Interesting interrogatives[1]

Maayan ABENINA-ADAR — *University of California, Los Angeles*

Abstract. The stem *interest* has two syntactic variants that occur with both declarative and interrogative subordinate clauses. The presuppositions that such constructions carry are difficult to explain under predominant theories of how similar predicates semantically compose with subordinate clauses. I offer a new analysis, which puts together some ideas already found in this literature – in particular, the idea that certain interrogative clauses semantically encode (something like) the illocutionary force of asking and the idea that experiencer predicates (such as *interest*) are associated with acquaintance inferences.

Keywords: emotive-factives, interrogatives, questions, facts, neo-davidsonian semantics.

1. Introduction

Predicates that syntactically combine with both declarative and interrogative clauses, like *know*, are called 'responsive'; they raise a question about semantic composition. The question stems from the fact that such predicates do not appear to be ambiguous between one meaning that composes with interrogative-denotations and another meaning that composes with declarative-denotations.

One piece of evidence against an ambiguity between two such denotation is the cross-linguistic robustness of responsive predicates' subordination patterns. In many languages, there is an predicate that 'feels like' English *know* that productively combines with both declaratives and interrogatives. This is not to be taken for granted. For example, it is not the case that in many languages, there is a predicate that 'feels like' English *know* that productively combines with both DPs and clauses as English *know* does. Spanish distinguishes *saber* from *conocer*, Hebrew distinguishes *leda'at* from *lehakir* (both, roughly: 'know' vs. 'be acquainted with'), etc.

Another piece of evidence for responsive predicates' unambiguousness is gapping. Gapping – as in the second conjunct of *Sue is eating candy, and Mary, chips* – is subject to identity constraints. This example can only mean Mary is eating chips. As discussed in Sennet (2016), gapping with a word like *run* leads to oddness (or as he calls it, a judgment of 'shenanigans') in a description of the scenario in (1), (1a); (1b) without gapping is not odd in the same way (though there may nonetheless be better ways to describe the given scenario).

(1) *William tried to be the head organizer of the Boston marathon, and Brooke tried to participate in the NYC marathon as runner (and did not try to be the head organizer of the NYC marathon).*
   a. #William tried to run the Boston marathon, and Brooke, the NYC marathon
   b. William tried to run the Boston marathon, and Brooke tried to run the NYC marathon

The fact that gapping in (2a) is not odd (Uegaki, 2019) suggests that the relation between interrogative-taking *know* and declarative-taking *know* is not the same as the relation between *run* in the sense of 'be the head organizer' and *run* in the sense of 'move at a pace faster than walking'. Gapping with DP-taking *know* and clause-taking *know* is odd, as expected, (2b).

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(2) a. Mary knows that Bill left, and John, whether Sue will leave
b. #Mary knows Bill, and John, {that, whether} Sue will leave

Predominant semantic theories of clausal subordination, based on Hintikka (1969), Hamblin (1973), and Karttunen (1977), typically make the following two assumptions: (i) predicates like *know* denote functions that take clausal denotations as arguments, and (ii) interrogatives and declaratives have different semantic types. The evidence for *know*'s unambiguousness raises the following question: how does an umambiguous predicate semantically compose with clausal denotations of different types?

A variety of answers to this question have emerged from works that address other issues in the semantics of clausal subordination. The purpose of this paper is to present a new paradigm that resists explanation by these answers. It involves two syntactic variants of the emotive-factive predicate *interest*, *interesting*$_1$ and *interests*$_2$. The basic empirical pattern, shown in (3a-d), is that while both *interesting*$_1$ and *interests*$_2$ presuppose declarative knowledge, (3a-b), *interesting*$_1$ presupposes interrogative knowledge while *interests*$_2$ does not, (3c-d).

(3) a. It is interesting$_1$ to me that I'll receive a kite for my birthday
Presupposes: I know that I'll receive a kite for my birthday
b. It interests$_2$ me that I'll receive a kite for my birthday
Presupposes: I know that I'll receive a kite for my birthday
c. It is interesting$_1$ to me what present I'll receive for my birthday
Presupposes: I know what present I'll receive for my birthday
d. It interests$_2$ me what present I'll receive for my birthday
Does not presuppose: I know what present I'll receive for my birthday

This perspective on the data is supported by contextual acceptability judgments. (3a)-(3b) are acceptable in contexts where the experiencer has declarative knowledge and are unacceptable in contexts where the experiencer lacks it, (4)-(5).

(4) *I (know that I) will receive a kite for my birthday, and...*
✓(3a), ✓(3b)

(5) *I don't know what present I will receive for my birthday, and...*
#(3a), #(3b)

In a context where the experiencer has interrogative knowledge, as in (6), (3c)-(3d) are both acceptable. But when the context is modified so that the experiencer lacks interrogative knowledge, as in (7), (3c) with *interesting*$_1$ becomes unacceptable whereas (3d) with *interests*$_2$ remains acceptable.[2]

[2](i)-(iii) round out the picture. (i) shows that the contrasts in presuppositions is about the experiencer's knowledge, not necessarily the speaker's. (ii)-(iii) show that knowledge implications survive negation and polar questioning, confirming their status as presuppositions.

(i) a. It is interesting to Sue what present I'll receive for my birthday
Presupposes: Sue knows what present I'll receive for my birthday
b. It interests Sue what present I'll receive for my birthday
Does not presuppose: Sue knows what present I'll receive for my birthday

(ii) a. Is it interesting to Sue what present I'll receive for my birthday?
b. It isn't (particularly) interesting to Sue what present I'll receive for my birthday
Both presuppose: Sue knows what present I'll receive for my birthday

(6) *I know what present I will receive for my birthday, and . . .*
✓(3c), ✓(3d)

(7) *I don't know what present I will receive for my birthday, and . . .*
#(3c), ✓(3d)

2. The puzzle

These judgments are not straightforwardly explained by the two predominant approaches to how responsive predicates compose with declaratives and interrogatives. I adopt terminology from George (2011), Uegaki (2015), Elliott et al. (2017), among others, and call these two approaches 'reductive' and 'uniform'.

2.1. The reductive approach

Theories within the reductive approach take for granted that declaratives and interrogative have different semantic types. One standard view is that declaratives denote propositions whereas interrogatives denote intensions of sets of propositions that count as possible answers (e.g. Hintikka, 1969; Hamblin, 1973). Sample clausal denotations are given in (8a-b); I assume that propositions are functions from situations to truth values[3].

(8) a. $[\![\text{that I will get a kite}]\!] = [\lambda s'.\ \mathsf{I\ will\ get\ a\ kite\ in}\ s']$
b. $[\![\text{what present I will get}]\!] = \lambda s.\ \{[\lambda s'.\ \mathsf{I\ will\ get}\ x\ \mathsf{in}\ s'] : x\ \mathsf{is\ a\ present\ in}\ s\}$

Under the reductive approach, responsive predicates select for declarative denotations, (9a); In this respect, they differ from interrogative-only predicates like *wonder*, (9b) (e.g. Lahiri, 2002).

(9) a. $[\![\text{know}]\!] = \lambda p_{st}.\ \lambda x.\ \lambda s : p(s) = 1.\ \mathsf{Know}(x, p, s)$
b. $[\![\text{wonder}]\!] = \lambda Q_{\langle s,\langle st,t\rangle\rangle}.\ \lambda x.\ \lambda s.\ \mathsf{Wonder}(x, Q, s)$

What theories that are classified as reductive have in common is that they propose some grammatical means to provide a responsive predicate with a proposition-type argument in subordinate interrogative constructions. One implementation (among others Heim, 1994; Dayal, 1996; Beck and Rullmann, 1999) assumes an answerhood operator, ANS, which shifts an interrogative-denotation to its answer (the most informative among the true propositions in the set of possible answers, defined only if there is one). [4] Sample declarative and interrogative constructions with the responsive predicate *know* are in (11a-b). $\rightarrow$ represents material implication and $\Rightarrow$ represents generalized entailment (e.g. von Fintel, 1999).

(10) $[\![\text{ANS}]\!] = \lambda s.\ \lambda Q_{\langle s,\langle st,t\rangle\rangle} : \exists p_{st} \in Q(s)[p(s) = 1 \wedge \forall q \in Q(s)[q(s) = 1 \rightarrow p \Rightarrow q]].$

(iii) a. Is it interesting to Sue that I'll receive a kite for my birthday?
b. Does it interest Sue that I'll receive a kite for my birthday?
c. It isn't (particularly) interesting to Sue that I'll receive a kite for my birthday
d. It doesn't (particularly) interest Sue that I'll receive a kite for my birthday
All presuppose: Sue knows that I'll receive a kite for my birthday

[3] I take a situation to be a proper or improper spatiotemporal part of a possible world (as in (among others) Kratzer, 1989, 2019). Throughout, @ is an object- and meta-language symbol for the topic situation under discussion. I assume the compositional system and λ-function notation in Heim and Kratzer (1998).

[4] Other implementations differ in what grammatical mechanism they propose (e.g. QR in Lahiri 2002, meaning postulates in Karttunen 1977, Spector and Egré 2015). The same issues arise as with ANS.

$$\iota p_{st} \in Q(s)[p(s) = 1 \wedge \forall q \in Q(s)[q(s) = 1 \rightarrow p \Rightarrow q]]$$

(11) a. [Sue [knows [that I will get a kite]]]
b. [Sue [knows [ANS-@ [what present I will get]]]]

Extending this approach to the analysis of *interesting*$_1$ and *interests*$_2$, we might assign the predicates the general proposition-selecting meanings in (12a-b). Their partiality is motivated by the fact that both variants presuppose knowledge with declarative clauses.

(12) a. $[\![\text{interesting}_1]\!] = \lambda p_{st}.\lambda x.\lambda s : \mathsf{Know}(x,p,s).\mathsf{Int}_1(x,p,s)$
b. $[\![\text{interests}_2]\!] = \lambda p_{st}.\lambda x.\lambda s. : \mathsf{Know}(x,p,s).\mathsf{Int}_2(x,p,s)$

This proposal incorrectly derives interrogative knowledge presuppositions with *interests*$_2$ as it correctly does with *interesting*$_1$. The relevant LFs are in (13a-b).

(13) It {is interesting$_1$ to me, interests$_2$ me} what present I'll receive for my birthday
a. [interesting$_1$ [ANS-@ [what present I'll receive for my birthday]] to me]
b. [interests$_2$ [ANS-@ [what present I'll receive for my birthday]] me]
Both presuppose: I know what present I'll receive for my birthday

To avoid incorrect predictions, a reductive account could posit that *interests*$_2$ is ambiguous between a proposition-selecting entry like (12b) and a question-selecting entry like (14a) and that both can be used in subordinate interrogative constructions. This would mean that *interests*$_2$'s subordinate interrogative constructions are structurally ambiguous between an LF as in (13b) that presupposes knowledge and an LF as in (14b) that does not.

(14) a. $[\![\text{interests}_{2'}]\!] = \lambda Q_{\langle s,\langle st,t\rangle\rangle}.\ \lambda x.\ \lambda s.\ \mathsf{Int2'}(x,Q,s)$
b. [interests$_{2'}$ [what present I'll receive for my birthday] me]

While an ambiguity analysis captures the constructions' knowledge presuppositions in isolation, it is not supported by ambiguity tests like gapping. The gapping example in (15) is acceptable in a context where Sue lacks interrogative knowledge and Mary has declarative knowledge. Under an ambiguity story, this is surprising. The identity constraints associated with gapping are expected to enforce the use of (12b) in both clauses, producing a reading that presupposes that Sue has interrogative knowledge and Mary has declarative knowledge.

(15) *Sue doesn't know what present she'll receive for her birthday. Meanwhile, Mary knows that Sue won't be receiving a kite. Thus...*
It interests Sue what present she'll receive for her birthday, and Mary, that it won't be a kite

2.2. The uniform approach

The uniform approach explains responsive predicates' flexibility by assigning interrogatives and declaratives the same semantic type and having responsive predicates select for that type. In Groenendijk and Stokhof (1984), both clause types denote intensions of propositions. More recently, in an explicit discussion about compositionality, Elliott et al. (2017) propose that declaratives and interrogatives both denote sets of propositions (see also Theiler et al. (2018) and references therein); in particular, declaratives denote singletons containing their usual Hintikka-proposition and interrogatives denote (intensions of) Hamblin sets, as in (16a-b).

(16) a. $[\![$that I will get a kite$]\!] = \{[\lambda s'.$ I will get a kite in $s']\}$
b. $[\![$what present I will get$]\!] = \lambda s.\ \{[\lambda s'.$ I will get x in $s'] : x$ is a present in $s\}$

Under this theory, responsive predicates can be assigned denotations that do not predict interrogative knowledge based on declarative knowledge; the predicates 'access' an unadulterated interrogative-denotation.

(17a-b) are extensions of this approach to *interests*$_2$ and *interesting*$_1$ (*interest*$_2$ is inspired by the analysis of *care* in Elliott et al. (2017)). The two predicates differ in their presuppositions. Suppose the meta-language relation Know takes proposition arguments, and having clausal knowledge means standing in the Know-relation to at least one member of the clause's set denotation. Given a singleton proposition set (i.e. a declarative denotation), both (17a-b) produce a knowledge presupposition, but given a non-singleton (i.e. an interrogative denotation), interrogative knowledge can be inferred from (17a) but not (17b). The relevant LFs are in (18a-b)

(17) a. $[\![\text{interesting}_1]\!] = \lambda Q_{\langle st,t\rangle}.\ \lambda x.\ \lambda s : \exists p \in Q[\mathsf{Know}(x,p,s)].\mathsf{Int}(x,Q,s)$
b. $[\![\text{interests}_2]\!] = \lambda Q_{\langle st,t\rangle}.\ \lambda x.\ \lambda s : \mathsf{Know}(x,[\lambda s'\ .\exists p \in Q[p(s') = 1],s).\mathsf{Int}(x,Q,s)$

(18) It {is interesting to me, interests me} what present I'll receive for my birthday
a. [interesting$_1$ [[what present I'll receive for my birthday]-@] to me]
Presupposes: I know what present I'll receive for my birthday (i.e. there is at least one possible answer that I know)
b. [interests$_2$ [[what present I'll receive for my birthday]-@] me]
Presupposes: I know that I'll receive a present for my birthday (i.e. I know that there is at least one true possible answer)

This uniform analysis runs afoul of further ambiguity tests. *Interesting*$_1$ and *interests*$_2$ can occur with individual-denoting expressions[5], as in (19a-b).

(19) a. Bill's clothing interests me
b. Bill's clothing is interesting to me

Ellipsis data like (20a-b) suggest that one lexical entry is used in clause- and individual-taking constructions. This is somewhat at odds with this sketch of a uniform analysis, which treats such predicates as intrinsically selecting for clausal denotations and encoding rather detailed presuppositions about what to do with those denotations.

(20) a. That Bill cuts his own hair interests me, and his clothing does too
b. That Bill cuts his own hair is interesting, and his clothing is too

2.3. Towards an analysis

Straightforward extensions of existing theories do not readily explain the knowledge inferences and ambiguity test results that we observe with *interesting*$_1$ and *interests*$_2$. This investigation has shown that a theory that captures i.-iii. is needed.

i. Responsive predicates compose with interrogatives in a way that does not necessarily produce interrogative knowledge on the basis of declarative knowledge

[5] *Bill's clothing*, unlike, e.g., *Bill's height*, does not appear to license a concealed question reading.

ii. *Interesting*$_1$ and *interests*$_2$ have an entry that is uniformly used across the various constructions they occur in

iii. Knowledge is presuppositional and is obligatory with declaratives and with *interesting*$_1$'s interrogatives

3. Proposal

The basic theoretical intuition I pursue (with non-technical uses of the terms 'question' and 'answer') is that when *interesting*$_1$ occurs with an interrogative clause, what is 'interesting' is the interrogative's answer. In contrast, when *interests*$_2$ occurs with an interrogative clause, what 'interests' can be either the answer or the question itself.

Because both predicates are experiencer predicates, they license acquaintance inferences; these are inferences that the experiencer has the prerequisite perceptual experience of the stimulus to evaluate whether it has the property associated with the predicate. For example, we generally infer from (21a-b) that Mary has tasted the cake, and we generally infer from (22a-d) that Mary has the relevant perceptual experience of Bill's clothing.

(21) a. The cake is tasty to Mary
b. The cake isn't tasty to Mary

(22) a. Bill's clothing is interesting to Mary
b. Bill's clothing isn't interesting to Mary
c. Bill's clothing interests Mary
d. Bill's clothing doesn't interest Mary

I propose that as a result of acquaintance, we can infer from *interesting*$_1$ with an interrogative clause that the experiencer has knowledge of the answer (which is what *know* with an interrogative clause means). In contrast, the possibility of a question reading for an interrogative with *interests*$_2$ renders interrogative knowledge inferences invalid; being acquainted with a question does not guarantee knowing its answer.

Under standard assumptions, where questions are simply sets of answers, this theoretical intuition is difficult to express coherently. To spell it out, I draw on works that have proposed that the illocutionary force of asking is sometimes part of the grammatically-determined meaning of an interrogative clause (among others Krifka, 1999, 2001; Sauerland and Yatsushiro, 2017). I call this richer meaning of an interrogative, which arises with *interests*$_2$ but not with *interesting*$_1$, an 'inquiry'. I continue to use the term 'question' for a set of possible answers and 'answer' for a member of this set (or the maximally informative among the true members of this set).

3.1. Neo-Davidsonian attitude semantics

Recent semantic work on subordinate clauses, inspired by Neo-Davidsonian event semantics, proposes that predicates and clauses denote properties of events and compose intersectively, as sketched in (23) (for motivation see among others Kratzer, 2006; Moulton, 2009; Moltmann, 2013; Bogal-Allbritten, 2016).

(23) $\exists e[[\![\text{clause-taking verb}]\!](e, @) \wedge [\![\text{clause}]\!](e, @) \wedge \ldots]$

Furthermore, it has been proposed that subordinate clauses can serve several kinds of thematic event-roles: (i) they may specify the propositional content of the event or of one of its participants (among others Kratzer, 2006; Moulton, 2009; Moltmann, 2013; Bogal-Allbritten, 2016), or (ii) they may specify the cause of the event (Hartman, 2012). According to the diagnostics in Hartman (2012) (based on Pesetsky, 1995), *interest* is a causative predicate.[6] To flesh out the semantic proposal in Hartman (2012), I assume that clauses with causative predicates like *interesting*$_1$ or *interests*$_2$ contribute that the cause of the event is a Kratzerian 'fact' (Kratzer, 1989, 2012, 2019). According to Kratzer, a fact is defined as a situation (i.e. a part of a possible world) that exemplifies a proposition (i.e. contains all and only the parts of the possible world necessary to make the proposition true). The definition of exemplification is in (24).

(24) For any situation s and proposition p:
$\mathsf{Exemplify}(s,p)$ iff $[\exists s' \sqsubseteq s[p(s')=0]] \rightarrow [p(s)=1 \wedge \neg\exists s' \sqsubset s[p(s')=1]]$
(p is true in s and all of its parts, or p is true in s and in none of its proper parts)

(25) gives the truth conditional meaning for a declarative construction with *interesting*$_1$ that I will aim to derive. Note that it does not yet capture declarative knowledge, which will be introduced as part of the sentence's presuppositional meaning.[7]

(25) a. It is interesting to me that I will receive a kite
b. When defined, $[\![(25a)]\!](@)=1$ iff $\exists e[\ \mathsf{Interest}(e,@) \wedge\ \mathsf{Cause}(e,@) =$
$\iota s' \sqsubseteq @[\mathsf{Exemplify}(s',[\lambda s''.\ \text{I will receive a kite in } s''])] \wedge \mathsf{Exp}(e,@)=\mathsf{Me}]$
'There was an event of interest caused by the fact (exemplifying the proposition) that I will receive a kite and it was experienced by me'

3.2. Denotations and getting knowledge

I propose to account for knowledge inferences with *interesting*$_1$ and *interests*$_2$, when they arise, as acquaintance inferences that are observed more generally with subjective experiencer predicates, such as *tasty*, *fun*, and *seem*. How exactly these inferences should be accounted for is a complex question (see Ninan (2014), Anand and Korotkova (2018) for discussion). For simplicity, I assume (inspired, among others, by Pearson, 2013) that *interesting*$_1$ and *interests*$_2$ directly encode a presupposition that the participants of the event they describe stand in an acquaintance relation, Acq. A major component of the proposal that remains to be developed is an explanation of what propositional knowledge the experiencer can be inferred to have based on acquaintance. I will refer to this further knowledge as 'extended acquaintance' and will point out what inferences are assumed to be derived by it. The account currently rests on the assumption that a theory of extended acquaintance can be developed that produces the desired

[6] One diagnostic is that nominalizations based on causative clause-taking verbs are degraded compared to nominalizations based on content/subject-matter clause-taking verbs; *interest* contrasts with *believe*, (i)-(ii).
(i) a. It interests Sue that it's raining
b. ??Sue's interest that it's raining is unexpected
(ii) a. Sue believes that it's raining
b. Sue's belief that it's raining is unexpected

[7] The same proposal be expressed with *interesting*$_1$/*interests*$_2$ denoting functions with clausal denotations in their domain. This would be a 'uniform'-style analysis; since clauses with *interest* are assumed to receive a fact denotation, the type-distinction between expressions like *Bill's clothing* and *that Bill cuts his own hair* (and, I propose, *what present I will get*) is in some sense neutralized. I adopt the Neo-Davidsonian approach merely for exposition.

results.

(26) sketches the LF and the composition of a declarative construction, showing the part of the clause that is involved in deriving an eventuality-property. I am assuming that functional material inside the clause *that I will receive a kite* can produce a fact denotation (i.e. $\iota s \sqsubseteq @[\mathsf{Exemplify}(s,[\lambda s'.\ \mathsf{I\ will\ receive\ a\ kite\ in}\ s'])]$), and that all event-role assignment takes place via syntactic functional heads like *Cause* and *Exp*; in addition to contributing what thematic role their syntactically-associated argument bears, they presuppositionally track event participants with meta-language labels like Part(icipant) A or Part(icipant) B. The presuppositions of content words like *interesting*$_1$ and *interests*$_2$ can then reference these labels. The event properties compose intersectively[8] and are the input to the presuppositional existential closure function in (26d) (inspired by Beaver (2001)), which produces the presupposition in (26e).

(26) LF: Closure$^{\exists}$ [[Cause [that I will receive a kite]] [interesting$_1$ [Exp [me]]]]

a. $[\![\text{Cause}]\!] = \lambda x.\lambda s.\lambda e : \mathsf{PartB}(e,s) = x.\ \mathsf{Cause}(e,s) = x$

b. $[\![\text{Exp}]\!] = \lambda y.\lambda s.\lambda e : \mathsf{PartA}(e,s) = y.\ \mathsf{Experiencer}(e,s) = y$

c. $[\![\text{interesting}_1/\text{interests}_2]\!] = \lambda s.\lambda e : \mathsf{Acq}(\mathsf{PartA}(e,s),\ \mathsf{PartB}(e,s),s)\ .\ \mathsf{Interest}(e,s)$

d. $[\![\text{Closure}^{\exists}]\!] = \lambda P_{\langle s,\langle\sigma,t\rangle\rangle}.\lambda s_s : \exists x_\sigma[(P)(s)(x)\ \text{is defined}].\ \exists x_\sigma[P(s)(x)\ \text{is defined} \wedge P(s)(x) = 1]$

e. $[\![(26)]\!](@)$ is defined only if $\exists e[\mathsf{PartB}(e,@) = \iota s \sqsubseteq @[\mathsf{Exemplify}(s,[\lambda s'.\ \mathsf{I\ will\ receive\ a\ kite\ in}\ s'])] \wedge \mathsf{PartA}(e,@) = \mathsf{me} \wedge \mathsf{Acq}(\ \mathsf{PartA}(e,@),\ \mathsf{PartB}(e,@),@)]$

Interesting$_1$ and *interests*$_2$ with a declarative are predicted to be felicitous in a context only if the context provides (or can accommodate) acquaintance, i.e. that the experiencer is acquainted with the fact exemplifying the relevant proposition (e.g. that I will receive a kite). In this case, I assume that extended acquaintance produces a presupposition that I believe the proposition. Inspired by Kratzer (2002) (where declarative knowledge ascriptions are analyzed as de re belief ascriptions where the res is a fact), this is what I take *know that* to mean.

3.3. Interrogative clauses and knowledge

Extending this Neo-Davidsonian causative semantics to interrogatives, I propose that interrogatives may contribute event descriptions as well (see Rawlins, 2013; Elliott, 2017: §3 for related proposals). Additionally, I propose that there are at least two kinds of interrogative clauses – hence at least two interrogative readings – that occur with causative predicates: 'resolved' and 'inquisitive'. A 'resolved' interrogative contributes that the cause of the event is the fact that exemplifies an answer, derived by applying (26a) to (27a). An 'inquisitive' interrogative contributes that the cause of the event is what I call an 'inquiry', (27b), which is a situation that does not exemplify an answer but that would exemplify an answer if it progressed normally.

(27) $[\![\textit{what present I will get}]\!](@)$

a. Resolved reading
$\iota s \sqsubseteq @[\exists p \in Q(@)[\mathsf{Exemplify}(s,p)]]$

b. Inquisitive reading
$\iota s \sqsubseteq @[\neg\exists p \in Q(@)[\mathsf{Exemplify}(s,p)] \wedge \mathsf{Norm}(s,@) \subseteq \{s' : \exists p \in Q(@)[\mathsf{Exemplify}(s',p)]\}]$

[8] I am assuming an intensional predicate modification rule as in (i).

(i) For any tree α whose daughters are $\beta_{\langle s,\langle\sigma,t\rangle\rangle}$ and $\gamma_{\langle s,\langle\sigma,t\rangle\rangle}$, $[\![\alpha]\!]$ is defined iff $[\![\beta]\!]$ and $[\![\gamma]\!]$ are defined. When defined, $[\![\alpha]\!] = \lambda s_s.\lambda x_\sigma : [\![\beta]\!](s)(x)$ is defined $\wedge$ $[\![\gamma]\!](s)(x)$ is defined. $[\![\beta]\!](s)(x) = [\![\gamma]\!](s)(x) = 1$

$Q = \lambda s.\ \{[\lambda s'.\ \text{I will get } x \text{ in } s'] : x \text{ is a present in } s\}$
$\text{Norm}(s', s) = \{s'' : \text{the norms of } s' \text{ in } s \text{ are satisfied in } s''\}$
(based on priority modality in Portner (2009), normative projection in Kratzer (2015))

When an interrogative with *interesting*$_1$ or *interests*$_2$ has a resolved reading like (27a), we derive a presupposition that the experiencer is acquainted with the fact exemplifying an answer. Here, I assume that extended acquaintance gives us that the experiencer believes the answer that the fact exemplifies. Inspired by Kratzer (2002), this is what I take an interrogative knowledge construction to mean. In contrast, with an inquisitive interrogative, acquaintance gives us that the experiencer is acquainted with a situation that doesn't exemplify any answer and that normally progresses to exemplify an answer. In this case, I assume that whatever can be inferred about an individual's beliefs who is acquainted with an inquiry, it is not belief of an answer. Indeed, given observations about Hebrew in Section 4.2, extended acquaintance should be an ignorance presupposition.

The final step of the analysis is to constrain the kinds of interrogatives that each variant can occur with. For now, I stipulate (e.g. by syntactic selectional restrictions) that *interesting*$_1$ occurs only with resolved interrogatives and *interests*$_2$ occurs with both resolved and inquisitive interrogatives. Assuming that fact-denoting declaratives are unambiguous, we get that both variants presuppose declarative knowledge, but with interrogatives, *interesting*$_1$ necessarily presupposes interrogative knowledge whereas *interests*$_2$ is ambiguous: one reading, derived with a resolved interrogative, presupposes interrogative knowledge, and the other reading, derived with an inquisitive interrogative, does not.

Before returning to how to constrain the distribution of these two interrogative readings, I consider how the Neo-Davidsonian approach is consistent with the gapping and ellipsis facts.

3.4. Unified entries for gapping and ellipsis

The fact that *interests*$_2$ is able to undergo gapping and ellipsis is problematic for an account that relies on ambiguity to capture the predicate's diverse inference patterns and combinatorial flexibility. To recap, gapping with *interest*$_2$ is acceptable in (28), despite one conjunct requiring declarative knowledge but the other conjunct not requiring interrogative knowledge. Also, ellipsis is possible with both *interests*$_2$ and *interesting*$_1$ when they occur with a clause in one conjunct and an individual-denoting expression in the other, (29a-b).

(28) It interests Sue what present she'll receive, and Mary, that it won't be a kite
Presupposes: Mary knows that it won't be a kite
Does not presuppose: Sue knows what present she'll receive

(29) a. That Bill cuts his own hair interests me, and his clothing does too
b. That Bill cuts his own hair is interesting, and his clothing is too

The Neo-Davidsonian account presented in the previous section satisfies most of the proposed syntactic-semantic identity conditions on gapping/ellipsis. For example, (30)-(31) have matching subconstituents with identical meanings, namely, the event description contributed by *interests*; (30) is the LF of (28), and (31) is the LF of (29a) ((29b)'s is identical, just swapping *interesting*$_1$ for *interests*$_2$). Strikeout represents gapping/ellipsis.

(30) [Closure$^{\exists}$ [[Cause [what present she'll receive$_{\text{inquisitive}}$]] [interest$_2$ [Exp [Sue]]]

and [Mary $\lambda 1$ [[Cause [that it won't be a kite]] [~~interest$_2$~~ [Exp [t_1]]]]]]]

(31) [Closure$^{\exists}$ [[Cause [that Bill cuts his own hair]] [interests$_2$ [Exp [me]]]
and [[Cause [his clothing]] [~~interests$_2$ [Exp[me]]~~]]]]

Under the present account, *interesting*$_1$ and *interests*$_2$ contribute very little grammatically-visible information; they both denote event descriptions, which are shared across all their uses.

4. Discussion

What are the consequence of assuming that interrogatives can in principle have resolved and inquisitive readings? Are there precedents for this idea?

4.1. Constraining the readings

I have posited two readings for interrogatives and assumed that *interesting*$_1$ and *interests*$_2$ differ in what kinds of interrogatives they occur with. This helps to explain when knowledge can and cannot be inferred, along with the licensing of ellipsis and gapping. However, assuming an intrinsic ambiguity in interrogative clauses, without further constraints, overpredicts readings.

Though there are some subtleties that need to be considered, a naive extension would have *know* with a resolved interrogative mean that the experiencer is acquainted with the fact that exemplifies an answer, and by extended acquaintance, believes the answer. Arguably, this is an adequate meaning for an interrogative knowledge ascription. However, it is not clear what *know* with an inquisitive interrogative would mean, but it is unlikely that we would want such a meaning to be derivable.

The distribution of the two readings could be constrained by assigning predicates and clauses semantic presuppositions that restrict their compatibility (albeit in a highly stipulative way). Perhaps certain predicates (e.g. *know*, *interesting*$_1$) carry presuppositions that contradict presuppositions carried by inquisitive interrogatives, producing event properties whose presuppositions are unsatisfiable.[9] Other predicates (e.g. *wonder*, *ask*) might carry presuppositions that contradict presuppositions carried by resolved interrogatives, ruling out such combinations. Such an account would imply that *interesting*$_1$ and *interests*$_2$ do not have the exact same meaning, as assumed before; *interesting*$_1$'s presupposition restricts the interrogatives it combines with to be resolved, whereas *interest*$_2$'s presupposition is compatible with the presuppositions of both resolved and inquisitive interrogatives.

I now turn to some facts from Hebrew, where the translation of *interest* also has two variants, but whose meanings differ from those of English *interest*. The difference between languages perhaps suggests the need for a different way to think about the combinatorial constraints.

[9]For example, partial event properties like in (ia-b), composed by the intensional PM rule in footnote (i), necessarily have no elements in their domain, producing a necessary presupposition failure with the existential closure function in (26d). This could be seen as a source of ungrammaticality.

(i) a. $\lambda s.\lambda e$: Resolving (PartB(e,s)) $\wedge \ldots$
b. $\lambda s.\lambda e$: $\neg$Resolving (PartB(e,s)) $\wedge \ldots$

4.2. The picture from Hebrew

In Hebrew, the root for *interest*, /ʔ/-/n/-/j/-/n/, also has two syntactic variants. Their difference is most clearly seen in past tense sentences like (32a-b). *Meʔanjen*$_1$, an adjective, occurs with a past copula, whereas *ʔinjen*$_2$, a verb, inflects for tense directly. Note that *meʔanjen*$_1$ is incompatible with an accusative object, whereas *ʔinjen*$_2$ requires one.[10]

(32) a. ha-sefer haja meʔanjen$_1$ (*oti)
the-book be.pst interesting$_1$ 1sg.acc
'The book was interesting'
b. ha-sefer ʔinjen$_2$ *(oti)
the-book interest$_2$.pst 1sg.acc
'The book interested me'

In present tense, the two forms look identical; however, the existence of two variants can be inferred from acceptability both with and without an accusative object, (33a-b).

(33) a. ha-sefer meʔanjen$_1$
the-book interesting$_1$
'The book is interesting'
b. ha-sefer meʔanjen$_2$ oti
the-book interests$_2$ 1sg.acc
'The book interests me'

Both variants are responsive. In combination with declarative clauses, as in (34a-b), both variants presuppose knowledge.

(34) a. meʔanjen$_1$ ʃe-ani ekabel afifon la jom huledet
interesting$_1$ that-1sg.nom will.receive kite for.the birthday
'It's interesting that I will receive a kite for my birthday'
b. meʔanjen$_2$ oti ʃe-ani ekabel afifon la jom huledet
interests$_2$ 1sg.acc that-1sg.nom will.receive kite for.the birthday
'It interests me that I will receive a kite for my birthday'
Both presuppose: I know that I will receive a kite for my birthday

But when occurring with an interrogative, neither variant presupposes knowledge. Indeed, both variants appear to presuppose ignorance, as illustrated by the unacceptability of (35a-b) in the provided context.

(35) *ani jodea ejze matana ani ekabel la jom huledet ve...*
I know what present I will receive for my birthday, and...
a. #meʔanjen$_1$ ejze matana ani ekabel la jom huledet
interesting$_1$ what present 1sg.nom will.receive for.the birthday
b. #meʔanjen$_2$ oti ejze matana ani ekabel la jom huledet
interests$_2$ 1sg.acc what present 1sg.nom will.receive for.the birthday
Both, roughly: 'I wonder what present I will receive for my birthday'

[10](32a) with an accusative object has a present counterfactual reading (i.e. 'the book would interest me'), formed with a past copula and *meʔanjen*$_2$, the participle of the verb. It is not a counterexample to the empirical generalization that the adjective is incompatible with accusative objects.

In this regard, Hebrew differs from English; (36) repeats the judgment from the introduction that in English, *interesting*$_1$ and *interests*$_2$ are acceptable in a context where the experiencer has interrogative knowledge.

(36) *I know what present I will receive for my birthday, and...*
  a. It is interesting$_1$ to me what present I will receive for my birthday
  b. It interests$_2$ me what present I will receive for my birthday

The analysis in the preceding section can be extended to Hebrew by assuming that in Hebrew, both variants are restricted to occur only with inquisitive interrogatives. If inquisitive interrogatives produce ignorance presuppositions[11], then the infelicity of (35a-b) could be seen as a result of presupposition failure in the provided context. In contrast, both variants in English can occur with resolved interrogatives, whose knowledge presuppositions are satisfied in (36).

Or, perhaps the difference between languages reduces to a difference in conceptual range. Crosslinguistically, content words – even those that appear to be translational equivalents – have different conceptual ranges. An example from (Borer, 2005: 12) is English *cat* and Hebrew *χatul*. The former can be used to describe domesticated felines, lions, and tigers (e.g. *the great cats*), whereas the latter only describes domesticated felines. English *ask* and Hebrew *ʃaʔal* are another example. As shown in (37a), *ask* occurs with both interrogatives and declaratives, the latter conveying a meaning like *request*. In contrast, Hebrew *ʃaʔal* is incompatible with declaratives and has no *request*-reading, (37b).

(37) a. She asked me (whether) to invite you
  b. hi ʃaʔala oti *(im) lehazmin otχa
  3sg.nom.f asked 1sg.acc whether to.invite 2sg.acc.m
  Well-formed sentence: 'She asked me whether to invite you'

One way to understand the difference between *ask* and *ʃaʔal* is to say that the former's conceptual range covers events of requesting action and commitment, whereas the latter's covers only events of requesting commitment. Extending this line of thought to *interest*, English *interesting*$_1$'s conceptual range only covers events caused by resolving facts, not inquiries, whereas *interest*$_2$'s range is broader. In contrast, the conceptual range of both variants of Hebrew *meʔanjen* only covers events caused by inquiries. If one has a theory of conceptual range (that is not based on semantic presuppositions), perhaps this could form the basis of an alternative to an account based on semantic presuppositions encoding selectional constraints.

4.3. Inquisitive readings

There is precedent for the idea that interrogative clauses sometimes denote something other than a set of possible answers (or other than the maximally informative true answer). An extension of Ross's (1970) 'performative hypothesis' for declaratives to interrogatives would imply that interrogatives contain a silent *I ask*, an idea that has been explicitly pursued by some authors. For example, Sauerland and Yatsushiro (2017) propose that the 'remind me' reading of *again* in (38) is derived by having *again* trigger a repetition presupposition above a

[11] Examples like (i) can be felicitous when some parents have interrogative knowledge and others do not (Omar Agha (p.c.)), suggesting that *interests*$_2$'s interrogative is underspecified rather than ignorance-inducing.
(i) It interests every parent what their child is doing (and some of them already know)

syntactically represented, compositionally complex *I ask*-constituent.

(38) What is your name again?
'Remind me' reading: I ask that you make it once again known what your name is

Krifka (1999, 2001) makes similar assumptions to explain pair-list readings of quantifiers in matrix interrogatives like (39).

(39) Who did every dog bite?
Pair-list reading: For every dog *x*, I ask that you make it known who *x* bit

To my knowledge, Krifka is the first to propose that certain subordinate interrogatives also encode asking, doing so in order to explain contrasts in the availability of high scope readings for quantifiers in subordinate interrogatives observed by Szabolcsi (1997). A basic summary of Szabolcsi's findings is that in matrix interrogatives, universal quantifiers like *every NP* contrast with modified numeral quantifiers like *more than three NP*, etc. in that only the former make available a pair-list reading. She reports that speakers are not inclined to answer (40) with a list consisting of at least four dog-person pairs.

(40) Who did more than three dogs bite?

In subordinate interrogatives, the availability of a pair-list reading is conditioned not just by the type of quantifier but also by the type of predicate. What Szabolcsi calls 'extensional predicates', following Groenendijk and Stokhof (1984), allow pair-list readings for all kinds of quantifiers; this is shown with *find out* in (41) (data based on Szabolcsi, 1997).

(41) *Context: We are investigating who each neighborhood dog has bitten to see which dog is the most dangerous. We confer to see who collected information on more dogs.*
A: I found out who exactly two dogs bit
B: I found out who more than three dogs bit

A's utterance has a reading along the lines of 'exactly two dogs are such that I found out who each of them bit', and B's has a reading along the lines of 'More than three dogs are such that I found out who each of them bit'. These readings are responsible for establishing that B gathered information on more dogs than A did.

In contrast, what Szabolcsi calls 'intensional predicates', again following Groenendijk and Stokhof (1984), exhibit the same pattern as matrix interrogatives in only allowing pair-list readings for universals. This is shown with the intensional predicate *wonder* in (42).

(42) *Context: We are investigating who each neighborhood dog has bitten to see which dog is the most dangerous. We confer to see who collected information on fewer dogs.*
A: #I am still wondering who exactly two dogs bit
B: #I am still wondering who more than three dogs bit

A's utterance does not have a reading along the lines of 'exactly two dogs are such that I am still wondering who each of them bit', and B's does not have a reading along the lines of 'more than three dogs are such that I am still wondering who each of them bit'; if they did have these readings, the discourse would establish that B gathered information on fewer dogs (given the ignorance implication of *wonder*). Instead, the discourse does not cohere.

A sketch of Krifka's explanation is that in matrix clauses, the *I ask*-operator provides a scope site for quantificational expressions, but given its semantics, it yields a coherent meaning only with universals. Subordinate interrogatives under predicates like *wonder* provide this same scope site and as a result exhibit the same constraints as matrix interrogatives. As for why extensional predicates produce more scope possibilities, and why these are not possibilities with *wonder*, more needs to be said – see Krifka (1999, 2001) for discussion, along with Moltmann and Szabolcsi (1994).

A full comparison between my proposal for inquisitive interrogatives and Krifka on embedded asking is beyond the scope of this work, and certain aspects of our proposals are incompatible (e.g. Krifka's proposal that the meaning of an asking acts does not return a truth value). However, one prediction is worth mentioning. By relating the lack of knowledge implications to an inquiry reading (which one might equate to Krifka's embedded asking), a potential prediction is that ignorance correlates with an absence of high scope readings. A relevant contrast is given in (43a-b), containing *interests*$_2$. By providing that I have knowledge, (43a) is meant to induce a resolved reading, and by providing that I am ignorant, (43b) is meant to induce an inquisitive reading; there appears to be a contrast.

(43) a. *There are 10 dogs, I have found out who each of them bit, and the information I've gathered about five of the dogs interests me. Thus...*
It interests me who more than three dogs bit

b. *There are 10 dogs, I don't know who any of the dogs bit, and for five of the dogs, I am interested to know who each of them bit. Thus...*
#It interests me who more than three dogs bit

It remains to be seen what kind of theory can capture the correlation between knowledge presuppositions and the availability of pair-list readings.

5. Conclusion

The inferences that *interesting*$_1$ and *interests*$_2$ license and fail to license with interrogatives are challenging for standard compositional analyses developed on the basis of other predicates. I have proposed an analysis that integrates the ideas that 'asking' can be embedded and that experiencer predicates are associated with acquaintance inferences. The major questions the analysis leaves open are how acquaintance produces the extended acquaintance inferences I have assumed and how constraints on different interrogative readings should be encoded.

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