Discourse, Diversity, and Free Choice*

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This paper has two aims. The first is to defend and extend a proposal made in Klinedinst 2007: that free choice effects are a special kind of scalar implicature akin to the one triggered by *the best hammers are made of steel or fibreglass*, which suggests that some of the best hammers are made of steel and others of fibreglass. Second, I offer a new explanation of how these "diversity implicatures" might arise. Instead of invoking lexical or grammatical implicatures, my explanation is essentially Gricean, although it requires a slight extension of standard neo-Gricean ideas. I argue that the extension is independently motivated.

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1 Introduction

Georg Henrik von Wright observed a now famous "perplexity" [1967: 137]: disjunctive permission statements like (1a) seems to entail the permissibility of both disjuncts.

(1) a. You may have beer or wine.
b. ⇝ You may have beer.
c. ⇝ You may have wine.

This is odd, because *having beer* entails *having beer or wine*: any possible act of having beer is also an act of having beer or wine. One might have expected – in line with standard deontic logic – that if a certain type of act A is permitted, and performing A entails performing B, then B must also be permitted. (In other words, permission

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contexts should be monotonic.) So the permissibility of having beer should entail the permissibility of having beer or wine: (1b) should entail (1a). But then (1a) can't entail (1c), as (1b) does not entail (1c).

Following [Wright 1968], this puzzle has come to be known as the *paradox of free choice permission*, because the disjunctive permission allows you to "freely choose" between beer and wine.

Building on [Klinedinst 2007], I will argue that the apparent entailment from (1a) to (1b) and (1c) is a special kind of scalar implicature, akin to the one triggered by (2a), which seems to imply (2b) and (2c).

(2) a. The best hammers are made of steel or fibreglass.
    b. $\rightsquigarrow$ Some of the best hammers are made of steel.
    c. $\rightsquigarrow$ Some of the best hammers are made of fibreglass.

Loosely speaking, in both (1) and (2), an unspecific predicate is applied to a plurality, triggering a "diversity implicature" (Klinedinst) suggesting that different parts of the plurality instantiate different, more specific versions of the predicate. In (2), the best hammers are unspecifically described as being made of steel or fibreglass, which suggests that some of the hammers are made of steel and others of fibreglass. In (1a), a collection of permissible worlds is unspecifically described as worlds where you have beer or wine, which suggests that some of the worlds are beer worlds and others are wine worlds.

Unfortunately, while standard, neo-Gricean accounts of scalar implicatures straightforwardly predict (2), they seem to fail for (1). Klinedinst accounts for the effect in (1) by invoking a non-Gricean mechanism of embedded implicatures. I will offer an alternative explanation that is closer to orthodox Gricean lines, but also draws on some basic insights from dynamic semantics.

If the free choice effect in (1) arises as a diversity implicature, then the underlying phenomenon is a lot wider than commonly assumed. For one thing, the phenomenon is not restricted to deontic modals. Indeed, it has often been noted that analogous puzzles arise for other modalities, as witnessed by (3) and (4).

(3) a. Carol might bring beer or wine.
    b. $\rightsquigarrow$ Carol might bring beer.
    c. $\rightsquigarrow$ Carol might bring wine.

(4) a. I can bring beer or wine.
    b. $\rightsquigarrow$ I can bring beer.
    c. $\rightsquigarrow$ I can bring wine.

More tellingly, the phenomenon is not limited to disjunctions. Consider (5)–(8).

(5) a. You may have wine.
b. ⇝ You may have red wine.
c. ⇝ You may have white wine.

(6) a. Third-year students can take an extra module.
b. ⇝ There are several modules from which the students can choose.

(7) a. Alice might be in one of the bars on campus.
b. ⇝ There are several bars where Alice might be.

(8) a. The generator can produce sine waves between 5 and 500 Hz.
b. ⇝ The generator can produce sine waves from across the entire interval.

Here, too, a collection of accessible worlds is described unspecifically, triggering an implicature that different more specific descriptions are true of different worlds in the collection. *Having beer or wine* is unspecific, encompassing the more specific possibilities *having beer* and *having wine*. But *having wine* is still unspecific with respect to whether the wine is white wine or red wine.

Moving beyond disjunctions brings to light some new desiderata for a theory of free choice. For example, if our target includes (5)–(8), then tinkering with the semantics of *or* (as suggested e.g. in [Zimmermann 2000], [Simons 2005], or [Alonso-Ovalle 2008]) will be of limited help. More generally, we will need a systematic account of what makes a statement "unspecific" and of what counts as a relevant resolution of the unspecificity. *Having white wine* is more specific than *having wine*, but so is *having wine while burning down the house*; yet we don't normally take a permission to have wine to cover this particular way of having wine. Let's call this the *problem of specificiations*.[1]

Note also that unspecific possibility claims that aren't disjunctions don't always suggest that such-and-such more specific possibilities are true. In (6a), for example, use of the unspecific *take an extra module* suggests that a range of modules may be chosen. But neither speaker nor hearer may know which modules fall in the range – either because they don't know what modules are taught in the first place, or because they don't know which of these modules are eligible as extra modules for third-year students. Similarly, (7a) suggests that there are several bars where Alice might be, but it need not suggest of any particular bar that Alice might be in it. Let's call this phenomenon *existential free choice*.

To be clear: I do not assume from the outset that the effect in (1) arises through the same mechanism as the inferences in (3)–(8). Identifying a linguistic phenomenon often goes hand in hand with understanding it. I will present an account of (1) that

1 The problem is related to Lewis's [1979] "problem about permission".

explains all the phenomena I have mentioned, along with several others (such as "Ross's Paradox", see section 6 below). What really unifies all these cases is that they have the same explanation.

Before I present my proposal, I want to review some arguments for thinking that the inferences in (1) and (3)–(8) are scalar implicatures, even though they don't fit the standard neo-Gricean analysis of such implicatures.

2 Free choice as scalar implicature?

Why not simply treat the apparent entailments in (1) and (3)–(8) as genuine semantic entailments? One reason is the puzzle with which we began. Here are two plausible assumptions about deontic modals.

1. *S may do A* is true iff *S* is not forbidden to do *A*.
2. Doing something that entails doing something forbidden *is* doing something forbidden.

Assuming that *having beer* entails *having beer or wine*, these assumptions guarantee that (1b) entails (1a). And then (1a) had better not entail (1c), since (1b) does not entail (1c).

Similarly, say, for (5). If having wine is forbidden then plausibly having red wine is also forbidden (an instance of assumption 2). By assumption 1, (5b) therefore entails (5a). And then (5a) can't entail (5c), as otherwise (5b) would entail (5c), which it doesn't.

Another, potentially more revealing observation (going back to [Kratzer and Shimoyama 2002]) is that the contraposition of (1) looks clearly invalid, as do the contrapositions of (3)–(8). If (1a) entails (1b), then (9a) should entail (9b); if (5a) entails (5b), then (10a) should entail (10b).

(9) a. You may not have wine.
b. $\not\rightarrow$ You may not have beer or wine.

(10) a. You may not have red wine.
b. $\not\rightarrow$ You may not have wine.

But these inference don't look good at all.

So the apparent entailments disappear under negation. They also disappear in other downward entailing environments, as (11) and (12) illustrate.

(11) No student may have beer or wine.

(12) I doubt that third year students can take an extra module.

Here, (11) seems to state that beer and wine are both forbidden for each student; it does not merely state that either beer or wine is forbidden for each student, as the validity of (1) would imply.

This interaction with downward entailing environments is the hallmark of scalar implicatures. Compare the textbook example of a scalar implicature, the inference from (13a) to (13b).

(13) a. Some students passed.

b. $\rightsquigarrow$ Not all students passed.

On the (neo-)Gricean model of implicatures going back to [Grice 1989], the inference is not licensed by the truth-conditional content of (13a), but rather draws on certain assumptions about the speaker's reasons for uttering that sentence. The inference is standardly regimented as an argument along the following lines (compare e.g. [Gazdar 1979: 57–63]).

1. The speaker uttered S (*some students passed*) rather than the stronger alternative S' (*all students passed*).
2. As a cooperative informant, the speaker would have uttered S' rather than S if she had known S' to be true.
3. So the speaker doesn't know that S' is true.
4. But the speaker is well-informed about the subject matter.
5. So S' (*all students passed*) is false while S (*some students passed*) is true.

The Gricean hypothesis is not that people explicitly go through these steps of reasoning whenever they encounter a statement like (13a); they obviously don't. The hypothesis is merely that the inference from (13a) to (13b) can be justified or rationalized along the above lines. If true, this sheds light on *why* people make the inference, even if it says little about the underlying computational process. On the Gricean account, the inference is based on general principles of rational action; we should therefore expect to find the same kind of inference in conversations between any cooperative rational agents, no matter their language or species (see e.g. [Saul 2002], [Bach 2006], [Chapman 2017]).[2]

The Gricean account of (13) has some other attractive features. For example, it allows us to preserve simple views about the meaning of *some* and *all*. Moreover, it correctly predicts that the apparent entailment depends on the contextual background assumptions 2 and 4, and that the inference reverses in downward entailing environments, since what

2 It is natural to assume that processing scalar implicatures requires additional resources to whatever is required for processing literal meanings. See for example [Chemla and Bott 2014] for relevant empirical results concerning free choice effects. The apparent ease of computing these effects might support the proposal I am going to present over the alternatives defended e.g. in [Fox 2007] and [Franke 2011] involving second-order exhaustification. On the account I will defend, computing the inference in (1) should require the same amount of effort as computing the inference in (2).

is more informative on its own becomes less informative under negation. For example, *I doubt that some/any students passed* normally conveys a suspicion that no student passed, rather than a suspicion that either no or all students passed.

We can also witness reversal in the cases from section 1. Consider the inference from (5a) (*You may have wine*) to (5b) (*You may have red wine*). When the conclusion is negated – *you may not have red wine* – we would not infer that you may not have wine; on the contrary, we would infer that you're *allowed* to have wine, just not red wine. Here again, free choice inferences look like scalar implicatures.

Moreover, like scalar implicatures, the inferences from section 1 seem to depend on assumptions 2 and 4 about the conversational context. For example, (14) and (15) are acceptable, but would not make sense if the inference in (1) were semantically valid (see e.g. [Kamp 1978], [Zimmermann 2000]).

(14) You may have beer or wine, but I forgot which.

(15) You may have beer or wine, but I won't tell you which.

Even direct cancellations are often possible: (16), for example, might be slightly odd, but it is not a contradiction. (It is not as bad as *you may have red wine, but no wine.*)[3]

(16) You may have wine, but no red wine.

The arguments I have reviewed so far are well-known, although it has gone largely unnoticed that they apply to cases like (5)–(8) just as much as to (1), (3), and (4).

Looking beyond the standard case of disjunctions, however, also reveals some new arguments for the hypothesis that the relevant inferences are scalar implicatures. In particular, the hypothesis promises an answer to the problem of specifications. That's because any credible theory of scalar implicatures must postulate restrictions on the alternatives S' to an uttered sentence S that can enter into the algorithm for computing implicatures. Return to (13). If we are told that *some students passed*, then on the Gricean account we can infer that not all students passed because the speaker didn't choose the stronger alternative *all students passed*. But there are countless other alternatives that could in principle be considered, including *some but not all students passed* or *some students passed and I don't want a cookie*. With these alternatives in place of S', the Gricean inference would lead, respectively, to the conclusions that all students passed and that the speaker wants a cookie. Without substantive restrictions on the alternatives S', the Gricean account therefore predicts not only implicatures that actually arise but also

3 With disjunctive possibility statements, direct cancellations are more problematic: *you may have beer or wine, but no wine* sounds bad. But so does *Alice brought beer or wine, but she didn't bring beer*, where the second sub-sentence attempts to cancel a ("primary") implicature of the first. I will have more to say on primary implicatures and the connection to free choice below.

a plethora of implicatures that do not arise. (This is known as the "symmetry problem"; see [Kroch 1972], [von Fintel and Heim 1997], [Fox and Katzir 2011].)

So what should count as an alternative S' to a given sentence S for the purpose of computing scalar implicatures? It is unlikely that the answer will simply fall out of our general theory of rational cooperation. Here language-specific or species-specific processes seem to play a role. A popular strategy is to define a base class of *formal alternatives* which is then restricted by a condition of *innocent excludability*, ensuring that one can consistently deny all the alternatives while accepting the original sentence S (see [Fox 2007], [Schwarz 2016]). According to [Katzir 2007], the formal alternatives to a sentence S are defined syntactically by (roughly) substituting constituents of S with either an element of the lexicon or another sub-constituent of S. However, contextual relevance also seems to play a role: conversational context can make alternatives salient that are more complex than the original sentence, and it can exclude certain alternatives that pass the above conditions (see [Matsumoto 1995], also [Carston 1998], [Kratzer and Shimoyama 2002], [Sauerland 2004], [Fox and Katzir 2011]).

I have nothing new to contribute to these investigations. What is important for present purposes is that if the free choice effects in (5)–(8) are scalar implicatures, then it is clear why only some "specifications" are legitimate: they are the ones that correspond to genuine alternatives for the computation of scalar implicatures.

The implicature hypothesis can also explain why the effect is especially strong for disjunctions. Compare (17a) and (17b).

(17) a. Bob might be in the UK.

b. Bob might be in England or Scotland or Wales.

(17b) strongly suggests that each of England, Scotland, and Wales is a live possibility for Bob's whereabouts. The implication is much weaker (and more dependent on context) in (17a). A plausible explanation of this difference is that if Scotland (say) could be ruled out, then the speaker should really have used the simpler and more informative *England or Wales* instead of *England or Scotland or Wales*, but it could still have been OK to use *UK*, especially if the precise location is not important in the conversational context.

I will return to these issues in section 4, after I have outlined my positive proposal. First, I want to recapitulate why an account of free choice in terms of scalar implicatures is not as easy as one might have hoped.

Consider again our first example.

(1) a. You may have beer or wine.

b. $\rightsquigarrow$ You may have beer.

c. $\rightsquigarrow$ You may have wine.

The most salient alternatives to (1a) are, in fact, (1b) and (1c). Both are simpler and stronger than (1a), they naturally come to mind as alternative things the speaker could have said, and they qualify as formal alternatives by the rules of [Katzir 2007]. However, they are not innocently excludable: we can't assume that (1b) and (1c) are both false while (1a) is true. In any case, this would be the opposite of what we want. We want to infer that (1b) and (1c) are true, not false! How is that supposed to work?

It is sometimes argued that although free choice effects may not fit the standard neo-Gricean account of scalar implicatures, they can nonetheless be explained along Gricean lines (see e.g. [Geurts 2010: ch.6]). The basic idea is that for a well-informed and cooperative speaker, (1b) would be the right thing to say if only beer is allowed, and (1c) if only wine is allowed. If the speaker chose neither of those sentences, we can infer that neither condition is met. This leaves two possibilities: either beer and wine are both allowed or both forbidden. The actual statement (1a) entails that they are not both forbidden. The only remaining possibility is that they are both allowed.

But this doesn't explain why (1a) is a reasonable choice of words to express that both beer and wine are allowed, if its literal meaning is that either beer or wine is allowed. Shouldn't we rather expect those words to be used in cases where the speaker is not fully informed (or secretive) about the relevant permissions? Compare bare disjunctions.

(18) a. Alice gave her number to Bob or Carol.
b. Alice gave her number to Bob.
c. Alice gave her number to Carol.

Suppose someone utters (18a). Mimicking the above derivation, we might reason as follows. There are two obvious alternatives to (18a): (18b) and (18c). For a well-informed and cooperative speaker, (18b) would be the right thing to say if Alice gave her number only to Bob, and (18c) if she gave it only to Carol. Since the speaker chose neither of those sentences, Alice either gave her number to both Bob and Carol or to neither of them. The latter is incompatible with the literal content of (18a). Conclusion: Alice gave her number to both Bob and Carol. — This is clearly not a sensible interpretation of the utterance. In ordinary situations, nobody would understand (18a) as asserting that Alice gave her number to both Bob and Carol. A much better explanation for why the speaker chose the comparatively weak and complex (18a) is that she wasn't in a position to assert (18b) and (18c): she doesn't know (or doesn't want to tell) whether Alice gave her number to Bob or to Carol.

The inference from the utterance of (18a) to the conclusion that the speaker doesn't know (or doesn't want to tell) which of (18b) and (18c) is true, fits the above Gricean schema, except that the reasoning stops at step 3. Such inferences are sometimes called *primary implicatures*, in contrast to a full (*secondary*) implicature that goes all the way to 5. Even if we had initially thought the speaker well-informed and cooperative (premise

4), the utterance of (18a) would convince us that she is not. The question is why this doesn't happen with (1a).

3 Beyond modality

The modal constructions (*may*, *might*, *can*, etc.) that trigger free choice effects are commonly analyzed as existential quantifiers over accessible possibilities (see [Kratzer 1981], [Hacquard 2011]). A natural question is therefore whether similar effects occur with constructions that instead quantify over times or individuals. As [Klinedinst 2007], [Eckardt 2007], and [Fox 2007] observed, the answer is yes. For example, (19) (from [Klinedinst 2007]) raises essentially the same puzzle as (1).

(19) a. Some passengers got sick or had trouble breathing.
b. $\rightsquigarrow$ Some passengers got sick.
c. $\rightsquigarrow$ Some passengers had trouble breathing.

There are good reasons to think that *some passengers did X* is monotonic: if some passengers did A, and doing A entails doing B, then surely some passengers did B. Thus (19b) should entail (19a). But then (19a) can't entail (19c), as (19b) doesn't entail (19c).

Once again the effect in (19) displays characteristic features of scalar implicatures. For example, it is sensitive to conversational context, to assumptions about the speaker's knowledge, it can be cancelled (e.g., by adding *I'm not sure which*), and it goes away under negation: (20a) does not at all seem to entail (20b).

(20) a. No passenger got sick.
b. No passenger got sick or had trouble breathing.

But as before, the effect is hard to explain along Gricean lines. What alternative to (19a) could we negate to infer (19b) and (19c)?[4]

In response, Klinedinst [2007] suggests dropping the (neo-)Gricean account of implicatures in favour of a lexical or grammatical account as defended e.g. in [Chierchia 2004], [Fox 2007], [Alonso-Ovalle 2008], [Chierchia et al. 2011], [Franke 2011]. On this approach, scalar implicatures do not arise from general norms of rational communication, but from language-specific mechanisms in the processing of compositional semantic values. A popular way of fleshing out the idea assumes that the lexicon contains a tacit "exhaustification"

4 Klinedinst points out that the free choice effect only seems to arise if the existential quantifier is plural: the singular *some passenger got sick or had trouble breathing* does not suggest that some passenger got sick and some had trouble breathing. Several proposals in the literature falsely predict that it should make no difference to the generation of free choice effects whether the quantifier is singular or plural (see [Klinedinst 2007: sec.1.5]). Like Klinedinst's account, the account I will develop explains why the effect is restricted to plurals.

operator Exh(·) which enriches the compositional semantic value of embedded sentences, so that Exh(A) is equivalent to the conjunction of A with its innocently excludable alternatives. Crucially, Exh(·) can occur in embedded positions. In essence, Klinedinst's proposal is now that (19a) should be analysed as something like (21).[5]

(21) $[\exists X : \textit{Passengers}(X)]\text{Exh}([\forall x \in X](\textit{Got-Sick}(x) \vee \textit{Had-Trouble-Breathing}(x)))$.

Relevant alternatives to the embedded clause (22a) are (22b) and (22c).

(22) a. $[\forall x \in X](\textit{Got-Sick}(x) \vee \textit{Had-Trouble-Breathing}(x))$.
b. $[\forall x \in X]\,\textit{Got-Sick}(x)$.
c. $[\forall x \in X]\,\textit{Had-Trouble-Breathing}(x)$.

Conjoining (22a) with the negations of (22b) and (22c) yields the compositional semantic value of Exh(22a). The original sentence (19a) therefore gets interpreted as (23), which entails (19b) and (19c).

(23) $[\exists X : \textit{Guests}(X)][\forall x \in X](\textit{Got-Sick}(x) \vee \textit{Had-Trouble-Breathing}(x)) \wedge$
$\neg[\forall x \in X]\,\textit{Got-Sick}(x) \wedge \neg[\forall x \in X]\,\textit{Had-Trouble-Breathing}(x)$.

To adapt this explanation to modals, Klinedinst suggests that (1a), too, should be analyzed as a plural quantification, over deontically accessible worlds:

(24) $[\exists W : \text{Acc}_D(W)]\text{Exh}([\forall w \in W](\text{Beer}(w) \vee \text{Wine}(w)))$.

The analysis of (24) is then analogous to that of (21), and predicts the inference from (1a) to (1b) and (1c).

Although Klinedinst mostly focuses on cases involving disjunction, his proposal also plausibly accounts for cases like (5)–(8). Informally, whenever P is a relatively unspecific statement and P' a stronger, more specific alternative, then Exh($[\forall w \in W]P(w)$) is satisfied by a collection W of worlds only if some of the worlds in W do not verify P. Thus unspecific possibility statements are predicted to have an enriched interpretation on which they entail the falsity of more specific possibility statements.

I have no decisive objection to Klinedinst's proposal, but it evidently rests on some controversial assumptions – notably the hypothesis of lexical or grammatical implicatures (see [Sauerland 2012] for an overview). To be sure, there is independent evidence that implicatures can arise in what appear to be embedded positions (see e.g. [Cohen 1971], [Hirschberg 1985], [Levinson 2000], [Recanati 2003], [Sauerland 2004]). However, neo-Griceans have tried to explain away these cases, arguing that they can actually be

5 [Klinedinst 2007] doesn't make use of a lexical exhaustification operator, but rather follows [Chierchia 2004] in assuming that other lexical items automatically trigger the computation of implicatures; in (19a) and (1a) the relevant item is taken to be an unpronounced distributivity operator which I've rendered as $[\forall x \in X]$ and $[\forall w \in W]$ respectively. The differences are not important for the present discussion.

explained along broadly Gricean lines (see e.g. [Russell 2006], [Geurts 2010], [Russell 2012], [Simons 2014], [Simons 2017]). In what follows, I will attempt to do the same with free choice effects. I will outline a new explanation of the inferences in (1), (3)–(8), and (19), based on general norms of rational communication.

4 Discourse referents

To understand the effect in (19), let's first have a look at a superficially similar case involving plural definites. Recall (2):

(2) a. The best hammers are made of steel or fibreglass.
b. ⇝ Some of the best hammers are made of steel.
c. ⇝ Some of the best hammers are made of fibreglass.

The apparent implication in (2) is easily explained as a scalar implicature (compare e.g. [Crnič et al. 2015]). Relevant alternatives to (2a) are (25a) and (25b).

(25) a. The best hammers are made of steel.
b. The best hammers are made of fibreglass.

(25a) and (25b) are simpler and stronger than (2a). Why did the speaker nonetheless utter (2a) rather than one of these alternatives? Assuming she is well-informed and cooperative, the best explanation is that the alternatives are false. And if (2a) is true while (25a) and (25b) are false, then some of the best hammers are made of steel and others are made of fibreglass.[6]

Two quick comments before we return to the harder case of plural indefinites. First, note that the diversity implicature in (2) relies on the distributive reading of (2a). Compare (26).

(26) The guests brought beer or wine.

(26) arguably has a distributive reading on which it states that each of the guests brought beer or wine, but it also has a collective reading on which it merely states that together as a group, the guests brought either beer or wine. On the collective reading, (26) does

6 One might argue that even though (25a) states that each of the best hammers is made of steel, its negation states that *none* of the best hammers are made of steel, due to the "homogeneity presupposition" triggered by plural definite descriptions. The conjunction of (2a) with ¬(25a) and ¬(25b) would then be inconsistent. To explain the implicature, we have to assume that the Gricean algorithm invokes the "weak falsity" of (25a) and (25b), viz. their non-truth, rather than the truth of their negation, if these come apart. From a (neo-)Gricean perspective, this makes sense: the assumption that (25a) is not true suffices to explain why an informed and cooperative speaker doesn't utter it, even if the negation of (25a) is not true either. (I thank an anonymous referee for raising this issue.)

not suggest that some of the guests brought beer and others wine, and indeed the above explanation doesn't apply: read collectively, (26) can't be true while (27a) and (27b) are both false.

(27) a. The guests brought beer.
b. The guests brought wine.

Second, the present analysis of (2) carries over to cases that do not involve disjunction, like (28), and to "existential" cases like (29).

(28) a. The guests arrived between 5 and 7.
b. $\rightsquigarrow$ Some of the guests arrived between 5 and 6.

(29) a. The children drew animals.
b. $\rightsquigarrow$ The children did not all draw the same kind of animal.

To see the implicature, we again have to read the relevant sentences distributively and imagine a context in which it would be useful to have more specific information about the arrival times in (28) or the animals in (29). In such a context, a well-informed speaker who utters (29a) should instead have uttered, say, *the children drew giraffes* if the children had all drawn giraffes; since she used the unspecific *animals*, we infer that the children drew different kinds of animals.

Why does the straightforward explanation for (2) not carry over to (19)? The relevant alternatives to (19a) would be (30a) and (30b).

(30) a. Some passengers got sick.
b. Some passengers had trouble breathing.

These are naturally read distributively. The problem is that if there is plurality G of passengers some of which got sick and others of which had trouble breathing, then this renders (30a) and (30b) true. The alternatives are verified not by the original plurality G, but by certain sub-pluralities of G. When we consider alternatives to (2a), *the best hammers* always picks out the same fixed plurality. By contrast, when we consider alternatives to (19a), different alternatives can be made true by different pluralities. To derive the diversity implicature, we would have to hold fixed the plurality.

Analogous problems can arise with singular indefinites. Consider (31).

(31) A gambler lost some of his savings. Another lost all of his.

There is an implicature here that the first gambler, unlike the second, didn't lose all his savings. How does the implicature arise? To be sure, the speaker could have used the stronger (32b) instead of (32a).

(32) a. A gambler lost some of his savings.

b. A gambler lost all of his savings.

Since she chose the weaker (32a), we might infer that she wasn't in a position to assert (32b). Assuming she is well-informed, we might further infer that the alternative is false. But in the context of (31), this explanation makes no sense. For the second sentence in (31) entails that (32b) is in fact true: the speaker knows that some gambler lost all of his savings. So we can hardly assume that the speaker wasn't in a position to assert (32b)!

The standard (neo-)Gricean account of scalar implicatures thus fails in the case of (31). Nonetheless, there is an intuitive rationalization of the inference, based on assumptions about rational communication. Informally, the reasoning could go as follows.

> The speaker said of some gambler that he lost some of his savings; it would have been more informative (and no more complicated) to say that he lost all his savings; so the speaker probably doesn't think this is true; since she is well-informed and cooperative, the relevant gambler probably didn't lose all his savings.

Unlike in the standard (neo-)Gricean inference reviewed in section 2, we here hold fixed the subject when considering the alternatives: we consider what else the speaker could have said *of the gambler* instead of saying that *he* lost some of his savings. The underlying point is that speakers usually don't just aim at saying something true, but also at conveying specific information about specific individuals and events. Take another example.

(33) One day, Bob met some of his colleagues at the pub.

A speaker who begins an anecdote with (33) wants to convey information about a specific day on which Bob met some (and not all) of his colleagues at the pub. There may have been other days on which Bob met all of his colleagues, but these aren't at issue. So the reason why the speaker didn't use the stronger *all of his colleagues* instead of *some of his colleagues* in (33) need not be that this would have rendered the utterance false. Instead, it might merely have changed the topic: the speaker doesn't want to talk about a day on which Bob met all of his colleagues.

The standard Gricean treatment of scalar implicatures is therefore incomplete insofar as it only considers one explanation for why the speaker didn't utter a relevant alternative: that the alternative is false (or not known to be true). We also need to consider the possibility that the alternative would have changed the topic.

To put flesh on these informal remarks, let me draw on some basic ideas from dynamic semantics. It is well-known that the classical bound-variable interpretation of indefinites runs into problems in cases where associated pronouns are not in the scope of the postulated quantifier, as in (34).

(34) A gambler lost some of his savings. He got upset.

On one popular approach to these phenomena, going back to [Heim 1982] and [Kamp 1981], indefinites like *a gambler* introduce a new "discourse referent" into the linguistic context, which we may represent as a free variable x. The assignment function that interprets x is then constrained by the various assertions about the gambler, which are analyzed as open sentences containing the new variable. Translated into first-order logic, the first sentence in (34) (=(32a)) would thus look like (35).

(35) $\mathit{Gambler}(x) \wedge \mathit{Lost\text{-}some\text{-}of\text{-}his\text{-}savings}(x)$.

The second sentence in (34) re-uses the variable x. Existential closure only takes place on the level of discourse: the entire discourse (34) is true iff there is some individual that satisfies the constraints expressed by the individual sentences.

We can now formalize the quasi-Gricean reasoning outlined above if we assume that the alternatives to a given sentence can involve the same free variables. One alternative to (35) is then (36).

(36) $\mathit{Gambler}(x) \wedge \mathit{Lost\text{-}all\text{-}of\text{-}his\text{-}savings}(x)$.

Conjoining (35) with the negation of (36) yields (37):

(37) $\mathit{Gambler}(x) \wedge \mathit{Lost\text{-}some\text{-}of\text{-}his\text{-}savings}(x) \wedge \neg \mathit{Lost\text{-}all\text{-}of\text{-}his\text{-}savings}(x)$.

Under discourse-level existential closure, we get the desired result: there is a gambler who lost some but not all his savings.

Note how this matches the informal quasi-Gricean reasoning above, in which we hold fixed the subject when computing implicatures, asking why the speaker characterized *him* as having lost some of his savings rather than as having lost all.

In effect, the Gricean mechanism here applies locally in the scope of the existential quantification. But we don't need to postulate tacit exhaustification operators or lexicalized implicatures to achieve that result. Indeed, from a dynamic semantics perspective, a truly global application of Gricean principles would have to wait until the end of the entire discourse, which is evidently not practical.

Now return to (19). As a first pass, let's assume that 'some passengers' introduces a plural discourse referent. (19) therefore gets analysed as (38), with a free (plural) variable X.

(38) $\mathit{Passengers}(X) \wedge [\forall x \in X](\mathit{Got\text{-}Sick}(X) \vee \mathit{Had\text{-}Trouble\text{-}Breathing}(X))$.

Here, '$[\forall x \in X]$' accounts for the distributive interpretation of the verb phrase, presumably arising from a tacit distributivity operator.

As above, we have to assume that alternatives to (38) may contain the same free variable, so that (39a) and (39b) count as alternatives to (38).

(39) a. $\mathit{Passengers}(X) \wedge [\forall x \in X]\,\mathit{Got\text{-}Sick}(X)$.

b. $\mathit{Passengers}(X) \wedge [\forall x \in X]\mathit{Had\text{-}Trouble\text{-}Breathing}(X)$.

Conjoining (38) with ¬(39a) and ¬(39b) yields (40), which is satisfied by a plurality X of passengers iff some elements of X got sick and others had trouble breathing.[7]

(40) $\mathit{Passengers}(X) \wedge [\forall x \in X](\mathit{Got\text{-}Sick}(X) \vee \mathit{Had\text{-}Trouble\text{-}Breathing}(X)) \wedge$
$\neg[\forall x \in X]\mathit{Got\text{-}Sick}(X) \wedge \neg[\forall x \in X]\mathit{Had\text{-}Trouble\text{-}Breathing}(X)$.

Under discourse-level existential closure, we therefore derive the inference from (19a) to (19b) and (19c).

Notice how this explanation differs from Klinedinst's. Klinedinst assumes that the implicature is computed below the noun phrase, at the level of the distributivity operator. Instead, I'm assuming that the inference is computed on sentence-level: the alternatives (39a) and (39b) are alternatives to the entire sentence (38). This works because the noun phrase 'some passengers' has been stripped of its quantificational force.

Moreover, while Klinedinst postulates a language-specific process for which their is no deeper explanation, the present account provides a rationalization of the inference in (19), analogous to the above rationalization of the inference in (31). Informally, the reasoning would goes as follows:

> The speaker said of some passengers that they got sick or had trouble breathing. It would have been simpler and more informative to say that they got sick, or to say that they had trouble breathing; since the speaker is well-informed and cooperative, we can infer that neither of these are true. So the relevant passengers didn't all get sick, nor did they all have trouble breathing. Since they all got sick *or* had trouble breathing (as the speaker said), it follows that some of them got sick and others had trouble breathing.

In effect, once we've stripped 'some passengers' of its quantificational force, the derivation of the implicature in (19) is entirely parallel to that in (2). The comments I made about (2) therefore carry over: first, the implicature requires a distributive reading of the relevant sentence; second, it arises for a wide variety of constructions (not just for disjunctions), including (41) and (42).

(41) a. Some guests arrived between 5 and 7.
b. ⇝ Some guests arrived between 5 and 6.

(42) a. Some children drew animals.
b. ⇝ The children that drew animals did not all draw the same kind of animal.

For example, if we analyse (41a) as (43a), the implicature (41b) is entailed by conjoining (43a) with the negated alternatives (43b) and (43c) (and existentially closing).

7 Modulo the complication discussed in note 6 above.

(43) a. $\mathit{Guests}(X) \wedge [\forall x \in X]\mathit{Arrived\text{-}between}(X, 5, 7)$.
b. $\mathit{Guests}(X) \wedge [\forall x \in X]\mathit{Arrived\text{-}between}(X, 5, 6)$.
c. $\mathit{Guests}(X) \wedge [\forall x \in X]\mathit{Arrived\text{-}between}(X, 6, 7)$.

Here is the informal argument:

> The speaker said of some guests that they arrived between 5 and 7; it would have been more informative to say that they arrived between 5 and 6, or that they arrived between 6 and 7; since the speaker chose the less informative expression, these alternatives are probably false; so the arrival times of the relevant guests lie partly between 5 and 6 and partly between 6 and 7.

Now, a caveat. I have assumed that plural discourse reference can be modelled just like singular discourse reference, in terms of plural variables. But the dynamics of plural indefinites appears to be more complicated, requiring sets of assignment functions to keep track of dependencies (see [van den Berg 1996], [Kamp et al. 2011: sec. 3.5], [Nouwen 2014], [Brasoveanu 2011]). I believe that the explanations just outlined can be adapted to a more adequate analysis of (19a) and (41a) along these lines, but I have to leave a detailed investigation of this question to another occasion.

Next, let's work back to modality, stopping briefly at the temporal case.

5 Free choice explained

I mentioned that free choice effects also seem to arise for temporal quantification. Here is an example.

(44) a. Sometimes Alice brought beer or wine.
b. Sometimes Alice brought beer.
c. Sometimes Alice brought wine.

In (44a), *sometimes* arguably functions like a plural indefinite, introducing a discourse referent for a plurality X of times or events; *Alice brought beer or wine* then characterizes all these times as times when Alice brought beer or wine. We can then explain the implicature along the same lines as in the previous section. Informally: if all the times in X had been times when Alice brought beer, a well-informed and cooperative speaker should have used the simpler *Alice brought beer*; since she didn't, one can infer that at some of the X times Alice brought wine. Likewise, *mutatis mutandis*, for beer.

Temporal discourse referents are well-established in dynamic semantics, motivated by the fact that tense often has an anaphoric function that is hard to capture with a traditional operator approach (see e.g. [Partee 1984], [Stone and Hardt 1999], [Kamp et al. 2011]). Plural discourse referents are a little less familiar in this context, but there

are good reasons to think that *sometimes* is indeed plural (as its morphology suggests). Thus it would be odd to use (44a) to describe scenarios in which Alice brought beer or wine only once. Moreover, like plural indefinites in the nominal domain, *sometimes* gives rise to "maximal set anaphora". For example, in (45), *then* picks out all times when Alice brought beer or wine, just as *them* in (46) (from [Evans 1980]) picks out all Bill's sheep.[8]

(45) Sometimes Alice brought beer or wine. Then Bob was happy.

(46) Bill owns some sheep. Harry vaccinated them.

Note also that the implicature in (44) does not arise if *sometimes* is replaced by the clearly singular *one time*.

Let's see what we need in order to adapt the present analysis to modal cases like (1).

(1) a. You may have beer or wine.
b. $\rightsquigarrow$ You may have beer.
c. $\rightsquigarrow$ You may have wine.

Following Klinedinst, let's analyze (1a) as involving plural (existential) quantification over deontically accessible worlds, but let's move the existential force of the quantifier to discourse level. This yields (47a). Relevant alternatives are (47b) and (47c).

(47) a. $\mathrm{Acc}_D(W) \wedge [\forall w \in W](\mathrm{Beer}(w) \vee \mathrm{Wine}(w))$.
b. $\mathrm{Acc}_D(W) \wedge [\forall w \in W]\mathrm{Beer}(w)$.
c. $\mathrm{Acc}_D(W) \wedge [\forall w \in W]\mathrm{Wine}(w)$.

Conjoining (47a) with $\neg$(47b) and $\neg$(47c), we get the strengthened (48), which entails that some of the worlds in W are *Beer* worlds and others *Wine* worlds.

(48) $\mathrm{Acc}_D(W) \wedge [\forall w \in W](\mathrm{Beer}(w) \vee \mathrm{Wine}(w)) \wedge \neg[\forall w \in W]\mathrm{Beer}(w) \wedge \neg[\forall w \in W]\mathrm{Wine}(w)$.

The crucial assumption here is that possibility modals introduce discourse referents for accessible worlds. The assumption is supported by various structural parallels between modal, temporal, and nominal discourse – see e.g. [Kibble 1995], [van Rooij 1998], [Geurts 1999], [Stone 1997], [Stone and Hardt 1999], [Bittner 2001], [Schlenker 2006], [Brasoveanu 2010], [Schlenker 2012], among others. In particular, the phenomenon of modal subordination ([Roberts 1989]), illustrated by (49) and (50), suggests that *would* can function like an anaphoric pronoun, referring back to previously introduced possibilities.

(49) Alice might bring beer. Bob would be happy.

8 The maximal set interpretation of plural anaphora is one of the phenomena the simplistic account of plurals sketched in the previous section fails to predict.

(50) You may have a beer. I would have one, too.

Note that (49) suggests not only that there are some epistemically accessible worlds at which Alice brings beer and Bob is happy, but rather that Bob is happy at all epistemically accessible worlds where Alice brings beer. Thus *would* seems to get a "maximal set" interpretation, which indicates that the discourse referent is plural.[9]

The assumption that the discourse referents introduced by modals are plural might get further support from languages in which modals aren't marked for quantificational force (as [Rullmann et al. 2008] point out), as well as from languages in which the same anaphoric elements are used in nominal, temporal and modal contexts (see [Schlenker 2012]). It also fits the close ties between modals and *if*-clauses on the one hand, and *if*-clauses and plural definite descriptions on the other (see [Schlenker 2003]). At any rate, I am not aware of any reasons to think that modal discourse referents are singular. Even if the plural hypothesis had no independent support, the fact that it allows for a uniform explanation of free choice effects would therefore be enough to take it seriously.

To be sure, possibility modals have traditionally been analysed in terms of singular existential quantification. For example, Kratzer [1981, 1991] suggests the following semantics for 'might', 'may', and 'can', where f selects the worlds accessible from a given world w:

(51) $[\![\text{might/may/can}]\!]^{w,f} = \lambda q_{<s,t>} \exists w' \in f(w) : q(w) = 1.$

Does the present account call for a revision to this tradition? No. There are good reasons to adopt a "weak" reading of plurals on which plural variables can refer to collections with just a single member (see e.g. [Nouwen 2014]). Thus we can still allow for unusual possibility statements like (52) that are verified by a single world.

(52) It could have been that everything is just as it actually is.

Indeed, on the weak reading of plurality, there is no truth-conditional difference at all between the singular and plural analysis of simple possibility sentences: necessarily, there is a world that satisfies C iff there are one or more worlds all of which satisfy C.

Let me now explore a few predictions of the present proposal.

If $\{S_i\}$ are (innocently excludable) scalar alternatives to S, then on the present account, *may* S generally triggers each of *may* S_i as an implicature. (Similarly for *might/can/could/sometimes*.) If S is a disjunction, the individual disjuncts are relevant scalar alternatives. This is true no matter how many disjuncts are in the disjunction. For example, (53) implicates that Alice might be in any of the four bars.

9 As a referee pointed out, it is not obvious that my intention to have a beer with you, as expressed by the second sentence in (50), is restricted to deontically accessible worlds. But suppose I expand (50) by *... You can't have a lager though: the lagers are reserved for Bob*. Arguably, this further restriction on the deontically accessible worlds also restricts the conditions under which I would have a beer with you.

(53) Alice might be in *bar 1* or *bar 2* or *bar 3* or *bar 4*.

Informally, the explanation is that if, say, *bar 4* could be ruled out, the speaker should have characterized the relevant possibilities more simply and strongly as *bar 1 or bar 2 or bar 3* possibilities.

The implicature is weaker in (7), where we only get what I called an "existential" free choice effect.

(7) a. Alice might be in one of the bars on campus.

b. $\rightsquigarrow$ There are several bars where Alice might be.

Here it would have been simpler and more informative to characterize the relevant possibilities as *bar 1* possibilities, or as *bar 2* possibilities, etc. Hence we do get the implicature that there are at least two different bars where Alice might be. On the other hand, *being in bar 1 or bar 2 or bar 3* normally doesn't count as a salient scalar alternative to *being in one of the bars on campus*. This is why (7a), unlike (53), does not obviously suggest that each bar is a possible location. The implicature is merely that there are several bars where Alice might be.

As foreshadowed in section 2, we can also explain why (54a) normally suggests (54b), but not (54c).

(54) a. You may have wine.

b. $\rightsquigarrow$ You may have red wine.

c. $\not\rightsquigarrow$ You may have wine and burn down the house.

The reason is that in the context of (54a), *you have white wine* is plausibly a scalar alternative to *you have wine*, while *you have wine and don't burn down the house* is not. More formally, (55b) is a scalar alternative to (55a), but (55c) is not. The strengthened interpretation of (54a) therefore includes the negation of (55b) but not that of (55c).

(55) a. $\text{Acc}_D(W) \wedge [\forall w \in W]$(You have wine in w).

b. $\text{Acc}_D(W) \wedge [\forall w \in W]$(You have white wine in w).

c. $\text{Acc}_D(W) \wedge [\forall w \in W]$(You have wine and don't burn down the house in w).

We can see the same effect with definite plurals in the nominal domain:

(56) The guests had wine.

In a context where it matters whether the guests all had red wine or white wine, (56) can implicate that some of the guests had red wine and others white wine. By contrast, it would be very unusual for (56) to implicate that some of the guests had wine and burnt down the house.

That the implicature seems stronger in (54) than in (56) (even if (56) is read distributively) also has a natural pragmatic explanation: in most contexts, it will not be terribly

important whether all the guests had the same kind of wine; by contrast, if someone utters (54a), it typically matters whether the deontically accessible worlds include red wine worlds and white wine worlds – that is, whether red wine is allowed and whether white wine is allowed. In the context of (54a), (55b) is therefore a highly relevant alternative to (55a), whereas *the guests had white wine* is often not a highly relevant alternative to *the guests had wine*. Note that the implicature also seems weaker in (57): in the context of (57), too, it often won't matter whether the speaker can rule out white wine or red wine possibilities.

(57) Carol might have wine.

Here is another attractive prediction of the present approach. I mentioned in passing that straight assertions of unspecific statements like (58) often trigger "primary implicatures" to the effect that the speaker is not in a position to assert the stronger alternatives.

(58) Alice brought beer or wine.

In the case of (58), the implicature is that the speaker doesn't know whether Alice brought beer or wine. On the neo-Gricean account, this implicature is computed by the same rules as full (secondary) scalar implicatures, except that the computation ends in the middle: since (59a) and (59b) would have been simpler and stronger than (58), we can infer that the speaker isn't in a position to assert these alternatives.

(59) a. Alice brought beer.

b. Alice brought wine.

We can't further conclude that the speaker, being well-informed, knows that these alternatives are false, as that would contradict her actual assertion.

Now the account I have outlined predicts that the free choice inferences triggered by *might A* mirror the primary implicatures that would be triggered by corresponding plain assertion of A, especially in contexts where *might* expresses epistemic possibility for the speaker. For suppose an utterance of A triggers the primary implicature that the speaker doesn't know B. Then B is a relevant scalar alternative to A. And then *might A* is predicted to implicate *might B*.

The prediction seems to be on the right track. For example, compare (60) and (61).

(60) Alice might be in one of the bars on campus.

(61) Alice is in one of the bars on campus.

In a suitable context, (60) and (61) both implicate that there are several bars where Alice might be, for all the speaker knows. In other contexts, say, where it wouldn't be helpful to name a specific bar (because it would be irrelevant to the conversation, or because the addressee doesn't know any bars on campus), both implicatures go away.

6 Conclusion

Let me sum up what I have tried to show.

If an unspecific predicate is applied (distributively) to a plurality, an implicature is triggered suggesting that different parts of the plurality instantiate different strengthenings ("specifications") of the predicate. Sometimes, as in (2) and (62), this effect is easily explained along neo-Gricean lines.

(2) a. The best hammers are made of steel or fibreglass.
b. ⇝ Some of the best hammers are made of steel.
c. ⇝ Some of the best hammers are made of fibreglass.

(62) a. Every child drew an animal.
b. ⇝ The children did not all draw the same kind of animal.

If we assume that modal auxiliaries quantify over a plurality of relevant worlds, this explanation carries over to unspecific necessity statements, as in (63) – an instance of "Ross's Paradox" ([Ross 1941]).

(63) a. You must work on Thursday or Friday.
b. ⇝ It is not the case that you must work on Thursday.
c. ⇝ it is not the case that you must work on Friday.

Here, *that you work on Thursday or Friday* is an unspecific description of the deontically accessible worlds. Accordingly, there is an implicature that at some of the worlds you work on Thursday and at others on Friday.

I have argued that the same mechanism lies behind a wide range of free choice type inferences, including (1), (5), (7), and (19).

(1) a. You may have beer or wine.
b. ⇝ You may have beer.
c. ⇝ You may have wine.

(5) a. You may have wine.
b. ⇝ You may have red wine.
c. ⇝ You may have white wine.

(7) a. Alice might be in one of the bars on campus.
b. ⇝ There are several bars where Alice might be.

(19) a. Some passengers got sick or had trouble breathing.
b. ⇝ Some passengers got sick.

c. $\rightsquigarrow$ Some passengers had trouble breathing.

As reviewed in section 2, these inferences display all the marks of scalar implicatures: they disappear (indeed reverse) in downward-entailing environments, they are cancellable, they depend on contextual assumptions about the speaker's knowledge and cooperativeness. Treating them as scalar implicatures further allows us to keep the semantics for *may*, *might*, *some*, and *or* simple; it explains why the effect arises for some strengthenings and not for others (the "problem of specifications"), why it is generally stronger for *may* than for *might*, and why the inferences suggested by an unspecific utterance of *might* S generally match the primary implicatures triggered by a direct assertion of S.

To explain (1) and (19), Klinedinst postulates a non-Gricean mechanisms by which implicatures are computed inside the scope of (plural) existential quantifiers. I have suggested an alternative explanation that stays closer to Gricean ideas, although it requires a slight extension of the standard neo-Gricean account. I have argued that the extension is independently motivated.

In short, the standard account considers only one reason why a speaker might have chosen to utter a given sentence S rather than a stronger alternative S': that the alternative is false (or not known to be true). In cases like (31) and (33), arguably a different reason is in play: the alternative would change the topic.

(31) a. A gambler lost some of his savings. Another lost all of his.

b. $\rightsquigarrow$ The first gambler did not lose all his savings.

(33) a. One day, Bob met some of his colleagues at the pub.

b. $\rightsquigarrow$ That day, Bob did not meet all his colleagues at the pub.

I have suggested that we can formalize the reasoning in these cases by adapting an idea from dynamic semantics, namely that indefinites introduce a free variable which is only bound on the level of discourse. If the alternatives to a sentence make use of the same free variable, the standard Gricean computation of scalar implicatures can effectively account for (31) and (33).

Extending this explanation to temporal and modal cases requires the assumption that the relevant operators (*sometimes*, *may*, *might*, etc.) introduce plural discourse referents. I have argued that there is some independent evidence for this assumption, but further investigation may be warranted.

Another question for further research is whether the present account can explain other phenomena that are sometimes grouped with free choice, notably free choice type effects in the antecedent of conditionals and with wide-scope *or*, as illustrated by (64) and (65) respectively.[10]

10 Closely related to cases with wide-scope *or* are cases where a conjunction is embedded under negated necessity: *you are not required to have both beer and wine*; see e.g. [Fox 2007].

(64) If Alice or Bob comes, it will be fun.

(65) You may have beer or you may have wine.

Adapting the account I have outlined to these cases would arguably require a closer look at some of the complexities in the semantics of plural discourse referents (mentioned on page 16). Consider a nominal analogue of (65):

(66) Some passengers had to leave; they got sick or they had trouble breathing.

(66) is naturally understood as stating that some of the passengers who had to leave got sick and others had trouble breathing. It's as if *they* here picks out not all the passengers who had to leave but a random yet homogeneous subset.

With respect to (64), observe that the present account already predicts the "simplification of disjunctive antecedents" effect if the conditional is broken into two speech acts, as it is in some languages that lack an *if–then* construction:

(67) Alice or Bob might come. Then it will be fun.

On the account I have outlined, the first sentence in (67) implicates that some of the epistemically possible worlds are Alice worlds and others are Bob worlds. Since *then* has its typical "maximal set" reading, the second sentence requires that all the worlds introduced by the first sentence are fun worlds.

These remarks are obviously no more than a tentative sketch. But they hopefully indicate that the account I have offered may have the potential to explain further phenomena that have not been the focus of the present study.

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