

FREE CHOICE PERMISSION

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1 The Problem: Free Choice Permission (Kamp 1973)

- The **inference** for *may* over *or*: (1b) and (1c) follow from (1a)
 - (1) a. You may camp or hunt
 - b. You may camp
 - c. You may hunt
- Does this follow?
 - (2) You may camp and hunt
 - It seems not, sense you can say *You may camp or hunt, but not both*
- The **inference** or *may* under *or*: (3b) and (3c) follow from (3a):
 - (3) a. You may camp or you may hunt
 - b. You may camp
 - c. You may hunt
- Does this follow?
 - (4) You may camp and hunt
 - It seems not, sense you can say *You may camp or you may hunt, but not both*
- **The Problem**: in modal logic, $\Diamond(C \vee H) \not\equiv \Diamond C$ and $\Diamond C \vee \Diamond H \not\equiv C$
 - $\llbracket \Diamond C \vee \Diamond H \rrbracket = \llbracket \Diamond C \rrbracket \cup \llbracket \Diamond H \rrbracket \not\subseteq \llbracket \Diamond C \rrbracket$
 - ▶ Indeed, this is a general fact about disjunction in classical logic!
 - $\llbracket \Diamond(C \vee H) \rrbracket = \{w \mid R(w) \cap (\llbracket C \rrbracket \cup \llbracket H \rrbracket) \neq \emptyset\}$
 - ▶ This allows $\Diamond(C \vee H)$ to be true at w_1 where $R(w_1) \cap \llbracket C \rrbracket = \emptyset$
 - ▶ Since $\llbracket \Diamond C \rrbracket = \{w \mid R(w) \cap \llbracket C \rrbracket \neq \emptyset\}$, $\Diamond C$ is false at w_1

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1.1 More Data: the problem is harder

- **Ignorance/non-compliance reading** does not give rise to free choice inferences:
 - (5) a. You may camp or hunt, I don't know which/I won't tell you which
 - b. You may camp
 - c. You may hunt
 - (6) a. You may camp or you may hunt, I don't know which/I won't tell you which
 - b. You may camp
 - c. You may hunt
- Patterns don't hold for *must* over *or*: neither (7c) nor (7b) follow from (7a)
 - (7) a. You must pay upon entry or pay upon exit
 - b. You must pay upon entry
 - c. You must pay upon exit
- **Free choice** reading is sometimes degraded for *must* under *or*
 - (8) a. ?? You must pay upon entry or you must pay upon exit, it's up to you
 - b. You must pay upon entry or you must pay upon exit, I don't know which/I won't tell you which
- **Free choice** reading is sometimes available for *must* under *or*
 - (9) You must write a term paper or you must do a class presentation, it's up to you¹

2 Alternative Semantics (Simons 2005; Aloni 2007)

- Starting point: Hamblin (1958, 1973) semantics for interrogatives
 - (10) is neither true nor false, so its meaning couldn't be a proposition
 - (10) Did Roger dance?
 - Hamblin: an interrogative's meaning is its **answerhood conditions**
 - ▶ A declarative's is its truth-conditions
 - Answerhood conditions: the propositions that are complete answers to the question
 - ▶ Formally: a *set* of propositions
 - (10)'s answerhood conditions: $\{\llbracket \text{Roger danced} \rrbracket, \llbracket \text{Roger didn't dance} \rrbracket\}$
 - This set of propositions provides no information: it excludes no worlds
 - ▶ Every world is either one where Roger danced or one where he didn't

¹ Thanks to Sally McConell-Ginet for providing this example.

- Hamblin thought all sentences should have the same semantic ‘type’ (same kind of formal object)
- Declarative meanings are then singleton sets of propositions: $\{p\}$
- Innovation: a Hamblin style semantics for declaratives
 - Think about this set of propositions: $\{\llbracket \text{Roger danced} \rrbracket, \llbracket \text{Roger sang} \rrbracket\}$
 - ▶ It provides information
 - ▷ It excludes worlds in neither proposition
 - ▶ But it *also* presents an issue: did Roger dance or sing?
 - Many have thought this is an interesting and plausible semantics for disjunction
 - It is often called an **alternative semantics for disjunction**
 - ▶ It says not only what a disjunction’s truth-conditions are, but also which alternatives it presents
- This is the starting point for Simons (2005) and Aloni (2007)
 - Simons (2005) is simpler and makes same predictions, so we’ll look at it
- **Simons 2005 Semantics:** $\llbracket \text{May } \phi \rrbracket = \{ \{w \mid \exists S \subseteq R(w) : (a) \ \& \ (b) \text{ hold} \} \}$
 - a. For each $p \in \llbracket \phi \rrbracket : S \cap p \neq \emptyset$
 - ▶ Each alternative is compatible with S
 - b. For every $w' \in S$, there is a $p \in \llbracket \phi \rrbracket : w' \in p$
 - ▶ Every world in S makes some alternative true
- Consider **May** $(C \vee H)$
 - We need to calculate the scope $\llbracket C \vee H \rrbracket$:
 - ▶ $\llbracket C \rrbracket = \{ \{w \mid v(w, C) = 1\} \} = \{C\}$
 - ▶ $\llbracket H \rrbracket = \{ \{w \mid v(w, H) = 1\} \} = \{H\}$
 - ▶ $\llbracket C \vee H \rrbracket = \llbracket C \rrbracket \cup \llbracket H \rrbracket = \{C, H\}$
 - Let’s see how truth of **May** C and **May** H follow in w_3 from truth of **May** $C \vee H$ in w_3

	C	H
w_0	1	1
w_1	1	0
w_2	0	1
w_3	0	0

 $R(w_3) = \{w_0, w_1, w_2, w_3\}, C = \{w_0, w_1\}, H = \{w_0, w_2\}$
 - Consider $S = \{w_0, w_1, w_2\}$
 - ▶ Condition (a): S is compatible with both C and H
 - ▶ Condition (b): every world in S makes either C or H true

- ▶ Condition (c): S is non-empty
- So **May** $(C \vee H)$ is true in w_3
- What about **May** C ?
 - ▶ Let $S' = \{w_0, w_1\} = C$
 - ▶ S' is compatible with C and every world in S' makes C true
 - ▶ S' is non-empty, so **May** C is true in w_3
- Parallel reasoning shows that **May** H is true in w_3 (Let $S'' = H$)
- This handles (1a). What about (3a)?
 - As it turns out: **May** $C \vee \text{May}$ H doesn’t entail either **May** C or **May** H
 - Failure? Not so fast!
 - Recall that *or/may* combos have both a free choice and an ignorance/non-compliance reading
 - Simons (2005) proposes that the mapping from natural language to a formal representation is complicated in the same way that quantifiers are
 - *Every one loves someone* can be mapped to either $\forall x \exists y \text{ Loves}(x, y)$ or $\exists y \forall x \text{ Loves}(x, y)$
 - ▶ In the second reading, \exists has been ‘raised’ to the left
 - Simons proposes that in the free-choice reading of (3a), both *may*’s has been raised over the disjunction and the redundant one deleted
 - ▶ So the free-choice reading: **May** $(C \vee H)$
 - ▶ And the ignorance/non-compliance reading: **May** $C \vee \text{May}$ H
 - ▶ Note how nicely this fits with the idea that disjunctions ‘raise issues’
- Wait, what about the ignorance/non-compliance reading of (1a)?
 - Can *may* somehow be duplicated and ‘lowered’?
 - The operation of raising is supposed to be a syntactically valid operation
 - ▶ It’s an operation already used to form grammatical sentences
 - While many linguists think this is plausible for ‘raising’ plus ‘deletion of redundant elements’
 - ▶ Virtually no one thinks it is plausible for ‘duplicating’ plus ‘lowering’
 - Simons (2005: §5.2) has some speculative proposals for answering this question, but it involves a pretty serious concession: semantic composition is indeterminate
 - So this is a bit of an open question for this approach
- Does this semantics predict the lack of entailment for *must* in (7)?
 - Yes, once a natural semantics for *must* is in hand

- **Simons 2005 Semantics:** $\llbracket \text{Must } \phi \rrbracket = \{ \{ w \mid \exists S = R(w) : (a) \ \& \ (b) \ \text{hold} \} \}$
 - a. For each $p \in \llbracket \phi \rrbracket : S \cap p \neq \emptyset$
 - ▷ Each alternative is compatible with S
 - b. For every $w' \in S$, there is a $p \in \llbracket \phi \rrbracket : w' \in p$
 - ▷ Every world in S makes some alternative true

2.1 Problems

- The fact that (8) doesn't have a free-choice reading is a problem for this analysis
 - Free-choice vs. ignorance is supposed to be a syntactic matter
 - But *may* and *must* are of the same syntactic category and should therefore be available for the same kinds of movement ('raising')
 - But this syntactic operation predicts that *You may camp and you may hunt* has a reading which means *You may camp and hunt*, but this seems wrong
 - Doesn't it generally mean that existential quantifiers can raise and delete duplicates?
 - ▶ But *Some man was talking to Jan and some man was ignoring Jan* has no reading meaning *Some man was talking to and ignoring Jan*
- This analysis does not capture **dual prohibition**:
 - (11) a. You may not camp or hunt
 - b. You may not camp
 - c. You may not hunt
 - To see this, adjust our above example to make **May** ($C \vee H$) false: $R(w_3) = \{w_2, w_3\}$
 - ▶ **May C** is false, since there is no subset of $R(w_3)$ that makes C true
 - ▷ So \neg **May C** is true
 - ▶ But **May H** is true: let $S = \{w_2\}$
- Dual Prohibition is a very difficult problem indeed:
 - Suppose we have an analysis on which: **May** ($C \vee H$) \models **May C** \wedge **May H**
 - Since **May C** \wedge **May H** \models **May** ($C \vee H$), the two are equivalent
 - But that means \neg **May** ($C \vee H$) is equivalent to \neg (**May C** \wedge **May H**), which amounts to \neg **May C** \vee \neg **May H**, not the desired \neg **May C** \wedge \neg **May H**
- So no classical semantic account of free-choice permission can be complete!
 - 'Classical': if ϕ and ψ are equivalent, so are $\neg\phi$ and $\neg\psi$

3 Pragmatic Analyses

(Alonso-Ovalle 2006; Fox 2007)

- These analyses aim to treat the free-choice inference as a scalar implicature
 - What's an implicature?
 - ▶ Something which is not entailed by an utterance, but follows from the assumption that the speaker is being co-operative and rational (Grice 1975)
 - ▶ Letter of recommendation example: *This applicant is excellent handwriting.*
 - ▶ Why not an entailment: cancelable (plausible deniability)
 - What is a scalar implicature?
 - ▶ Some implicatures seem to rely on the fact that various words are arranged in **scales of strength**
 - ▶ Classic example: *And* > *Or*
 - ▷ Grice's Maxim of Quantity: if ϕ is more informative than ψ , both are relevant to the topic of conversation and the speaker believes both to be true, then the speaker should say ϕ
 - ▷ Since *And* is stronger than *Or*, hearers can infer from utterances of *A or B* that the speaker does not believe *A and B* to be true
 - ▷ So an utterance of *A or B* implicates *Not(A and B)*
 - ▷ This is an implicature since it is deniable: *John hunted or camped, actually, he did both*
 - ▶ Similarly: *All* > *Most* > *Some*
 - ▷ *Some kittens are cute* implicates that *Not all kittens are cute*

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