Economy of structure and information: Oddness, questions, and answers[1]

Roni KATZIR — *Tel Aviv University*
Raj SINGH — *Carleton University*

Abstract. We examine two conflicting perspectives on oddness: Magri (2009, 2011)'s theory, which derives oddness from blind inferences that clash with common knowledge, and Spector (2014)'s theory that derives oddness from trivial alternatives. Building on these works, we offer a third alternative, one that relies on a discourse condition that says that a good assertion is one that provides a good answer to a good question. A remaining difficulty is the persistence of oddness when the relevant sentences are embedded in environments that are predicted to satisfy the proposed appropriateness conditions.

Keywords: Hurford's constraint; questions; oddness; scalar implicature; exhaustivity; redundancy; economy; presupposition.

1. Introduction

1.1. On oddness and mismatches (Magri, 2009, 2011)

Magri (2009) observes a systematic pattern of oddness with scalar items, such as 'some'. The following examples illustrate:

(1) a. # Some Italians come from a warm country
     b. # John transmitted a stupid family name to some of his children

Magri proposes that oddness in such cases is due to a clash of scalar implicatures (SIs) with world knowledge. In (1a), for example, the SI that not all Italians come from a warm country, when combined with the assertion, clashes with our knowledge that all Italians come from the same country. Similarly, the SI of (1b) that John did not transmit a stupid family name to all of his children, when combined with the assertion, clashes with our knowledge that children of the same parents receive the same family name.

1.2. Spector (2014)'s challenge and proposal

Spector (2014) notes that in close variants of Magri's examples, oddness arises even without any

conceivable clash between strengthened meanings and world knowledge. Spector makes his case on the basis of examples such as those in (2) and (3). The sentences in (2) use 'all', the strongest element on the scale, and have neither an SI nor an ignorance inference. The sentences in (3) have SIs – that John has no more than one wife and that Mary put on no more than two gloves – but those are fully compatible with world knowledge. Still, the sentences in (2) and (3) are odd.

(2)   a.   # All Italians come from a warm country

       b.   # John transmitted a stupid family name to all of his children

(3)   a.   # John has one wife

       b.   # (It was cold out, so) Mary put on two gloves

To account for the oddness of (2) and (3), Spector (2014) proposes that oddness in these cases – and in Magri (2009)'s original paradigm – arises not through strange SIs but rather through unhelpful alternatives. In particular, he suggests (extending in part an earlier proposal in Spector 2007) that in cases such as the above, all the alternatives are trivial given common knowledge: they are either contextually equivalent to the assertion or it is already known whether they are true or false.

(4)   Let ϕ be a proposition and C a context. A proposition ϕ' is said to be *trivial in C given ϕ* if one of the following holds:

       a. ϕ' is a C-contradiction, $\phi' \cap C = \emptyset$

       b. ϕ' is a C-tautology, $C \subseteq \phi'$

       c. ϕ' is C-equivalent to ϕ, $\phi \cap C = \phi' \cap C$

(5)   NO TRIVIAL ALTERNATIVES! (Spector, 2014, p. 154): If ϕ is associated with a set of alternatives ALT in context C, there must be at least one element of ALT that is not trivial in C given ϕ.

For example, in both (1a) and (2a) the alternatives are {*Some Italians come from a warm country*, *All Italians come from a warm country*}. Given world knowledge, the two alternatives are contextually equivalent: all Italians come from the same country, so (1a) and (2a) contribute the same information. Assuming there are no additional alternatives to (1a) and (2a), (5) predicts that neither sentence should be felicitous. For (1b) and (2b), the scalar items are again *some* and *all*, leading to a similar pattern of alternatives as with (1a) and (2a); the assumption that fathers transmit the same family name to all their children thus yields the same pattern of triviality, correctly predicting from (5) that both variants would be infelicitous.

Similar considerations apply to the sentences in (3), though with different scalar items – and consequently different sets of alternatives – than in (1) and (2). In (3a) the alternatives are {*John has one wife*, *John has two wives*, *John has three wives*, ...}, the first of which being the assertion

itself, and all the other ones being C-contradictions assuming the context is that of a monogamous society. In (3b) the alternatives are {*Mary put on one glove*, *Mary put on two gloves*, *Mary put on three gloves*, … }. Here the first two are contextually equivalent – in a normal context, if Mary put on one glove she also put on the other – and the remaining alternatives are C-contradictions. As in the *some/all* cases, the numerical cases in (3) have sets of alternatives that are all trivial, thus deriving their oddness from (5).[2]

1.3. A conceptual concern with triviality

Spector (2014)'s broader pattern of oddness calls for a unified treatment, and his proposal succeeds in capturing it, thus offering exactly this kind of account. Below we will examine cases that we think should also fall under such an account but which Spector's proposal does not capture. Before discussing such empirical problems, we briefly note a conceptual concern with the idea of a ban on trivial alternatives: why should it be odd if the alternatives are contextually unhelpful? Differently from assertions (and their strengthened meanings), the alternatives are not attempted contributions to discourse, and it is not clear why they should be subject to any felicity conditions. Spector suggests that all-trivial sets of alternatives might be bad collectively, due to two considerations (p. 154): (a) such sets are useless for purposes of SIs and similar processes; and (b) alternatives should be expressions that the speaker could have chosen instead of the prejacent. With respect to the first consideration, we note that various felicitous constructions have been argued to have sets of alternatives that do not lead to SIs or similar effects, for example due to a contradiction between the alternatives (see Fox and Hackl 2006):[3]

(6)   John has more than three children

With respect to the second consideration, we note that if an alternative is C-equivalent to the prejacent, it counts as trivial according to definition (4) but could have been used by the speaker to convey the same information as the prejacent. In sum, we are left with a felicity condition, (5), that currently lacks clear motivation.

---

[2]At least in some cases, including the wife and glove examples in (3), it seems that we have some reasonable expectations about the alternatives, but we could easily be wrong about them. To maintain the triviality-based account, then, one may need to replace 'contextually trivial' with 'contextually reasonably well determined'. (We are not sure how such an approach could be implemented.)

[3]In a neutral context, (6) suggests that the speaker does not know how many children John has, and one might try to use this inference to account for the contrast between the felicitous (6) and the odd examples above. However, (6) remains felicitous even in contexts that explicitly contradict ignorance inferences (see Fox 2014 for the use of contexts in which the speaker is taken to be knowledgeable but unhelpful to tease apart ignorance inferences and SIs).

1.4. Outline

Motivated by the conceptual concern with (5), we will look, in section 2, at a different perspective concerned with constraints on the introduction of questions into discourse. Our proposed question condition requires that the speaker answer a 'good question,' which we take to be one that is commonly accepted by speaker and hearer as being in need of resolution in the current context. Then, in section 3, we will provide what we think is a natural complement to the question condition: an answer condition, which posits that linguistic objects that are inferior along linguistically significant dimensions (complexity and semantic strength) cannot be offered as answers, even when they are as relevant as better linguistic objects. Needlessly inferior objects are bad answers. Section 4 discusses a complication that the present account faces, having to do with oddness effects in complex sentences. Section 5 concludes.

2. The question condition

2.1. From individual alternatives to questions

The concern we mentioned regarding Spector (2014)'s proposal motivates looking at factors other than the triviality of individual alternatives. We propose that the utterances in (2) and (3) are odd because they address questions that the hearer could not possibly have been interested in. If we are right, accommodating an unreasonable question is something conversational participants are unwilling to do, at least not without justification.

The intuition we follow, often discussed in the literature (see Roberts 1996, Büring 2003, and Beaver and Clark 2008), is that discourse is required not just to gradually narrow down our uncertainty about the world, as in the conversational model of Stalnaker (1978, 2002), but to do so while respecting discrete, jointly accepted steps. Questions provide the relevant discrete steps that structure discourse, and we state the requirement that such steps must be jointly accepted as a condition on good questions:

(7) A question Q is a *good question* at a point t in the conversation if it is common knowledge at t that all participants in the conversation are interested in settling Q.[4]

Given the notion of good questions in (7), we can now state our first condition on assertions. This condition, stated in (8), requires an assertion to address what has already been established as a good question.

---

[4]This definition is vague and incomplete. Unfortunately, we can do no better at present. We also note that 'interested' might not be the best characterization of the participants' attitude toward a good question. For our purposes, if it is clear that everyone has accepted the question into the discourse, even thought it is inherently of no real interest to anyone, that will count as 'interested in.' As far as we can tell, the cases below can be derived with (7) in spite of its shortcomings. We hope that a better characterization of good questions can be left for a separate occasion.

(8)   QUESTION CONDITION: An assertion S must be congruent to some good question Q when it is uttered. On Rooth (1992)'s definition of congruence, this means that when S is uttered, $Q \subseteq [\![S]\!]$.

According to (8), an assertion cannot introduce a new question: an assertion must be relevant with respect to a good question. If a participant in the conversation wishes to add a new question, they must do so directly, by stating that question, rather than sneak it in through an assertion that addresses that question.[5]

Let us return to Spector (2014)'s examples in (3) above. While we might be wrong about John having one wife and Mary having two hands, it still seems strange, given world knowledge, to suggest we are interested in the question of how many wives John has and how many hands Mary has, especially since the answers provided in (3) do not shift our views on the plausibility of these questions. When the answer does help make the question useful, minimal variants of these sentences are fine:

(9)   a.   Some (but not all) Italians come from a warm country – Italy is really two countries, one warm and one cold

   b.   John transmitted a stupid family name to some (but not all) of his children – his wife insisted that their youngest boy get her maiden name

(10)   a.   John has two wives

   b.   Mary put on one glove

2.2. Prediction: an explicit question can improve an otherwise odd assertion

We note that, by preceding the sentences above with an appropriate question, we can make them improve without changing the triviality of the alternatives. For example, the sentences in (3) improve when used as answers to explicit questions about the scalar item responsible for the alternatives, as in (11):

(11)   a.   (How many wives does John have?) John has one wife

   b.   (How many gloves did Mary put on?) It was cold out, so Mary put on two gloves

---

[5]It has been noted in the literature that it is sometimes possible to address a question that is different from the QUD. For example, Büring (2003) notes that the following question-answer dialogue is appropriate: A: *What did the pop stars wear? B: The FEMALE pop stars wore CAFTANS.* B's response is not congruent to A's question, yet the dialogue is fine. This is not as problematic for our account as it might appear to be: if you are interested in what the pop stars wore, then you are certainly interested in what the female pop stars wore. See Groenendijk and Stokhof (1984), and Lewis (1988).

In (11), the explicit question provided is unusual and possibly odd, but on Spector (2014)'s approach it is not clear why this should matter: if we are convinced that John adheres to the conventions of monogamy, the potentially true answers are those where he has either no wives or one wife, which means that the question does not change our beliefs about the alternatives, so the answer should still be odd. And similarly for the glove example.

On the face of it, these examples might be reconcilable with Spector's (2014) approach if we assume that by asking such questions explicitly, speakers can signal that they do *not* share common beliefs about the alternatives. And this might be enough to ensure the non-triviality of the alternatives. Against this analysis, note that the sentences improve in response to an explicit question even when the speaker *is* assumed to share common beliefs. For example, imagine a hiring committee that is interviewing many candidates, some of whom come from countries where monogamy is not the norm. Nevertheless, to ensure fairness of the process, they are required to ask the same questions of all candidates. If John is assumed to come from a place where monagamy is the norm, the question and answer in (11a) continue to be appropriate. Furthermore, (11a) can be used in answer to a question that does *not* signal that the speaker's beliefs are somehow non-conformist (adapted from Singh, 2009):

(12) A: What can you tell me about this candidate, John?
      B: Well, he's from Vermont, he has two dogs, he has one wife, and he likes to whistle.

The dialogue in (12) is perfectly normal. A's question is sensible and does not signal that A is ignorant of John's marital status; B's response is likewise not odd.

2.3. Beyond potentially trivial alternatives: accommodating presuppositions

A particularly clear case in which the predictions of our bad-question approach and Spector (2014)'s trivial-alternative approach diverge arises with presupposition accommodation out of the blue. Sometimes we can't plausibly expect anything about the alternatives. And yet, if we can ensure that the question itself is not a good question, the result is odd:

(13) (Context: none. In particular, it is not common knowledge that the typewriter has been broken.)
      a. # $[Kim]_F$ broke the typewriter
      b. # It was $[Kim]_F$ who broke the typewriter
      c. # The person who broke the typewriter is $[Kim]_F$

Without prior context for the examples in (13), the hearer does not even know that the typewriter was broken, and so the speaker cannot plausibly expect the hearer to be interested in the question of who broke the typewriter. In such settings, the examples in (13) are unacceptable.[6]

For us, the unacceptability of the sentences in (13) out of the blue is a straightforward consequence of question-based oddness. Crucially, there seems to be nothing trivial about any of the individual alternatives in any of these cases. In (13a), for example, the alternatives would be something like {*Al broke the typewriter*, *Kim broke the typewriter*, *Frank broke the typewriter*, … }. Other than *Kim broke the typewriter*, none of the alternatives is contextually equivalent to the assertion, and none of them is either a C-contradiction or a C-tautology. It is only in collecting these alternatives into a question that we obtain an implausible object.[7]

3. The answer condition

3.1. Relevant but inferior answers

The question condition handles much of the oddness paradigm, but there are other cases of oddness – often superficially very similar to the examples above – where the question condition has little to contribute. A case in point is (14), from Spector (2014), extending a paradigm from Magri (2011) to be discussed in more detail below.

(14)   In this department, every professor gives the same grade to all of his students. Kim is a professor in this department.
   a.   # This year, Kim assigned an A to some of his students
   b.   This year, Kim assigned an A to all of his students

The oddness of (14a) is unexpected according to the question condition. One possible question that (14a) might be addressing – namely, {*Kim assigned an A to some of his students*, *Kim assigned a B to some of his students*, …, *Kim assigned an F to some of his students* } – can be taken to be a good question given the context. In fact, given the context, this question is equivalent to {*Kim*

---

[6]*It*-clefts, as in (13b), are also considered to be hard presupposition triggers (see Simons 2001, Abusch 2002, and Romoli 2014, among others; see Abrusán 2014 for a dissenting view). The distinction between hard and soft triggers, however, concerns the question of whether the relevant projected presuppositions can disappear in contexts of explicit ignorance. It is not clear that this should affect ease of (global) accommodation, which is our concern in (13b). (See Büring and Križ 2013 for a recent analysis of it-clefts and their meaning components, including the well-known similarities with definite descriptions such as (13c)).

[7]A prediction of our approach is that if we make it less implausible that we are interested in the question of who broke the typewriter, the relevant sentences should improve. While straightforward in principle, testing this prediction is complicated by the fact that raising the relevant question explicitly would mean that we no longer need to accommodate that someone broke the typewriter. However, one could look at contexts in which the hearer does not have a say in determining the question under discussion. For example, a novel, a newspaper article, or a speech can easily start with a sentence such as (13b). See von Fintel (2008).

assigned an A to all of his students, *Kim assigned a B to all of his students*, ..., *Kim assigned an F to all of his students* }, which is presumably the question that the perfectly felicitous (14b) is trying to answer.

For cases such as (14a), we believe the problem lies not with the question that we are pretending to be interested in but in the way we are trying to address it. What might make an answer good or bad? To stand a chance of being a good contribution to discourse, an answer should probably be true and relevant.[8] Can an answer be true and relevant and still odd? Consider a true and relevant answer ϕ that is a needlessly inferior linguistic object (that is, $\phi' \prec \phi$ for some other true and relevant ϕ', where $\prec$ stands for 'strictly better than'). In principle, ϕ might be: (a) bad, since it is needlessly inferior, or (b) good, since it serves its purpose in the given context. It is hard to think of an *a priori* way to settle the question of whether $\prec$ should affect felicity, but the two possibilities make different empirical predictions that can be tested. As we discuss below, based on the oddness of (14a) and other cases, pointless inferiority result in oddness. This will motivate the following answer condition:[9]

(15)   ANSWER CONDITION: A *good answer* ϕ given a question Q is a true answer that is *relevant* to Q and that is not needlessly worse than any other true ϕ' that is relevant to Q (that is, there is no $\phi' \prec \phi$ such that ϕ' is true and relevant to Q)

One can imagine a variety of criteria for comparing linguistic objects, but in this paper we restrict ourselves to two fairly natural ones: semantic strength, which we discuss in section 3.2 and implicate in the oddness of (14a); and complexity, which we discuss in section 3.3 and relate to the oddness of so-called Hurford disjunctions.

To be able to talk about comparing linguistic objects in terms of both complexity and strength, we will need a way to combine two criteria for comparison into one. To do so, we first combine the weak pre-orders for structural complexity ($\lesssim$) and semantic strength ($\subseteq$) into a weak pre-order for *at-least-as-good-as* ($\precsim$, as in (16a)) and then strengthen it to *better-than* ($\prec$, as in (16b)):[10]

(16)   a. $\precsim := \{(\phi, \psi) \mid \phi \lesssim \psi \wedge [\![\, \phi \,]\!] \subseteq [\![\, \psi \,]\!]\}$
        b. $\prec := \precsim \setminus \precsim^{-1}$

---

[8]We will not attempt to investigate truth and relevance here. We simply follow the literature on these matters. For relevance and its relation to questions, we follow Hamblin (1958), Groenendijk and Stokhof (1984), and Lewis (1988), among others. In particular, we take ϕ to be relevant to Q if it eliminates whole cells in the partition defined by Q. In what follows, it will generally suffice to compare ϕ to a true and otherwise better ϕ' that is at least as relevant as ϕ; that is, for our purposes it will suffice to consider relative relevance – very little hinges on the precise definition of (absolute) relevance.

[9]An obvious question to ask is whether the preference for best answers is a separate pragmatic principle or an aspect of whatever mechanism derives SIs. At present we do not have an argument in either direction.

[10]See Katzir (2007) for further discussion. See also Lauer (2013) for a recent optimization system that takes structure and content into account.

3.2. Needlessly weak answers

3.2.1. When 'some' and 'all' should be interchangeable but are not

Consider again (14) above, repeated here:

(17)   In this department, every professor gives the same grade to all of his students. Kim is a professor in this department.
    a.   # This year, Kim assigned an A to some of his students
    b.   This year, Kim assigned an A to all of his students

In (17) – as in the examples in (1) above from Magri (2009) – the context provided makes the weaker (17a) equivalent to (17b). In this context, (17a) is odd. As noted earlier, it seems unlikely that oddness in this case is due to a bad question: given the context, it is not unreasonable to suppose that the odd (17a) and the acceptable (17b) are trying to answer the same question. Rather, we take the oddness of (17a) as showing that an answer that is needlessly weak – (17a) is strictly weaker semantically than (17b) but provides the same information in the given context – is infelicitous. More generally, we take this case as an instance of a violation of the answer condition in (15).

Following Magri (2011), we can embed the relevant examples in a downward-entailing environment to reverse the logical strength of the 'some' and 'all' variants and re-engineer the context to make the two variants equivalent. In this case, as Magri (2011) notes, it is the 'all' version in (18b) that is odd and the 'some' version in (18a) that is felicitous. This is again as expected by the answer condition: both answers provide the same information in the given context, so the needlessly weak one in (18b) becomes odd.

(18)   Every year, the dean has to decide: if the college has made enough profit that year, he gives a pay raise to every professor who has assigned an A to at least some of his students; if there is not enough money, then no one gets a pay raise.
    a.   This year, every professor who assigned an A to some of his students got a raise
    b.   # This year, every professor who assigned an A to all of his students got a raise

3.2.2. Complication: assertions vs. actual common knowledge

In (17) and (18) we focused on the logically weaker of two contextually equivalent answers and noted that it is odd. Spector (2014) observes that when we are dealing with more obvious cases of common knowledge, the logically stronger variant becomes odd as well.

(19) In this country, every father gives the same last name to all of his children. Kim is a father in this country.
    a.   # Kim transmitted a stupid last name to some of his children
    b.   # Kim transmitted a stupid last name to all of his children

Spector (2014) suggests that the contrast between (17), where only the logically weaker answer is odd, and (19), where both answers are odd, is due to a difference in our beliefs regarding the context. In (17) we are dealing with speaker's belief that is not necessarily common knowledge; it is quite possible that despite the speaker's assertion, we do not share the belief that every professor in the department gives the same grade to all their students. In (19), on the other hand, we actually have common knowledge, so this is the more telling paradigm as far as condition (5) is concerned.

We agree with Spector on the distinction between speaker's belief and common knowledge, but our explanation for the contrast between (17) and (19) is different. In (17), the question is legitimate but the logically weaker answer (17a) is needlessly bad. In (19), the weaker answer is similarly penalized by the answer condition, but here, due to common knowledge, even the question is bad, which explains why even the logically stronger answer is odd in this case.

Spector (2014)'s explanation and our own make different predictions. For Spector (2014), the problem with (19) is that the two alternatives are equivalent and thus trivial. For us, the question formed by the two alternatives is bad; in addition, the weaker alternative is bad independently, through the answer condition. If we disable the question condition, we predict that (19) will pattern with (17), while Spector (2014) predicts no change.

As in our discussion of (11) above, stating an explicit question neutralizes the question condition. (20) is the relevant test case. As in some earlier cases, the question provided may well be perceived as odd, but the critical point is that given this question, the stronger 'all' alternative becomes acceptable, as predicted by the combination of the question condition and the answer condition.

(20) In this country, every father gives the same last name to all of his children. Kim is a father in this country. To how many of his children did he transmit a stupid last name?
    a.   # Kim transmitted a stupid last name to some of his children
    b.   Kim transmitted a stupid last name to all of his children

3.2.3. MAXIMIZE PRESUPPOSITION!

As another case of answers that are needlessly weak, we can look at examples such as (21a) (see Hawkins 1991 and Heim 1991). As Heim (1991) observes, (21a) seems to be odd not because the

indefinite is incompatible with a singleton denotation (it is), but because of the availability of an alternative with a stronger presupposition, namely the one in (21b).

(21)   a.   # A sun is shining
        b.   The sun is shining

As Heim (1991) further notes, blocking (21a) by (21b) is hard to justify on naive Gricean grounds. Given world knowledge, the two sentences contribute the same information, so neither is contextually better than the other. Instead, Heim proposes a separate principle, MAXIMIZE PRESUPPOSITION! to rule out sentences with presuppositions that are weaker than necessary.[11] For the present proposal, MAXIMIZE PRESUPPOSITION! is an instance of the answer condition.

3.3. Needlessly complex answers

3.3.1. Hurford coordination: the basic case

We can make an answer ϕ pointlessly complex by (a) disjoining it with a stronger one, or (b) conjoining it with a weaker one. In both cases, the additional constituent does not change the truth conditions of ϕ: suppose $[\![\psi]\!] \subseteq [\![\phi]\!] \subseteq [\![\psi']\!]$, then $[\![\phi \vee \psi]\!] = [\![\phi \wedge \psi']\!] = [\![\phi]\!]$. And in both cases, the result is known to be infelicitous. The oddness of disjunction with a stronger constituent was discussed by Hurford (1974):

(22)   a.   # John visited France or Paris
        b.   # John visted Paris or France

Similarly to the disjunction of an answer with a stronger one, the conjunction of an answer with a weaker one is odd. The oddness of conjunction with a weaker constituent was discussed by Chemla (2009) and Katzir and Singh (2014):[12]

(23)   a.   # John visted France and Paris
        b.   # John visted Paris and France

---

[11]However, see Schlenker (2012) for a Gricean account of such cases.

[12]There is evidence that the redundancy condition for conjunctions is sometimes sensitive to linear order (e.g., Horn, 1972; van der Sandt, 1992; Schlenker, 2008; Fox, 2008). We do not discuss this here; see Katzir and Singh (2014) and Mayr and Romoli (2014) for recent discussion.

3.3.2. Complication: amelioration with scalar items

There are cases in which Hurford disjunctions improve, such as (24a) and (24b). Such cases, already noted by Hurford (1974) and further studied by Gazdar (1979) and Chierchia, Fox, and Spector (2012), typically involve disjuncts that differ from each other in the identity of a scalar item ('or' vs. 'and' in (24a); 'some' vs. 'all' in (24b)).

(24) a. John ate (cake or ice-cream) or he ate both (cake and ice-cream)
      b. John gave some of his students an A or he gave all of his students an A

Chierchia et al. characterize the pattern as follows: HC is valid (that is, no entailment may hold between disjuncts), and a grammatical *exh* operator is available, the judicious placement of which can break entailment.[13]

We take Chierchia et al.'s characterization of the disjunction pattern to be correct; we differ from Chierchia et al. only in attempting to derive HC – specifically, as a needlessly inferior answer – rather than stipulating it as a separate principle. Superficially, however, acceptable Hurford disjunctions such as those in (24) seem to argue against the answer condition even if a grammatical *exh* operator is granted: the complex disjunction seems pointlessly worse than the equivalent weaker disjunct,[14] and yet the disjunction is acceptable. Upon closer inspection, equivalence with the weaker disjunct depends on certain architectural assumptions that have been discussed in the literature. In particular, Meyer (2013) observes that if we assume in addition to *exh* the availability of a grammatical knowledge operator, sentences such as those in (24) are not, in fact, equivalent to their seemingly weaker disjuncts.[15]

4. Locality

The question condition and the answer condition are conditions on appropriate speech acts. Thus, they must apply globally. Similarly, we understand Spector's (2014) constraint against trivial alter-

---

[13]An important piece of evidence for the possibility of exhaustifying a single disjunct comes from (i), developed by Fox and Spector (2009); see also Chierchia et al. (2012) and Bergen et al. (2014).

i. Peter either solved the first and the second problem or he solved all of the problems
   Reading: Peter either solved only the first and second problems, or he solved them all

[14]When the first disjunct is parsed without *exh* the second disjunct adds nothing, and when the first disjunct is parsed with *exh* the matrix disjunction is equivalent to the prejacent of *exh* contained in the first disjunct, and thus the structure is again needlessly complex.

[15]A different approach argues that complexity comparisons are made locally in embedded positions, with the consequence that the root cannot be compared with sub-constituents of the disjuncts (Katzir and Singh, 2014). For now, we hope it suffices that there are defensible approaches for dealing with the observation that embedded exhaustification can sometimes rescue a sentence that would otherwise be banned as needlessly complex, even when the resulting sentence is more complex than a minimal variant without *exh*.

natives (cf. (5)) as a global condition. A challenging finding for such proposals is that the oddness detected in atomic sentences persists when the relevant sentences are embedded. Consider the following scenario, from Magri (2011):

(25) In this department, every professor gives the same grade to all of his students
    a.   # This year, every professor who assigned an A to some of his students got a prize from the Dean
    b.   This year, every professor who assigned an A to all of his students got a prize from the Dean

Magri contrasts (25), in which the 'all' answer is felicitous and the 'some' answer is odd, with the almost identical (18), where it was the 'some' answer that was felicitous and the 'all' answer that was odd. He proposes that exhaustification, which he argues to take place at every scope position, strengthens the restrictor in (25a) to something like 'professor x assigned an A to some but not all of his students'. Given the context provided in (25), this results in an empty restrictor, and Magri suggests that it is this empty restrictor that makes (25) odd.[16] As Spector (2014) notes, however, the oddness pattern of (25) can be replicated even when exhaustification of the restrictor is irrelevant. The answers in (26) illustrate:

(26) In this department, every professor has exactly ten students and always gives the same grade to all of them.
    a.   # This year, every professor who assigned an A to more than two of his students was Italian
    b.   # This year, every professor who assigned an A to some or all of his students was Italian

In both (26a) and (26b), exhaustifying the restrictor is vacuous. Consequently, the restrictor is not empty, and the sentences are predicted by Magri's theory to be felicitous, contrary to fact. To complete the picture, Spector further notes that, in cases that are more clearly about common knowledge rather than speaker's opinion, the strongest local alternative patterns with the weaker ones in giving rise to oddness:

(27) In this country, every father gives the same last name to all of his children
    a.   # This year, every father who transmitted a stupid last name to some of his children got a fine

---

[16]Magri proposes to derive the contrast between (25) and (18) from considerations of relevance: in (25) – but crucially not in (18) – 'professor x assigned an A to all of his students' is equivalent to 'professor x assigned an A to some of his students' and consequently cannot be ignored in computing the embedded implicature. See Magri (2011) for discussion.

b. # This year, every father who transmitted a stupid last name to all of his children got a fine

To account for the full embedding paradigm, Spector (2014) proposes a local condition, his (30), that bans pointlessly weak expressions – stated with respect to speaker equivalence rather than contextual equivalence – within certain constituents:

(28) MINIMIZE MEANING CONTRIBUTION!: For any constituent X containing an occurrence of a lexical item α, we note $X(\alpha \to \beta)$ the result of replacing this occurrence of α with β. Let S be a sentence, C a non-linguistic context, and α an occurrence of a certain lexical item in C. Then α is not licensed in context C if there is an alternative β of α such that:
a. α and β are speaker-equivalent relative to S in C
b. The smallest constituent X of S such that β and α are speaker-equivalent relative to X in context C is such that $X(\alpha \to \beta)$ asymmetrically entails X

For Spector, (28) seems like an imperfect fit to his global condition against all-trivial alternative sets: the two principles try to say similar things but in very different ways. The combination of (28) with the global condition is motivated empirically, by the need to account for the meta-contrast between (25) and (18). Above we have proposed to derive Spector's global condition as a by-product of the question condition; the local (28) can perhaps be folded into a localized version of the answer condition. In fact, other predicted violations of the answer condition – such as MAXIMIZE PRESUPPOSITION! effects – have previously been noted to persist under embeddings similar to the ones above (Percus, 2006):

(29) a. # Every father who has exactly two sons gave all of them a stupid first name.
b. Every father who has exactly two sons gave both of them a stupid first name.

Percus (2006) gives an analysis of (29) that – like (28) – involves competition between lexical items in embedded constituents, with items that have stronger presuppositions blocking items with weaker ones under certain conditions that need not concern us here. What is important for the present discussion is that, like with (28) in its original formulation, we do not have a natural place for such competition. Because the sentences in (29) are semantically equivalent, and differ syntactically only at a single terminal, they are equally good as far as the answer condition is concerned. The challenge is to find ways to deal with apparent embedded violations of the answer condition, and unfortunately no obvious solution comes to mind.

How are we to extend the answer condition to make sense of its apparent application in complex sentences such as the ones discussed above? Two technical fixes with antecedent motivation might help (see Singh, 2009). One is to assume that the answer condition compares sentences not for

their semantic strength, but for the relative strength of their Gajewski-LFs (e.g., Gajewski, 2004; Fox, 2000; Fox and Hackl, 2006). These can be derived from the actual LF of the sentence by replacing all non-logical vocabulary with distinct variables. Simplifying for presentation purposes, the Gajewski-LF of (29a) would be something like 'every α β'd all of γ a δ' and that of its alternative (29b) would be 'every α β'd both of γ a δ.' For all assignments to the variables α, β, γ, and δ, the sentence containing 'all' would be entailed by the sentence containing 'both.' If the answer condition applied to Gajewski-LFs, the competition could be adjudicated globally.

The other technical fix continues to assume that the competition is between the actual content of the constituents, but that it is adjudicated in the *local contexts* of embedded constituents (see Singh, 2011; Schlenker, 2012). This of course commits one to theories that assume there *are* local contexts. For example, assuming Heim's (1983) theory of local contexts, for any context c the local context for 'x gave all of them a stupid first name' and 'x gave both of them an A' in (29) is $c + x$ *is a father* $+ x$ *has exactly two sons*, and in such a context the constituent with 'all' is needlessly weak. Thus, applying the answer condition in local contexts could account for such cases.

The difficulty is that neither of these two moves fits well with our approach. The answer condition is a condition on appropriate speech acts. There seems to be no pragmatic motivation for either the extreme blindness of Gajewski-LFs nor of the appeal to local contexts (though see Schlenker, 2009). We must leave a resolution of this tension for future work.

5. Discussion

We have proposed a condition on appropriate speech that allows for a unified, pragmatic treatment of oddness: an assertion is good if it provides a good answer to a good question. Oddness effects under embedding remain challenging.

References

Abrusán, M. (2014, May). Disappearing acts of presuppositions: Cancelling the soft-hard distinction. Ms., CNRS.

Abusch, D. (2002). Lexical alternatives as a source of pragmatic presuppositions. In B. Jackson (Ed.), *Proceedings of SALT 12*, Ithaca, NY. CLC Publications.

Beaver, D. and B. Clark (2008). *Sense and Sensitivity: How Focus Determines Meaning*. Oxford: Blackwell.

Bergen, L., R. Levy, and N. Goodman (2014, June). Pragmatic reasoning through semantic inference. Ms., MIT.

Büring, D. (2003). On D-Trees, Beans, and B-Accents. *Linguistics and Philosophy 26*(5), 511–545.

Büring, D. and M. Križ (2013, August). It's that, and that's it! Exhaustivity and homogeneity presuppositions in clefts (and definites). *Semantics and Pragmatics 6*(6), 1–29.

Chemla, E. (2009). Similarity: Towards a unified account of scalar implicatures, free choice permission, and presupposition projection. Under Revision for *Semantics and Pragmatics*.

Chierchia, G., D. Fox, and B. Spector (2012). Scalar implicature as a grammatical phenomenon. In P. Portner, C. Maienborn, and K. von Heusinger (Eds.), *Semantics: An International Handbook of Natural Language Meaning*, Volume 3, Chapter 87, pp. 2297–2331. Mouton de Gruyter.

von Fintel, K. (2008). What is presupposition accommodation, again? *Philosophical Perspectives 22*, 137–170.

Fox, D. (2000). *Economy and Semantic Interpretation*. Cambridge, MA: MITWPL and MIT Press.

Fox, D. (2008). Two short notes on Schlenker's theory of presupposition projection. *Theoretical Linguistics 34*, 237–252.

Fox, D. (2014, April). Cancelling the maxim of quantity: Another challenge for a gricean theory of scalar implicatures. *Semantics and Pragmatics 7*(5), 1–20.

Fox, D. and M. Hackl (2006). The universal density of measurement. *Linguistics and Philosophy 29*, 537–586.

Fox, D. and B. Spector (2009). Economy and embedded exhaustification. Handout from a talk at Cornell, MIT & ENS.

Gajewski, J. (2004). On analyticity in natural language. Manuscript, MIT.

Gazdar, G. (1979). *Pragmatics: Implicature, Presupposition and Logical Form*. Academic Press New-York.

Groenendijk, J. and M. Stokhof (1984). *Studies in the Semantics of Questions and the Pragmatics of Answers*. Ph. D. thesis, Universiteit van Amsterdam, Amsterdam.

Hamblin, C. L. (1958). Questions. *The Australasian Journal of Philosophy 36*(3), 159–168.

Hawkins, J. A. (1991). On (in) definite articles: Implicatures and (un) grammaticality prediction. *Journal of Linguistics 27*(2), 405–442.

Heim, I. (1983). On the projection problem for presuppositions. In *WCCFL 2*, pp. 114–125.

Heim, I. (1991). Artikel und Definitheit. In A. von Stechow and D. Wunderlich (Eds.), *Semantik: Ein internationales Handbuch der zeitgenössischen Forchung*. Berlin: De Gruyter.

Horn, L. R. (1972). On the semantic properties of logical operators in english. Doctoral Dissertation, UCLA.

Hurford, J. R. (1974). Exclusive or inclusive disjunction. *Foundations of Language 11*, 409–411.

Katzir, R. (2007). Structurally-defined alternatives. *Linguistics and Philosophy 30*, 669–690.

Katzir, R. and R. Singh (2014). Hurford disjunctions: embedded exhaustification and structural economy. In U. Etxeberria, A. Fălăuş, A. Irurtzun, and B. Leferman (Eds.), *Proceedings of SuB 18*, pp. 201–216.

Lauer, S. (2013). Towards a dynamic pragmatics. Doctoral dissertation, Stanford University.

Lewis, D. (1988). Relevant implication. *Theoria 54*, 161–174.

Magri, G. (2009). A theory of individual-level predicates based on blind mandatory scalar implicatures. *Natural Language Semantics 17*, 245–297.

Magri, G. (2011, November). Another argument for embedded scalar implicatures based on oddness in downward entailing environments. *Semantics and Pragmatics 4*(6), 1–51.

Mayr, C. and J. Romoli (2014). Redundancy, exhaustification, and the notion of local context. Manuscript.

Meyer, M.-C. (2013, September). *Ignorance and Grammar*. Ph. D. thesis, MIT, Cambridge, MA.

Percus, O. (2006). Antipresuppositions. In A. Uyema (Ed.), *Theoretical and Empirical Studies of Reference and Anaphora: Toward the Establishment of Generative Grammar as an Empirical Science*, pp. 52–73. Report of the Grant-in-Aid for Scientific Research (B), Project No. 15320052, Japan Society for the Promotion of Science.

Roberts, C. (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. In J.-H. Yoon and A. Kathol (Eds.), *Papers in semantics*, Volume 49 of *Working Papers in Linguistics*, pp. 91–136. The Ohio State University.

Romoli, J. (2014). The presuppositions of soft triggers are obligatory scalar implicatures. *Journal of Semantics*.

Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics 1*, 75–116.

van der Sandt, R. (1992). Presupposition projection as anaphora resolution. *Journal of Semantics 9*, 333–377.

Schlenker, P. (2008). *Be Articulate!* A pragmatic theory of presupposition projection. *Theoretical Linguistics 34*, 157–212.

Schlenker, P. (2009). Local contexts. *Semantics and Pragmatics 2*, 1–78.

Schlenker, P. (2012). Maximize presupposition and Gricean reasoning. *Natural Language Semantics 20*, 391–429.

Simons, M. (2001). On the conversational basis of some presuppositions. In R. Hastings, B. Jackson, and Z. Zvolenszky (Eds.), *Proceedings of SALT 11*, Cornell University, Ithaca, NY, pp. 431–448. CLC Publications.

Singh, R. (2009). *Maximize Presupposition!* and informationally encapsulated implicatures. In A. Riester and T. Solstad (Eds.), *Proceedings of* Sinn und Bedeutung 13, pp. 513–526.

Singh, R. (2011). *Maximize Presupposition!* and local contexts. *Natural Language Semantics 19*, 149–168.

Spector, B. (2007). Aspects of the pragmatics of plural morphology: On higher-order implicatures. In U. Sauerland and P. Stateva (Eds.), *Presuppositions and Implicatures in Compositional Semantics*, pp. 243–281. Palgrave-Macmillan.

Spector, B. (2014). Scalar implicatures, blindness and common knowledge–comments on Magri (2011). In S. Pistoia Reda (Ed.), *Semantics, Pragmatics, and the Case of Scalar Implicatures*, pp. 146–169. Palgrave-Macmillan.

Stalnaker, R. (1978). Assertion. In P. Cole (Ed.), *Pragmatics*, Volume 9 of *Syntax and Semantics*, pp. 315–332. New York: Academic Press.

Stalnaker, R. (2002). Common ground. *Linguistics and Philosophy 25*, 701–721.