

Contextual blindness in implicature computation

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Abstract In this paper, I defend a grammatical account of scalar implicatures. In particular, I submit new evidence in favor of the contextual blindness principle, assumed in recent versions of the grammatical account. I argue that mismatching scalar implicatures can be generated even when the restrictor of the universal quantifier in a universal alternative is contextually known to be empty. The crucial evidence consists of a hitherto unnoticed oddness asymmetry between formally analogous existential sentences with reference failure NPs. I conclude that the generation of mismatching scalar implicatures does not require contextual access.

Keywords scalar implicature; contextual knowledge; oddness; asymmetric entailment

“[...] but as we content ourselves with this blind thought
and as we do not push far enough the analysis of notions,
it happens that unwittingly we fall into the contradiction
which the composite idea may imply”.

G. W. von Leibniz, *Meditationes de cognitione, veritate et ideis*, 1684
(transl. G.M. Duncan, 1908)

I. INTRODUCTION

IN so-called grammatical approaches (Chierchia *et al.*, 2012; Fox, 2007; Chierchia, 2006), scalar implicatures are assumed to be derived as part of the semantic contribution of a scalar sentence. One type of evidence in favor of grammatical approaches involves embeddability, the property whereby scalar implicatures can be generated at sub-sentential levels of computation. The evidence concerning embeddability seems unexpected within standard pragmatic accounts, in which conversational inferences are the result of a linguistic speech act; speech acts notoriously resist embeddin (Recanati, 2003; Ansombre & Ducrot, 1983).¹

In addition, in grammatical approaches the scalar implicature mechanism, a compositional device, is assumed to operate in an involuntary fashion, i.e. without taking speakers’ intentions, motives, and relevant contextual knowledge into account. This property of the scalar implicature mechanism is often referred to as *contextual blindness*. An interesting and influential argument in favor of the contextual blindness of the scalar implicature mechanism has been presented by Giorgio Magri in a series of recent contributions

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¹As stated in the text, the embeddability of scalar implicatures seems incongruous with *standard* pragmatic accounts, but there are exceptions: for instance, Krifka (2014) places the notion of embedded speech acts at its center, though Krifka as well acknowledges that the possibility of such embedded speech acts seems to be excluded in disjunctions and conditionals. Recent results regarding the embeddability of scalar implicatures are discussed in Sauerland (2014).

(Magri, 2009, et seq.), building on a previous informal proposal by Hawkins (Hawkins, 1991). According to his argument, scalar implicatures involving positive quantifiers can be derived even when this results in a contextual contradiction (a contradiction in light of contextual knowledge). Consider sentence (1a) below. Magri’s idea is that the oddness effect produced by this sentence originates in the conflict between the negation of the alternative in (1b) and the piece of contextual knowledge according to which, assuming the basic rules of football and of team sports in general, if a given team wins then each of its players win. Since it can be shown that the scalar implicature mechanism is endowed with a provision to avoid contradictions, the derivability of contextually contradictory interpretations is evidence that this mechanism operates blindly with respect to contextual knowledge and is designed to avoid only *logical* conflicts. (As is customary in the literature, here and throughout the paper I will use the symbol “#” to denote pragmatic infelicity.)

- (1) a. # ϕ = Some Portugal players have won Euro 2016.
b. $\text{Alt}(\phi) = \{\text{All Portugal players have won Euro 2016}\}$

The idea of a contextually blind scalar implicature mechanism generating a contradictory interpretation has been the object of various criticisms in the literature. Most of these criticisms aim at demonstrating that in reality no contextual contradiction is generated in the crucial cases. For instance, Spector (2014) has argued that the infelicitous scalar sentences in question are always exclusively associated with “trivial” - that is, pragmatically unusable - alternatives, and that this exclusive association with unusable alternatives produces oddness effects. Since, according to his definition, trivial alternatives include contextually equivalent alternatives, and (1a) can only evoke the universal alternative (1b), the observed oddness can be explained by Spector based on a pragmatic motivation, the conversational value or usability of alternatives, without reference to a contextual contradiction. In addition, Pistoia-Reda & Romoli (to appear) have noted that the oddness effects produced in certain conjunctive variants of the original case, such as (2) below, tend to disappear in simple variants like (3). But this behavior of the conjunctive cases is unexpected if the source of the oddness is the contextual contradiction induced by the first conjunct, as proposed in Magri (2016). Indeed, if this contextual contradiction were the issue, such predicate changes should have no effects on the acceptability of a conjunctive sentence. Consequently, Pistoia-Reda & Romoli have provided an alternative explanation, based on a congruity principle for conjunctive sentences.²

- (2) # Some Portugal players have won Euro 2016 and are blond.
(3) Some Portugal players have won Euro 2016 and have left the team.

This paper, however, is specifically devoted to the discussion of another kind of pragmatically motivated criticism, advanced by Schlenker in his work on Gricean reasoning and the principle of Maximize Presupposition (Schlenker, 2012, § 4). In its essence, Schlenker’s idea is that, even if we conceded that a contextual contradiction can in fact be generated, the mechanism described in grammatical approaches would not in fact be sufficient to derive the contextual contradiction arguably induced by the scalar implicature of (1a). In particular, in order to be negated, the alternative (1b) needs to asymmetrically entail its base sentence.

²Another pragmatic explanation of the oddness of scalar sentences has been proposed in Katzir & Singh (2015). These authors argue that there are relevant cases of oddness that do not involve the generation of contextual contradictions, nor association with pragmatically unusable alternatives. Thus, they propose that all cases of oddness need to be explained on account of the violation of two discourse conditions.

According to the contextual blindness assumption, this asymmetric entailment pattern has to be established logically, without interference of contextual information. However, standard quantificational treatment in classical logic demonstrates that universally quantified sentences do not entail existential variants logically, since we must also be able to assume the non-emptiness of the relevant domains. Schlenker argues that the existential import of the universal quantifier cannot be satisfied through an existence presupposition, since there are cases in which universal sentences do not seem to carry an implication that the restrictor of the universal quantifier is not empty. Thus, he concludes that “recourse to contextual knowledge is necessary to have the desired pattern of asymmetric entailment” (Schlenker, 2012, p. 421). Magri (to appear) characterizes the resulting perspective as being based on a *contextual shortsightedness* principle: in this view, the scalar implicature mechanism allows for the generation of a contextual contradiction, and it is consequently blind to the piece of information that determines the conflict; however, the mechanism cannot be blind to the contextual information concerning the emptiness of the relevant domain. There is, to be sure, Schlenker admits, another theoretical possibility for the proponents of the contextual blindness assumption, which involves changing the semantics of the exhaustivity operator so as to allow the negation of logically independent alternatives, rather than simply of asymmetrically entailing alternatives. However, Schlenker notes that we would be faced with a symmetry problem if this option were taken. In particular, we would be forced to predict the negation of an existential alternative like (1a) starting from a universal base sentence like (1b) - something which is clearly not attested.³

In this paper I provide a defense of the contextual blindness assumption, with specific focus on cases involving positive quantifiers. If contextual access is necessary in order to obtain the asymmetric entailment pattern, as assumed in Schlenker’s criticism, then a scalar implicature cannot be generated *unless* contextual knowledge entails that the relevant domains are not empty. In particular, no scalar implicature can be generated in case contextual knowledge entails that the relevant domains are in fact empty. However, I will show that a mismatching scalar implicature is generated even if contextual knowledge entails that the relevant domain is empty. This new argument is crucially based on a hitherto unnoticed oddness asymmetry between existential sentences with reference failure NPs. While previous work has assumed that existential sentences that display reference failure can nevertheless be interpreted naturally, the cases we will consider here give rise to a clear infelicity effect - one which, interestingly, a recent pilot experiment connects to the oddness produced in the original cases. Consequently, the observed contrast is to be explained by the generation of a mismatching scalar implicature in one of the two types of sentences, which supports the idea, *pace* Schlenker, that contextual access is not necessary to derive the relevant inference.

³Schlenker’s idea that logical independence gives rise to a symmetry problem also extends to scalar sentences involving Hirschberg’s alternatives. In particular, if logical independence is the relevant relation between base sentence and alternatives, we cannot obtain the observed negation of the first alternative in (1b) without also producing the undesired negation of the second alternative. This part of Schlenker’s criticism is discussed in Magri (to appear).

- (1) a. # ϕ = Mary has a high school degree.
 b. $\text{Alt}(\phi) = \{ \underbrace{\text{Mary has a college degree}}_{\psi_i}, \underbrace{\text{Mary has a junior high school degree}}_{\psi_{ii}} \}$

II. THE ORIGINAL ARGUMENT FOR CONTEXTUAL BLINDNESS

Let us consider another infelicitous scalar sentence. The scalar implicature attached to sentence (4a) below, which involves the negation of the alternative (4b), contradicts contextual knowledge. Specifically, the scalar implicature conflicts with the piece of contextual knowledge according to which all Swedes come from the same country.

- (4) a. # ϕ = Some Swedes come from a cold country.
 b. $\text{Alt}(\phi) = \{\text{All Swedes come from a cold country}\}$

Given the latter piece of contextual knowledge, it cannot be the case that some Swedes come from a country which is cold while others come from a country which is not cold (assuming, of course, that for a country the property of being cold is stable over time.) In other words, when conjoined with the standard contribution of the existential sentence, the scalar implicature results in a pure contradiction.⁴ Now, if we follow an established tradition in the literature according to which contextual conflicts produce infelicity effects (see (Magri, 2009, Sect. 3.2) for relevant references) we can explain the observed oddness as an effect of the mismatching inference. Magri dubs the underlying assumption, on account of which the contextual conflict generated by the mismatching scalar implicature results in an infelicity effect, the ‘Mismatch Hypothesis’.

As Magri discusses, independent evidence in favor of the idea that the oddness of such sentences is due to a mismatching inference comes from the fact that these sentences remain infelicitous when an overt ‘only’ is added. This is shown in (5) with respect to the original sentence (4a), and in (6) with respect to the original sentence (1a).

- (5) # Only $\underbrace{\text{some Swedes come from a cold country.}}_{\phi}$
 (6) # Only $\underbrace{\text{some Portugal players have won Euro 2016.}}_{\phi}$

A general tenet of grammatical approaches, as already indirectly observed, is that scalar implicatures are generated because an exhaustivity operator is articulated in the sentence structure. This exhaustivity operator is assumed to be an implicit counterpart of the exclusive operator and to be endowed with a similar semantics (Fox, 2007, Sect. 1.3). In particular, the operator associates with the scalar term in the sentence and generates the conjunction of the prejacent proposition and of the negation of all negatable alternatives (of the *conjoined* negation in case there is more than just one alternative). A similar combination can be observed, for instance, in (7a), where the exclusive operator associates with a focused term and returns the conjunction of the initial sentence deprived of the exclusive particle and of the negation of some suitably derived alternatives. One important difference between the two operators is that the prejacent proposition is

⁴It is interesting that, as has been often noted in the literature (Horn, 1989), the strengthened meaning of an existential sentence corresponds to the conjunction of the sub-contraries in the post-Aristotelian Square of Opposition, while the information that either all Swedes come from a cold country or none of them do, implied by the information that all Swedes come from the same country, corresponds to the disjunction of the contraries. Now, the conjunction of the sub-contraries and the disjunction of the contraries are explicitly realized as independent vertices in a relevant expansion of the post-Aristotelian Square of Opposition, generally referred to as Blanché’s Hexagon (Blanché, 1966). Boethius already noted that the upper vertex is rarely lexicalized, especially in the modal version of the Hexagon. The derivability of a contextual contradiction at the lower vertex might have played a role in determining this pattern of lexicalization. I hope that future research will investigate this further.

derived with presuppositional force from exclusive sentences such as (7a) while being part of the asserted content of exhausted scalar sentences like (4a).⁵

- (7) a. $\phi = \text{John met only [Mary]}_f$
 b. $\text{Alt}(\phi) = \{\text{John met Mary and Paul}\}$

A crucial consequence of this parallel is that the exhausted meaning of a scalar sentence can be accessed by incorporating an overt instance of the exclusive operator into the initial structure of the sentence. Thus, the infelicity of the two exclusive variants in (5) and (6) above, which is plausibly due to the conflict with contextual knowledge caused by their asserted contents, lends plausibility to the idea that the source of the oddness in the scalar examples is a mismatching scalar implicature. In passing, we have to note that the very fact that a similar conflict can be generated in the case of exclusives is also proof that the dedicated device to derive the alternatives of exclusive sentences cannot avoid the negation of the mismatching alternative.

Now, the scalar implicature mechanism, as well as the semantics of the exclusive operator, can be argued to be endowed with a provision which avoids the negation of alternatives that would produce contradictions. In the case of scalar sentences this would seem to be demonstrated by the fact that universal base sentences do not generate the negation of alternatives construed by substituting the universal quantifier with terms like ‘most’ and ‘many’ (Magri, 2016, p. 7). Something similar holds in the case of exclusives. Thus, in particular, the observed oddness in the scalar examples is proof that the scalar implicature mechanism is indifferent to the risk of generating a contextual contradiction. We can conclude that the scalar implicature mechanism is specifically engineered to avoid purely *logical* contradictions and that scalar implicatures are generated blindly with respect to contextual knowledge.

As is often noted in the literature, scalar implicatures may be computed blindly with respect to contextual knowledge; however, it would be wrong to assume that they are generated completely independent of all contextual knowledge (Chierchia *et al.*, 2012, p. 2298). This caveat is explicitly accepted by Magri in his theory. In particular, Magri proposes a specific constraint on the negation of alternatives, according to which alternative sentences may only be negated provided that they have been assigned relevance through a specific relevance assignment procedure. But, is it possible to derive a contextual contradiction while assuming that relevance plays a role in the negation of alternatives? Magri’s solution to this apparent complication involves imposing that valid assignments of relevance be contingent on two grammatical axioms. According to the first axiom, base sentences always count as relevant, because they are the object of utterance. According to the second axiom, a sentence which is contextually equivalent to an independently relevant sentence also counts as relevant (in other words, relevance is assumed to be closed with respect to contextual equivalence). Thus, in the above example the negation of (4b) and the consequent mismatching inference are generated because the alternative and the base (and relevant) sentence stand in a relation of contextual equivalence. Given the piece of contextual knowledge that all Swedes come from a cold country, there is no way for these sentences to be assigned different truth values. Note that, in order for his explanation to work, Magri doesn’t merely need to assume that alternatives may be negated only if they are relevant; he also needs to assume that alternatives are negated obligatorily, whenever they are assigned relevance. However, there has been discussion in the literature as to whether relevant alternatives are necessarily negated, especially when relevance assignments

⁵Standard presuppositional analyses of the exclusives operator are contained in Horn (1969) and in Roberts (1996). Beaver & Clark (2008) propose the theory that the presupposition induced by exclusive sentences is not always the prejacent proposition.

are derived from previous discourse (Romoli, 2012). Be that as it may, in order to circumvent this potential difficulty in this paper I devote my attention to scalar sentences uttered out of the blue.

We have noted that in the above examples alternatives and base sentences stand in a relation of contextual equivalence. It should be underlined that, precisely because of this equivalence relation, classic versions of pragmatic approaches to implicatures cannot provide an explanation of the observed oddness, assuming that this oddness is due to the mismatching inference (Heim, 1991). In such accounts the scalar implicature mechanism, rather than being an algorithm for generating automatic inferences, represents a “heuristic form of reasoning” (Geurts, 2010, p. 37) activated by the violation of the first Gricean maxim of quantity. Consequently, in a pragmatic reconstruction of the phenomenon, base sentences and alternatives are compared with respect to the amount of information they add to the ongoing conversation. However, because of the nature of the contextual knowledge at issue, alternatives and base sentences in fact convey exactly the same amount of information - specifically, the information that Sweden is a cold country and the information that Portugal has won Euro 2016 respectively. Uttering one of the two base sentences instead of the respective alternatives cannot possibly constitute a violation of the relevant conversational maxim. Thus, no mismatching scalar implicature can be predicted by standard pragmatic approaches, leaving the observed oddness unexplained.

III. A KEY DIFFICULTY WITH QUANTIFIERS

The contextual blindness assumption has been widely discussed in the literature. As we have noted already, skeptical voices have commonly focused on the observation that alternative (and more theoretically conservative) explanations are available for the observed oddness - explanations which do not rely on the derivability of a contextually contradictory scalar implicature. The criticism put forward by Schlenker (2012), though pragmatically motivated as well, is crucially different. His target is not merely the idea that the scalar implicature mechanism can generate contextual contradictions. In fact, Schlenker does grant, if only for the sake of the argument, that such contextual contradictions can arise. His point is that, somewhat surprisingly, none of the approaches which assume the complete blindness of the scalar implicature mechanism are actually able to explain that a contextual contradiction has been generated. What he has in mind, then, seems to be a more versatile version of pragmatic approaches to scalar implicatures, one which in his view significantly improves on standard theories. According to his critical argument, the scalar implicature mechanism may be blind to the information that alternatives and base sentences stand in a contextual equivalence relation, which in key cases is at the origin of the contextual contradiction assumed within grammatical reconstructions. However, he says, it would be wrong to assume that the mechanism is blind to *all* contextual knowledge. In particular, the mechanism cannot be blind to the contextual information that the relevant domains are not empty. Let us discuss Schlenker’s argument against contextual blindness in more detail.

The first component of Schlenker’s argument builds on standard quantificational analysis in classic logic. According to Schlenker, the desired pattern of asymmetric entailment between base sentence and alternatives cannot be established in a purely logical fashion, contrary to what the contextual blindness principle would seem to require. On standard quantificational treatment, universally quantified sentences cannot be taken as entailing their existential variants on account of their purely logical contributions. To illustrate, consider the standard formulation of universal sentences in (8a). This formulation contains an implication. This fact entails that a universal sentence is bound to be true whenever the restrictor of the universal quantifier is empty,

namely whenever there are no *A*-individuals for the quantifier to range over. For instance, given that Italy is a Republic, the universal sentence in (8b) is necessarily assigned truth in this analysis.

- (8) a. $\forall x (Ax \rightarrow Bx)$
b. All Italian kings enjoy hunting.

On the other hand, it follows from the standard conjunctive definition of existential sentences, reported in (9) below, that empty domains cannot but result in falsity in the same circumstances. Indeed, there cannot be a non-empty intersection between any given set and the empty set. In particular, then, this formulation entails that the existential sentence in (10a) is equivalent to the variant in (10b); but the latter sentence clearly implies (10c).

- (9) $\exists x (Ax \wedge Bx)$
(10) a. Some Italian kings enjoy hunting.
b. Italian kings enjoying hunting exist.
c. Italian kings exist.

Therefore, assuming these standard definitions, the implication from universally quantified sentences to existentially quantified sentences cannot be said to be valid unless it can also be assumed that the relevant domain is non-empty. Purely logical relations, at least those derivable from standard quantificational treatment, do not give grounds for this inference. This problem is often referred to as the problem of the existential import of universal quantifiers, one of the most debated issues in philosophical logic (for recent linguistic references, see Geurts (2007) and Abusch & Rooth (2004)). Thus, the conclusion of the first part of Schlenker's argument is that, if asymmetric entailment is the relevant relation between base sentence and alternatives, it cannot be established logically.

But is there another way to establish the asymmetric entailment pattern that would be compatible with an approach building on contextual blindness? As Schlenker himself recognizes, there is indeed a standard response to the existential import complication, and it consists of assuming that universal sentences carry an existence presupposition. However, the second component of his argument provides evidence that such a theoretical option is empirically flawed. He makes his case based on two basic observations. First, there are cases in which universal sentences do not seem to carry any kind of implication that the domain of the universal quantifier is not empty. To illustrate, Schlenker notes the sentence (11) below. Under a natural reading, this sentence does not seem to imply that there will be students with a perfect score on the next test. In fact, it may well have been the speaker's fear that there might be no student at all with a perfect score that prompted the utterance.

- (11) I'll give a bottle of champagne to every student who gets a perfect score on the next test.

Second, the presuppositional response seems to be at odds with the standard presupposition projection pattern concerning quantifiers with universal force. For instance, the sentence in (12a) does not carry an implication that there was at least one applicant with a published paper. However, the sentence in (12b) does trigger the inference that each year at least one applicant with a published paper got in.

- (12) a. Each year, every applicant who already had a published paper got in.
 b. Each year, I knew that at least one applicant who already had a published paper would get in.

Having reached this point in Schlenker’s exposition, we might conclude that there is no way to obtain the desired pattern of asymmetric entailment without accessing contextual knowledge. Yet there remains one more conceivable option to rescue the notion of contextual blindness: changing the semantics of the exhaustivity operator so as to allow the negation of *non-weaker* rather than simply stronger (that is, asymmetrically entailing) alternatives (for an early proposal in terms of “innocently excludable” alternatives, Fox (2007)). This would of course be a crucial departure from standard pragmatic approaches, which do not offer ground for negating non-weaker alternatives. But if we were to make this move, the universal alternatives would in fact be excluded, on account of their being logically independent of the relevant base existential sentences. This would clearly solve the problems discussed above.

However, in the third and final component of his argument, Schlenker contends that if this line is taken, we are faced with what he calls a symmetry problem. The symmetry problem is the following. Suppose alternatives are negated based on their logical independence of the respective base sentences. The alternative in (4b) will be negated because it is logical independent of the base sentence in (4a). Note that when a universal sentence is considered as base sentence, like in (13a), it is automatically associated with the existential alternative, (13b). Since, assuming the same reasoning as before, this existential alternative is logically independent of the base sentence, we should expect that the alternative is negated in this case. Yet, as we know from the standard conjunctive formulation of existential sentences, presented in (9), the interpretation resulting from the negation of the existential alternative would be equivalent to negating that people coming from Sweden exist. As it is clear, though, this interpretation is not available for (13a).

- (13) a. $\phi =$ All Swedes come from a cold country
 b. $\text{Alt}(\phi) = \{\text{Some Swedes come from a cold country}\}$

Schlenker thus concludes that logical independence cannot replace asymmetric entailment as the relevant relation for deriving scalar implicatures. Since asymmetric entailment cannot be established logically, nor through an existence presupposition, he argues that contextual access is necessary even for generating mismatching scalar implicatures, especially to check the non emptiness of the relevant domains.

IV. NEW EVIDENCE FOR CONTEXTUAL BLINDNESS

Schlenker’s argument against contextual blindness (or in favor of a more versatile pragmatic approach that allows for contextual contradictions) generates the prediction that no scalar implicature can be derived unless the necessary existential import has been contextually established. In particular, no scalar implicature can be derived when contextual knowledge entails that the restrictor of the universal quantifier is empty. However, in this section I am going to prove that this prediction is empirically inaccurate.

My new argument for contextual blindness is based on the observation that a mismatching scalar implicature can be detected in cases in which the restrictor of the quantifier in a universal alternative is contextually known to be empty. This observation builds on the oddness asymmetry between two formally analogous existential sentences containing the same reference failure NP. The observed contrast, I will argue, needs to

be explained as a direct effect of the mismatching scalar implicature generated by one of the two sentences. Since this mismatching scalar implicature is generated notwithstanding the fact that contextual knowledge entails the emptiness of the relevant domain, I will conclude that recourse to contextual knowledge is not necessary to derive the mismatching scalar implicature. Of course, this new argument in favor of contextual blindness could be extended in different and arguably incompatible directions, a point to which I will return. But let me first present the crucial evidence upon which my argument is built.

Consider the existential sentence in (14a), construed with a reference failure NP. According to my intuition, this sentence sounds unequivocally infelicitous.

- (14) a. # ϕ = Some Swedish matadors come from a cold country.
b. $\text{Alt}(\phi) = \{\text{All Swedish matadors come from a cold country}\}$

This informal intuition received clear corroboration in a recent pilot experiment. One of the most important results of this experiment is that I observed a similar percentage of inappropriateness judgments in a condition corresponding to basic scalar examples, i.e. sentences such as (4a), and in a condition corresponding to existential items construed with reference failure NPs, such as (14a). Statistical analysis showed a high positive correlation between inappropriateness judgments in the two conditions, and one that was of great statistical significance.⁶ Thus, these preliminary results lend plausibility to the idea that similar mismatching inferences are at the origin of the oddness effects observed in the original scalar examples and in these new cases. Clearly, if a mismatching scalar implicature explains the oddness effect attached to a sentence like (14a), we seem to have evidence against Schlenker's prediction.

Against this interpretation of the new findings, one might propose that the oddness of an existential example like (14a) is precisely due to the reference failure it contains. There are a number of observations, though, that argue against this alternative proposal. The first is that the sentence in (15a), which is construed with the same NP as (14a) above, does not give rise to infelicity effects, at least according to informal intuition.

- (15) a. ϕ = Some Swedish matadors know Latin
b. $\text{Alt}(\phi) = \{\text{All Swedish matadors know Latin}\}$

The second observation is that in the pilot experiment I observed a very low percentage of inappropriateness judgments in the second condition tested, which corresponded to sentences like (15a), and more importantly no statistically significant correlation with either of the two other conditions tested.

The third observation against the alternative explanation follows from previous discussion in the literature, where the acceptability of reference failure existential sentences is demonstrated. In particular, according to the empirical pattern described in Lappin & Reinhart (1988) existential sentences containing reference failure NPs can be used naturally. As the authors observe, the majority of informants tend to assign a

⁶The pilot experiment was conducted by testing the intuitions of 10 adults, native speakers of English. These informants were recruited on the Amazon Mechanical Turk platform. I tested three conditions. Sentences in the first condition were obtained by combining five reference failure NPs with VPs yielding contextual contradictions; sentences in the second condition were obtained by combining five different reference failure NPs with VPs not yielding contextual contradictions; finally, sentences in the third condition were construed from Magri's original cases. Informants were instructed to press a "True" button when they judged a sentence to be true; to press a "False" button when they judged it to be false; and to press a "Can't say" button if they judged it to be inappropriate (see Abrusán & Szendroi (2013) for a similar ternary paradigm). I found a highly significant positive correlation between inappropriateness judgments in the first and in the third condition (Pearson's coefficient was 0,816) of great statistical significance ($p=0,003$). The relevance of the second condition will be explained later in the text.

standard truth value to improper uses of weak quantifiers, thus conforming to the classic interpretations of their determiners. However, the majority of informants also interpret improper uses of strong quantifiers as undefined rather than true. This is proof that speakers' judgments do not correspond to the classic analysis of strong quantifiers in logic. According to some researchers (Reinhart, 2006), the observed pattern is evidence for non-presuppositional analysis of indefinites. Other researchers (Von Stechow, 1998), however, criticize the assumption that presuppositional analyses of indefinites are forced to predict truth-value gap judgments. Be that as it may, the acceptability of reference failure existential sentences like (15a) is expected, in light of the classic pattern. The infelicity of (14a), on the other hand, would seem to call for a partial revision of Lappin & Reinhart's pattern. In particular, existential sentences can be used naturally only under the assumption that the strengthened meaning of the sentence does not result in a contradiction given common knowledge. In the latter case, the production of an oddness effect is expected on account of the hypothesis concerning contextual conflicts. Let us conclude this discussion by observing that, assuming the derivability of a mismatching inference with empty domains, there is no need to predict infelicity effects in the case of (15a). Contextual knowledge does not entail that all Swedes share the same linguistic abilities. Consequently, the possible negation of the universal alternative in (15b) does not generate any contextual contradiction, and no oddness effect is expected to be produced in this case. Note that, for the same reason, Schlenker's proposal cannot be falsified here. In particular, Schlenker's argument generates the prediction that a scalar implicature *cannot* be generated in this case, as opposed to our proposal that a scalar implicature could in fact be generated but without producing infelicity effects. Thus, there is no way of generating distinct empirical predictions with respect to oddness effects here.

Another sign that the oddness of (14a) is due to a mismatching scalar implicature, which implies that no infelicity effect should be produced in the case of (15a), is that a similar contrast can be observed between the exclusive variants of the simple scalar examples. This asymmetry is clearly shown in (16a) vs. in (16b). Since the strengthened meaning of a scalar sentence can be accessed via the application of the exclusive operator to the initial sentence structure, as we have discussed with respect to examples (5) and (6), the variation in acceptability of these exclusive variants demonstrates that the oddness effect originates in the status of the respective strengthened meanings.

- (16) a. # Only $\underbrace{\text{some Swedish matadors come from a cold country.}}_{\phi}$
 b. Only $\underbrace{\text{some Swedish matadors know Latin.}}_{\phi}$

As I noted above in discussing the original argument for contextual blindness, the scalar implicature mechanism may be blind to many types of contextual knowledge but cannot be completely independent of it. In particular, alternatives are assumed to be negated only if they have been assigned relevance. When an alternative is assigned relevance, it is obligatorily negated.

The relevance assignment procedure is such that on certain occasions relevance assignments can be forced on alternatives. This is a direct consequence of the fact that the relevance assignment procedure is linguistically triggered and subject to relevance axioms imposed by the grammar. Since, in particular, contextual relevance is assumed to be closed with respect to contextual equivalence, the alternative in (4b), repeated here as (17b), is subject to obligatory negation, if, based on the information that all Swedes come

from the same country, we take it that this alternative is contextually equivalent to the base sentence (4a), repeated here as (17a), and that base sentences are necessarily relevant. Is it possible to propose a similar explanation to account for the oddness of (14a) while maintaining that relevance plays a role in the negation of alternatives? In order to circumvent complications arising from dependence on previous discourse, suppose that the base sentence has been uttered out of the blue. In this case, then, there is no way to derive the relevance of the universal alternative from previous manipulation of the context. The only factor that can have forced relevance assignment on the alternative is a contextual equivalence relation with the base sentence.

- (17) a. $\# \phi =$ Some Swedes come from a cold country.
 b. $\text{Alt}(\phi) = \{ \text{All Swedes come from a cold country} \}$

An important implication is that, in order for this potential explanation concerning relevance to work, the relevance assignment procedure itself has to be partially blind to contextual knowledge. In particular, the procedure cannot be blind to the information that all Swedes come from the same country. If this were the case, there would be no way to derive the contextual equivalence relation between alternative and base sentence. But for the same reason, the procedure has to be necessarily blind to the information that Swedish matadors do not exist. Since this particular behavior of the procedure is ultimately connected with the specific relationship that is assumed to hold between quantifiers, a point I must leave open for future investigation, I shall not pursue a deeper explanation here.

For the time being, however, I would like to suggest that the partial blindness of such a procedure may be related to the differing status of the two pieces of sentence-external information (the piece of information that all Swedes come from the same country and the piece of information that Swedish matadors do not exist). Indeed, the piece of contextual knowledge according to which all Swedes come from the same country would seem to be implied by the definition of ‘country’, by what a country really is, and consequently it could be available by simple appeal to the term’s lexical entry. On the other hand, the information that there are no bullfighters coming from Sweden does not automatically emerge from lexical considerations and would seem to require access to world knowledge. In short, the kind of information that the relevance assignment procedure has access to might be pure lexical knowledge rather than contextual information.

V. FUTURE RESEARCH ON CONTEXTUAL BLINDNESS

In the foregoing discussion I have presented evidence that the scalar implicature mechanism can give rise to a mismatching inference even when contextual knowledge entails that the relevant domains are empty. In particular, I have argued that assuming the generation of a mismatching scalar implicature with empty domains is the only way to explain the unexpected oddness asymmetry between the two reference failure existential sentences. This observation provides grounds for rejecting Schlenker’s argument against contextual blindness. As we have seen, contextual knowledge entails that Swedish matadors do not exist. So, if alternatives are negated based on a pattern of asymmetric entailment with base sentences, and assuming standard quantificational treatment, the existential import attached to the universal alternative cannot be said to be satisfied contextually in this case. The derivability of a mismatching scalar implicature with an empty domain speaks against Schlenker’s idea that recourse to contextual knowledge is necessary in order to obtain an implicature, even a mismatching implicature.

It is now time to discuss what would be the theoretical implications of allowing this kind of generation for a theory of scalar implicature based on contextual blindness. A first possibility to account for the mismatching inferences with empty domains involves maintaining that alternatives are negated based on a pattern of asymmetric entailment with base sentences and proposing that universal sentences in fact carry an existence presupposition, intended as a definiteness condition on the sentence (for a presuppositional analysis of universal sentences, see De Jong & Verkuyl (1985); see also the discussion in Chierchia (2004)). One may then argue that this existence presupposition is satisfied automatically, i.e. without recourse to contextual knowledge, when the universal sentence is computed as an alternative, that is to say implicitly. Note that such default emergence of the existence presupposition seems to be coherent with asymmetric accounts of the different presuppositions attached to universal sentences (Sauerland, 2008). Evidence in favor of this explanation should be available if one makes use of the fact that all cases used by Schlenker to argue against a presuppositional analysis of universal sentences, such as (11) and (12a), crucially involve potential presuppositional items found in embedded positions. Of course, one cannot exclude that the embedded position might play a role in invalidating the generation of the relevant implication in such cases.

The first possibility thus involves maintaining that asymmetric entailment is the relevant relation for obtaining the negation. A second possibility to account for the generation of implicatures with empty domains would be to argue that asymmetric entailment is not the relevant relation for deriving scalar implicatures after all; that what matters is logical independence. As mentioned, this option has been explicitly taken by a number of authors. One of the main pieces of evidence in favor of this treatment consists of the exhaustivity behavior of scalar sentences in non-monotonic environments. The main obstacle, on the other hand, for adopting this solution is constituted by the symmetry problem discussed by Schlenker.

A third and final possibility, one that to my knowledge has never been considered in the literature, would be to concede that asymmetric entailment is indeed the relevant relation for the derivation of scalar implicatures, while also maintaining that the relevant entailment pattern obtains independently of the presence or the absence of existential import of universal quantifiers - that the entailment pattern can be derived on account of a purely logical association between the quantifiers. Clearly, pursuing this possibility would require abandoning standard quantificational analysis and to instead assume an alternative and non-standard treatment, such as those offered by connexive logics. To illustrate, note that in connexive quantificational treatments, existential sentences are given a conditional definition, reported in (18). It is easy to realize that this definition blocks the implication to the existence of *A*-individuals, which, as discussed above, is an integral component of standard analysis. Universal sentences can consequently be taken as asymmetrically entailing their existential variants independently of considerations about existence. McCall famously declared that the existence of external objects should be of no relevance for determining the validity of logical inferences, for “it would be ridiculous to think that the discovery of unicorns in the mountains of the moon would affect the validity of an inference” (McCall, 1967, p. 347).

$$(18) \quad \exists x (\neg (Ax \rightarrow \neg Bx))$$

VI. CONCLUSION

In this paper I have discussed a key assumption of grammatical approaches to scalar implicatures, namely the contextual blindness principle. According to this principle, scalar implicatures are generated in an automatic fashion, without *necessary* recourse to contextual knowledge. The recourse to contextual knowledge is not crucial because alternative sentences can be shown to be negated even in cases where implicature generation engenders a contextual contradiction. Nevertheless, contextual knowledge can be shown to play a role in determining the interpretive result of the scalar implicature mechanism. In particular, the mechanism generates the negation of the alternative sentences only if these are assigned contextual relevance through a suitably defined relevance assignment procedure. It should be underlined that, contrary to what one might expect, the cases in which the mechanism gives rise to contextual contradictions are not also cases in which the mechanism fails to assign, for some reason, contextual relevance to the alternative sentences. Rather, the relevance assignment procedure is such that relevance can be imposed on alternative sentences on certain occasions. But the pure derivability of a mismatching scalar implicature also tells us something else, namely that the alternative sentences whose negation would yield a contextual contradiction are taken into account by the mechanism and considered as potential candidates for negation. This is further evidence that the scalar implicature mechanism does not arise from conversational dynamics; rather, it is the unadulterated expression of a natural tendency of speakers to avoid structural conflicts. In this discussion, I have contributed new evidence in favor of the contextual blindness of the scalar implicatures mechanism. In particular, I have shown that a mismatching scalar implicature can be generated even when the restrictor of the quantifier in a universal alternative is contextually known to be empty.

VII. BIBLIOGRAPHY

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