Because lexicalizes a focus-sensitive *exh* operator that violates Economy

Introduction. The connective *because* interacts with focus in an interesting way.[1] Consider:

(1) *Sam ruined Ali's jumper while ironing it.*
   a. *Context A: the jumper is iron-safe cotton. Ali knows how to iron, Sam doesn't.*
      Ali: The jumper is ruined because [Sam]$_F$ ironed it.
   b. *Context B: the jumper is cashmere and ruined by ironing. Both know how to iron.*
      Ali: The jumper is ruined because Sam [ironed]$_F$ it.

Ali's utterances are acceptable in their own context and infelicitous in the other context. We make two points. First, this observation is predicted if *because* lexicalizes a focus-sensitive exhaustivity operator *exh*, but not predicted if *exh* appears elsewhere. Second, we show that this lexical *exh* violates Fox and Spector (2018)'s Economy Condition on Exhaustification.

The puzzle. (2) illustrates how the inferences licensed by an utterance can be focus-sensitive.

(2) How did the exam go? (Rooth 1992: ex. 16-17)
   a. Well, I [passed]$_F$. Inference: The speaker didn't ace the exam.
   b. Well, [I]$_F$ passed. Inference: A contextually salient individual failed.

Fox and Katzir (2011) propose that scalar implicatures are generated by an operator *exh* whose alternatives are determined by replacing focused constituents of the prejacent. Applying their account to (1) raises the following puzzle: There seems to be no site for *exh* correctly predicting (1a)-(1b) to be acceptable only in their own context. There are two possible positions for *exh*: matrix *exh* and *exh* below *because*. We consider each in turn, taking (1a) as our example.

(3) a. *exh*[The jumper is ruined because [Sam]$_F$ ironed it] *exh* > *because*
   b. ⇔ The jumper is ruined because Sam ironed it and
      it is not the case that the jumper is ruined because Ali ironed it.

(4) a. The jumper is ruined because *exh*[[Sam]$_F$ ironed it]. *because* > *exh*
   b. ⇔ The jumper is ruined because [Sam ironed it and Ali did not iron it].

Matrix *exh*, in (3a), wrongly predicts (1a) to be acceptable in both contexts A-B in (1). Since in no context does Ali iron the jumper, in no context is it ruined because Ali ironed it.[2]

Similarly, *exh* below *because* wrongly predicts (1a) to be acceptable in both contexts. McHugh (2020) shows that *because* is downward monotone in its cause argument: if C^+ entails C then (E *because* C) entails (E *because* C^+). Then as *The jumper is ruined because Sam ironed it* is true in both contexts A and B, (4b) is true in both as well. Hence *exh* below *because* wrongly predicts (1a) to be acceptable in both contexts (rather than only in context A). We conclude that the F-marked phrases in (1) associate neither with matrix *exh* nor with *exh* below *because*. But then the puzzle remains—how to account for the judgments in (1)?

[1] The observation that *because* is focus-sensitive has been made before (e.g. Dretske 1972, Rooth 1999, Beaver and Clark 2008: p. 64). In the presentation we compare the current proposal with these previous accounts.

[2] Alternatively, one might think that since *because* softly presupposes that its propositional arguments are true (Romoli 2012), (3b) is infelicitous—rather than strictly speaking false—in contexts where Ali does not iron the jumper. Still, this proposal would not explain why (1a) is felicitous in context A: (3b) would carry a false presupposition in both contexts, so the account would predict (1a) to be infelicitous in both contexts A-B.

Proposal: lexical exhaustification. We show that Fox and Katzir's (2011) treatment of *exh* can account for the data in (1) if *exh* is part of the lexical semantics of *because*. Our starting point is the entry in (5), based on Lewis (1973) and Schlenker (2008). We take $\Box(p)(q)$ to be a counterfactual modal (in the sense of Kratzer 1981) with restrictor p and nuclear scope q.

(5) **Entry for *because* (initial).** $[\![q \textit{ because } p]\!] = 1$ iff $\Box(p)(q)$ and $\neg\Box(\neg p)(q)$.

Note that (5) can be expressed in terms of *exh* by taking *alt* to be the antecedent's polar alternatives, $alt = \{p, \neg p\}$. Specifically, if $\Box(p)(q)$ does not entail $\neg\Box(\neg p)(q)$, we have $exh_{alt}[\Box(p)(q)] \Leftrightarrow \Box(p)(q) \wedge \neg\Box(\neg p)(q)$, and can therefore generalize (5) as follows.

(6) **Entry for *because* (final).** $[\![q \textit{ because } p]\!] = 1$ iff $exh_{alt}[\Box(p)(q)]$.

(5) is a case of (6) where $alt = \{p, \neg p\}$. But focus-marking can result in other choices of *alt*:

(7) a. Ali: The jumper is ruined because $[\text{Sam}]_F$ ironed it. =(1a)
b. *alt* = {jumper ruined because Sam ironed it, jumper ruined because Ali ironed it}
c. $[\![(7a)]\!] = 1$ iff $\Box([\![\text{Sam iron}]\!])([\![\text{j ruined}]\!])$ and $\underline{\neg\Box([\![\text{Ali iron}]\!])([\![\text{j ruined}]\!])}$.

The entry in (6), featuring lexical *exh*, correctly predicts (1a) to be acceptable in context A but not B. This is because only context A makes true the underlined condition in (7c); namely, that it is not the case that, if Ali had ironed the jumper, it would have been ruined.

Lexical *exh* in *because* violates economy. Consider *because* in a downward entailing environment, illustrated in (8) and (9), on the reading where negation takes scope over *because*.

(8) *Context C: Rose pulls a lever, making an oncoming train take a different track. No matter which track the train takes, it reaches the station.*
The train did not reach the station because Rose pulled the lever. ($\neg >$ *because*)

(9) *Context D: Tom, and then Helen, independently flip a fair coin. Both coins land heads.*
Helen's coin did not land heads because Tom's coin landed heads. ($\neg >$ *because*)

Intuitively, each sentence is true in its given context. Table 1 overleaf calculates the predictions for (8) and (9) under the four plausible parses of $\neg(p \textit{ because } q)$ generated by *exh*, where $alt = \{p, \neg p\}$, and following Fox and Spector (2018: ex. 70), $alt' = \{\neg exh_{alt}[\Box(p)(q)], \neg\Box(p)(q)\}$. As Table 1 shows, only $\neg exh_{alt}[\Box(p)(q)] \Leftrightarrow \neg\Box(p)(q) \vee \Box(\neg p)(q)$ correctly predicts that (8) and (9) are both true. This is also the only parse that violates Fox and Spector's (2018) Economy Condition on Exhaustification. As Economy is motivated by general principles of discourse rationality, this suggests that, strikingly, lexical *exh* is not subject to such constraints.

Parse of *not* ... *because*	Truth conditions of parse	(8)	(9)	Economy
$\neg\Box(p)(q)$	$\neg\Box(p)(q)$	F ✗	T ✓	✓
$exh_{alt}[\neg\Box(p)(q)]$	$\neg\Box(p)(q) \wedge \Box(\neg p)(q)$	F ✗	F ✗	✓
$\neg exh_{alt}[\Box(p)(q)]$	$\neg\Box(p)(q) \vee \Box(\neg p)(q)$	T ✓	T ✓	✗
$exh_{alt'}[\neg exh_{alt}[\Box(p)(q)]]$	$\Box(p)(q) \wedge \Box(\neg p)(q)$	T ✓	F ✗	✓

Table 1: Possible parses of *not* ... *because*, and their predictions for (8), (9) and Economy.

In sum, we apply focus-sensitive *exh* to provide an account of the focus-sensitivity of *because*, and show that it violates Economy. We will further address the consequences of these data, both for the status of Economy and larger debates on the derivation of scalar implicatures.

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