

# Conditional Collapse

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## Abstract

Indicative and subjunctive conditionals are in non-complimentary distribution: there are conversational contexts at which both are licensed (Stalnaker (1975), Karttunen & Peters (1979), von Fintel (1998)). This means we can ask an important, but under-explored, question: in contexts which license both, what relations hold between the two?

In this paper, I'll argue for an initially surprising conclusion: when attention is restricted to the relevant contexts, indicatives and subjunctives are co-entailing. §1 introduces the indicative/subjunctive distinction, along with a discussion of the relevant notion of entailment; §2 presents the main argument of the paper, and §3 considers some of the philosophical implications the argument in §2. Finally, §4 argues that we can reconcile the equivalence of indicatives and subjunctives with apparently conflicting judgments.<sup>1</sup>

## 1 Indicatives & Subjunctives

2 Consider the following pair of conditionals:

- 3 (1) If the butler was in the library, he saw the murder.  
4 (2) If the butler had been in the library, he'd have seen the murder.

5 According to the articles of faith for conditionals, (1) and (2) differ in meaning.<sup>2</sup>  
6 Following orthodoxy, call conditionals which pattern with the former *indicative*  
7 and conditionals which pattern with the latter *subjunctive*. Throughout, we will  
8 use  $\rightarrow$  for indicatives and  $>$  for subjunctives.<sup>3</sup>

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<sup>1</sup>I am grateful for discussion with Kyle Blumberg, Thony Gillies, Simon Goldstein, John Hawthorne, Ben Holguin, Jeff King, Cameron Domenico Kirk-Giannini, Arc Kocurek and Matt Mandelkern as well as the audience at the 2020 Eastern APA.

<sup>2</sup>See, e.g., Adams (1965), Stalnaker (1975), Slote (1978), Davis (1979), and Gibbard (1981) and von Fintel (1998), for classic work. For recent discussion, see Starr (2014b), Khoo (2015), Goldstein (2020), Williamson (2020) and Mandelkern (2021).

<sup>3</sup>This choice is not entirely innocent. The dominant view, at least in linguistics, is that *if*-clauses are restrictors on (overt or covert) modals (Kratzer (1979, 1981, 1986, 2012)). Nevertheless, we might still hope to productively study their inferential

1 One way the two forms of conditional differ has to do with the contexts at  
 2 which they are licensed. Unlike subjunctives, indicatives are unacceptable in  
 3 counterfactual environments—contexts in which their antecedent has been ruled  
 4 out. Thus, while (3.b) constitutes an acceptable bit of discourse, (3.a) does not.

- 5 (3) a. The butler wasn't in the library. ??If he was, he saw the murder.  
 6 b. The butler wasn't in the library. If he had been, he'd have seen the  
 7 murder.

8 At this point, it will be helpful to introduce some terminology. We can talk  
 9 about the presuppositions of various expressions using the notion of truth-in-a-  
 10 context.<sup>4</sup> Where  $\phi$  is true-in- $c$ , we'll write  $c \models \phi$ . We'll say that  $\phi$  is licensed  
 11 at  $c$  if and only if all of its presuppositions are true there.

12 There is then a simple (and seemingly popular) story to be told about the  
 13 behavior in (3.a-b). Indicatives presuppose their antecedent to be epistemically  
 14 possible in the context in which they are used.

15 INDICATIVE LICENSING  $A \rightarrow B$  is licensed at  $c$  only if  $c \models \Diamond A$ .

16 INDICATIVE LICENSING has been defended by Stalnaker (1975), Karttunen & Pe-  
 17 ters (1979), von Stechow (1998), Gillies (2009, 2020) and Starr (2014c,a,b) amongst  
 18 others. On the assumption that  $\Diamond A$  is true-in- $c$  only if  $A$  hasn't been ruled out  
 19 at  $c$ , it explains the infelicity of (3.a). In the context that results from accepting  
 20 the first sentence, the butler having been in the library will be ruled out. But, at  
 21 any such context, the presuppositions of the second sentence will be unsatisfied.

22 Subjunctives are standardly assumed to be licensed in both counterfactual and  
 23 non-counterfactual environments.<sup>5,6</sup> We will follow this assumption, attributing

properties by theorizing about the logic of a simple propositional language in which  
 they are represented using a binary connective. For previous articulations of this idea,  
 see Stalnaker (2014) and Rothschild (2021); for dissent, see Mandelkern (2021).

The suggestion is not that the English 'if' may turn out to be ambiguous between a  
 subjunctive and indicative connective. The difference between sentences like (1) and (2)  
 is presumably the product of a combination of differences in tense, mood and aspect.  
 However, we can aim to say something about the overall effect of these differences,  
 while abstracting away from how that effect is achieved. For instance, a (tentative)  
 proposal of the following discussion is that the differences between (1) and (2) may be  
 exhausted by the contribution their different morphological properties makes to their  
 respective presuppositions. I am grateful to a referee at *Mind* for encouraging me to  
 address this point.

<sup>4</sup>The notion of truth-in-a-context is originally due to Kaplan (1989). I employ it  
 here without any particular commitment to contexts being the kinds of things Kaplan  
 says contexts are. In particular, if the truth-in-a-context of an expression containing  
 one or more epistemic modals is sensitive to some body of information, then contexts  
 will need to be the kind of thing which can determine one of those.

<sup>5</sup>The *locus classicus* here, due to Anderson (1951), concerns the things doctors  
 tend to say about potential arsenic poisoning victims. See §4.3 for further discussion.

<sup>6</sup>Note that, in the sense used here, for  $c$  to be a counterfactual context for  $A$  does

1 them trivial presuppositions which are everywhere satisfied. Accordingly, we will  
 2 adhere to von Fintel (1998)’s observation that indicatives and subjunctives are  
 3 in non-complementary distribution—i.e., that there exist contexts at which both  
 4 an indicative and its corresponding subjunctive are licensed.<sup>7</sup> These contexts  
 5 will be those at which the conditionals’ common antecedent is epistemically  
 6 possible.

7 If indicatives and subjunctives are in non-complementary distribution, a number  
 8 of interesting issues can be raised. In particular, we can non-trivially ask: what  
 9 logical relations hold between the two types of conditional at those contexts  
 10 which license both?

11 This paper takes up that question. I will argue that under reasonable assump-  
 12 tions about the logic of indicatives and subjunctives, they are equivalent in  
 13 the appropriate sense. Where licensed, each entails the other. Defending this  
 14 principle, which I will call COLLAPSE, is the primary goal of this paper.

15 COLLAPSE  $A \rightarrow B \models A > B$ .

16 §2 introduces three inference patterns, each of which has substantial appeal.  
 17 Taken together, however, they are shown to imply COLLAPSE. COLLAPSE has  
 18 its disciples (e.g., Karttunen & Peters (1979); von Fintel (1998)).<sup>8</sup> It is however,  
 19 at least *prima facie*, at odds with orthodoxy. §3 considers some consequences of  
 20 the principle, focusing on the information (in)sensitivity of subjunctives. While  
 21 these consequences are surprising, the primary motivation for resisting COL-  
 22 LAPSE comes from Adams pairs: pairs of corresponding indicatives and subjunc-  
 23 tives, such as (4.a-b), which can elicit divergent judgments (see Zakkou (2019,  
 24 2021); Holguín (2020) for recent commentary).

- 25 (4) a. If the vicar did it, he didn’t leave any clues.  
 26 b. If the vicar had done it, he wouldn’t have left any clues.

27 §4 shows that our judgments about Adams pairs can be accommodated in a  
 28 way compatible with COLLAPSE by appealing to an independently plausible  
 29 pragmatic rule along with a popular story about how contexts change in con-  
 30 versation.

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not merely require that A is false in *c*; rather, it requires that  $\Box\neg A$  is true in *c*.

<sup>7</sup> This is directly supported by examples like (†.a-b):

- (†) a. Maybe the butler was in the library. If he was, he saw the murder.  
 b. Maybe the butler was in the library. If he had been, he’d have seen the  
 murder.

<sup>8</sup> Stalnaker (1975, 1984) is a more complicated case. Stalnaker (1975, 276) describes the subjunctive mood as a ‘conventional device for indicating that presuppositions [i.e., information in the common ground] are being suspended’. Whether this should be interpreted as a difference in licensing conditions between the indicative and subjunctive is unclear (see footnote 39 for one implementation of the view on which it is).

1 Our focus throughout will be on a propositional language closed under the  
 2 boolean constants ( $\neg, \wedge$ ), conditional connectives ( $\rightarrow, >$ ), and existential modal  
 3 operator ( $\diamond$ ), interpreted as epistemic possibility. We'll define  $\vee, \supset$  and  $\square$  in  
 4 the usual way. We'll take  $A, B, C, \dots$  to range over the fragment of the language  
 5 free of  $\diamond$  and  $\phi, \psi, \chi \dots$  to range over the full language.<sup>9</sup> For simplicity, we will  
 6 largely restrict our attention to sentences free of iterated modals.<sup>10</sup>

## 7 1.1 Strawson Entailment

8 Since we are dealing with expressions some of which have non-trivial presup-  
 9 positions, we want a notion of entailment which takes this into account. In  
 10 particular, we need to know how to treat contexts at which one (or more) of  
 11 the premises/conclusion is unlicensed when determining whether an inference  
 12 pattern is valid.

13 We will follow the standard strategy and talk about inference patterns in terms  
 14 of Strawson entailment (Strawson (1952), von Fintel (1998, 1999)). Informally,  
 15 the idea is that in evaluating a particular inference we should consider all and  
 16 only those contexts at which both the premises and the conclusion are licensed.  
 17 It is valid iff, within this restricted domain, there is no context at which the  
 18 premises are true but the conclusion false.<sup>11</sup>

19 STRAWSON      $\Gamma \models \phi$  iff in all contexts at which  $\phi$  and the members of  $\Gamma$  are  
 ENTAILMENT    licensed,  $\phi$  is true if  $\bigwedge \Gamma$  is.

20 In reasoning about Strawson entailment, it will be useful to have a function,  
 21  $\pi$ , which maps an expression to the set of its presuppositions—the expressions  
 22 which must be true-in-a-context for it to be licensed there (Beaver (2001), cf.  
 23 (Bochvar (1939); Herzberger (1973))). Thus, for example, according to INDICA-  
 24 TIVE LICENSING,  $\diamond A \in \pi(A \rightarrow B)$ . Where  $\Gamma$  is a set of sentences, we will adopt  
 25 the notational convention that  $\pi(\Gamma) = \bigcup_{\phi \in \Gamma} \pi(\phi)$ .<sup>12</sup> Strawson entailment can  
 26 then be defined in terms of classical entailment and  $\pi$ :  $\Gamma$  Strawson entails  $\phi$  if

<sup>9</sup> $\phi$  is free of  $\diamond$  if and only if  $\phi$  belongs to the closure of the atomic sentences of the language under  $\neg, \wedge, \rightarrow$  and  $>$ .

<sup>10</sup>Crucially, this allows us to bypass a schismatic debate over whether nested epistemic modals collapse to the innermost (Veltman (1996); Yalcin (2007)), collapse to the outermost (Veltman (1985)) or neither (Moss (2015); Goldstein (2019a)).

<sup>11</sup>Here, we adopt a static implementation of Strawson entailment (dynamic implementations are also available; see, in particular, (von Fintel (2001))). Later, we'll look at some ways that changes in context between evaluation of premises and conclusion can affect our judgments about validity. It will be a matter of contention whether these changes get triggered semantically or pragmatically. In the interest of neutrality, it is simplest to stick with the static notion of entailment, while recognizing that dynamic effects may need to be accounted for down the line in order to explain our full range of judgments.

<sup>12</sup>Note that on the assumption that an expression is licensed in  $c$  only if the presuppositions of its presuppositions are true-in- $c$ , then  $\psi \in \pi(\phi)$  implies  $\pi(\psi) \subseteq \pi(\phi)$ . That is,  $\pi$  is identical to its transitive closure.

1 and only if  $\Gamma \cup \pi(\Gamma \cup \{\phi\})$  classically entails  $\phi$ .

2 Importantly, some inference rules which are valid for classical entailment fail  
 3 for Strawson entailment. In particular, Strawson entailment does not vindicate  
 4 Cut (Smiley (1967), see also Cariani & Goldstein (2018)).

5 CUT If  $\Gamma \models \phi$  and  $\Delta, \phi \models \psi$ , then  $\Delta, \Gamma \models \psi$ .

6 To see why, consider the case in which presuppositions of  $\phi$  are not entailed by  
 7 the presuppositions of  $\Gamma \cup \Delta \cup \{\psi\}$ . Then the contexts considered in evaluating  
 8 whether  $\Gamma$  Strawson entails  $\phi$  and in evaluating whether  $\Delta$  and  $\phi$  Strawson  
 9 entail  $\chi$ , will be a strict subset of those considered in evaluating whether  $\Delta$  and  
 10  $\Gamma$  Strawson entail  $\psi$ . Accordingly, that the former two inferences are Strawson  
 11 valid does not guarantee that there is no context at which the elements of  $\Delta$   
 12 and  $\Gamma$  are licensed and true, yet  $\psi$  is licensed but false. The transitivity of  
 13 entailment is a limiting instance of Cut, and fails for the same reasons.

14 However, Strawson entailment does preserve Cut (and, hence, the transitivity  
 15 of entailment) in a restricted form. The rule is valid in the special case in which  
 16 the presuppositions of  $\Gamma, \Delta$  and  $\psi$ , along with  $\Gamma$  and  $\Delta$  themselves, are at least  
 17 as strong as the presuppositions of  $\phi$ . Call this rule Strawson Cut.

18 STRAWSON CUT Suppose that  $\delta(\Gamma \cup \Delta \cup \{\psi\}), \Gamma, \Delta \models \bigwedge \delta(\phi)$ . Then, if  $\Gamma \models \phi$   
 and  $\Delta, \phi \models \psi$ , then  $\Delta, \Gamma \models \psi$ .

19 Strawson Cut says that, if  $\Gamma$  and  $\Delta$ , along with the presuppositions of  $\Gamma \cup \Delta \cup \{\psi\}$ ,  
 20 entail each of the presuppositions of  $\phi$ , then the relevant instance of Cut will  
 21 be Strawson validity preserving. It is this restricted rule which we will rely on  
 22 below.

23 In addition to invalidating some classical inference rules, Strawson entailment  
 24 also validates some novel rules. Of particular note is the rule we will call Re-  
 25 duction.

26 REDUCTION If  $\Gamma, \phi \models \psi$  and  $\phi, \pi(\phi) \in \pi(\Gamma \cup \{\psi\})$ , then  $\Gamma \models \psi$ .

27 Reduction says that if  $\Gamma$  and  $\phi$  Strawson entail  $\psi$ , but  $\phi$  and its presuppositions  
 28 are presuppositions of  $\psi$  and  $\Gamma$ , then  $\Gamma$  Strawson entails  $\psi$  by itself. To see  
 29 why, note that since  $\phi$  and its presuppositions are among the presuppositions  
 30 of  $\psi$  and  $\Gamma$ , in evaluating the latter entailment we will restrict our attention to  
 31 only those contexts in which  $\phi$  is true and licensed. But it is established that  
 32 in all such contexts if the elements of  $\Gamma$  are true and licensed, then  $\psi$  is true, if  
 33 licensed.

34 The relationship that holds between the presuppositions of complex expressions  
 35 and the presuppositions of their parts is subject to complex and unresolved ques-  
 36 tions (for discussion see, e.g., Karttunen (1973, 1974), Heim (1983, 1990), Geurts  
 37 (1999), Beaver (1992, 2001), Schlenker (2007, 2008, 2009), Rothschild (2008)).  
 38 However, for present purposes, difficult cases can be set aside. Instead, we can re-

1 strict our attention to matters on which there is a large degree of consensus. I fol-  
 2 low Karttunen (1973, 1974) in adopting three assumptions: First, that negation  
 3 and modals are transparent to presuppositions. That is,  $\pi(\diamond\phi) = \pi(\neg\phi) = \pi(\phi)$ .  
 4 Second, that conjunctions inherit the presuppositions of their left-hand conjunct,  
 5 along with the presuppositions of the right-hand conjunct conditional on the  
 6 left.<sup>13</sup> That is,  $\pi(\phi \wedge \psi) = \pi(\phi) \cup \{\phi \supset \chi \mid \chi \in \pi(\psi)\}$ . Finally, that the presup-  
 7 positions of a conditional include at least the presuppositions of its antecedent  
 8 along with the presuppositions of its consequent conditional on its antecedent.  
 9 That is,  $\pi(\phi) \cup \{\phi \supset \chi \mid \chi \in \pi(\psi)\} \subseteq \pi(\phi \rightarrow \psi)$  (*mutatis mutandis* for subjunctive-  
 10 tives). Wherever these assumptions play a role in the argument below, the role  
 11 they play will be noted.

## 12 2 Constructing Collapse

### 13 2.1 And/If

14 First, consider the following pair of inference patterns:

- 15     AND/IF   i.    $\diamond(A \wedge B) \models A \rightarrow \diamond B$     INDICATIVE  
                   ii.  $\diamond(A \wedge B) \models A > \diamond B$     SUBJUNCTIVE

16 AND/IF says that a conditional with a  $\diamond$ -embedded consequent is entailed by the  
 17 epistemic possibility of its antecedent and consequent conjoined. Both indicative  
 18 and subjunctive variants of this principle look to be in good standing.

19 An individual who argues from (5) to either (6.a) or (6.b) reasons impeccably  
 20 (indeed, to the point of sounding boring).

- 21     (5) Maybe the butler was in the library and saw the murder.  
 22     (6)   a. So, if he was, maybe he saw the murder.  
 23            b. So, if he had been, maybe he'd have seen the murder.

24 It is hard to see how either inference could fail. Along with the argument from  
 25 (5) to (6.a-b), both variants of AND/IF draw support from the oddity of ac-  
 26 cepting the possibility of a conjunction along with the negation of the relevant  
 27 conditional. Since neither ‘*maybe*’ nor conditionals embed happily under sen-  
 28 tential negation, we can see this most easily by considering examples involving  
 29 (i) the modal auxiliary ‘*might*’ and (ii) downward monotonic environments that  
 30 do embed conditionals (such as, e.g., the scope of ‘*no-one*’).

31 An individual who accepts (7) along with either of (8.a-b) has reasoned subop-

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<sup>13</sup>For recent discussion, see Chemla & Schlenker (2012), Mandelkern *et al.* (2017).

1 timally (indeed, to the point of sounding unintelligible).<sup>14,15</sup>

2 (7) Anyone might buy a winning lottery ticket.

3 (8) a. There is no-one who might win the lottery, if they buy a ticket.

4 b. There is no-one who might win the lottery, if they were to buy a ticket.

5 These observations are hardly heretical (even if they are not scripture). Gillies  
6 (2020) endorses the indicative variant of AND/IF explicitly (and Gillies (2007)  
7 the subjunctive, implicitly). Likewise, both will constitute a reasonable infer-  
8 ence in the framework of Stalnaker (1975).

9 Note that I will take it for granted that the examples above involve a consequent  
10 embedded modal (rather than syntactically less plausible wide-scoping). There  
11 is good reason to think that, in this position, ‘*might*’ admits both an epistemic  
12 and circumstantial reading (see, e.g., Lewis (1973, 1979), Stalnaker (1981, 1984),  
13 DeRose (1994, 1999), Bennett (2003) and Asher & McCreedy (2007), for dis-  
14 cussion). However, the latter reading of (7)-(8.a-b) would appear to be highly  
15 unnatural, if it is available at all. Moreover, there is clearly no circumstantial  
16 reading of ‘*maybe*’ when it occurs in the same position (e.g., (5)-(6.a-b)). For  
17 this reason, I will primarily focus on examples involving the latter expression,  
18 employing the modal auxiliary to express epistemic possibility only in environ-  
19 ments in which ‘*maybe*’ does not happily embed.

## 20 2.2 If/And

21 Next, consider the following further pair of inference patterns:

- 22 IF/AND i.  $\diamond A, A \rightarrow \diamond B \models \diamond(A \wedge B)$  INDICATIVE  
ii.  $\diamond A, A > \diamond B \models \diamond(A \wedge B)$  SUBJUNCTIVE

23 IF/AND says that, given the epistemic possibility of its antecedent, a conditional  
24 with a  $\diamond$ -embedded consequent entails the epistemic possibility of its antecedent  
25 and consequent conjoined. The two variants are not quite the converses of their  
26 AND/IF counterparts, since they also include the epistemic possibility of the

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<sup>14</sup>von Fintel & Iatridou (2003) propose the epistemic containment principle (ECP), which states that generalized quantifiers cannot take scope over epistemic modals. The principle does not, however, block the relevant readings of (7)-(8) (which all involve a narrow-scope modal). As von Fintel and Iatridou observe, FCIs such as ‘*anyone*’ are exempt from ECP (196). Similarly, placing the modal in a relative clause with a dummy pronoun in subject position (as in (8.a-b)) forces a narrow-scope reading.

<sup>15</sup>Note that whereas antecedent of (6.b) exhibits two layers of past tense and a stative verb, the antecedent embedded in (8.b) exhibits a single layer of past tense and eventive verb. This produces in a future-less-vivid interpretation of the latter (?), on which the antecedent’s reference time is later than the utterance time. In general, the observations in the present section appear robust across different sub-categories of subjunctives.

1 antecedent as a premise. However, the difference is superficial. After all, in the  
 2 former inferences, the possibility of the antecedent is entailed by the possibility  
 3 of its conjunction with the consequent.

4 IF/AND also looks to be in good standing, for both variants. Take the indicative  
 5 case first. Running the same tests, an individual who argues from (9.a) to (9.c)  
 6 reasons just as impeccably. Similarly an individual who accepts (10.a-c) reasons  
 7 just as sub-optimally.

- 8 (9) a. Maybe the butler was in the library.  
 9 b. If he was, maybe he saw the murder.  
 10 c. So, maybe the butler was in the library and saw the murder.

- 11 (10) a. Anyone might buy a lottery ticket.  
 12 b. Anyone might win the lottery, if they buy a ticket.  
 13 c. There is no-one who might buy a winning lottery ticket.

14 Turning to the subjunctive case, analogous considerations appear to mitigate  
 15 equally strongly in its favor. The reasoning in (11.a-c) seems just as good as its  
 16 indicative counterpart. And (12.a-c) seem no less inconsistent.

- 17 (11) a. Maybe the butler was in the library.  
 18 b. If he had been, maybe he'd have seen the murder.  
 19 c. So, maybe the butler was in the library and saw the murder.

- 20 (12) a. Anyone might buy a lottery ticket.  
 21 b. Anyone might win the lottery, if they were to buy a ticket.  
 22 c. There is no-one who might buy a winning lottery ticket.

23 Again, the observation that these inferences appear valid is not new. The validity  
 24 of IF/AND has been previously advocated in Gillies (2010, 2020) (for indicatives)  
 25 and Gillies (2007) and Goldstein (2020) (for subjunctives).

26 Of the two, subjunctive IF/AND appears the more contentious.<sup>16</sup> Suppose that  
 27 it is unknown whether the vicar did it, although it is known that whoever did  
 28 it acted alone. If we suppose, further, that the vicar and the maid are co-  
 29 conspirators, who frequently engage in misdeeds together, it appears easy to  
 30 hear the following subjunctive as true:

- 31 (13) If the vicar had done it, maybe the maid would've helped him.

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<sup>16</sup>I am grateful to an anonymous referee for *Mind* for pressing me on this concern.



1 Assuming that, at the context at which (13) is evaluated, it is epistemically  
 2 possible that the vicar did it but not that he did it with help from the maid,  
 3 this will amount to a counter-example to subjunctive IF/AND.

4 There is evidence that this assumption is not appropriate, however. When  
 5 combined with an indicative which reports information supposedly settled in  
 6 the context, the subjunctive degrades substantially.

- 7 (14) a. ?? If the vicar did it, he acted alone. But if he'd done it, maybe the  
 8 maid would've helped him.  
 9 b. ?? If the vicar had done it, maybe the maid would've helped him.  
 10 But if he did it, he acted alone.

11 This is surprising. The indicative follows directly from the claim that whoever  
 12 did it acted alone. Accordingly, if (13) had a true reading in a context which  
 13 this information is epistemically necessary, (14.a) and (14.b) should too. This  
 14 suggests that, for the subjunctive to receive a true reading, what is epistemically  
 15 possible in the context must be permitted to shift.

16 This hypothesis gets additional support from a diagnostic test for context shifti-  
 17 ness. von Fintel & Gillies (2021) (following Kroch (1974)) observe that embed-  
 18 ding material under '*although*' prevents covert shifts in context.<sup>17</sup>

- 19 (15) ?? Although the vicar might have done it and whoever did it acted alone,  
 20 if the vicar had done it, the maid might've helped him.

21 It is much harder to obtain a true reading of (15) than (13). This suggests that,  
 22 when the latter is heard as true, the context undergoes a shift to either rule out  
 23 that the vicar did it or rule in that the culprit did not act alone. I will return  
 24 to the phenomenon of context shiftiness and offer an explanation of how it can  
 25 be triggered later on (in §4).

26 We have now seen two principles, each of which has significant plausibility and  
 27 has been previously endorsed in both its indicative and subjunctive variants.  
 28 What has gone unnoticed, however, is that, combined with one other popular  
 29 principle about '*maybe*'s and '*if*'s, the pairs of AND/IF and IF/AND inferences  
 30 come perilously close to triggering COLLAPSE by themselves.

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<sup>17</sup>For example, while (?a) is acceptable, (?b) is notably degraded:

- (?) a. John will be at the bar. But if he isn't at the bar, he'll be in his office.  
 b. ?? Although John will be at the bar, if he isn't at the bar, he'll be in his  
 office.

I am grateful to Matt Mandelkern for bringing examples like (?a) to my attention.

1 **2.3 Scopelessness & Quasi-Collapse**

2 Call the principle that  $\diamond$  commutes with conditional antecedents SCOPELESS-  
 3 NESS:

- 4 SCOPELESSNESS i.  $A \rightarrow \diamond B \models \diamond(A \rightarrow B)$  INDICATIVE  
 ii.  $A > \diamond B \models \diamond(A > B)$  SUBJUNCTIVE

5 SCOPELESSNESS says that conditionals with  $\diamond$ -embedded consequents are equiv-  
 6 alent to the corresponding bare conditionals embedded under  $\diamond$ . That is, a bare  
 7 conditional is epistemically possible just in case its consequent is epistemically  
 8 possible conditional on its antecedent. SCOPELESSNESS is explicitly defended  
 9 by Gillies (2020) and Ciardelli (2021) (for indicatives) and by Stalnaker (1981),  
 10 DeRose (1991, 1994, 1999) and Goldstein (2020) (for subjunctives). And for  
 11 both, it is hard to hear any difference between the two scope resolutions:

- 12 (16) a. If the butler was in the library, maybe he saw the murder.  
 13 b. Maybe, if the butler was in the library, he saw the murder.

- 14 (17) a. If the butler had been in the library, maybe he would've seen the  
 15 murder.  
 16 b. Maybe, if the butler had been in the library, he would've seen the  
 17 murder.

18 (16.a-b) and (17.a-b) seem to be just different ways of saying the same thing.  
 19 Someone who accepted one member of each pair but denied the other would  
 20 sound incoherent. Moreover, SCOPELESSNESS accords with a broader observa-  
 21 tion about epistemic operators in conditionals. It is widely recognized that other  
 22 epistemic operators (i.e., ‘probably’, ‘presumably’, ‘certainly’, etc.) appear scope-  
 23 less with respect to conditionals. As with ‘maybe’, (18.a-b) seem like different  
 24 ways of saying the same thing.

- 25 (18) a. If the butler [was/had been] in the library, he [probably/presumably/certainly]  
 26 [saw/would've seen] the murder.  
 27 b. [Probably/presumably/certainly], if the butler [was/had been] in the  
 28 library, he [saw/would've seen] .

29 Some might worry whether (16.b) and (17.b) in fact involve an epistemic possibil-  
 30 ity modal taking wide-scope over a conditional. Perhaps, instead, the antecedent  
 31 occurs in a parenthetical, without scoping under the modal. Fortunately, we do  
 32 not need to adjudicate this issue. Considering response particle uses of ‘maybe’  
 33 gives us an alternative way of evaluating its behavior when taking wide scope  
 34 over a conditional (cf. Krifka (2015)). In each of (19.a-b), it would be incoher-  
 35 ent to for someone to agree with B’s response while denying (16.a)/(17.a) (or  
 36 *vice versa*).

- 1 (19) a. A: If the butler did it, he used the candlestick.  
 2 B: Maybe.  
 3 b. A: If the butler had done it, he'd have used the candlestick.  
 4 B: Maybe.

5 We have looked at three pairs of plausible seeming principles connecting ‘*if*’s and  
 6 ‘*maybe*’s. Each of these principles seems good in both indicative and subjunctive  
 7 forms. However, taken together, the three pairs of principles have a potentially  
 8 surprising consequence. Let QUASI-COLLAPSE be the principle that indicatives  
 9 and subjunctives are equivalent when embedded under  $\diamond$ :

10 QUASI-COLLAPSE  $\diamond(A \rightarrow B) \models \diamond(A > B)$

11 Each direction of QUASI-COLLAPSE can be derived from SCOPELESSNESS, the  
 12 indicative or subjunctive variant of IF/AND and the corresponding subjunctive/  
 13 indicative variant of AND/IF.

14 **Fact 1.** AND/IF, IF/AND and SCOPELESSNESS imply QUASI-COLLAPSE.

15 Take the left-to-right direction first. By indicative IF/AND, we know that  
 16  $\diamond A, A \rightarrow \diamond B \models \diamond(A \wedge B)$ . By subjunctive AND/IF, we also know that  $\diamond(A \wedge B) \models$   
 17  $A > \diamond B$ . Yet  $\diamond(A \wedge B)$  introduces no new presuppositions of its own.<sup>18</sup> Thus,  
 18 by Strawson Cut, it follows that  $\diamond A, A \rightarrow \diamond B \models A > \diamond B$ . But, by INDICA-  
 19 TIVE LICENSING,  $\diamond A$  is a presupposition of  $A \rightarrow \diamond B$ . So, by Reduction, it  
 20 follows that  $A \rightarrow \diamond B \models A > \diamond B$ . Since  $\diamond$  is transparent to presupposition,<sup>19</sup>  
 21 SCOPELESSNESS allows us to derive that  $\diamond(A \rightarrow B) \models \diamond(A > B)$ , via Strawson  
 22 Cut.

23 Equivalent reasoning, *mutatis mutandis*, is sufficient to demonstrate that the  
 24 right-to-left direction,  $\diamond(A > B) \models \diamond(A \rightarrow B)$ , follows from SCOPELESSNESS,  
 25 subjunctive IF/AND and indicative AND/IF.<sup>20</sup> Thus anyone who accepts both  
 26 variants of the three principles (as, I’ve been suggesting, they should) is commit-  
 27 ted to QUASI-COLLAPSE. QUASI-COLLAPSE is distinct from COLLAPSE. How-  
 28 ever, the latter follows from the former given one further common assumption.

## 29 2.4 Informationality & Collapse

30 INFORMATIONALITY says that entailment relations between epistemic necessi-  
 31 ties are constrained by entailment relations between their prejacent. B being  
 32 epistemically necessary follows from A being epistemically necessary only if B  
 33 follows from A.

<sup>18</sup>Since, by assumption,  $\pi(\diamond(A \wedge B)) = \pi(A) \cup \{A \supset \chi \mid \chi \in \pi(B)\}$  and  $\pi(A \rightarrow \diamond B) \subseteq \pi(A) \cup \{A \supset \chi \mid \chi \in \pi(B)\}$

<sup>19</sup>Which guarantees that  $\pi(\diamond(A \rightarrow B)) = \pi(A \rightarrow \diamond B)$  and, *mutatis mutandis*, for  $>$ .

<sup>20</sup>Note that, in the right-to-left direction of proof, Reduction will employ the fact that the conclusion has  $\diamond A$  as a presupposition, rather than the premise.

1    INFORMATIONALITY     $\Box A \models \Box B$  only if  $A \models B$

2    INFORMATIONALITY is a key property of many so-called ‘informational’ ap-  
 3    proaches to arguments involving epistemic modals (Bledin (2014); Santorio  
 4    (forthcoming)). It is accepted in domain semantics for informational entail-  
 5    ment (Yalcin (2007)); in update semantics for both update-to-test and test-to-  
 6    test entailment (Veltman (1996)); as well as in acceptance semantics (Hawke &  
 7    Steinert-Threlkeld (2018, 2020)), path semantics Santorio (forthcoming); Gold-  
 8    stein & Santorio (2021) and attitude semantics (Ciardelli (2021)). Similarly, it  
 9    is also accepted in Incurvati & Schlöder (2017, 2019, 2021)’s multilateral epis-  
 10    temic logic.

11    However, acceptance of INFORMATIONALITY is not distinctive of informational  
 12    approaches to entailment. It is also accepted in domain semantics for the non-  
 13    informational, truth-preserving entailment relation (what Yalcin (2007) terms  
 14    ‘standard consequence’). And it is likewise accepted in relational frameworks,  
 15    such as Mandelkern (2019)’s bounded semantics.<sup>21</sup>

16    The widespread appeal of INFORMATIONALITY can be brought out by consider-  
 17    ing what it would take for it to fail. Failure of INFORMATIONALITY would need  
 18    there to exist a pair of consistent (non-modal) claims where the necessity of one  
 19    sufficed to make the other epistemically impossible. That is, it would require  
 20    that, for some consistent  $A$  and  $B$ ,  $\Box A$  could nevertheless be inconsistent with  
 21     $\Diamond B$ .

22    Given INFORMATIONALITY, QUASI-COLLAPSE leads directly to COLLAPSE.

23    **Fact 2.** INFORMATIONALITY and QUASI-COLLAPSE imply COLLAPSE.

24    First, observe that contraposition is a safe rule for Strawson entailment. Ac-  
 25    cordingly, from QUASI-COLLAPSE and the fact that  $\Diamond$  and  $\Box$  are duals, we can  
 26    infer  $\Box \neg(A > B) \models \Box \neg(A \rightarrow B)$ . Applying INFORMATIONALITY allows us  
 27    to conclude  $\neg(A > B) \models \neg(A \rightarrow B)$ . Finally, a further application of con-  
 28    traposition to each direction of the equivalence gives us COLLAPSE (repeated  
 29    below).

30    COLLAPSE     $A \rightarrow B \models A > B$ .

31    This is a striking result. COLLAPSE looks, at first glance, to be in tension with

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<sup>21</sup>It is important, here, that INFORMATIONALITY is restricted to the fragment of the language free of  $\Diamond$ . While the more general variant of the principle which ranges over the full language will hold in informational approaches to entailment, it may fail in non-informational frameworks.

For this reason, things are more complicated for views which combine a non-informational consequence relation with a strict conditional account of the indicative. Some versions of these views generate counter-examples even to the restricted variant of the principle. For example, in domain semantics with standard consequence  $\Box(A \wedge \neg\Box(T \supset \neg A)) \models \Box \perp$  and yet  $A \wedge \neg\Box(T \supset \neg A) \not\models \perp$ . And in relational semantics,  $\Box(A \supset B) \models \Box\Box(A \supset B)$  is valid in S4, but  $A \supset B \models \Box(A \supset B)$  is not.

1 the articles of faith which state that indicatives and subjunctives differ in mean-  
 2 ing. It also appears to be in tension with the observation that judgments about  
 3 pairs of corresponding indicatives and subjunctives (like (4.a-b)) can diverge.

4 Faced with this tension, a tempting response is to deny INFORMATIONALITY.  
 5 After all, unlike the other principles which lead to collapse, INFORMATIONALITY  
 6 is motivated primarily by theoretical considerations. And although popular, it  
 7 is hardly doctrine.

8 However, while denying INFORMATIONALITY is a way of resisting COLLAPSE, it  
 9 is not a particularly promising way of resisting the troublesome consequences  
 10 of COLLAPSE. As we saw in the proof of **Fact 2**, QUASI-COLLAPSE by itself  
 11 implies that, where both are licensed, the negation of an indicative is epistem-  
 12 ically necessary if and only if the negation of the corresponding subjunctive is  
 13 epistemically necessary, too. That is,  $\Box\neg(A \rightarrow B)$  and  $\Box\neg(A > B)$  are Strawson  
 14 co-entailing.

15 A common picture has it that you are in a position to deny a claim if and only  
 16 if its negation is epistemically necessary (Willer (2013); Incurvati & Schlöder  
 17 (2017, 2021)).<sup>22</sup> Given this assumption, QUASI-COLLAPSE will imply that,  
 18 where both are licensed, you are in a position to deny a subjunctive if and  
 19 only if you are in a position to deny the corresponding indicative. Yet this is  
 20 no less at odds with judgments about Adams pairs than COLLAPSE itself. After  
 21 all, someone may deny (4.b) despite not being in a position to deny (4.a).

22 Similarly, given STRICTNESS (§3, below), QUASI-COLLAPSE implies that some-  
 23 one who takes its antecedent to be epistemically possible is in a position to deny  
 24 a subjunctive if and only if they are in a position to deny that the corresponding  
 25 material conditional is epistemically necessary.

26 In §§3-4, I will argue that the tension between COLLAPSE and orthodoxy is  
 27 merely apparent. The two are compatible. Indeed, I will suggest, the principle  
 28 fits naturally into an appealing picture of the semantic and pragmatic differences  
 29 between indicatives and subjunctives. The primary goal of §4 is to provide an  
 30 account of divergent judgments about indicatives and subjunctives which is  
 31 consistent with COLLAPSE. Before taking up that task, however, §3 examines  
 32 the philosophical consequences of COLLAPSE in greater detail.

### 33 **3 Collapse Considered**

34 COLLAPSE says that indicatives and subjunctives are Strawson equivalent. To  
 35 some, this might seem tantamount to denying a central article of conditional  
 36 faith.

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<sup>22</sup>Assuming that (i) you are in a position to deny A if and only if you are in a position  
 to assert  $\neg A$  and (ii) what is epistemically necessary is what is known, proponents of  
 a knowledge norm on assertion will also be committed to this principle (Unger (1975)  
 Williamson (1996, 2000), DeRose (1996, 2002), Adler (2002))).

1 It might, but it shouldn't. Strawson equivalence requires that the truth values  
 2 of the two conditionals coincide at those contexts which license both. However,  
 3 it allows for substantial differences in which contexts license each. As a result,  
 4 it allows each conditional to be governed by a substantially different logic.

5 The conditional articles of faith state that indicatives and subjunctives differ  
 6 in meaning. This is consistent with their Strawson equivalence.<sup>23</sup> Indeed, one  
 7 might argue that showing the conditionals to differ in their presuppositions or  
 8 their logic *amounts* to showing them to differ in meaning. We do not need to  
 9 defend this stronger claim here, however. What is relevant is that the adher-  
 10 ent of COLLAPSE is not thereby committed to the identity of indicatives' and  
 11 subjunctives' meanings.

12 It does not, however, follow that COLLAPSE is neutral with respect to the tradi-  
 13 tional picture of indicatives and subjunctives. While it may be compatible with  
 14 attributing different meanings to the two forms, COLLAPSE casts doubt on one  
 15 of the key ways in which those meanings are typically taken to differ.

16 Indicative conditionals are widely held to be information sensitive (see, e.g., [Gib-  
 17 bard \(1981\)](#), [Veltman \(1985\)](#), [Yalcin \(2007, 2012\)](#) and [Kolodny & MacFarlane  
 18 \(2010\)](#)). The truth value of an indicative in context appears to depend, in part,  
 19 on what information that context makes salient. To see this, consider a case  
 20 with the following structure (which is a symmetric variant of [Gibbard \(1981,  
 21 231\)](#)'s original 'Sly Pete' example).<sup>24</sup>

22 An individual (The GameMaster) places a ball under one of three cups (Red,  
 23 Blue, Yellow). Two contestants (A, B) must guess under which cup the ball has  
 24 been placed. Before they do, however, The GameMaster will privately reveal  
 25 one of the empty cups to each of them. Suppose that The GameMaster places  
 26 the ball under the Red cup. She reveals to Contestant A that it is not under the  
 27 Blue cup, and, to Contestant B, that it is not under the Yellow cup. Intuitively,  
 28 A could truthfully assert (20) (but not (21)). In contrast, B could truthfully  
 29 assert (21) (but not (20)):

30 (20) If the ball is not under Red, then it is under Yellow.

31 (21) If the ball is not under Red, then it is under Blue.

32 Yet the only apparent difference between A and B's contexts of utterance is the  
 33 body of information they make salient. Presumably, A's information is salient  
 34 in the former, whereas B's is salient in the latter.

---

<sup>23</sup>The more general point, that, for an appropriate entailment relation, equivalence between two sentences does not imply sameness of meaning is familiar in the logic of conditionals (cf., in particular, [Stalnaker \(1975\)](#), [von Fintel \(2001\)](#), [Gillies \(2009\)](#), and [Cariani & Goldstein \(2018\)](#)).

<sup>24</sup>For extended discussion of cases of with this structure (both symmetric and asymmetric), see in particular [Stalnaker \(1984\)](#), [Lycan \(2001\)](#), [Bennett \(2003\)](#), [Rothschild \(2015\)](#), [Goldstein \(2019b\)](#), and [Dorr & Hawthorne \(manuscript\)](#).

1 Subjunctives are standardly taken to be information insensitive. A common  
 2 way to motivate this is to note that in normal contexts the truth of (22)-(23),  
 3 unlike their indicative variants, appears to depend entirely on the dispositions  
 4 of The GameMaster—it is not sensitive to what the contestants know.

5 (22) If the the ball hadn't been under Red, it would have been under Yellow.

6 (23) If the the ball hadn't been under Red, it would have been under Blue.

7 Yet according to COLLAPSE, the truth-values of corresponding indicatives and  
 8 subjunctives coincide at contexts which licenses both. Accordingly, if indicatives  
 9 are information sensitive in such contexts, subjunctives must be too.

10 We can make the same point in a less neutral way. An apparent symptom of  
 11 the information sensitivity of indicatives is the equivalence of (20) and (24) (and,  
 12 equally, (21) and (25).

13 (24) The ball must either be under Red or Yellow.

14 (25) The ball must either be under Red or Blue.

15 Someone who denied (24) could not coherently accept (20). And, equally, some-  
 16 one who accepted (24) could not coherently deny (20). This motivates STRICT-  
 17 NESS (endorsed by, e.g., Warmbrod (1983), Veltman (1985), Dekker (1993), von  
 18 Fintel (1999), Gillies (2004, 2009), Yalcin (2007), Starr (2014b,c), and Holguín  
 19 (Forthcoming), amongst others):

20 STRICTNESS  $\Box(\neg A \vee B) \models A \rightarrow B$

21 STRICTNESS says that indicative conditionals are Strawson equivalent to the  
 22 epistemic necessity of the corresponding material conditional. Yet together,  
 23 COLLAPSE and STRICTNESS imply EPISTEMICITY.<sup>25</sup>

24 EPISTEMICITY  $\Diamond A \wedge (A > B) \models \Diamond A \wedge \Box(\neg A \vee B)$

25 EPISTEMICITY says that, in contexts in which its antecedent is epistemically  
 26 possible, a subjunctive is equivalent to the epistemic necessity of the corre-  
 27 sponding material conditional. Epistemic necessity claims are uncontroversially  
 28 information sensitive.<sup>26</sup> So, given STRICTNESS, COLLAPSE implies that, in non-  
 29 counterfactual contexts, subjunctives are information sensitive, too.

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<sup>25</sup>Proof: By the right-to-left direction of COLLAPSE, we know that  $\Diamond A \wedge (A > B) \models A \rightarrow B$ . By the right-to-left direction of STRICTNESS, INDICATIVE LICENSING, and Reduction we also know that  $A \rightarrow B \models \Diamond A \wedge \Box(\neg A \vee B)$ . Yet  $\Diamond A \wedge (A > B) \models \wedge \pi(A \rightarrow B)$ . So, by Strawson Cut, we can conclude that  $\Diamond A \wedge (A > B) \models \Diamond A \wedge \Box(\neg A \vee B)$ . Equivalent reasoning, with the left-to-right directions of each principle establishes the right-to-left direction of EPISTEMICITY.

<sup>26</sup>See, e.g., Hacking (1967), DeRose (1991), Egan *et al.* (2005), and von Fintel & Gillies (2007, 2010) for classic discussion of precisely what information they are sensitive too.

1 While this conflict with the traditional picture, it is not without precedent. Oth-  
 2 ers have observed that subjunctives can sometimes permit information sensitive  
 3 readings which are equivalent to their indicative counterparts (see, in particular,  
 4 [Edgington \(2007, 211\)](#)).

5 For example suppose Contestant A guesses that the ball is under Yellow and  
 6 Contestant B that it is under Blue. After the ball is revealed to be under Red,  
 7 each contestant could justify her guess along the lines of (26), *mutatis mutandis*.  
 8 And, equally, a third party could rationalize their guesses along the lines of (27):

9 (26) Ah well—I had a 50% chance of guessing correctly: if it hadn’t been  
 10 under Red, it would have been under [Yellow/Blue].

11 (27) Contestant [A/B]’s guess wasn’t so bad. After all, she knew that if it  
 12 hadn’t been under Red, it would have been under [Yellow/Blue].

13 Here, both (26) and (27) ascribe past possession of the information that the  
 14 contestant would have expressed with the corresponding indicative, prior to  
 15 learning the location of the ball. Similarly, [Khoo \(2015\)](#) has recently argued for  
 16 the availability an information sensitive reading of subjunctives on the basis of  
 17 assumptions about the contribution of indicative and subjunctive mood.

18 Nevertheless, the mere availability of an information sensitive reading of sub-  
 19 junctives is insufficient to fully address the concerns raised by COLLAPSE. We  
 20 need to explain why, in contexts which license both, subjunctives frequently  
 21 permit an information insensitive reading that is not available for the indicative.  
 22 And we also need to explain why, in the same contexts, the information sensitive  
 23 reading of the indicative is frequently unavailable for the subjunctive. I turn to  
 24 this issue in the following (and final) section.

## 25 4 Collapse in Context

### 26 4.1 Adams Pairs

27 In many (non-counterfactual) contexts, judgments about corresponding indica-  
 28 tives and subjunctives diverge. Call instance of this phenomenon ‘Adams’ pairs  
 29 (following [Adams \(1970, 1975\)](#)).<sup>27</sup>

30 Here is one example. Sherlock is investigating the murder. No-one can be ruled  
 31 out, but some suspects are more naturally suited to the crime than others. The  
 32 vicar, in particular, is notoriously clumsy and inept. Suppose that an initial  
 33 search of the murder scene has produced no evidence. In this context, (4.a)  
 34 appears true (as uttered by Sherlock, at least). Intuitively, it reports Sherlock’s  
 35 information that either the vicar is innocent or he covered his tracks well.

---

<sup>27</sup>The *locus classicus* here involves differences in the level of paranoia required for one to accept certain indicatives vs. subjunctives about JFK’s assassination.



- 1 (4) a. If the vicar did it, he didn't leave any clues.  
 2 b. If the vicar had done it, he wouldn't have left any clues.

3 In contrast, (4.b) appears false (or at least uncertain). Intuitively, rather than  
 4 reporting Sherlock's information, it makes a (dubious) claim about the vicar's  
 5 disposition to commit murder competently. Both conditionals are licensed in the  
 6 context at which they are evaluated. Hence, it seems we have a counter-example  
 7 to COLLAPSE.

8 Our judgments about (4.a-b) are robust. But they are not quite conclusive.  
 9 COLLAPSE requires the status of indicatives and subjunctives to coincide at  
 10 any context which licenses both. At contexts which do not license both, it  
 11 imposes no constraints. If, prior to evaluating one member of the pair, hearers  
 12 are required to modify the common ground of the context so that it no longer  
 13 licenses the other, then despite appearances, our judgments will not correspond  
 14 to a counter-instance to COLLAPSE.

15 In fact, there is reason to think that this is precisely what occurs. As [Shanon](#)  
 16 (1976) and [von Stechow](#) (2004) observe, the availability of 'Hold up/Hey, wait a  
 17 minute!'-responses provides a test for the accommodation of not-at-issue mate-  
 18 rial. The subjunctive members of Adams pairs pass this test. In response to  
 19 an utterance of (4.b) in its specified context, a hearer could reasonably object  
 20 'Hey, wait a minute! We can't rule out that the vicar *did* do it yet!'.<sup>28</sup> In con-  
 21 trast, no such response is available to its indicative variant. This suggests that  
 22 (4.b)—unlike (4.a)—triggers a not-at-issue implication in context that the vicar  
 23 must be innocent. If, prior to evaluating it, hearers accommodate this material,  
 24 then the subjunctive will be assessed in a different context to the indicative.  
 25 Accordingly, there will be no reason to expect that judgments about the two  
 26 will coincide.

27 This explanation receives further support from the conditionals behavior in cer-  
 28 tain embedded environments.

- 29 (28) a. ?? Although the vicar would've left some clues if he'd done it, he  
 30 didn't leave any if he did it.  
 31 b. ?? Although the vicar didn't leave any clues if he did it, he would've  
 32 left some if he'd done it.

33 As noted above, '*although*' prevents intra-sentential shifts in context. While each  
 34 conditional appears acceptable in isolation, the fact that they degrade in the

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<sup>28</sup>Note that the availability of this response is fragile. In particular, it is blocked  
 in cases where the subjunctive is employed as part of a argument, via *modus tollens*,  
 for the negation of its antecedent. This conforms to a more general rule that 'Hold  
 up/Hey, wait a minute!'-responses are illicit in cases in which the speaker is explicitly  
 engaged in an argument in favor of the relevant not-at-issue material

1 embedded environment is evidence that the original judgments were dependent  
2 on a shift in context.

3 It is important to note that the data here are subtle. An agent who endorses  
4 an indicative can positively evaluate an utterance of the contrary subjunctive  
5 (even if they cannot assert it outright themselves).<sup>29</sup>

- 6 (29) A: If the vicar had done it, he would have left some clues.  
7 B: That’s probably true. Still, we can’t rule out that he did it (and if  
8 he did, he didn’t leave any).

9 If positive evaluation of A’s utterance in (29) required accommodating the falsity  
10 of the antecedent, wouldn’t we expect B’s second utterance to be odd?

11 Not necessarily. Someone may temporarily accommodate a not-at-issue implica-  
12 tion of an utterance, evaluate it positively in the accommodated context, and yet  
13 resist permanently adding the accommodated material to the common ground .

- 14 (30) A: Tom always orders soda at the bar, so he must have stopped drinking  
15 alcohol.

16 B: That’s probably true. Still, we can’t rule out that he never drank  
17 alcohol.

- 18 (31) A: Ada ticked +1, so she must be bringing her partner to the wedding.

19 B: That’s probably true. Still, we can’t rule out that she doesn’t have  
20 a partner and is bringing a friend instead.

21 In each of (30)-(31), rather than rejecting A’s utterance as infelicitous, B ac-  
22 commodates its not-at-issue content and, in the resulting context, evaluates the  
23 utterance positively. However, having done so, B goes on to resist incorporating  
24 the not-at-issue content into the common ground permanently.

25 I want to suggest that the same phenomenon can explain what is happening in  
26 (29). B temporarily accommodates the not-at-issue implication that the vicar  
27 must be innocent. In the resulting context, B takes the subjunctive to be highly  
28 probable.<sup>30</sup> Nevertheless, since B does not wish to rule out that the vicar did  
29 it, they resist permanently adding either the subjunctive or its implication to  
30 the common ground.

31 If an assertion of the subjunctive member of an Adams pair carries a not-at-  
32 issue implication that its antecedent is ruled out in context, this implication  
33 cannot take the form of a presupposition (Iatridou (2000)). First, such a presup-  
34 position would be incompatible with the observation that subjunctives permit  
35 non-counterfactual uses (see Anderson (1951), Stalnaker (1975) and von Stechow

<sup>29</sup>I am grateful to a referee for *Mind* for raising this kind of example.

<sup>30</sup>Indeed, B may agree that A’s utterance, in its accommodated context, conveys facts about the vicar’s dispositions which make it unlikely he was the murder.

1 (1998), along with §4.3 for discussion). Second, as we will shortly see, the im-  
 2 plication appears defeasible—in appropriate discourse contexts, it is capable of  
 3 being cancelled. Yet the presuppositions of (unembedded) sentences are stan-  
 4 dardly taken to be uncancellable (Karttunen (1971, 63), Gazdar (1979), Abbott  
 5 (2006), Simons (2013), Abrusán (2016)). Accordingly, it seems more plausible  
 6 that it arises via some form of pragmatic mechanism.

## 7 4.2 The Fluidity of Context

8 Differences in the presuppositions of expressions can give rise to corresponding  
 9 differences in their pragmatic behavior. For instance, the determiners ‘*All*’ and  
 10 ‘*both*’ are standardly taken to differ only at the level of their presuppositions.  
 11 The latter, unlike the former, carries a presupposition that its NP complement  
 12 has exactly two individuals in its extension.

- 13 (32) a. All of the victim’s children are suspects.  
 14 b. Both of the victim’s children are suspects.

15 This difference in presuppositions is accompanied by two differences at the level  
 16 of pragmatics. First, use of the former is dispreferred in contexts in which  
 17 the latter is licensed. That is, if it is common ground that the victim had  
 18 exactly two children then, unlike (32.b), an utterance of (32.a) will be decidedly  
 19 odd. Second, and relatedly, use of the former will typically implicate that the  
 20 presuppositions of the latter are not satisfied. That is, an utterance of (32.a)  
 21 suggests that the victim has at least three children.

22 While implementations differ in detail, there is broad consensus on the expla-  
 23 nation of these observations, originating with Heim (1991, 515) and Sauerland  
 24 (2003, 2008).<sup>31</sup> All other things being equal, it is assumed that speakers are  
 25 under pragmatic pressure to use sentences with stronger presuppositions. Or,  
 26 stated a little more carefully:

If: (i.)  $\phi \models \psi$ ;  
 (ii.)  $\pi(\phi) \subset \pi(\psi)$ ; and  
 (iii.)  $c \models \bigwedge \pi(\psi)$ ;  
 Then there is a preference for asserting  $\psi$  over  $\phi$  in  $c$ .

27 MAXIMIZE  
 PRESUPPOSITION  
 28 Maximize Presupposition says that if  $\phi$  and  $\psi$  are Strawson equivalent but the  
 29 presuppositions of the latter outstrip the presuppositions of the former, then as  
 30 long as both are licensed,  $\psi$  should be favored over  $\phi$ .<sup>32</sup>

31 Maximize Presupposition directly explains why use of ‘*all*’ is marked in contexts  
 32 in which it is common ground that the victim had exactly two children. How-  
 33 ever, it also explains why, where the common ground is unopinionated about

<sup>31</sup>There is room for disagreement over the status of Maximize Presupposition as a pragmatic principle; see Schlenker (2012) and Lauer (2016) for discussion.

<sup>32</sup>Since they are orthogonal to the present discussion, I set aside issues involving local accommodation, though see Percus (2006) and Singh (2011) for discussion.

1 the number of children the victim has, use of ‘*all*’ carries a not-at-issue impli-  
 2 cation that the victim had three or more children (sometimes described as an  
 3 ‘anti-presupposition’). Assume ‘*both*’ and ‘*all*’ both carry a presupposition of  
 4 plurality. The presuppositions of (32.b) are strictly stronger than the presupp-  
 5 sitions of (32.a) (in virtue of the additional presupposition of duality associated  
 6 with ‘*both*’). So, by Maximize Presupposition, if the speaker took the former to  
 7 be licensed, she would have used it. Since she didn’t, she must assume that the  
 8 speaker has at least three children.<sup>33</sup> Accordingly, absent objection, this infor-  
 9 mation will be accommodated, leading it to be incorporated into the common  
 10 ground prior to evaluating her utterance.

11 Crucially, the same reasoning generalizes directly to the case of conditionals.  
 12 The presuppositions of subjunctives are a strict subset of the presuppositions  
 13 of indicatives. Unlike the former, the latter presuppose that their antecedent is  
 14 epistemically possible. Accordingly, that a speaker uses a subjunctive can be  
 15 expected to implicate that she takes its antecedent to be epistemically impos-  
 16 sible. Absent objections, this information will be accommodated, leading it be  
 17 incorporated into the common ground prior to evaluating her utterance.<sup>3435</sup>

18 While this explains the not-at-issue implication of subjunctives which the ‘Hold  
 19 up/Hey, wait a minute’-test first indicated, it does not go all the way to recon-  
 20 ciling our judgments about Adams pairs with COLLAPSE. We have shown that  
 21 the subjunctive member of a pair can be expected to trigger accommodation  
 22 to a context whose common ground entails the negation of the presuppositions  
 23 of the indicative. Since the two conditionals are evaluated at distinct contexts,  
 24 judgments about them can diverge without threatening COLLAPSE.

25 However, it is not sufficient to merely explain how the pair can elicit differ-  
 26 ent responses. We must also explain why, in its accommodated context, the

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<sup>33</sup>As with normal scalar implicatures within a neo-Gricean framework, the deriva-  
 tion requires the idealization that the speaker is opinionated about the presuppositions  
 of the alternatives to her utterance. Absent this assumption, we will instead derive  
 the implicature that the speaker is not certain that the presupposition of (32.b) is  
 satisfied. See Sauerland (2008, §2.1) for discussion.

<sup>34</sup>As a referee for *Mind* points out, this argument depends on the assumption (fol-  
 lowing Heim (1992)) that presuppositions project in the same way in the antecedents of  
 indicatives and subjunctives (cf. Mackay (2019)). Ippolito (2003, 2006) observes that  
 presuppositions of past-tensed subjunctives are evaluated relative to the reference time  
 of the antecedent, rather than the utterance time. A similar point appears to hold for  
 past-tensed indicatives. Accordingly, to ensure their projection behavior is the same,  
 it is crucial that tense is held fixed across corresponding indicatives/subjunctives.

<sup>35</sup>In appealing to MAXIMIZE PRESUPPOSITION to explain the not-at-issue implication  
 of subjunctives, my account follows that of Leahy (2011, 2015, 2018) in all important  
 respects (cf. Ippolito (2003) and Schlenker (2005) for related previous work).<sup>36</sup> Leahy  
 presents his account within a neo-Gricean approach to MAXIMIZE PRESUPPOSITION  
 (Leahy (2016) cf. Schlenker (2012)). However, this commitment is inessential to the  
 broad structure of the argument, and I remain neutral on how MAXIMIZE PRESUPPO-  
 SITION is to be derived.

## Conditional Collapse

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1 subjunctive can receive an information insensitive reading (one which depends  
2 entirely on the vicar’s dispositions). In line with the discussion in §3, to do this  
3 we need to show that the presuppositions of the indicative will be unsatisfied  
4 in the new context. Here, the connection between the behavior of epistemic  
5 modals and what is common ground is crucial.

6 Let  $CG(c)$  denote the common ground of  $c$ —that is, the set of claims which  
7 are mutually accepted by the participants in  $c$  (see [Stalnaker & Thomason](#)  
8 [\(1970\)](#); [Stalnaker \(1973, 1974\)](#) for classic discussion). First, note that where it  
9 is common ground that  $A$  is epistemically necessary, it can be expected to also  
10 be common ground that  $A$ . That is:

11 
$$\text{If } CG(c) \models \Box A, \text{ then } CG(c) \models A.$$

12 Note that this merely constrains membership of the common ground. Hence, it  
13 is neutral with respect to the principle that ‘*must*’ is weak—i.e., that  $\Box A \not\models A$   
14 (see, e.g., [Karttunen \(1972\)](#), [Veltman \(1985\)](#), [Kratzer \(1991\)](#), and [Lassiter \(2016\)](#)  
15 for discussion; cf. [von Stechow & Gillies \(2010, 2021\)](#) for rebuttal).

16 Second,  $A$  cannot be epistemically possible at a context if its prejacent is incom-  
17 compatible with the common ground. That is:

18 
$$c \models \Diamond A \text{ only if } CG(c) \not\models \neg A.$$

19 Yet together, these constraints imply that in the context resulting from ac-  
20 commodating the not-at-issue implication of the subjunctive, the corresponding  
21 indicative will no longer be licensed. Suppose that a speaker utters  $A > B$  in  
22  $c$ . Assuming that  $CG(c)$  does not entail  $\Diamond A$ , co-operative hearers can be ex-  
23 pected to accommodate the implication that the indicative is unlicensed. This  
24 will result in a new context,  $c'$ , such that  $CG(c) \cup \{\neg \Diamond A\} \subseteq CG(c')$ . Yet if  
25  $\neg \Diamond A \in CG(c')$ , then  $CG(c') \models \Box \neg A$ . So, from our first observation, it follows  
26 that  $CG(c') \models \neg A$ . Yet, by our second observation, it follows that  $c' \not\models \Diamond A$ . So  
27  $A \rightarrow B$  will not be licensed at  $c'$ .

28 Here is a summary of where we are: in contexts at which their antecedent is  
29 epistemically possible, subjunctives are equivalent to the corresponding indica-  
30 tives. When evaluated in such a context, the former will receive an information  
31 sensitive reading. Indeed, according to EPISTEMICITY, a subjunctive in a non-  
32 counterfactual context will simply express that it is epistemically impossible for  
33 its antecedent to be true but its consequent false.

34 However, subjunctives uttered in non-counterfactual contexts are not always  
35 evaluated at their context of utterance. Rather, due to pragmatic pressure gen-  
36 erated by Maximize Presupposition, they often implicate that their antecedent  
37 is epistemically impossible. Accommodating this information returns a new  
38 context. Yet, once this information is accommodated, COLLAPSE no longer im-  
39 poses a requirement that the subjunctive will receive an information sensitive  
40 reading.

1 **4.3 Coda**

2 Not all uses of subjunctives trigger context shifts of the kind just discussed.  
 3 Before concluding, it is worth considering two notable categories of exception.  
 4 Unlike uses of subjunctives forming Adams pairs, we should expect uses in these  
 5 categories to be information sensitive, as a corollary of COLLAPSE.

6 First, note that the conditionals in the subjunctive instances of IF/AND and  
 7 AND/IF (i.e., (11.a-c) and (5.a-b’), repeated below) do not implicate that their  
 8 antecedent is not epistemically possible; in neither case is a ‘Hold up/Hey, wait  
 9 a minute!’-response available. Accordingly, there is no reason to posit covert  
 10 context shift in the arguments.

- 11 (11) a. Maybe the butler was in the library.  
 12 b. If he had been, maybe he’d have seen the murder.  
 13 c. So, maybe the butler was in the library and saw the murder.  
 14 (5) a. Maybe the butler was in the library and saw the murder.  
 15 b’. So, if he had been, maybe he’d have seen the murder.

16 This should be unsurprising. Not-at-issue implicatures generated by Maximize  
 17 Presupposition, like other pragmatic implicatures, are widely recognized to be  
 18 cancellable (see, in particular, Lauer (2016, §2.2)). In both (11.a-c) and (5.a-b’),  
 19 the speaker explicitly asserts that she take the antecedent of the subjunctive to  
 20 be epistemically possible. Hence, any implication that she takes the presuppo-  
 21 sitions of the corresponding indicatives to be false should be defeated.

22 However, explicit cancellation is not the only way in which the implicature can  
 23 be cancelled. Consider the indicative and subjunctive variants of Anderson  
 24 (1951)’s minimal pair:

- 25 (33) a. If Jones has taken arsenic, he’s showing the symptoms he’s actually  
 26 showing.  
 27 b. If Jones had taken arsenic, he’d be showing the symptoms he’s ac-  
 28 tually showing.

29 (33.a) and (33.b) differ in their communicative effects. As Stalnaker (1975)  
 30 and von Stechow (1998) observe, the latter can naturally figure in an argument  
 31 that Jones’s symptoms are typical of arsenic poisoning. In contrast, the former  
 32 carries a strong sense of redundancy, and cannot be expected to figure in a  
 33 successful argument for anything.

34 To explain this contrast, we need to compare how each conditional changes  
 35 the information of an agent who comes to accept it. Note, first, that assuming  
 36 STRICTNESS, an agent who already takes it to be possible that Jones took arsenic

1 will not need to change her information at all.<sup>37</sup> So consider instead an agent  
 2 who antecedently rules this out (either due to ignorance, or due to failing to  
 3 consider it as a possible explanation).

4 In coming to accept (33.a), the agent must first accommodate its presupposition,  
 5 by ruling in the possibility that Jones took arsenic. In doing so, she will hold  
 6 fixed as much as possible, including Jones' symptoms. Having accommodated  
 7 the presupposition, however, she does not need to make any further changes  
 8 to her information. Since she accepts its consequent, she will already trivially  
 9 accept the indicative. In particular, she need not form any beliefs about whether  
 10 Jones' symptoms are typical of arsenic poisoning.

11 In coming to accept (33.b), in contrast, the agent does not need to accommodate  
 12 any presupposition. Instead, for an agent who takes its antecedent to be ruled  
 13 out, coming to accept a subjunctive,  $A > B$ , typically involves coming to accept  
 14 that  $B$  is causally dependent on  $A$ . Accordingly, to accept (33.b), the agent  
 15 simply needs to accept that arsenic poisoning would lead to symptoms like  
 16 Jones'. This in turn, may lead her to re-evaluate her original diagnosis, as an  
 17 indirect consequence of the utterance (thought it need not).<sup>38</sup>

18 Accordingly, the contrast between (33.a) and (33.b) can be explained in terms  
 19 of their differing effects on an audience's information. Whereas the latter can  
 20 be used to communicate the information that arsenic poisoning leads to Jones'  
 21 symptoms, the former cannot.

22 Given INDICATIVE LICENSING, that (33.a) appears redundant is unsurprising.  
 23 After all, it presupposes precisely what it is, intuitively, intended to establish.

---

<sup>37</sup>If such an agent temporarily accommodates the not-at-issue implication that the antecedent is ruled out (as discussed in (§4.1)), (33.b) can still convey non-trivial information about the connection between arsenic and Jones' symptoms. Thus, someone who acknowledges the possibility of arsenic poisoning may argue as in (¥):

(¥) Maybe Jones took arsenic. If he had, he'd be showing the symptoms he's actually showing. So it is likely he did take it.

The same behavior is exhibited by other expressions which trigger accommodation. Suppose that it is unknown whether Ada has a partner, but it is known she came to the party alone. Then someone may argue as in (§):

(§) Maybe Ada doesn't have a partner. It would be surprising for her not to have brought her partner to the party. So it is likely she doesn't.

Here, the speaker relies on temporary accommodation of the not-at-issue content that Ada has a partner in evaluating the second utterance, before going on to reject this as unlikely in the last utterance.

<sup>38</sup>It seems right that accepting that Jones' may have taken arsenic is not a direct consequence of accepting the subjunctive. After all, someone with independent evidence might agree with an utterance of (33.b), yet deny that Jones took arsenic (e.g., because they already have the toxicology report ruling it out).

1 (33.b) has no such presupposition and, hence, can be used in an argument that  
 2 Jones might have taken arsenic. Crucially, (33.b) also lacks the implicature that  
 3 its antecedent is ruled out in context. Again, this is to be expected. The im-  
 4 plicature of the subjunctive is generated by the need to explain why a speaker  
 5 did not use the indicative. Yet, in this case, there is an independently avail-  
 6 able explanation: the indicative form presupposes what the speaker intends to  
 7 establish. Accordingly, her interlocutors cannot conclude from her use of the  
 8 subjunctive that she took indicative to be unlicensed—indeed, for her to do so  
 9 would be incompatible with the intuitive point of her utterance.

## 10 5 Conclusion

11 COLLAPSE says that corresponding indicatives and subjunctives are Strawson  
 12 equivalent; in contexts at which both are licensed, the one implies the other.  
 13 COLLAPSE may be surprising, but it is not heretical. Since the presuppositions  
 14 of indicatives and subjunctives diverge, it is compatible with their exhibiting  
 15 substantially different logical properties. As the prior section demonstrated, it  
 16 is also compatible with differing judgments about the members of Adams pairs.

17 There is a broad theoretical picture which accords nicely with this account.<sup>39</sup>  
 18 Conditionals (both indicative and subjunctive) involve the evaluation of their  
 19 consequent at a body of information which entails their antecedent. Where  
 20 their antecedent is compatible with the contextually salient information, the  
 21 body of information at which the consequent is evaluated will be a subset of  
 22 the information which is contextually salient. However, where it is incompat-  
 23 ible, the contextually salient information places no constraints on the body  
 24 of information at which the consequent is evaluated. Assume that epistemic  
 25 modals and conditionals are evaluated with respect to the same contextually  
 26 salient information. Then, given INDICATIVE LICENSING, indicatives will re-  
 27 ceive an information sensitive reading where licensed—their antecedents will  
 28 always be evaluated at a subset of the contextually salient information. Sub-  
 29 junctives will receive an information sensitive reading in contexts which are  
 30 non-counterfactual. However, when evaluated in counterfactual contexts, (as, I  
 31 have suggested, given their pragmatic behavior they standardly are) they will  
 32 be insensitive to the contextually salient information.

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<sup>39</sup>An alternative approach would be to try to accommodate the same data under a  
 variably strict account of the indicative and subjunctive (Stalnaker (1968, 1975); Stal-  
 naker & Thomason (1970); Lewis (1973)). On this picture, each context  $c$  determines  
 a common ground,  $CG(c)$ , and unique selection function,  $f_c$ .  $A \rightarrow B$  presupposes that  
 $CG(c) \cap \llbracket A \rrbracket \neq \emptyset$  and that for all  $w \in CG(c) : f_c(w, \llbracket A \rrbracket) \in CG(c)$ .  $A > B$  is presuppo-  
 sition free.

This picture will be able to explain the felicity of ‘Hey, wait-a-minute’-responses  
 to (4.b) as well as the infelicity of embeddings like (28.a-b). It will also validate  
 COLLAPSE. However it will fail to validate one or both of subjunctive IF/AND and  
 AND/IF, depending on what account of conditionals with  $\diamond$ -embedded consequents is  
 adopted.



1 This picture is an instance of the popular idea that the differences between in-  
 2 dicatives and subjunctives are exhausted by differences in their presuppositions  
 3 (proponents of the latter include [Karttunen & Peters \(1979\)](#), [von Stechow \(1999\)](#)  
 4 and, arguably, [Stalnaker \(1975, 1984\)](#)). Any other variation in their behavior  
 5 is attributable to this basic difference. If any form of this idea is correct, then  
 6 where both are licensed, they will exhibit the same truth conditions. Never-  
 7 theless, as long as their presuppositions do not coincide fully, the two forms of  
 8 conditional may have different pragmatic effects, even in those contexts which  
 9 license each.

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