -que and -li to overt J heads in (42) and (44). The analysis of Hungarian (1b) may thus be (46); another option will be mentioned at the end of this subsection.

(46) ∅ Kati **∅-vagy** ~~vagy~~ Mari

KA Kati J-KA KA Mari `Kate or Mary'

Hungarian, Russian, French, and other unrelated languages exhibit a construction involving iterated KA particles in a position that is reminiscent of that of `only' in those languages. The disjuncts seem to be individually exhaustified. (As was shown in Simons (2000), simple exclusive disjunction would not work for more than two disjuncts.)

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

B. Slade (p.c.) and K.A. Jayaseelan (p.c.) inform me that the Sinhala and Malayalam iterated KA examples that my general analysis is based on are not of this sort; their meaning is as inclusive as that of plain English `or'. Thus (47) represents a distinct descriptive issue that I will not discuss further here.

While hypothesis (45) 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 absence of any phonological evidence:

(48) 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 A AND B, with stressed AND, is a strictly Boolean, distributive construction, in various respects similar to both A and B and A as well as B. It does not serve as a subject of collective predication and it only gets a `not both' interpretation within the scope of negation:

(49) a. #John AND Mary are a good couple / solved the problem together.
b. I didn't study math AND physics.
`not both'; #`neither'

One analysis could be that stress here is a MO-particle that cliticizes to J. I do not wish to defend such an analysis here, but (48) is meant to allow for it in principle.

(48) is a reality-check hypothesis, and it may need to be refined. For example, it may be preferable to analyze constructions like (46) as ones involving agreement or allomorphy, rather than cliticization (K. A. Jayaseelan, p.c.). That would mean that KA is present but phonetically null, and it determines the shape of J via agreement or allomorph-selection. Effectively, in (46) vagy would be an allomorph of J on that analysis. I am not able to take a final stand at this point, but in the next section I indicate that such questions are the staple of morpho-syntactic theories and our answers should be informed by those theories.

2.3.3 Allomorphy, suppletion, and syncretism in quantifier particles

The reader will recall from (1) and (2) that the joint distribution of Hungarian vala/vagy and etymologically unrelated -e corresponds, roughly, to that of Japanese -ka, and the joint distribution of mind and is corresponds to that of -mo. What shall we make of this kind of cross-linguistic variation?

Cable (2010) considered a similar question in connection with Tlingit, a language in which the joint distribution of gé, sá, khach'u, and gwáa corresponds to that of Japanese ka, and proposed that Japanese presents a case of massive homonymy that syntax and semantics does not have to account for. Slade (2011) showed that the homonymy thesis was not tenable, based on the detailed analyses of four diachronic stages of Sinhala, two of Japanese, and two of Malayalam. Slade himself accounted for the various patterns with reference to syntactic features and differences in epistemic semantics.

Similar issues are under vigorous study in morpho-syntax (e.g. Distributed Morphology and Nanosyntax). Compare, for example, the fact that some languages have distinct forms for the nominative, accusative, genitive, and dative cases, whereas others collapse some or all of these in a cross-linguistically systematic fashion ("syncretism"). Or, the fact that some languages have different forms for the verb `melt' in John melted the butter and in The butter melted.

Accounts of such phenomena often refer to a surface morpheme M as spelling out either some α, or a combination of α plus some β. One might use a similar approach to account for the distinctive distribution of Hungarian vala/vagy. Vala/vagy is not particularly inquisitive. It does not serve as a "question marker" (unlike Jap. ka, Sin. də) and does not exhibit much epistemic uncertainty (unlike Sin. də). For example, the indefinite valami in (50), just as its English translation something, does not require ignorance or curiosity on behalf of the speaker:

(50) **Va**n **vala**mim a számodra.
`I have **some**thing for you'

Vala/vagy also serves as the stem of the existential and possessive verb (unlike the other elements mentioned, but like Sin. hō); see van in the same example (50). It is quite possible that vala/vagy is often satisfied by non-inquisitive join, a composition of the non-inquisitive closure operator (!, see Section 3.1, right below) and the join operator.

An account of the division of labor between mind and is is less straightforward. However, given that their distributions overlap in expressing `A as well as B', I believe that, by transitivity, they support a semantically unified analysis of the roles.

Another outstanding question is raised by the fact in some languages the same morpheme serves as the exponent of J and MO (Russian and Romanian, but not Japanese or Hungarian). This might be an effect of agreement, or of allomorph selection under Late Insertion in Distributed Morphology.

The reader may be anxious to know whether the analyses extend to languages like English that have as distinct items as every, any, both, as well as, too, even, and so on for the various roles of Japanese mo, for example. Because I am not a morpho-syntactician and because the present project is at an initial stage, it is too soon to offer a responsible answer. It should be clear what my wishful thought is.

This paper does not attempt to resolve the variation questions. It is important to see though that they are not particular to this domain of inquiry, and that they could be successfully investigated using the tools of our trade.

3 Formalization using Inquisitive Semantics

3.1 A Pocket Inquisitive Toolkit (InqB)

As was pointed out in 2.1, 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.[16]

[16] The choice-functional approach to KA in Cable (2010) and Slade (2011) belongs to the Alternative Se-

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 (2013a), because they are published and relatively well-known. It is quite possible that other versions, for example Roelofsen (2013b), that divide non-informative content into inquisitive and attentive content, 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.

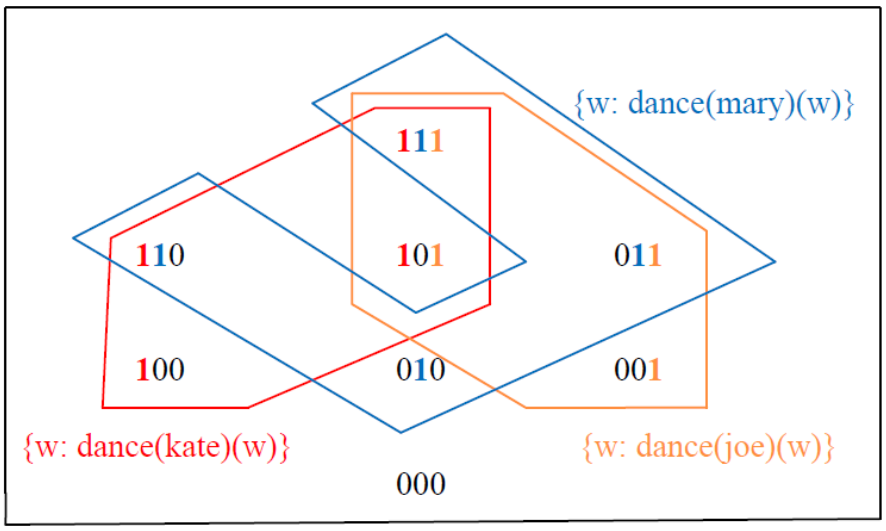
(51) A **proposition** is a non-empty, downward closed set of possibilities.
A **possibility** is a set of worlds.
E.g. $[\phi] = [[\text{Joe dances}]] = \wp\{w: \text{dance}_w(j)\}$ (powerset for downward closure).
The informative content of ϕ, **info(ϕ)** $= \cup[\phi]$.
Meet: $A \cap B$.
Join: $A \cup B$.
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.
ϕ is **inquisitive** iff $\text{info}(\phi) \notin [\phi]$; ϕ has more than one maximal possibility.
An **alternative** is a 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 area contains all the worlds in which Kate dances is true (1xy). [[Kate dances or Mary

---

mantics 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 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 (see (28)-(29) above). 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.

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)}.



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.

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

Now recall the informal requirement (16), repeated as (52):

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

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

(53) If [[Y]] = [[X]] $\cup$ [[Z]], then [[X]]$\angle$[[Y]] holds.
(54) If [[Y]] = [[X]] $\cap$ [[Z]], then [[X]]$\angle$[[Y]] does not hold.
(55) If [[Y]] = (([[X]] $\cup$ [[Z]])*)*, then [[X]]$\angle$[[Y]] holds.
(56) If [[Y]] = (([[X]])*)*, then [[X]]$\angle$[[Y]] does not hold.

(53)-(56) are empirical claims about the contexts that make KA happy.

(53) 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.

(54) 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.

(55) 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. See for example the discussion of vala/vagy in Section 2.3.3 -- recall that in Hungarian, KA is the stem of the existential verb, and at least that occurrence involves both join and non-inquisitive closure. (55) also allows for other non-inquisitive occurrences of KA.

Based on the above three requirements, $[[X]]\angle[[Y]]$ looks like $[[X]] \subset [[Y]]$, where $[[\varphi]]$ 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 (56). Compare (55) and (56). (56) says that if you start out with an expression that is inquisitive, simply subjecting it to non-inquisitive closure -- $!\phi$, interpreted as $([[\phi]]^*)^*$, viz. $\wp(\text{info}(\phi))$ -- does not justify an extra occurrence of the KA morpheme. How do we know? Well, no such rogue KAs have been reported, to my knowledge. For example, emphatic assertion of a disjunction does not merit an extra KA attached to the disjunction from the outside:

(57) (John-KA Mary-KA ran)-KA
`Indeed, John or Mary ran'

But the following holds:[17]

(58) $[[\phi]] \subset (([[\phi]])^*)^*$

This would predict that the non-inquisitive closure 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, see e.g. Szabolcsi (2013). Here I will simply present one 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:

(59) The desired $[[X]]\angle[[Y]]$ is strict inquisitive and informative entailment,
$[[X]] \subset [[Y]]$ plus $\text{info}(X) \subset \text{info}(Y)$.

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

I demonstrate that this definition works well for (53)-(56). In the examples below I

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

only add KA to one of the disjuncts; this suffices for the formal demonstration, since each KA does the same thing, and makes reading easier. 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.

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

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

In both (60) and (61), 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 (62) and (63).

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

In (62), the meet operation is performed on the two juncts. Possibilities are shrinking! ∩ eliminates {m¬k} from [[Mary runs]]. KA is deemed unacceptable.

(63) [[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 (63), 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.

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) and ob (German), and of epistemic might in the declarative domain; see 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.

Finally, let me briefly comment on the fact that InqB makes the closure operators ! and ? available and that they are linguistically useful in the domain investigated here. Recall:

(64) $[?\phi] = [\phi] \cup [\phi]^*$

(65) $[!\phi] = ([[\phi]]^*)^* = \wp(\text{info}(\phi))$

In Section 2.2.2 I proposed that polarity questions in the sense of Krifka (2001) should be interpreted by the non-informative closure operator. The availability of ? is important, because these questions do not contain KA and do not spell out the exclusive alternative. Therefore it would be difficult to compositionally derive them using the same ingredients that alternative questions contain.

The importance of the non-inquisitive closure operator has already been mentioned in connection with the fact that some KA-particles may be quite decidedly non-inquisitive. The fact that Hungarian vala and vagy correspond to the participial and finite stem of the existential and possessive verb is a striking example (etymologies from the *Historical-Etymological Dictionary of Hungarian*). At least when the KA particle serves as the stem of an existential predicate, its contribution is classically Boolean.

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

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.

References

Aloni, M. (2007). Free choice and exhaustification: an account of subtrigging effects. (In E. Puig-Waldmueller (Ed.), *Proceedings of Sinn und Bedeutung 11*. Barcelona: Universitat Pompeu Fabra.)

Alonso-Ovalle, L. (2006). *Disjunction in Alternative Semantics*. Dissertation, UMass, Amherst.

AnderBois, S. (2010). Sluicing as anaphora to issues. (In N. Li & D. Lutz (Eds.), *Semantics and Linguistic Theory* 20 (pp. 451-470) Ithaca: Cornell).

AnderBois, S. (2012). Focus and uninformativity in (Yucatec Maya) questions. *Natural Language Semantics,* 20, 349-390.

Arsenijević, B. (2011). Serbo-Croatian coordinative conjunctions at the syntax-semantics interface. *The Linguistic Review,* 28, 175-206.

Asher, N., & Lascarides, A. (1998). The semantics and pragmatics of presupposition. *Journal of Semantics,* 15, 239-299.

Beck, S. (2006). Intervention effects follow from focus interpretation. *Natural Language Semantics,* 14, 1-56.

Beghelli, F. & Stowell, T. (1997). Distributivity and negation: The syntax of each and every. (In A. Szabolcsi (Ed)., *Ways of Scope Taking* (pp. 349–409). Dordrecht: Kluwer).

Biezma, M. & Rawlins, K. (2012). Responding to alternative and polar questions. *Linguistics & Philosophy,* 35(5), 361-40.

Brasoveanu, A. (2013). Modified numerals as post-suppositions. *Journal of Semantics,* 30(2), 155-209.

Brasoveanu, A. & Szabolcsi, A. (2013). Presuppositional *too*, postsuppositional *too*. (In M. Aloni, M. Franke & F. Roelofsen (Eds.), *The dynamic, inquisitive, and visionary life of ϕ, ?ϕ, and ◊ϕ. A festschrift for Jeroen Groenendijk, Martin Stokhof, and Frank Veltman.*) http://www.illc.uva.nl/Festschrift-JMF/ .

Brody, M. (1990). Remarks on the order of elements in the Hungarian focus field. (In I. Kenesei (Ed.), Approaches to Hungarian 3 (pp. 95-123). Szeged: JATE).

Bumford, D. (2013). Universal quantification as iterated dynamic conjunction. (In M. Aloni, M. Franke & F. Roelofsen (Eds.), *19th Amsterdam Colloquium Proceedings*.) http://staff.science.uva.nl/~maloni/AC2013/AC_proceedings.pdf .

Cable, S. (2010). *The Grammar of Q. Q-particles, Wh-movement, and Pied Piping*. (Oxford: Oxford University Press).

Carlson, G. (1983). Marking constituents. (In F. Heny & M. Richards (Eds.), *Linguistic Categories: Auxiliaries and Related Puzzles I* (pp. 69-98). Dordrecht: Reidel).

Carlson, G. (2006). `Mismatches' of form and interpretation. (In V. van Geenhoven (Ed.), *Semantics in Acquistion* (pp. 19-36). Berlin: de Gruyter).

Champollion, L. (2013). Man and woman: the last obstacle for Boolean conjunction. (In M. Aloni, M. Franke & F. Roelofsen (Eds.), *19th Amsterdam Colloquium Proceedings*.) http://staff.science.uva.nl/~maloni/AC2013/AC_proceedings.pdf .

Chemla, E. & Schlenker, P. (2012). Incremental vs. symmetric accounts of presupposition projection: an experimental approach. *Natural Language Semantics,* 20, 177-226.

Ciardelli, I., Groenendijk, J. & Roelofsen, F. (2010). Information, issues and attention. July 5, 2010 version. http://www.illc.uva.nl/inquisitive-semantics .

Ciardelli, I., Groenendijk, J. & Roelofsen, F. (2012). Inquisitive Semantics. NASSLLI 2012 Lecture Notes. https://sites.google.com/site/inquisitivesemantics/courses/nasslli-2012.

Ciardelli, I., Groenendijk, J. & Roelofsen, F. (2013). Inquisitive Semantics: A new notion of meaning. *Language and Linguistics Compass,* 7/9, 459–476.

Cremers, A. & Chemla, E. (2012). The semantics of embedded questions. Ms., ENS, CNRS, EHESS.

Dekker, P. (2012). *Dynamic Semantics*. (Dordrecht: Springer).

den Dikken, M. (2006). *Either*-float and the syntax of co-*or*-dination. *Natural Language and Linguistic Theory,* 24, 689-749.

de Swart, H. & Sag, I. A. (2002). Negation and negative concord in Romance. *Linguistics and Philosophy,* 25, 373-417.

Farkas, D. (2010). The grammar of polarity particles in Romanian. (In *Edges, heads, and projections: Interface properties* (pp. 87-124).)

Farkas, D. & Bruce, K. (2010). On reacting to assertions and polar questions. *Journal of Semantics,* 27, 81-118.

Fine, K. (2012). *A Theory of Truth-conditional Content I: Conjunction, Disjunction and Negation*. Ms., New York University.

Geurts, B. & van der Slik, F. (2005). Monotonicity and processing load. *Journal of Semantics,* 22, 97-117.

Gärtner, H-M. & Gyuris, B. (2012). Pragmatic markers in Hungarian: Some introductory remarks. *Acta Linguistica Hungarica,* 59, 387-426.

Gil, D. (2008). Conjunctions and universal quantifiers. In The World Atlas of Language Structures Online. http://wals.info/feature/description/56.

Greenberg, J. (1964). Some universals of grammar with particular reference to the order of meaningful elements. (In J. H. Greenberg (Ed.), *Universals of Grammar*, 2nd edition (pp. 73-113). Cambridge, Mass: MIT Press).

Groenendijk, J. & Stokhof, M. (1984). *The Semantics of Questions and the Pragmatics of Answers*. Dissertation, University of Amsterdam.

Hagstrom, P. (1998). *Decomposing Questions*. Dissertation, MIT.

Haida, A. (2007). *The Indefiniteness and Focusing of Wh-Words*. Dissertation, Humboldt University, Berlin.

Heim, I. (2011). Definiteness and indefiniteness. (In K. von Heusinger, C. Maienborn & P. Portner (Eds.), *Semantics*: *An International Handbook of Meaning*. (pp. 996–1025). Berlin: de Gruyter).

Hamblin, C. L. (1973). Questions in Montague English. *Foundations of Language,* 10, 41–53.

Haspelmath, M. (1997). *Indefinite Pronouns.* (Oxford: Clarendon Press).

Horvath, J. (2010). "Discourse-features", syntactic displacement and the status of contrast. *Lingua,* 120, 1346-1369.

Horvath, J. (2012). On focus, exhaustivity and wh-interrogatives: The case of Hungarian. (In J. Brandtler, V. Molnár, & C. Platzack (Eds). *Approaches to Hungarian 13* (pp. 97-133). Amsterdam: John Benjamins).

Hurford, J. (1974). Exclusive or inclusive disjunction. *Foundations of Language,* 11, 409–411.
Jayaseelan, K.A. (2001). Questions and question-word incorporating quantifiers in Malayalam. *Syntax*, 4, 63-83.
Jayaseelan, K.A. (2011). Comparative morphology of quantifiers. *Lingua*, 121, 269-286.
Karttunen, L. (1977). The syntax and semantics of questions. *Linguistics and Philosophy,* 1, 1-44.
Katzir, R. (2011). Morphosemantic mismatches, structural economy, and licensing. *Linguistic Inquiry,* 42, 48-82.
Kiss, K. É. (2002). *The Syntax of Hungarian*. (Cambridge: Cambridge University Press).
Kobuchi-Philip, M. (2009). Japanese MO: universal, additive and NPI. *Journal of Cognitive Science,* 10, 172–194 and http://semanticsarchive.net/Archive/mIxZDk0N/.
Kratzer, A. (2005). Indefinites and the operators they depend on: From Japanese to Salish. (In G. N. Carlson & F.J. Pelletier, eds., *Reference and Quantification: The Partee Effect* (pp. 113-142.) Stanford: CSLI Publications.)
Kratzer, A. & Shimoyama, J. (2002). Indeterminate pronouns: the view from Janese. *Proceedings of Third Tokyo Conference in Psycholinguistics* and http://semanticsarchive.net/
Krifka, M. (2001). For a structured meaning account of questions and answers. (In C. Féry & W. Sternefeld (eds.), *Audiatur Vox Sapientia. A Festschrift for Arnim von Stechow* (pp. 287-319). Berlin: Akademie Verlag = Studia Grammatica 52)
Kuroda, S-Y. (1965). *Generative Grammatical Studies in the Japanese Language*. Dissertation, MIT.
Kusumoto, K. (2005). On the quantification over times in natural language. *Natural Language Semantics,* 13, 317-357.
Ladusaw, W. (1992). Expressing negation. In *Semantics and Linguistic Theory (SALT) 2*: 236-259.
Landman, F. (1991). *Structures for Semantics*. (Dordrecht: Kluwer.)
Mitrović, M. (2012). Configurational change in Indo-European coordinate construction. http://mitrovic.co/ .
Mitrović, M. (2013). The composition of logical constants. http://mitrovic.co/ .
Mitrović, M. & Sauerland, U. (2013). Decomposing coordination. NELS 44 handout.
Roelofsen, F. (2013a). Algebraic foundations for the semantic treatment of inquisitive content *Synthese*. http://sites.google.com/site/inquisitivesemantics/.
Roelofsen, F. (2013b). A bare bone attentive semantics for *might.* (In M. Aloni, M. Franke & F. Roelofsen (Eds.), *The dynamic, inquisitive, and visionary life of ϕ, ?ϕ, and ◊ϕ. A festschrift for Jeroen Groenendijk, Martin Stokhof, and Frank Veltman*.) http://www.illc.uva.nl/Festschrift-JMF/ .
Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics,* 1, 75–116.
Shimoyama, J. (2006). Indeterminate phrase quantification in Japanese. *Natural Language Semantics*, 14, 139-173.
Simons, M. (2000). *Issues in the Semantics and Pragmatics of Disjunction*. (New York: Garland).
Slade, B. (2011). *Formal and Philological Inquiries Into the Nature of Interrogatives,*

Indefinites, Disjunction, and Focus in Sinhala and Other Languages. Dissertation, University of Illinois. http://semanticsarchive.net/Archive/TdhYTM3Y/ .

Szabolcsi, A. (1997a). Background notions in lattice theory and generalized quantifiers. (In A. Szabolcsi (Ed.), *Ways of Scope Taking* (pp. 1-29). Dordrecht: Kluwer).

Szabolcsi, A. (1997b). Strategies for scope taking. (In A. Szabolcsi (Ed.), *Ways of Scope Taking* (pp. 109-155). Dordrecht: Kluwer).

Szabolcsi, A. (2007). Questions about proof theory vis-a-vis natural language semantics. Ms., New York University. http://semanticsarchive.net/Archive/Dk1MTNkO/ .

Szabolcsi, A. (2010). *Quantification*. (Cambridge: Cambridge University Press).

Szabolcsi, A. (2012). Compositionality without word boundaries: *(the) more* and *(the) most*. (In A. Chereches (Ed.), *Proceedings of Semantics and Linguistic Theory 22* (pp. 1–25). http://elanguage.net/journals/salt/article/view/22.1) .

Szabolcsi, A. (2013). Quantifier particles and compositionality. (In M. Aloni, M. Franke & F. Roelofsen (Eds.), *19th Amsterdam Colloquium Proceedings)*. http://staff.science.uva.nl/~maloni/AC2013/AC_proceedings.pdf

Szabolcsi, A. & Haddican, B. (2004). Conjunction meets negation: A study in cross-linguistic variation. *Journal of Semantics,* 21, 219-249.

Szabolcsi, A., Whang, J.D., & Zu, V. (2014). Quantifier words and their multi-functional(?) parts. *Language and Linguistics, 15/1, 115-155*. from http://www.ling.sinica.edu.tw/files/publication/j2014_1__6501.pdf .

Winter, Y. (1995). Syntcategorematic conjunction and structured meaning. *Semantics and Linguistic Theory (SALT) 5*, http://elanguage.net/journals/salt/article/view/5.387

Winter, Y. (1998). *Flexible Boolean Semantics: Coordination, Plurality and Scope in Natural Language*. Dissertation, Utrecht University.

Winter, Y. (2001). *Flexibility Principles in Boolean Semantics*. (Cambridge: MIT Press).

Yatsushiro, K. (2009). The distribution of quantificational suffixes in Japanese. *Natural Language Semantics,* 17, 141–173.

Zumpt, K. G. (1856). *A Grammar of the Latin Language.* Harper & Brothers. See http://www.logicmuseum.com/latin/conjunctions.htm.