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Resolving symmetry without constraining alternatives*

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Abstract In cases where an assertion could in principle lead to several, mutually incompatible quantity implicatures, some of these implicatures seem systematically unavailable. Katzir (2007) and Fox & Katzir (2011) aim to solve this so-called ‘symmetry problem’ by preventing implicatures that are based on the exclusion of alternatives that are syntactically more complex than the assertion itself. We argue that this complexity filter on alternatives falls short of solving the symmetry problem completely, and is in fact incompatible with the full range of observed implicatures. We propose a solution to the symmetry problem that, in addition to context, appeals to a blocking condition: enriching the meaning of an utterance ϕ with an implicature is blocked if the same meaning can be expressed without this implicature, by an utterance that is no more complex than ϕ . In making our case, we also argue against a central auxiliary assumption that Katzir and Fox’s account appeals to, namely the assumption that symmetry cannot be resolved by context.

Keywords: exhaustification, quantity implicature, symmetry problem, complexity constraint, blocking

1 Introduction

Exhaustification is a process that can tacitly strengthen basic sentence meanings. Prominent instances of this effect are so-called scalar implicatures, inferences routinely associated with uses of certain logical vocabulary. Sentences with the existential determiner *some* are a familiar case in point. Sentence (1) has a basic meaning that is merely existential, namely that there are players who responded, which we will state as in (2). But (1) can, and typically does, carry the stronger meaning in (3). That is, (1) can be understood as also implying that there were players who did not respond, the second conjunct of (3). The utterance can clearly have this stronger

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interpretation, as is supported by the fact that the stronger meaning can be denied with *no*, as in (4).¹

- (1) Some players responded.
- (2) Basic meaning of (1):
SOME(P)(R)
- (3) Available strengthened meaning of (1):
SOME(P)(R) $\wedge$ $\neg$ ALL(P)(R)
- (4) A: Some players responded.
B: No, all of them did!

The nature of exhaustification is a matter of debate. In particular, while the mapping from basic to strengthened meaning is classically attributed to Gricean pragmatics, it has also been credited to a grammatically encoded operator (e.g., Chierchia et al. 2012). However, since the choice between these options does not bear on the arguments in this paper, we will refrain here from committing to one view or another. Reflecting this lack of commitment, we will often use the terms *strengthening* and *strengthened meaning* to refer to the phenomenon in question, which might be more obviously theory-neutral than *exhaustification*. At the same time, it will be convenient to also have a name for the inferences that strengthening adds to basic meaning, such as the second conjunct in (3), and we will employ the term *implicature* to that effect.

In the broadest characterization, strengthening takes the form in (5). That is, the strengthened meaning of sentence ϕ , $\text{Exh}_{\text{Excl}}(\phi)$, is the conjunction of the basic meaning of ϕ , $\text{Basic}(\phi)$, with the negations of the members of a set of propositions *Excl*. We will also refer to *Excl* as the *exclusion set*, and to its members as the *excluded propositions*. The format in (5) can be illustrated with the equality in (6). That is, the strengthened meaning of sentence (1) given in (3) can be understood as due to strengthening relative to an exclusion set that contains just the proposition ALL(P)(R) , that all players responded.

¹ We assume that the possibility of using the polar particle *no* in this dialogue, followed by a sentence denying the implicature, provides evidence that one can read the utterance as making a stronger statement than its literal meaning suggests. A reviewer comments that *no* does not sound fully felicitous to them in this case. When soliciting judgments we noticed that using *no* may be avoided here by some because it sounds a bit impolite or at least ungenerous—after all, the listeners could have made the assumption that no implicature was intended, in which case no objection would be warranted. Adding *tell me exactly...* or *is it correct that...* in the context can help make *no* felicitous, maybe because attention to the truth of the matter diminishes the politeness effects. Meyer (2013) uses *Are you saying that...* as a test for implicature, which might be a way to avoid this issue.

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- (5) Strengthened meaning:
 $\text{Exh}_{\text{Excl}}(\phi) = \text{Basic}(\phi) \wedge \bigwedge \{\neg p: p \in \text{Excl}\}$
- (6) $\text{Exh}_{\{\text{ALL}(\text{P})(\text{R})\}}(1) = \text{SOME}(\text{P})(\text{R}) \wedge \neg \text{ALL}(\text{P})(\text{R})$

A central task for a theory of strengthening is to explain limitations on the range of actually observed sentence meanings of the format in (5). Consider a hypothetical exclusion set for (1) that only contains $\neg \text{ALL}(\text{P})(\text{R})$, the proposition that not all players responded. As stated in (7), strengthening (1) with this exclusion set would yield $\text{ALL}(\text{P})(\text{R})$, that all players responded. As recorded in (8), however, such a strengthening is unavailable for (1). This is confirmed by the observation in (9) that the relevant hypothetical implicature cannot be felicitously denied.

- (7) $\text{Exh}_{\{\neg \text{ALL}(\text{P})(\text{R})\}}(1) = \text{ALL}(\text{P})(\text{R})$
- (8) Unavailable strengthened meaning of (1):
 $\text{ALL}(\text{P})(\text{R})$
- (9) A: Some players responded.
 B: #No, not all of them did!

Why is it that the basic meaning of (1) can be strengthened with the implicature $\neg \text{ALL}(\text{P})(\text{R})$, yielding (3), but not with $\text{ALL}(\text{P})(\text{R})$, yielding (8)? The pertinent literature typically takes relevance to be closed under negation and conjunction (cf. Fox 2007, Fox & Katzir 2011), and it therefore remains unclear why the inference in (8) is not viable. The possibility of strengthening (1) to $\neg \text{ALL}(\text{P})(\text{R})$ suggests that this meaning is relevant, and it therefore seems hard to argue that it cannot be in the exclusion set for lack of relevance. We therefore follow the previous literature in assuming that relevance will not be sufficient to explain the asymmetry in (1) (see Magri 2009 for similar reasoning), but return to this question in Section 3.3. For any implicature that we observe to be possible, we can in fact easily create a symmetric competitor, simply by adding negation:

- (10) Conceivable symmetric strengthenings:
- a. $\text{Basic}(\phi) \wedge \neg p$
 - b. $\text{Basic}(\phi) \wedge p$

Whenever the basic meaning of a sentence ϕ can be strengthened with the conjunct $\neg p$, as in (10-a), but not with the conjunct p , as in (10-b), the question arises on what grounds the former is available while the latter is not. Since the two strengthenings in (10) and the implicatures they add are in a transparent sense *symmetric*, this problem is known as the *symmetry problem*. First identified by Kroch (1972) with reference

to a Gricean view of strengthening, the symmetry problem has figured prominently in recent work on exhaustification.

1.1 Filtering alternatives

The dominant approach to address this issue involves imposing constraints on the membership of the exclusion set *Excl*. On this view, if for a given sentence ϕ , the strengthening (10-a) is attested while (10-b) is not, this is assumed to be due to a constraint that allows for an exclusion set that yields (10-a), but prohibits an exclusion set that would yield (10-b). For example, sentence (1) is assumed to permit the strengthening in (3), but not the one in (8), because the exclusion set for the interpretation of (1) may contain $\text{ALL}(\text{P})(\text{R})$ to yield (3), but it cannot contain $\neg\text{ALL}(\text{P})(\text{R})$, or any other proposition that would enable the derivation of (8).

This approach has prominently been developed by constraining the exclusion set with reference to the *linguistic form* that would be required to express certain meanings. Horn (1972), for example, postulates lexical scales, today often called *Horn scales*; Levinson (1983) invokes an *economy* condition; and Horn (2000) a *brevity* condition. More recently, Katzir (2007) and Fox & Katzir (2011) have formalized a notion of complexity that requires formal alternatives to be no more complex than the asserted sentence. This *complexity filter on Excl* (CF) can be stated as in (11).

- (11) Complexity filter on *Excl* (CF):
 $\text{Excl}(\phi) \subseteq \{\text{Basic}(\psi) : \psi \text{ is no more complex than } \phi\}$

The complexity filter has the intended effect for sentence (1). As noted, the unavailable strengthened meaning (8) could potentially arise for (1) from excluding the proposition $\neg\text{ALL}(\text{P})(\text{R})$. This proposition is the basic meaning of, for example, the sentence in (12). However, the presence of negation renders (12) more complex than (1). In fact, it appears that any linguistic encoding of $\neg\text{ALL}(\text{P})(\text{R})$, or any other meaning that would yield the strengthening in (8), will require added complexity relative to (1). If so, then CF correctly prevents this strengthening.

- (12) Not all players responded.

CF generally defuses the recipe for creating a problematic symmetric alternative by adding negation: Since negation adds complexity, the competing alternative created by this recipe should never be viable.

In this paper, we build a case against this approach to the symmetry problem. On the one hand, extending observations in the previous literature, we will argue that CF is insufficient, sometimes permitting alternatives that yield strengthenings which

are not in fact attested. We bring new data to bear on this argument, and also present counter-evidence to several auxiliary assumptions about potential other constraints on Excl that could potentially address this issue. On the other hand, we will see that CF is too demanding a condition on Excl. In some cases, the sorts of linguistic alternatives that CF prohibits would actually be needed to explain strengthenings that are intuitively available.

1.2 Blocking strengthened outputs

If a syntactic complexity filter does not yield a solution to the symmetry problem, then what does? We propose that using a sentence with a strengthened reading is blocked if there is an equally or less complex sentence that conveys the strengthened meaning without implicature. Consider once again sentence (1), and let us juxtapose it with (13).

(13) All players responded.

Note that the basic meaning of (13) is identical to the unavailable strengthened meaning for (1) in (8). What we propose is that, since (13) is moreover no more complex than (1), its existence *blocks* the use of (1) in the meaning in (8), rendering this strengthening unavailable. So we propose that a potential strengthened meaning for a sentence ϕ is unavailable if it amounts to the *basic* meaning of a sentence no more complex than ϕ . We can state this *blocking constraint* (BC) as in (14).²

(14) Blocking constraint (BC, First Version):
 $\text{Exh}_{\text{Excl}}(\phi)$ is blocked if: $\exists \psi [\text{Basic}(\psi) = \text{Exh}_{\text{Excl}}(\phi) \wedge \psi$ is no more complex than $\phi]$

BC effectively demands that strengthening always be in the service of abbreviation and reduce complexity—a sort of economy constraint. Given that (1) is no less complex than (13), the unavailable strengthening for (1) in (8) is blocked by (13) on those grounds. BC could perhaps be derived from Grice’s Manner maxims (Grice 1975: 27). One of Grice’s Manner maxims calls for brevity, and another disfavors ambiguity. A strengthened utterance is always ambiguous because it could be understood in its unstrengthened sense. It therefore will be less desirable than an unambiguous, lexicalized way to express meaning, unless the ambiguous utterance is less prolix.

² We assume that identity is mutual logical entailment. Entailments due to presuppositions have to be factored in when assessing identity, since otherwise adding a purely presuppositional item to an expression (e.g., ‘again’) would always be blocked by the expression without the presuppositional item. However, a closer look at interactions with presuppositions would be necessary here.

In contrast, even though the proposition in (3) is the basic meaning of sentence (15), (1) is less complex than (15) is.

(15) Some but not all players responded.

It seems that *any* sentence of English with this basic meaning is more complex than (1). If so, then, the available strengthening in (3) enables abbreviation, and is correctly permitted by BC.³

Unlike CF, an account in terms of BC does not rely on the assumption that the alternatives in Exh are syntactic expressions. We can simply assume that Exh is a set of freely chosen meanings. The unavailability of certain strengthenings comes about because BC constrains possible *outputs* of strengthening.

The idea that blocking plays a role in exhaustification is not new. Blocking was invoked, for example, in the account of quantity implicatures presented by Geurts (2010: ch. 6). Geurts appeals to complexity to account for a listener's selection of cells from a partition of the speaker's "intentional state". *Some players responded* cannot convey ALL(P)(R), because to convey the corresponding intentional state, it would have been more expedient for the speaker to assert *All players responded*. This approach is similar to ours in that it appeals to the complexity of alternative assertions in reasoning about the likely intended meanings. It differs in that the account does away with any appeal to the exclusion of alternative meanings.

Another precedent for applying the logic of blocking to scalar implicatures is implicit in the Rational Speech Act (RSA) framework (see Bergen et al. 2016, Goodman & Frank 2016, Degen 2023 for overviews). RSA models a speaker's choice for how to convey a particular meaning as an optimization problem. Two factors are central for each decision on how to convey a meaning: One is the likelihood that an utterance will convey the correct meaning successfully; the other is the production

³ A reviewer asks why the asymmetry persists when *some* is embedded in a non-monotonic environment:

(i) Exactly one student did some of the readings.

This statement can convey that it is not the case that exactly one student did all of the readings, but it cannot convey that it is not the case that exactly one student did some but not all of the readings. This hypothetical strengthened reading would entail that exactly one student did some of the readings, as well as that in fact that student did all of the readings. We note that the sentence *Exactly one student did the readings* intuitively can entail that conjunction. It seems to us that it can convey that exactly one student did all of the readings but also that no one else did any readings, maybe because *the* has a non-maximal basic reading, which gets 'strengthened' to a maximal reading by implicature depending on the monotonicity of the context (cf. Bar-Lev 2021). It could therefore be the source of blocking. Another solution could be to argue that blocking applies locally at the VP level. We do not have the space here to explore the complex question of embedded implicature in more detail, but these are interesting questions that should be explored.

cost of a given utterance, which increases with syntactic complexity. Bergen et al. (2016) discuss how this can provide an answer to the symmetry problem. If the intended meaning is ALL(P)(R), then using *Some players responded* instead of *All players responded* would preserve complexity and hence not serve to lower production cost, and at the same time would be less likely to successfully communicate ALL(P)(R) than *All players responded*, as it could just convey SOME(P)(R). *Some players responded* will therefore be unlikely to be the speaker's preferred way of conveying ALL(P)(R).⁴

The blocking constraint is also reminiscent of accounts that invoke blocking in order to ensure that a less complex expression will be chosen over a more complex expression with an equivalent meaning, even in the absence of strengthening. Grice (1975) proposed the Manner maxim 'Be brief (avoid unnecessary prolixity).' McCawley (1978) and Horn (1989) discuss a preference for less prolix expression in the context of scalar implicatures, relating this effect to the Paninian "Elsewhere Principle" (Kiparsky 1973). See Meyer (2013), Mayr & Romoli (2016), and Meyer (2016) for recent discussions of related blocking conditions that favor less prolix expressions. Meyer (2013: 84) for example proposes a constraint 'Efficiency', which renders expressions infelicitous if there is a competing expression of lesser complexity. The cases here are different in that the expression that blocks strengthening is of the same length, but maybe a single constraint could handle both.⁵

Bar-Lev & Fox (2023), building on ideas in Magri 2009, propose a constraint that blocks an assertion if it is contextually equivalent to a logically stronger alternative, a constraint they label 'fatal competition' (see also Bar-Lev et al. 2025). This constraint is quite similar to BC, and in fact we could state BC such that it encompasses any contextual enrichment of the basic meaning, not just enrichment based on exclusion of Excl, but we will not pursue this here.⁶

Finally, another precedent for BC can be found in Chierchia 2013 (p. 129), who argues for 'Exhaustification Economy,' which constrains Exh so that it cannot derive meanings that are equivalent to an already existing alternative in the set of

⁴ Degen et al. (2015) observe that other aspects of the RSA can override these factors. If it is common knowledge that *some x-ed* usually entails *all x-ed*, then certain versions of the RSA predict the undesirable outcome that *some* can convey *all* after all. See Cremers et al. (2023) for further discussion.

⁵ If the Exh operator is syntactically represented, maybe blocking effects captured by BC could be achieved by a prolixity constraint, but we will not explore this possibility here.

⁶ One such source of enrichment is prior knowledge, which can also make sentences contextually equivalent. Magri (2009) discusses cases like (i).

(i) #Some lions are mammals.

Magri (2009) assumes that this statement is necessarily strengthened by implicature, resulting in infelicity. But it might be sufficient to say that contextual equivalence with *All lions are mammals* is inferred based on prior knowledge that being a mammal is a kind-level property, and hence blocked.

alternative meanings. Chierchia uses this constraint to explain why disjunctions cannot be strengthened to convey *and*, but does not discuss further implications for other cases of symmetry, or the symmetry problem in general.

It is likely that the arguments in favor of BC in this paper are arguments for a broader class of accounts including the ones just reviewed. Our goal in this paper is not to specifically argue in favor of BC over potential alternatives that also predict blocking effects. Our goal is simply to argue that blocking is necessary as part of a solution of the symmetry problem.

As formulated here, BC is successful in ruling out strengthening (1) based on the exclusion set consisting only of $\neg\text{ALL}(\text{P})(\text{R})$. However, it turns out that BC runs into problems when a broader range of exclusion sets are considered, and needs to be generalized.

1.3 Blocking refined: maximize basic meaning

Uncontroversially, (1) can be understood as excluding relevant propositions other than $\text{ALL}(\text{P})(\text{R})$. For example, it seems easy to imagine a context where *Some players responded*, in addition to implying that not all players responded, also implies that the coach did not respond, $\neg\text{R}(\text{c})$. This suggests that $\text{R}(\text{c})$ is a potential member of the exclusion set. Now, what about strengthening (1) as in (16-a), where $\text{R}(\text{c})$ is excluded in addition to $\neg\text{ALL}(\text{P})(\text{R})$, leading to the reading in (17)?

- (16) a. $\text{Exh}_{\{\neg\text{ALL}(\text{P})(\text{R}), \text{R}(\text{c})\}}(\text{1}) = \text{ALL}(\text{P})(\text{R}) \wedge \neg\text{R}(\text{c})$
 b. $\text{Basic}(\text{1}) \neq \text{ALL}(\text{P})(\text{R}) \wedge \neg\text{R}(\text{c})$
- (17) All players responded, but the coach did not.

The intuition is of course that this is not an available reading—(1) cannot imply that all players responded but the coach did not. The intuition that (1) cannot imply $\text{ALL}(\text{P})(\text{R})$ is surely independent of what else the sentence may or may not be taken to imply beyond its basic meaning.

As stated in (16-b), the potential strengthened meaning of (1) in (16-a) is *not* equivalent to the basic meaning of *All players responded*. Moreover, while $\text{ALL}(\text{P})(\text{R}) \wedge \neg\text{R}(\text{c})$ is the basic meaning of, say, sentence (17), this sentence is more complex than (1), and the same is arguably true for any sentence with the same basic meaning. BC, as formulated above, is too permissive: it allows for strengthening to result in the meaning paraphrased in (17).

There is a natural generalization of BC that removes this shortcoming. As recorded in (18), the problematic meaning $\text{ALL}(\text{P})(\text{R}) \wedge \neg\text{R}(\text{c})$ could well be the strengthened meaning of the sentence *All players responded*, obtained by exclusion of just $\text{R}(\text{c})$. So the problematic meaning could have been expressed by a sentence

with a stronger basic meaning than (1). We maintain that it is on those grounds that it cannot be expressed by (1) itself.

$$(18) \quad \text{Exh}_{\{R(c)\}}(13) = \text{ALL}(P)(R) \wedge \neg R(c)$$

Blocking of a given strengthening is not just supported by sentences whose basic meaning is equivalent to the strengthened meaning, the correct blocking condition should ensure more broadly that the contribution of basic meaning to the overall utterance meaning is maximized, so that the contribution added by strengthening is minimized. The revised rendition of BC in (19) captures this idea:⁷

(19) Blocking constraint (BC), revised:

$$\text{Exh}_{\text{Excl}}(\phi) \text{ is blocked if: } \exists \psi [\text{Exh}_{\text{Excl}}(\phi) \subseteq \text{Basic}(\psi) \subset \text{Basic}(\phi) \wedge \psi \text{ is no more complex than } \phi]$$

Like the initial version of BC, the generalized rendition is aligned with the RSA approach. On that view, maximization of basic meaning in the overall meaning conveyed can be understood as maximization of the likelihood that the intended meaning is communicated successfully.⁸

According to (19), a sentence ψ can block a strengthening of ϕ in virtue of having a basic meaning that is merely entailed by the strengthened meaning of ϕ , as long as the basic meaning of ψ is stronger than the basic meaning of ϕ , so that using ψ instead of ϕ will increase the contribution of basic meaning to the overall meaning. So generalized, BC has the effect that (13) will correctly block the strengthening to $\text{ALL}(P)(R) \wedge \neg R(c)$ for (1), on the grounds that the basic meaning of (17), $\text{ALL}(P)(R)$, is entailed by this strengthened meaning, and at the same time is stronger than the basic meaning of (1), $\text{SOME}(P)(R)$.⁹

⁷ In the following, we will somewhat imprecisely say that a particular expression blocks a strengthened reading, even if there could be more than one blocker, and blocking is not actually defined as a relation between expressions.

⁸ A reviewer asks whether the correct explanation of (1) should not also explain why *Only some students responded* cannot convey that all did. CF potentially can cover both, while our formulation of Blocking does not, and might therefore not be general enough. Maybe a more general blocking constraint could, since this would be a more costly way to encode the meaning *All students responded*.

⁹ A reviewer pointed out that *John might go* cannot be strengthened to convey the meaning of *John is certain to go*, although the latter sentence is more complex and should hence not block this strengthening. This case might be similar to the coach example discussed above, however. Note that *John will go* or *John is going*, if they do not already convey this strengthened reading, seem stronger in their basic meaning than *John might go*, in which case they would be preferable as a carrier for the implicature that John is certain to go. Strengthening the statement to mean that John is not certain to go may itself pose a problem for CF. In Section 4, we will discuss a related Japanese example from Breheny et al. (2018), which raises a greater challenge.

1.4 Differentiating filtering and blocking

When it comes to explaining why *some* cannot mean ALL, we have seen that either CF or BC could have the intended effect. But how can these accounts be teased apart empirically? This is not obvious, in particular since the notion of complexity that BC appeals to may well be the same notion as the one invoked by CF.

In this paper, we will discuss two ways in which the accounts can be differentiated. In Section 2, we will look at cases in which an unavailable implicature would be derivable based on alternatives that are no more complex than the asserted sentence. These cases show that CF is insufficient to explain the symmetry problem, while BC provides a straightforward explanation. We also argue that certain auxiliary assumptions proposed to supplement CF cannot be maintained.

Section 3 scrutinizes one of these auxiliary assumptions more closely, which holds that in cases where there are symmetry alternatives permissible by CF, none of the implicatures based on them are attested, since they preempt each other, effectively creating a stalemate, and show evidence against it.

In Section 4, we explore whether CF is needed in addition to BC. To assess this, we first explore the logical relation between CF and BC in their effects on symmetric alternatives in more detail. We also look at non-symmetric cases, where CF would be expected to still apply, and show evidence that CF makes incorrect predictions. If true, this means that CF can at best be a tie-breaker constraint for symmetric alternatives, but not a general formal constraint on the alternatives in Excl, let alone alternative substitution more generally. Given the data we are aware of, it would then be redundant with BC, and therefore not needed.

2 The case for blocking

CF prevents the unwanted strengthening of (1) by exploiting a limitation of English relative to the structure of (1). In contrast to ALL, $\neg$ ALL is not lexicalized. Expressing $\neg$ ALL therefore requires a syntax that transparently encodes negation, but adding negation to (1) would increase complexity. It is in virtue of this increase in complexity that CF has the intended effect. Notably, then, if the meaning $\neg$ ALL *were* lexicalized, then CF would do nothing to resolve symmetry in this case.

Exploring this line of thought, we will now present challenges to CF, cases where unwanted meanings are carried by acceptable sentences which lack the complexity that would be needed for CF to screen them out. We refer to such sentences as *simplex threats*.

Simplex threats suggest that CF is not sufficient as a solution to symmetry resolution. By the same token, they furnish potential arguments for the presence

of BC. In each case to be discussed, the unwanted meaning that the simplex threat supports is correctly blocked by BC.

Our argument is based on a series of case studies that each crucially build on previous work. The case of contextually supported simplex threats (Section 2.1) is centrally discussed in [Katzir 2007](#) and [Fox & Katzir 2011](#). The simplex threat based on disjunction (Section 2.2) is discussed in [Fox 2007](#), among others. The simplex threat based on expressed negation (Section 2.3) is a variant of a case discussed in [Romoli 2013](#). Like we do for our case, Romoli interpreted his example as a challenge for CF. The simplex threats posed by antonyms (Section 2.4) are related to data in [Breheny et al. 2018](#) and [Buccola et al. 2022](#). Finally, the simplex threats in 2.5 are based on [Swanson \(2010\)](#).

All of these cases show that CF is not sufficient. In fact, [Breheny et al. \(2018\)](#), [Buccola et al. \(2022\)](#), and [Swanson \(2010\)](#) already used their data to challenge CF along these lines. They constitute an argument for a blocking constraint only if there are no alternative explanations that could supplement CF to account for them. [Katzir \(2007\)](#) and [Fox & Katzir \(2011\)](#) make several auxiliary assumptions which could potentially help address these cases. We will argue that two of these assumptions in fact cannot be maintained. If correct, this means that an alternative account is needed, and we will show that BC can fill this gap.

2.1 Simplex threat 1: enabled by complex alternatives in the context

Under a construal of the notion of syntactic complexity that seems initially plausible and that we have tacitly assumed so far, a structure β counts as no more complex than a structure α only if β can be obtained from α by merely deleting constituents of α or replacing terminal nodes. However, based on an observation in [Matsumoto 1995](#), [Katzir 2007](#) suggests that for the purposes of the theory of exhaustification, this condition is too demanding.

Consider the conjunctive sentence given by the concatenation of the clause in (20-a) with (20-b).

- (20) a. It was warm yesterday ...
 b. ... and it is a little bit more than warm today.

While the basic meaning of (20-a) merely implies that it was warm yesterday, Matsumoto observed that as part of the conjunctive sentence, (20-a) intuitively permits a strengthened meaning that implies in addition that yesterday it was *not* a little bit more than warm (not just the implicature that it was not hot, which does not require such contextual support). Hence strengthening can exclude the proposition expressed by the linguistic alternative to (20-a) stated in (21).

- (21) It was a little bit more than warm yesterday ...

Under CF, this is surprising, since (21) appears to have more structure than (20-a). In fact, any sentence with the same basic meaning as (21) seems to have more structure than (20-a). This leads Matsumoto to conclude that a complexity constraint on the exclusion set is not viable.

Katzir (2007), however, suggests that Matsumoto's observation can be reconciled with CF under a suitable construal of the notion of complexity that CF references. Katzir proposes that for the purposes of CF, a constituent that appears in the linguistic context of an utterance counts as a lexical item, in the sense that CF applies *as though* this constituent lacked internal structure.

- (22) Auxiliary assumption 1, to be revised: Contextually given alternatives are simplex

In the case at hand, given that the constituent *a little bit more than warm* appears in the linguistic context of (20-a), substituting it for *warm* will not actually be taken to incur an increase of complexity for the purposes of CF, and (21) counts as no more complex than (20-a), reconciling CF with the observed strengthening.

Assuming this amended understanding of complexity motivated by Matsumoto's example, consider now the sentence given by the concatenation of (23-a) with (23-b), which adapts similar examples discussed in Katzir 2007 and Fox & Katzir 2011.

- (23) a. Last week, some of them responded, ...
b. ... and this week (too), not all of them responded.

Sentence (23) can give rise to the very same strengthening asymmetry that we observed in (1). Even in the context of the continuation (23-b), (23-a) can be understood as conveying that some but not all players responded last week, as in (24-a), a reading brought out clearly by including the additive particle *too* in (23-b). In contrast, as indicated in (24-b), with or without the additive particle, (23-a) certainly cannot be understood as conveying that all players responded.

- (24) a. Available strengthened meaning of (23-a):
 $\text{SOME}(\text{P})(\text{R}) \wedge \neg \text{ALL}(\text{P})(\text{R})$
 b. Unavailable strengthened meaning of (23-a):
 $\text{SOME}(\text{P})(\text{R}) \wedge \neg \neg \text{ALL}(\text{P})(\text{R}) = \text{ALL}(\text{P})(\text{R})$

However, under the amended construal of complexity, *both* of the linguistic alternatives to (23-a) in (25) qualify as no more complex than (23-a). This is true for (25-b) on the grounds that the constituent *not all of them responded* appears in the linguistic context (23-b). CF therefore permits the unwanted strengthening in (24-b)

alongside the attested one in (24-a). Hence the alternative (25-b) constitutes our first case of a simplex threat.

- (25) a. Last week, all of them responded ...
 b. Last week, not all of them responded ...

Although Fox & Katzir (2011) do not discuss this particular example, their account offers a strategy to explain this simplex threat. The crucial assumption necessary is that in cases where grammatical constraints on linguistic alternatives permit two alternatives that are symmetric, such that excluding both would yield a contradiction, it is not possible, regardless of context, to simply selectively omit one of the two alternatives and exclude the other.

In other words, the claim is that symmetry, unless broken by CF, leads to a stalemate, which context cannot break. We refer to this as the ‘stalemate assumption’, and state it in (26):

- (26) Auxiliary assumption 2 (Stalemate assumption):
 Symmetric alternatives permitted by CF cannot be selectively omitted from
 Excl based on context alone

How does the stalemate assumption help with (23)? While it explains why the unavailable implicature that all players responded is absent, it also predicts that the available implicature that *not all players responded* should also be absent. The reason that it can still be part of a solution to this case is due to a refinement of the first auxiliary assumption, which is that contextually mentioned complex alternatives only optionally become part of the substitution source:

- (27) Auxiliary assumption 1, refined: Contextually given alternatives can optionally be treated as simplex

This refinement has the intended effect for (23-a). In conjunction with the stalemate assumption, it can make the desirable implicature available: If we do not include (25-b) in Excl, exhaustification can output the strengthened meaning in (24-a), since CF excludes the complex alternative; if we include both, neither implicature is derived, due to the stalemate assumption.

BC can explain this case without making these additional assumptions, in the very same way as it explains our initial example in (1). The unavailable strengthening in (24-b) is blocked by sentence (25-a), for example, given that (25-a) has (24-b) as its basic meaning. The available strengthening in (24-a) correctly evades blocking. While sentence (28) has (24-a) as its basic meaning, it is more complex than (23-a). Assuming that this is true for all sentences with this basic meaning, BC correctly permits the strengthening in (24-a).

(28) Last week, some but not all of them responded . . .

In a way, it seems that the account based on BC should make Matsumoto's strengthening of *warm* available even without providing a linguistic antecedent like *a little more than warm* in the context—contrary to fact. However, this implicature would be impossible to recover for the listener without context. We will discuss how recoverability plays a role in explaining the absence of certain implicatures in Section 3.2.

We saw that CF can avoid the challenge posed by this simplex threat if the stalemate assumption is adopted. We will challenge this assumption in due course. But let's first turn to a simplex threat that may have been the original motivation for the stalemate assumption.

2.2 Simplex threat 2: enabled by disjunction

Consider the disjunctive sentence in (29), with the basic meaning in (30).

(29) Ann or Ben responded.

(30) Basic meaning of (29):
 $R(a) \vee R(b)$

Beyond its basic meaning, sentence (29) could well be taken to imply that Ann and Ben did not both respond, $\neg(R(a) \wedge R(b))$, or that, say, the coach didn't respond, $\neg R(c)$. This indicates that both $R(a) \wedge R(b)$ and $R(c)$ can in principle be excluded in a strengthened meaning of (29). However, as recorded in (31), it is clear that (29) *cannot* be understood as strengthened via the exclusion of either of the disjuncts in (30), $R(a)$ or $R(b)$, to yield the strengthened meaning that Ann responded and Ben didn't or that Ben responded and Ann didn't.

(31) Unavailable strengthened meanings of (29):
 a. $(R(a) \vee R(b)) \wedge \neg R(a) = R(b) \wedge \neg R(a)$
 b. $(R(a) \vee R(b)) \wedge \neg R(b) = R(a) \wedge \neg R(b)$

Note first that $R(a)$ and $R(b)$ are the basic meanings of the sentences in (32-a) and (32-b), respectively.

(32) a. Ann responded.
 b. Ben responded.

Sentence (32-a) is no more complex—in fact, it is less complex—than sentence (29), so CF does not filter out these alternatives, and they therefore constitute a simplex threat. The same holds of course for (32-b).

Our blocking constraint in (19), by contrast, straightforwardly explains this. Basic(32-a) is stronger than Basic(29) and at the same time is entailed by the potential strengthened meaning of sentence (29) in (31-b). By the revised version of BC in (19), the simpler sentence in (32-a) therefore blocks the strengthening in (31-b). Likewise, (32-b) blocks the strengthening in (31-a).¹⁰

Of course, while CF cannot explain this pattern, the stalemate assumption could. We now turn our attention to simplex threats where the stalemate assumption is of no help, and which in fact suggest that the stalemate assumption cannot be maintained.

2.3 Simplex threat 3: enabled by negation

The simplex threat arises in certain data where an overt negation interacts scopally with another operator. Here, we focus on a case where negation is interpreted in the scope of an existential indefinite, as in (33).¹¹

(33) Some players have not responded.

The basic meaning of this sentence can be given in (34) (where D is the domain of individuals). As stated in (35), we observe an asymmetry in the intuitively available strengthenings much like the one that we described for (1). Sentence (33) can be understood as conveying that some but not all players responded, see (35-a), but not as conveying that none of them did, see (35-b).

(34) Basic meaning of (33):
 $\text{SOME}(\text{P})(\text{D}-\text{R})$

(35) a. Available strengthened meaning of (33):
 $\text{SOME}(\text{P})(\text{D}-\text{R}) \wedge \neg \text{ALL}(\text{P})(\text{D}-\text{R}) = \neg \text{ALL}(\text{P})(\text{R}) \wedge \text{SOME}(\text{P})(\text{R})$
 b. Unavailable strengthened meaning of (33):
 $\text{SOME}(\text{P})(\text{D}-\text{R}) \wedge \neg \text{SOME}(\text{P})(\text{R}) = \text{NO}(\text{P})(\text{R})$

CF does not derive this asymmetry. Sentence (36-a) below, which permits a surface scope reading with the basic meaning $\text{NO}(\text{P})(\text{R})$, is no more complex than (33). Therefore, since (35-a) is the strengthened meaning of (33) that can result from, say,

10 Our account of disjunctive inferences is aligned with a proposal in Stalnaker 1975, a precedent for the idea that these strengthenings of disjunctions are unavailable due to blocking: “...the disjunction would be equivalent to the assertion of one of the disjuncts alone. So the disjunctive assertion would be pointless, hence misleading, and therefore inappropriate.”

11 Sentence (33) is a variant of an example discussed in Romoli (2013), which centrally features a negated universal, as in *Not all players have responded*. Romoli’s case could be captured by supplementing CF with an additional constraint, the *Atomicity Constraint* proposed in Trinh & Haida 2015. We do not have space to discuss this constraint here, but we note that this approach does not extend to our example in (33).

the exclusion set $\{\text{NO}(\text{P})(\text{R})\}$, CF correctly permits this strengthening. However, sentence (36-b), with the basic meaning $\text{SOME}(\text{P})(\text{R})$, is not more complex than (33), either. Therefore, since (35-b) is the strengthening for (33) that would result from, say, the exclusion set $\{\text{SOME}(\text{P})(\text{R})\}$, CF permits this unwanted strengthening as well. The sentence in (36-b), then, is a simplex threat.

- (36) a. All players have not responded.
b. Some players have responded.

If CF does not capture the asymmetry in (35), then what does? We contend that the blocking condition BC has the intended effect. BC correctly prevents (35-b) as a strengthened meaning for (33). It is blocked due to the existence of a sentence that is no more complex than (33) and that has (35-b) as its basic meaning. For example, (36-a) is such a sentence. We moreover argue that BC permits the available strengthened meaning in (35-a). To be sure, there are sentences that have (35-a) as their basic meaning. Example (37) is a case in point. However, (37) is more complex than (33). We submit that this is in fact true for all sentences with the basic meaning (35-a). If so, then BC correctly permits (35-a) as a strengthened meaning for (33).

- (37) Some but not all players have responded.

What distinguishes (33) from our original case in (1) is that it already contains negation, and a symmetric pair of linguistic alternatives can be derived by removing rather than adding complexity. This is why CF cannot capture this case without further assumptions, while BC makes the correct prediction.

One strategy for the CF account could again be to appeal to the stalemate assumption, and try to eliminate the undesirable alternative based on a constraint other than CF. A further assumption that is already advanced in Fox & Katzir (2011) opens up one possible route. Fox & Katzir propose that in addition to being constrained by CF, the form of linguistic alternatives is shaped by F(ocus)-marking. The possible alternatives to a given sentence are assumed to differ in this sentence only with regard to F-marked constituents. Put differently, modulo F-marked constituents, an alternative to a given sentence is required to be an exact copy of that sentence.

- (38) Auxiliary assumption 3 (Focus filter):
Excl is a subset of the focus alternatives of an expression

Suppose that the sentence in (33) carries F-marking that includes *some* in an F-marked constituent, but not the negation *not*:

- (39) $[\text{Some}]_F$ players have not responded.

Under Fox & Katzir's proposal, such F-marking ensures that alternatives can differ from those sentences in the position of *some* but nowhere else. Therefore, while the sentence in (36-a) qualifies as an alternative to (39), the simplex threat in (36-b) does not. With the simplex threats so eliminated by grammar, it is correctly predicted that (33) can be understood as excluding (36-a), to convey that some but not all players have responded.

However, Fox & Katzir's proposal also makes predictions about (33) that are not in fact consistent with intuitions. The account is too permissive in some ways, and too restrictive in others.

On the one hand, the proposal allows for the unavailable strengthening in (35-b) to arise under conditions that support structures with appropriate F-marking, viz. the structure where *not* is included in F-marked constituents, while *some* is not. For example, (35-b) would be expected to arise from the structure in (40), with narrow focus on *not*. Since there is in fact no reason to expect that such F-marking is categorically excluded, it is predicted that the strengthening in (35-b) can be observed under certain conditions. However, as implied by our initial characterization of the data, intuitions are clear that this strengthening is not in fact available under any conditions. In fact, even with a prosody favoring the F-marking in (40), the possibility of the implicature based on substituting *some* persists. This conflicts with the premise that scalar implicatures are constrained by limiting substitutions to F-marked content.

(40) Some players have [not]_F responded.

On the other hand, Fox & Katzir's proposal also leads one to expect that the available strengthening in (35-a) requires that not too much be included in F-marked constituents. Specifically, strengthening should be obviated by F-marking that leads to a symmetric stalemate. Under conditions that force both *some* and *not* to be included in an F-marked constituent in (33), both (36-a) and (36-b) would qualify as alternatives to (33). Under such conditions, a stalemate should ensue, and hence we should not see the strengthenings in (35). It is predicted, for example, that neither strengthening is observed under conditions that force narrow focus on *some* and *not*, as in (41-a), or that force broad focus on the entire sentence, as in (41-b).

- (41) a. [Some]_F players have [not]_F responded.
 b. [Some players have not responded]_F.

This prediction too seems incompatible with intuitions. As hard as one may try to force the sort of F-marking shown in (41), it seems that the strengthening asymmetry described in (35) persists, and the inference in (35-a) remains available. In particular, this asymmetry is still intuited when the sentence in (33) is produced with prosodic focus on *some* and *not*, in an attempt to force the double narrow F-marking in (39).

And, paralleling an observation in [Romoli 2013](#), the strengthening asymmetry also persists in responses to a wh-question like *What happened?*, which should favor the broad F-marking in (41-b).

In sum, the strategy of appealing to the stalemate assumption and F-marking to avoid the simplex threat fails on two counts: First, implicatures do not actually appear to be constrained by F: narrow focus placement that should make undesirable alternatives available and desirable ones unavailable does not actually affect which implicature is available in the predicted way. The assumed focus filter on Excl in (38) is simply incorrect.

Second, focus marking that should make *both* alternatives available fails to lead to a stalemate, casting further doubt that focus plays any role in explaining symmetry effects, and also raises question about the stalemate assumption itself. An alternative explanation is needed, and we propose that the blocking condition BC can fill this gap.

2.4 Simplex threat 4: enabled by antonyms

Another type of simplex threat can arise in cases where a predicate that appears in the scope of another operator has a lexical antonym (cf. [Breheny et al. 2018](#)). Here we consider the case where a predicate of this sort appears in the scope of an existential indefinite.

(42) Some players were inside.

The basic meaning of (42) is given in (43). As stated in (44), we once again observe an asymmetry in the intuitively available strengthenings. (42) can be understood as conveying that some but not all players were inside, see (44-a), but not as conveying that all were inside, see (44-b).

(43) Basic meaning of (42):
 $\text{SOME}(\text{P})(\text{In})$

(44) a. Available strengthened meaning of (42):
 $\text{SOME}(\text{P})(\text{In}) \wedge \neg \text{ALL}(\text{P})(\text{In})$
 b. Unavailable strengthened meaning of (42):
 $\text{SOME}(\text{P})(\text{In}) \wedge \neg \neg \text{ALL}(\text{P})(\text{In}) = \text{ALL}(\text{P})(\text{In})$

It may initially appear as though CF captures this asymmetry, as CF may seem to apply to (42) in the same way it applies to the basic example (1). To begin, since sentence (45-a), with basic meaning $\text{ALL}(\text{P})(\text{In})$, is no more complex than (42), CF permits the exclusion set to be, for example, $\{\text{ALL}(\text{P})(\text{In})\}$. Hence it permits exhaustification that yields the available strengthened meaning in (44-a). CF seems

to also correctly prevent the undesirable inference, as the presence of syntactic negation renders (45-b) more complex than (42).

- (45) a. All players were inside.
b. Not all players were inside.

However, closer inspection reveals CF to be insufficient to prevent the exclusion set from containing $\neg\text{ALL}(\text{P})(\text{In})$. This same proposition is also expressed by a different sentence, one that crucially is no more complex than (42), namely (46), where *inside* is replaced by its antonym *outside*:

- (46) Some players were outside.

Sentence (46) transparently expresses the proposition $\text{SOME}(\text{P})(\text{Out})$. Since the complementarity of the antonyms *inside* and *outside* guarantees the equality of the two sets Out and D-In, this basic meaning is equivalent to $\text{SOME}(\text{P})(\text{D-In})$ and hence to $\neg\text{ALL}(\text{P})(\text{In})$. Therefore, CF does not prevent an exclusion set containing this proposition after all. In other words, sentence (46) constitutes a simplex threat.

The blocking condition BC captures the asymmetry in (44). BC correctly blocks (44-b) as a strengthened meaning for (42), due to the existence of a sentence like (45-a), which is no more complex than (42) and has (44-b) as its basic meaning. While there are sentences with the basic meaning (44-a), it seems that they all are more complex than (42). For example, both of the sentences in (47) have (44-a) as their basic meaning. But given their complexity relative to (42), their existence does not stand in the way of (42) having this same meaning as a result of strengthening. We submit that this extends to all sentences with the basic meaning (44-a). If so, then BC correctly allows for (42) to acquire this meaning from strengthening.

- (47) a. Some but not all players were inside.
b. Some players were inside and some were outside.

The example in (42) illustrates that symmetric linguistic alternatives can evade the reach of CF in virtue of featuring predicates that have antonyms. By introducing semantic negation without adding syntactic complexity, replacing such a predicate with its antonym can give rise to a simplex threat.¹²

We can again ask whether some other factor than CF could explain the observed pattern of available and unavailable implicatures here. We note that appealing to

¹² Commenting on an earlier version of this work, Haslinger & Schmitt (2025) note that negative antonyms might involve a syntactically represented negation (cf. Heim 2008 and others), which could render them complex. However, if this applied to *outside* and was the source of the asymmetry observed here, we would expect, incorrectly, that the relevant intuition would change if we replace *inside* with *outside* in (42).

focus is again of no help. Which implicature is possible and impossible is not affected by placing focus on the subject, the predicate, or both:

- (48) a. [Some]_F players were outside.
 b. Some players were [outside]_F.
 c. [Some]_F players were [outside]_F.

This case also constitutes a straightforward counterexample to the stalemate assumption, especially in the case of double focus, where there is no reason to think that symmetric alternatives are not available in principle.

A formal constraint on Excl seems unlikely to be the right solution here, because an implicature based on excluding the alternative *Some are outside* seems to be possible given the right context. To set the stage, imagine that A is urgently looking for a doctor at a party. Everyone present knows that there happen to be 5 doctors at the party, and that each is either inside or outside.

- (49) A: Where are the doctors?
 B: Some are inside.

Just as in our previous example, it is impossible to understand B as denying that some are outside and thereby conveying that all are inside. (B can only be understood as conveying uncertainty about whether all are inside.)

But let's now look at a minimally different context. Imagine that everyone knows that there were 5 doctors present earlier. While it's not clear how many have left since, it's clear that if still present, they are inside or outside. Now there are three relevant possibilities for a given doctor: they are inside, outside, or they have left. It seems quite plausible in this situation to conclude that B intends to imply the falseness of the alternative *Some are outside*, and that A will successfully understand this implicature and run inside to look for a doctor.

In this scenario, not being inside no longer entails being outside, and yet the alternatives *All are inside*, *Some are outside*, and *Some have left* are still symmetric in that they cannot all be denied without contradiction—even if any two of them can be. We can detect the effect of blocking also in this context: B cannot deny both that some are outside and that some have left, which would again imply that all are inside. The possibility of the implicature that none are outside contradicts the stalemate assumption: Since the three alternatives are symmetric, no implicature should be observed. Instead, however, context (the information that some might have left) facilitates the implicature.

What this contextual effect shows is that it is not the form or meaning of the excluded alternative that explains why the relevant implicature is unavailable. Rather, it is the resulting strengthened meaning that can create a problem and lead to

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blocking. This is just as predicted by the output condition BC, but unexpected by an account based on formal constraints on the alternatives in Excl.

Buccola et al. (2022) also discuss examples related to (42), but draw different conclusions. Consider the sentence in (50), which Buccola et al. imagine being uttered in the context of a card game where all cards are either red or black:

(50) Some of the cards are red.

Two potential alternatives for strengthening are listed in (51):

- (51) a. All of the cards are red
b. Some of the cards are black

Buccola et al. (2022) note that CF alone cannot explain why (50) has the implicature that not all cards are red, but cannot have the implicature that all cards are red. The alternative in (51-a), which leads to the attested implicature, is just as complex as (51-b), which would lead to the unattested implicature.

Buccola et al. (2022) provide a potential avenue for a solution, with the proposal that one needs to additionally distinguish between alternatives due to substitutions of logical expressions like *some* and alternatives to open-class lexical words like *red* or *black*, with the former alternatives taking precedence over the latter if the derived implicatures are mutually contradictory.

The blocking condition BC captures the asymmetry without making such further assumptions: Only for the unattested strengthened meaning is there an expression with a basic meaning that leads to blocking, namely *All cards are red*.¹³

2.5 Simplex threat 5: enabled by lexicalizations of NALL

Swanson (2010) presents a particularly striking simplex threat for CF. Sentence (52) could in principle be strengthened in two ways, conveying either that confession is permitted and not required, denying the alternative that going to confession is required (53-b); or conveying that it is not just permitted but also required, denying the alternative that going to confession is optional (53-a):

¹³ Breheny et al. (2018) discuss a related case, we use a simplified version:

- (i) The glass is not full.

This statement can imply that the glass is not empty, but it cannot imply that it is empty, although the alternative *The glass is not empty* is no more complex than what is asserted. This asymmetry is as expected based on BC, since *The glass is empty* directly encodes the unavailable strengthened reading. Breheny et al. (2018) already notice that the RSA approach, which effectively employs the logic of blocking (see Section 1.2), can also account for this example.

- (52) Going to confession is permitted.
- (53) a. Going to confession is optional.
b. Going to confession is required.

Since both alternatives can be expressed with simple predicates, CF (in conjunction with the stalemate assumption) predicts a stalemate. In actual fact, of course, *permitted* can be strengthened to *permitted and not required*, while it cannot convey *permitted and required*. Swanson uses this and related examples to show that CF cannot be the only constraint on Excl. In our terminology, *Going to confession is optional* poses a simplex threat for the account based on CF. The example provides a particularly straightforward counterexample to the stalemate assumption: No formal filter on alternatives will be able to exclude one alternative and keep the other given their identical complexity; and focus marking should also be irrelevant in this case, since all alternatives are introduced as substitutes for the same word.

Swanson in fact argues that the predicates *optional* and *required* lexicalize each of these two potential strengthened meanings of *permitted*. BC correctly predicts blocking of the strengthening of *permit* to convey that confession is required by denying that it is optional, because the basic meaning of the predicate *require* encodes that meaning.¹⁴ But if Swanson's lexical entries are correct, strengthening the meaning of *permit* to convey that confession is not required should also be blocked, since the basic meaning of *optional* already encodes that meaning. Much like the stalemate assumption, BC would then predict in this case that *neither* conceivable implicature is available, contrary to fact.

We contend, however, that *optional* does not actually have the basic meaning that something is both permitted and not required. If it did, both of the following statements should be equally infelicitous, but only the second is outright contradictory:¹⁵

- (54) a. ?Doing drugs is optional, and in fact it is not (even) permitted
b. #Doing drugs is optional, and in fact it is (even) required

This suggests that the basic meaning of *optional* does not actually entail *permitted*, even if it may convey *permitted* in many (possibly most) contexts as an implicature.

¹⁴ A reviewer asked whether *permitted* strengthened by denying *optional* would really entail *required*.

We do think it does. Notice that *it's not required, but it's permitted and not optional* seems incoherent.

¹⁵ The following example found online is also evidence that *optional* can be used in its unstrengthened meaning:

- (i) Breaking the law is optional and the consequential punishment is known so what's the problem?

One informant called (54-a) ‘cheeky,’ indicating that it is hard not to draw this implicature. But there is a clear contrast to (54-b).¹⁶

Embedding these predicates under negation, where implicatures often vanish, provides further evidence for this conclusion. In the following examples, the preferred interpretation is the implausible reading that taking drugs is required. This is expected if the lexical meaning of *optional* is close in meaning to *not required* and does not entail *permitted*:

- (55) a. Taking drugs is not optional.
b. Taking drugs is non-optional.

The relation between *permitted* and *optional* (as well as *not required*) looks parallel to the relation between *some* on the one hand and *not all* (as well as *some not*) on the other: The strengthened readings of *some* and *not all* are truth-conditionally equivalent (both convey *some but not all*), but neither basic meaning is equivalent to the strengthened reading of the other. Hence BC correctly predicts that both of these can be strengthened: *some* can be strengthened by denying *all*; and *not all* by denying *none*. Similarly, *permitted* can be strengthened by denying *required*; and *optional* by denying *prohibited*. Two different utterances have the same strengthened reading, but because neither directly expresses the strengthened reading BC does not block either.

Optional differs from *not all/some not* in an important respect: it is simplex. If our conclusion about the basic meaning of *optional* is correct, then *optional* shows that, contrary to what is sometimes assumed (starting with Horn 1972), ‘nall’-expressions, that is expressions that play an equivalent role to *not all/some not* vis-à-vis their alternatives, can be lexicalized.

¹⁶ Louise McNally suggests that while *permitted* necessarily has a deontic modal base, *optional* may be compatible with a broader set of uses. Our argument relies on the assumption that at least one use is deontic, and close in meaning to *not required*, and hence a valid scalar alternative to *permitted* and *required*. Swanson (p.c.) observes that it is possible to use *optional* in contexts in which it is presupposed that something is not required, suggesting that it is not exactly equivalent to *not required*. We don’t have the space here to explore this interesting observation further. Breheny et al. (2018: 102) discuss examples like (i) as potential evidence that *optional* does not lexically encode *not required*, but merely implicates it, contrary to our claim. They suggest that the continuation *if not obligatory* should otherwise be infelicitous:

- (i) An end-of-night greasy burger is optional, if not obligatory.

We observe, however, that *optional* may simply have been strengthened here to implicate *not required* and *permitted*. Note that the continuation with *if not* is possible with mutually exclusive alternatives:

- (ii) By now she must be an associate professor, if not a full professor.

If the basic meaning of *optional* does not entail *permitted*, this defuses the challenge for BC. However, these examples still contradict both CF and the stalemate assumption. Even if the basic meaning of *optional* does not entail *permitted* as Swanson assumed, the alternative still poses a simplex threat for CF and the stalemate assumption.¹⁷

We have not been able to find any sets of examples in which two potential incompatible strengthened meanings are each truly lexicalized. This would instantiate a situation where BC predicts both strengthenings to be blocked.¹⁸

2.6 Taking stock: Simplex threats

In this section, we discussed several simplex threats, cases in which CF fails to rule out unattested implicatures that are based on simple alternatives. In all of these cases, blocking provided a straightforward explanation for which implicatures are possible and impossible, while CF would need to be supplemented by additional constraints on Excl, assumptions that are not necessary if we assume BC.

We also considered several auxiliary assumptions discussed in [Katzir 2007](#) and [Fox & Katzir \(2011\)](#) that are crucial to make CF viable in the first place (e.g., in addressing Matsumoto's argument against a complexity filter), and could also help defuse simplex threats. The first is that complex alternatives can optionally be treated as simplex if they are mentioned in the context; the second is the stalemate assumption; the third is the assumption that focus acts as a filter on the alternatives

¹⁷ [Swanson \(2017\)](#) discusses some other cases, including the following:

- (i.)
 - a. The heater sometimes squeaks.
 - b. The heater intermittently squeaks.
 - c. The heater occasionally squeaks.
 - d. The heater always squeaks.

The question for BC in this case is why the available strengthening to *sometimes but not always* is not blocked by *intermittently* or *occasionally*. Maybe *intermittently* implies a richer temporal structuring of the squeakings than what *sometimes but not always* entails, and hence does not block this strengthening. And it seems plausible to us that *occasionally* is actually similar in its basic meaning to *sometimes* in that it implicates *not always*, rather than lexically encoding it, in which case it would not be predicted to block strengthening *sometimes*. Swanson furthermore discusses the triplet *possibly*, *contingently*, *necessarily*. We think the relevant reading of *contingently* might have as its basic meaning simply *not necessarily*, and merely implicate *possibly*, rather than lexicalizing *possibly but not necessarily*.

¹⁸ At first sight, *tepid/warm/hot* seems to fit the bill, assuming that *tepid* means 'warm but not hot.' However, in a context where *tepid* is salient enough to come to mind as an alternative, *warm* can get strengthened to convey 'warm, but neither tepid nor hot,' so both implicatures are simultaneously possible. This suggests that the meaning of *tepid* is more like that of *lukewarm*, and implies a low degree of warmth. A real test case would be one where the two implicatures are contradictory.

in Excl, along with CF. We have not seen any need to make the first assumption about contextually mentioned alternatives, and provided new empirical arguments against the stalemate assumption and the focus filter.

We now briefly turn to the stalemate assumption. If we abandon this assumption, this raises two questions. First, what about actually attested stalemates, where two possible but mutually contradictory implicatures seem to preempt each other? And second, what about the claim in Fox & Katzir 2011 that context cannot break symmetry, which would be strong evidence that something like the stalemate assumption is needed?

3 Stalemates revisited

Much of the recent literature on the symmetry problem appears to assume that a solution to the problem amounts to a way of ‘breaking symmetry’, that is, a way to break the tie between two or more mutually incompatible implicatures, preempting a stalemate. If the stalemate assumption is actually incorrect, as we have claimed, this changes perspective: The expectation in a case of symmetry is that in the right context, any of a number of symmetric implicatures should in principle be available. What needs to be explained is that sometimes, such as with (1), an implicature is unavailable regardless of context. We argued that blocking can provide the answer.

And yet, there are cases of symmetry in which *none* of several conceivable but contradictory implicatures appear to be available, just as expected under the stalemate assumption. We suspect that such cases may have served as an initial motivation for the stalemate assumption. By giving up the stalemate assumption, we seem to have created a new problem then: How can we explain such empirically attested stalemates? Let us look at one such case of a ‘de facto’ stalemate.

3.1 Recoverability can explain attested stalemates

In the exchange in (56), B’s objection seems contrived. Intuitively, neither of the symmetric alternatives in (57) can be excluded. But without the stalemate assumption, what prevents this? Why can’t a speaker draw either one of the two implicatures?

- (56) a. A: I have a yellow bicycle.
 b. B: #That’s not true! You have a cheap bicycle.
- (57) a. Alternative 1: I have an expensive bicycle
 b. Alternative 2: I have a cheap bicycle

While the stalemate assumption provides a principled answer to this question, we suggest that such a formal condition is not in fact needed. There seems to be a

plausible *pragmatic* reason for why A in (56) cannot be taken to court by B for having implied that their bicycle is not cheap. If A arbitrarily added the alternative with *expensive* to the exclusion set, this would not be reliably recoverable by B, and hence B is not entitled to object to the implications of this choice on the grounds of what A asserted. Of course A would not even try this, knowing that their message would not be recoverable, and would resort to a different way to convey this meaning instead. In other words, such implicatures are non-recoverable from the utterance. As Grice (1975: 31) already states as one condition for an implicature that the hearer has to be able to ‘work out’ the stronger meaning.¹⁹

We propose then that the impossibility of arbitrary and hence non-recoverable inferences is a pragmatic effect that can be explained without appeal to the stalemate assumption.²⁰

3.2 Context can ‘break’ at least some stalemates

Under a pragmatic account of the stalemate, there is no reason to expect context should never be able to decide which of two symmetric alternatives is used to compute an implicature, a state of affairs which Fox & Katzir (2011) argue is impossible. In this section, we present arguments that context can indeed sometimes help successfully recover which of two mutually contradictory implicatures was intended.

Consider the following pair of dialogues in (58) and (59) (similar examples are discussed in Trinh & Haida 2015, Breheny et al. 2018, Hirsch & Schwarz 2025):

- (58) What do you do to protect your teeth?
 Kid 1: I brush my teeth. (And) I don’t eat candy.
 Kid 2: I brush my teeth (too).
- (59) What do you do to protect your teeth?
 Kid 1: I brush my teeth. (But) I don’t floss.
 Kid 2: I brush my teeth (too).

¹⁹ The prediction is that if context could make the intended implicature recoverable, (56) should work. We note that B’s response in (56) would be fine in a context in which (for some contrived reason) everyone knows that for a bike, being yellow implies being expensive. At first glance, this seems to directly contradict the stalemate assumption. But in a context in which this inference holds, one arguably does not even need an implicature to license the required inference to make the dialogue in (56) coherent. So this context is not sufficient to validate the prediction, nor does it falsify the stalemate assumption.

²⁰ Looking at related examples involving modifying adjectives, Katzir (2013) appeals to a formal restriction on the excluded alternatives, and assumes with Fox (2007) that alternatives that are not innocently excludable are ignored by Exh. At least for cases like (56), no such formal explanation seems necessary.

The dialogues are fully parallel in linguistic form, but nevertheless differ with regard to the direction in which symmetry is resolved. What we are interested in are the inferences that can be drawn from Kid 2's assertion in each case.

Let's start with (58). Kid 2 can be taken in this dialogue to imply that they *eat candy*, but not that they *don't eat candy*. Breheny et al. (2018) note that CF falls short of accounting for this observation. In our terms, this is a case of a simplex threat. The threat is from the positive alternative *I eat candy*, which is symmetric to the alternative actually excluded in (58), *I don't eat candy*.

Whatever explains this example, it seems to us that it will not be a more refined formal filter on alternatives. To see why, we need to compare examples like (58) with examples like (59). Trinh & Haida (2015: 257) already notice, based on a parallel example, that (59) does not lend itself to implicating that Kid 2 does floss, in contrast to (58). But in fact, Kid 2 in (59) can be understood as implying that they *do not floss* either—apparently excluding the *positive* alternative *I floss*.

This suggests that whether the negated or the positive alternatives can be excluded is decided by context. Dialogues (58) and (59) contrast not because of how the alternatives are, or can be, linguistically encoded, but because of what we know about how flossing and eating candy affect our teeth. There appear to be two symmetric alternatives that are in principle available, but symmetry is resolved in opposite directions depending on world knowledge.

A pragmatic explanation of the difference seems straightforward: The questions in (58) and (59) make reporting *not eating candy* and *flossing* intuitively directly pertinent, but the same is not true of their negations, which do not directly address the question under discussion, even though they would be 'relevant' under the weaker notion of relevance assumed by Fox & Katzir 2011, which is closed under negation. Aligned with Hirsch & Schwarz (2025), we suggest that listeners can recover which of two mutually contradictory implicatures was intended in this case because of the question under discussion.

Trinh & Haida (2015) already consider a pragmatic approach, but conclude that it cannot be sufficient, since in some examples context cannot tip the balance. In order to explain, for example, that in (60), the implicature that John passed all fitness tests is not available, they propose a formal constraint on alternatives instead. However, the example in (60) patterns as expected based on BC.

- (60) Bill passed some of the fitness tests and failed some. John (only) passed some of the fitness tests.

We take the examples in (58) and (59) to show that both negated and unnegated alternatives are in principle available, and that context *can* break the stalemate between these symmetric alternatives. It seems then that, in the terminology of Fox

& Katzir (2011), context can ‘break symmetry’. This provides further support for the pragmatic account of stalemates and against the formal stalemate assumption.²¹

3.3 Asymmetries in question/answer dialogues

We saw that in cases in which BC does not apply, context can sometimes tip the balance and make either of two mutually exclusive implicatures available. There are also more stubborn asymmetries that do not seem easily amenable to contextual manipulation. Haslinger & Schmitt (2025) and Bar-Lev et al. (2025) discuss asymmetries reminiscent of that observed in (1) and observe that these asymmetries are not predicted by BC. Here’s an example:

- (61) A: Who among Ada and Bea came?
 B: Ada (came).
 Available implicature: Bea didn’t come.
 Unavailable implicature: Bea came

While B can implicate that Bea didn’t come, the implicature that Bea came as well is unavailable. Cremers et al. (2023) present evidence that such ‘anti-exhaustive’ inferences are robustly absent, even in contexts which would make them likely, parallel to cases of scalar implicature like (1).

Appealing to CF may seem like a possible account of (61), since the unavailable implicature would involve denying the more complex negated alternative, and Bar-Lev et al. (2025) conclude that CF is needed after all. However, we hold that CF is unable to capture the broader generalization. For example, if the question in the context includes negation, a parallel asymmetry is observed, but CF would not predict this:

- (62) A: Who among Ada and Bea didn’t come?
 B: Ada (didn’t come).
 Available implicature: Bea came.
 Unavailable implicature: Bea didn’t come.

Furthermore, predicates that have lexical antonyms (without added negation) show the very same asymmetry:

²¹ We note that example (59) is parallel in structure to examples discussed in Section 2.1, such as (23). CF, in conjunction with the auxiliary assumptions, could in principle capture (58), but only with a refined formal filter optionally keeps the more complex negated alternative and discards the simpler, unnegated alternative in this particular case where the negated alternative is salient. For proposals along those lines see Trinh (2018) and Haslinger & Schmitt (2025). Such a formal account, however, would not capture that the choice of implicature is fundamentally pragmatic in these cases.

Resolving symmetry without constraining alternatives

- (63) A: Which of these two switches are on?
 B: Switch A (is on).
 Available implicature: Switch B is off.
 Unavailable implicature: Switch B is on.

The unavailable implicature could be derived by excluding the meaning of the simplex alternative *Switch B is off*, but this implicature is not available. The asymmetry persists when we change the form of the question, which should make the alternative required to derive the unattested implicature salient:

- (64) A: Which of these two switches are off?
 B: Switch A is on.
 Available implicature: Switch B is off.
 Unavailable implicature: Switch B is on.

There are other predicate pairs that could be used to make the same point, such as *pass/fail*, *hit/miss the target*, etc. These examples show that the exclusion of antonymic alternatives is generally not possible, not just in those cases in which an antonym is derived by adding negation or adding some other syntactic complexity.

It seems clear then that CF cannot account for these asymmetries. It is also not clear, however, that BC can. Maybe what we observe in these examples are effects of the context question. Hirsch & Schwarz (2025) argue that the exclusion set for *only* is constrained by the question under discussion (QUD), and it could be that parallel constraints apply to the alternatives involved in implicatures. In fact, our flossing examples in (58) and (59) already provided support for this idea. Negated alternatives will only be a member of the set of the propositions generated by the question if it itself includes negation. This could help with explaining the implicature pattern in (61).²²

By itself, appeal to the QUD does not fully capture the case in (64), where the availability of implicatures seems to be driven by the form of the answer, not the form of the question. The same point can be made with a positive answer to a negative question:

- (65) A: Who among Ada and Bea didn't come?
 B: Ada came.
 Available implicature: Bea didn't come.
 Unavailable implicature: Bea came

²² The QUD constraint is different from the notion of relevance assumed in Fox & Katzir 2011, which is closed under negation, and would not be of help here.

Similarly, if a speaker responds *Bea didn't come* in (61), a likely implicature would be that Ada came, presumably by excluding the alternative that Ada did not come. However, one could plausibly argue, aligned with Hirsch & Schwarz (2025), that B's response with a wording different from the question, as in (64), would violate a constraint on question-answer congruence. This could trigger accommodation of a different question under discussion. Thus, in (64), the response might be evaluated against the accommodated QUD *Which of these two switches are on?*, which would capture the observed direction of strengthening.

We have argued here that a QUD constraint might be needed in addition to BC, to explain asymmetries like the one observed for (61). The premise of the critique of the BC account in Haslinger & Schmitt 2025 and Bar-Lev et al. 2025, however, is that whatever explains the asymmetry observed in ad hoc implicatures like (61) should also explain the asymmetry in (1). If this premise is correct, then BC falls short—unless the unavailability of the implicatures in (61)–(65) is due to blocking after all: Among the blockers could be alternative assertions like *Both came* in the case of (61) (or *All came* in cases with cardinality greater than two), which lexically encode the unavailable strengthened readings. An explanation in terms of blocking would immediately explain why it is the form of the answer rather than the form of the question that drives the effect. While it is plausible that the alternatives that *only* excludes are constrained by the immediate QUD, this seems harder to maintain as a general constraint on conversational implicatures. An explanation of these symmetries in terms of blocking does not rely on this assumption, but whether this explanation is viable remains to be explored further.

3.4 Summary: The stalemate assumption

In Section 2 we had already seen evidence against the stalemate assumption based on examples in which it would have arguably predicted that some attested implicatures are unavailable. Abandoning the stalemate assumption, however, raises the question of how to explain actually attested stalemates, and also how to explain apparent evidence that stalemates cannot be broken by context. In this section, we tried to address these questions. We sketched how actually occurring stalemates might be explainable without this assumption, and also presented a further argument against the stalemate assumption by showing a case in which a stalemate can be broken by context. The stalemate assumption was essential in all strategies to explain the simplex threats without BC. The arguments against it therefore support the case that BC is needed.

We also saw evidence the alternatives in Excl are furthermore constrained by context. This raises a question whether these additional contextual effects are not already sufficient to explain blocking effects as well. We return to this concern in

the conclusion. We now turn to the question whether CF may be needed in addition to BC.

4 Is CF needed in addition to BC?

CF and BC, both repeated below from Section 1, are very different conditions, in that one is a condition on the alternatives in exclusion set and the other a condition on the output of exclusion. It is also different in that only BC appeals to how an asserted sentence relates to alternative sentences in terms of meaning.

- (66) Complexity filter on Excl (CF):
 $\text{Excl}(\phi) \subseteq \{\text{Basic}(\psi) : \psi \text{ is no more complex than } \phi\}$
- (67) Blocking constraint (BC), revised:
 $\text{Exh}_{\text{Excl}}(\phi)$ is blocked if: $\exists \psi [\text{Exh}_{\text{Excl}}(\phi) \subseteq \text{Basic}(\psi) \subset \text{Basic}(\phi) \wedge \psi \text{ is no more complex than } \phi]$

At the same time, though, both CF and BC somehow reference alternatives' structural complexity. One crucial difference between them is that complexity filter CF is *general* in the sense that it itself does not in any way reference the notion of symmetry. Blocking, by contrast, is by its very nature only possible in cases of symmetry.

The question whether CF is needed in addition to BC falls into two subquestions, then: Cases of symmetry and cases where symmetry is not at play. Below, we discuss each case in turn.

For cases where alternatives are symmetric, CF and BC can under certain conditions coincide in their predicted effects on possible strengthenings. We will briefly discuss those conditions, and also how predictions of CF and BC differ when the conditions are not met.

We have characterized alternatives as *symmetric* relative to a sentence ϕ if the strengthening of $\text{Basic}(\phi)$ obtained by excluding each of those alternatives would yield a contradiction. With symmetry so understood, alternatives are symmetric relative to ϕ in case their disjunction is entailed by $\text{Basic}(\phi)$. Confining attention to cases with just two alternatives, a_1 and a_2 , the assumption that those are symmetric relative to ϕ can then be stated as in (68).

- (68) $\text{Basic}(\phi) \subseteq a_1 \vee a_2$

Fox & Katzir (2011) actually define symmetry more narrowly. To clarify how, it will be instructive to consider the two further conditions in (69). (69i) states that the disjunction of a_1 and a_2 entails $\text{Basic}(\phi)$, which together with (68) yields equivalence

of this disjunction with $\text{Basic}(\phi)$. (69ii) states that $a1$ and $a2$ are contraries, that is, are incompatible with each other.

- (69) i. $a1 \vee a2 \subseteq \text{Basic}(\phi)$
 ii. $a1 \wedge a2 = \emptyset$

Notably, the conjunction of the statements in (68) and (69i, ii) is equivalent to the assumption that relative to $\text{Basic}(\phi)$, $a1$ and $a2$ are complementary to each other. That is, it follows from (68) and (69i,ii) that $a1$ and $a2$ relate to $\text{Basic}(\phi)$ as stated in (70i,ii).

- (70) i. $\text{Basic}(\phi) \wedge \neg a1 = a2$
 ii. $\text{Basic}(\phi) \wedge \neg a2 = a1$

It will be useful for us to introduce terminology to facilitate reference to the assumptions in (69). If $a1$ and $a2$ are symmetric relative to ϕ , meeting the condition in (68), and in addition relate to ϕ as in (69i), we will say that $a1$ and $a2$ are *entailment symmetric* relative to ϕ . If (69ii) holds in addition to (68), we will say that $a1$ and $a2$ are *contrary symmetric* relative to ϕ . And if $a1$ and $a2$ are both entailment symmetric and contrary symmetric relative to ϕ , we will also say that they are *strictly symmetric* relative to ϕ . Fox & Katzir (2011) use bare *symmetry* to refer to **strict symmetry**, which is not the only situation, however, in which the symmetry problem arises.

4.1 CF and BC under strict symmetry

We begin our discussion of how CF and BC relate based on cases of strict symmetry. Strict symmetry arises if the disjunction of two alternatives is equivalent to the basic meaning of the expression, and the two alternatives are contraries. In this case, it turns out that the symmetry-breaking effects of CF and BC always coincide in that CF breaks symmetry in a given direction just in case BC does—so if one of the two constraints CF and BC permits (71i) but prohibits (71ii), the same will be true for the other constraint.

- (71) i. $\text{Basic}(\phi) \wedge \neg a1$
 ii. $\text{Basic}(\phi) \wedge \neg a2$

Let us say that an alternative *meaning* is “simplex” if it permits a linguistic encoding no more complex than ϕ , and “complex” otherwise. Now, assuming strict symmetry of $a1$ and $a2$ relative to ϕ , suppose that CF permits the strengthened meaning (71i) but prohibits (71ii). Since CF permits (71i), we can conclude that $a1$ must be simplex, and therefore that there is a sentence ψ no more complex than ϕ such that $\text{Basic}(\psi) = a1$. Given strict symmetry, in particular the equality in (70ii), this entails that BC

precludes the strengthening (71ii). At the same time, since CF prohibits (71ii), we can conclude that a2 is complex. This ensures that BC cannot prevent the strengthening (71i), the equality in (70i) notwithstanding. In sum, we can conclude that like CF, BC permits (71i) and prohibits (71ii).

Conversely, still assuming strict symmetry, suppose now that BC permits (71i), but prohibits (71ii). Given strict symmetry, hence in particular the equality in (70ii), BC can prohibit (71ii) only if a1 is simplex, which in turn guarantees that CF permits (71i). At the same time, for BC to permit (71i), given the equality (70i), it must be that a2 is complex, which in turn ensures that CF prohibits (71ii). In sum, we can conclude that like BC, CF permits (71i) and prohibits (71ii).

So as long as a pair of alternatives is strictly symmetric relative to an asserted sentence, CF and BC are necessarily aligned in their effects on symmetry-breaking. To illustrate this alignment with our running example, CF and BC alike predict correctly that (72) can be strengthened by excluding simplex Basic(72a) to yield $\text{SOME}(P)(R) \wedge \neg \text{ALL}(P)(R)$. But assuming that the meaning Basic(72b) is complex, as suggested by the complexity of sentence (72b) itself, both CF and BC predict correctly that strengthening to $\text{ALL}(P)(R)$ by excluding Basic(72b) is not attested.

- (72) Some players responded.
- a. All players responded
 - b. Some but not all players responded.

Even under the assumption of strict symmetry, however, the effects of CF and BC do not fully coincide. What we know is that if either of CF or BC fails to break symmetry, then so must the other. However, this failure of symmetry-breaking manifests itself differently. Each constraint prohibits what the other permits, and vice versa. Here is why. First, suppose CF permits both (71i) and (71ii). This entails that both a1 and a2 are simplex. In turn, given the equalities in (70), this means that BC will prohibit both (71i) and (71ii). So here CF is more permissive. However, if a CF account assumes the stalemate assumption, as Fox & Katzir (2011) do, then the predictions for implicatures are nevertheless aligned: no implicature is derived under either account.

This situation is potentially exemplified by cases like (73) repeated from Section 2. Under the assessment in Swanson 2010, Basic(73-a) and Basic(73-b) are complementary relative to (73), instantiating strict symmetry. Recall that under this assumption, given that both Basic(73-a) and Basic(73-b) are simplex, CF by itself allows for either to be excluded, but given the stalemate assumption, neither of them should be available. BC would directly block either implicature.

- (73) Going to confession is permitted.

- a. Going to confession is required.
- b. Going to confession is optional.

Of course, both potential predictions are equally unwanted. *Permitted* can be strengthened to convey *not required*. Swanson's example seems to falsify BC, and show that CF is not sufficient, as we discussed. Remember, however, that we argued that the lexical meanings are not in fact as claimed by Swanson, because the basic meaning of *optional* does not actually entail *permitted*. If this is correct, then this case is no longer an example of strict symmetry. The alternatives are still contraries, satisfying (69ii), but their disjunction no longer entails the basic meaning of the asserted utterance, so this case no longer satisfies (69i), and BC no longer blocks the desired implicature. This would be a case of symmetry that is contrary, but not strict. We will turn to this type of case next.

Before we do, we should also consider a situation in which BC permits both (71i) and (71ii). Given the equalities in (70), it follows that both a1 and a2 are complex, which in turn entails that CF will prohibit both (71i) and (71ii). If in such a case we found that one or both implicatures are available, this could falsify CF. If only one was available, this could show that BC is not sufficient, and CF might be needed in addition. We have not been able to identify such a test case.

4.2 CF and BC under contrary symmetry

In cases that only satisfy (68) and (69ii), hence where symmetry is contrary but not strict, the predictions of CF and BC drift further apart—and yet continue to overlap, giving rise to a complex pattern. This is illustrated by our example initially presented in Section 1 to introduce BC as an alternative to CF, repeated in (74). Note that the alternatives in this case are not strictly symmetric, on the grounds that one of them, namely Basic(74-b), does not entail Basic(74) (and hence their disjunction does not entail it either).

- (74) Some players responded.
- a. All players responded.
 - b. Not all players responded.

Regardless, as established in Section 1, CF and BC agree in their predictions about this case. Both correctly permit the exclusion of Basic(74-a) to yield $\text{SOME}(P)(R) \wedge \neg \text{ALL}(P)(R)$, and both correctly prevent the exclusion of Basic(74-b) that would yield $\text{ALL}(P)(R)$.

The alignment of CF and BC in this case is crucially enabled by the fact that despite the non-strict symmetry, one alternative, viz. Basic(74-a), still entails Basic(74). For $\text{Basic}(74-a) = a1$, this crucially supports the equality in (70ii), hence

in a sense supports one side of strictness. It is in virtue of this half-way strictness, in conjunction with the fact that the entailing alternative Basic(74-a) happens to be simplex, that BC has the welcome effect of prohibiting the exclusion of Basic(74-b).

Despite the overlap in this case, contrary symmetry is insufficient to ensure that CF and BC agree *in general* in their predictions about symmetry-breaking. This point is already established by the simplex threat data discussed in Section 2, for example by the antonym example repeated in (75). Given that both Basic(75-a) and Basic(75-b) are simplex, CF cannot prevent the exclusion of either, hence cannot break symmetry. In contrast, BC correctly prohibits the exclusion of (75-b) while allowing for the exclusion of (75-a), supporting the argument that CF is insufficient.

- (75) Some players are inside.
 a. All players are inside.
 b. Some players are outside.

Where symmetry is merely contrary but not strict, predictions about symmetry-breaking under CF and BC also come apart in cases where both alternatives are complex. A case in point may be a Japanese example discussed by Breheny et al. (2018: 100) expressing deontic possibility:

- (76) John-wa ki-te yoi.
 John-top come-gerund good
 ‘John is allowed to come.’

Breheny et al. (2018) argue that all alternative ways to express deontic necessity are more complex:

- (77) a. John-wa ko-naku-te-wa nar-anai/ike-nai.
 John-top come-neg-gerund-top become-neg/go-neg
 ‘John must come.’
 b. John-wa kuru hitsuyoo-ga aru.
 John-top come necessity-nom exist
 ‘John needs to come.’

The predictions of CF and BC are clear: CF predicts that the possibility statement should not be able to convey non-necessity, while BC allows this implicature. Breheny et al. (2018) report that the implicature is in fact attested. This contradicts the predictions of CF, and supports the conclusion that CF is not just insufficient, it is also incorrect.

BC, however, also runs into a problem: Since the expressions that express necessity are more complex, it should also be possible to strengthen the possibility statement to mean that John must come, but according to Breheny et al. (2018), this

is not the case. So this case may show that BC is not sufficient, unless there is a simpler way of conveying this meaning that could act as a blocker.

In sum, cases of contrary symmetry are a fruitful ground for testing CF and BC. All our simplex threats except the disjunction case in Section 2.2 fall into this category, and show that CF is not sufficient. Here, we saw that cases with contrary symmetry also provide evidence that contradict CF (and might show that BC is not sufficient).

4.3 CF and BC under entailment symmetry

What happens in cases which satisfy (68) and the condition in (69i) but not (69ii), so that they are entailment symmetric but not contrary symmetric (and hence not strict)?

It turns out that the results from the strictly symmetric case carry over to this case, as long as the basic meanings of the alternatives are independent. We refrain from detailing a proof of this claim here. Instead, we content ourselves with illustrating just one of the parallels with strict symmetry. Under the assumption of mere entailment symmetry, in cases in which CF does not rule out either of two symmetric alternatives, BC prohibits both corresponding implicatures. Yet if in addition to CF we assume the stalemate assumption, the two accounts are aligned nevertheless. This is illustrated by observations about the example in (78), repeated from Section 2.2.

- (78) Ann or Ben responded.
- a. Ann responded.
 - b. Ben responded.

Since the disjunction of Basic(78-a) and Basic(78-b) is not merely entailed by Basic(78), but equivalent to it, this case instantiates both (68) and (69i), hence instantiates entailment symmetry.

Now, given that the alternatives (78-a) and (78-b) are both simplex, CF by itself permits the exclusion of either Basic(78-a) or Basic(78-b). This again shows that CF is not sufficient, and in the absence of an alternative explanation constitutes an argument that BC is needed. Of course, if CF is combined with the stalemate assumption, the predictions align with those made by BC. As established in Section 2.2, BC correctly prohibits strengthening of (78) by excluding both Basic(78-a) or Basic(78-b) without additional assumptions.

In cases of entailment symmetry (including strict symmetry) in which CF or BC permit one implicature but not the other, their predictions align, by the same logic

we observed in the special case of strict symmetry. This concludes our survey of types of symmetry.²³

This section reviewed the ways in which in cases of symmetry, here defined in the sense of the assertion entailing the disjunction of two alternatives, the effects of CF and BC can agree or diverge in complex ways. Most of the arguments we had seen earlier in the paper showed that CF is not sufficient, leaving open the possibility that it might be needed in addition. In this section, we saw one piece of evidence that suggests that CF is simply incorrect, Breheny et al.'s Japanese example in (76). We now turn to another situation that can help us test CF further, even though it does not yield any information about BC: Cases in which alternatives are not symmetric.

4.4 CF and BC without symmetry

An attractive property of the complexity filter CF is that it is *general*, in the sense that it does not in any way reference the notion of symmetry. One expects to find cases where CF permits only one of two conceivable implicatures even though the two are compatible with one another, and could in principle jointly contribute to a strengthened meaning. Blocking, on the other hand, can by its very nature only arise in cases of symmetry. This suggests another avenue for scrutinizing whether CF is needed in addition to BC.

We will follow the strategy in Fox & Katzir 2011 and use embedding under a universal to remove symmetry in order to explore this.²⁴ Sentence (79) features a

²³ There is a fourth case of symmetry to consider, in which only (68) is met, but which is neither an instance of contrary symmetry nor of entailment symmetry. An instance of this type of symmetry may be the following:

- (i.) S: Ann has a red Toyota or a red VW.
A1: Ann has a Toyota
A2: Ann has a VW.

BC correctly predicts blocking of either implicature, since the speaker could have used the simpler *Ann has a red VW* to imply that she doesn't have a Toyota, for example. CF by itself excludes neither implicature, but together with the stalemate discussion it makes the same prediction as BC. However, constraining ourselves to these two alternatives seems artificial, obvious and pertinent alternatives are omitted here, including *Ann has a Toyota and a VW*, *Ann has a red Toyota*, and *Ann has a red VW*. Adding more alternatives would turn this into a case of entailment symmetry. All examples of this symmetry type we were able to construct seemed to lack some obvious alternative or other, so maybe not much can be learned from this fourth type. Our typology is more generally incomplete since we did not explore possible types of symmetry in sets of more than two alternatives, which, as we saw in example (49), can have interesting properties.

²⁴ The example in Fox & Katzir 2011, given in (i), involves association of focus with *only*. Fox & Katzir note that in the context of the first sentence in (i), the second sentence can implicate $\neg$ Basic(ii), despite the fact that (ii) is more complex, crucially due to the presence of negation.

necessity modal, here the auxiliary *must*, whose modal base is restricted by an initial purpose clause.

- (79) To get a cookie, she must eat some of the plums.
- (80) a. No, she must eat all of them!
b. No, she also must not eat all of them!
- (81) a. She must eat all of the plums.
b. She must not eat all of the plums.

We submit that both (80-a) and (80-b) are felicitous responses, indicating that (79) can be understood as implying either $\neg\text{Basic}(81\text{-a})$ or $\neg\text{Basic}(81\text{-b})$. Note that these implicatures can both be drawn at the same time without contradiction, since *must*, in virtue of expressing necessity, removes symmetry. We moreover note that the implicature $\neg\text{Basic}(81\text{-b})$ is available despite the fact that the alternative in (81-b), like presumably any sentence with the same basic meaning, is more complex than (79) itself, so that CF prevents this meaning from being a member of Excl.

We can multiply felicitous denials that challenge CF by considering ways of adding complexity other than just adding negation. Each of the responses in (82) is unquestionably felicitous, indicating that (79) can implicate the negation of the basic meaning of each of the alternatives in (83), despite the fact that each of them is more complex than (79) itself. In fact, it seems natural to interpret (79) as conveying that eating some of the plums is not just a necessary condition for getting a cookie, as entailed by $\text{Basic}(79)$, but also a *sufficient* condition. This suggests that (79) implicates the negation of *any* conceivable clausal argument of *must*, regardless of its linguistic form.

- (82) a. No, she also must not sing *Hallelujah* more than once!
b. No, she also must play the piano for at least one hour!

-
- (i) Detective B concluded that the robbers [stole the books but not the jewelry]_F.
Detective A only concluded that the robbers [stole the books]_F.
- (ii) Detective A concluded that the robbers stole the books but not the jewelry.

Fox & Katzir use this observation to argue that more complex alternatives can be excluded by *only* if they arise from substitutions of material that is *explicitly provided in the context*, here given by the first sentence of (i) (see also Section 3 above). However, while their implicit claim is that such contextual support is *necessary* to enable the exclusion of a more complex alternative, they do not actually consider controls where the relevant sort of contextual support is missing. In fact observations in Hirsch & Schwarz 2025 suggest that such support is not needed in the case at hand (cf. also Hirsch & Schwarz 2023): even without being preceded by the first sentence in (i), the second sentence could well be taken to imply that Detective A did *not* conclude that the robbers did not steal the jewelry. This is in itself a potential argument against CF.

- c. No, she also must either eat an orange or take a walk!
- (83)
- a. She must not sing *Hallelujah* more than once.
 - b. She must play the piano for at least one hour.
 - c. She must either eat an orange or take a walk.

We interpret this as showing that the initial purpose clause in (79) can serve to establish the relevance of the participating alternatives. This example challenges Katzir and Fox's claim that CF is a general constraint on Excl.

To be sure, instead of viewing CF as a general constraint on alternatives, one could stipulate that CF only applies in situations where alternatives are symmetric to each other, as a form of tie breaker (see Haslinger & Schmitt 2025 for a recent response along these lines). But note that in (76), we have seen at least one case which seems to show that CF cannot be maintained even in the presence of symmetry. It also seems to us that much of the attractiveness of CF as part of a solution to the symmetry problem derives from its predictive power outside the cases involving symmetry. And restricting it to the case of symmetry seems arbitrary, whereas Blocking by definition can only arise in this case.

5 Conclusion

Symmetry arises when a statement has more than one potential alternative meaning, but excluding all of them would lead to a contradiction. How to account for which implicatures are viable in such cases and which are not remains an open question of current research. We presented evidence that one particular instance of such a theory, the syntactic complexity filter on alternatives (CF) (Katzir 2007, Fox & Katzir 2011), is not sufficient to address the symmetry problem, since it fails to rule out alternatives that are undesirable but syntactically simplex. We also argued that several auxiliary assumptions that were proposed to supplement CF cannot be maintained, and gave two arguments that CF in fact is not just insufficient, but also incorrect.

Our alternative proposal assumes that alternatives in Excl can be freely chosen. To explain why certain implicatures are nevertheless unavailable, we proposed several pragmatic constraints. Most important to the argument here was the blocking constraint BC, which constrains the *output* of strengthening. BC prohibits strengthening if there is an utterance whose basic meaning encodes the strengthened meaning, and is at most as complex as the asserted utterance. This blocking effect might itself be derivable from the Gricean maxim of Manner.

The account based on BC differs from the CF account in that it does not build on the assumption that the excluded alternatives in Excl are syntactic expressions. While BC, too, is sensitive to the linguistic resources of a language, this sensitivity to form is due to an output condition on strengthening. No formal constraint on the

set of alternatives that strengthening is based on is required. BC is compatible with the assumptions that Excl consists of meanings that can be freely chosen.

We hope to have shown that the account in terms of blocking has the potential to provide an insightful explanation of the symmetry problem. We have not tried to address the question of whether and how BC can be explained—be it via Grice’s Manner maxims, the RSA, or whether a more ad hoc constraint like the one proposed here is needed.

We also presented some evidence showing that BC is not sufficient to explain all absent implicatures. Some implicatures appear to be unavailable simply because they are not contextually relevant given the question under discussion; others because the implicature would not be contextually recoverable. This raises the question whether these additional pragmatic effects could not already cover the cases for which we have argued that blocking is necessary.

For example, if Excl is in addition constrained by the immediate question under discussion, as we considered in Section 3.4, one might wonder whether the asymmetry in (1) arises simply because alternatives such as *some players didn’t respond* are unavailable for exclusion because they are not generated by the question *Who responded?* A QUD constraint could thus offer a potential explanation for (1).

At least some of the cases we discussed in this paper, however, show that BC is needed in addition. One case in point is the simplex threats posed by antonyms in Section 2.4. In the card game scenario, for example, we discussed that *some cards are red* can convey that not all were red, but not that all of them are. In the context of the question *Which cards did you get?*, it is not obvious why the alternative *all cards are red* should be available for exclusion but not *some cards are black*, which would derive the unavailable implicature. It seems unlikely then that the question under discussion will be able to provide a complete explanation for why *some* cannot implicate *all*.

Similarly, in Section 2.5, we appealed to blocking to explain why *going to confession is permitted* cannot mean that it is required; and why it can, and usually does, convey that it is not required. It is not obvious why the question under discussion would make the alternative *going to confession is required* available for exclusion, but not the alternative *going to confession is optional*.

We conclude that even once we take additional pragmatic effects into consideration, it appears that BC is needed. However, the empirical ground we covered in this paper is still quite limited, and more work will be needed to test these ideas further.

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