Ability, free choice, and distribution

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1 Free choice

$$\textit{Wide scope free choice (WSFC): } \Diamond p \vee \Diamond q \rightsquigarrow \Diamond p \wedge \Diamond q$$

$$\textit{Narrow scope free choice (NSFC): } \Diamond (p \vee q) \rightsquigarrow \Diamond p \wedge \Diamond q$$

These look like surprisingly good inferences on both epistemic and deontic interpretations of $\Diamond$, even though they are obviously not valid in classical modal logic.

There is no straightforward way to capture this; adding either one to a standard modal logic leads immediately to a kind of collapse:

von Wright, Kamp, etc.

1. $\Diamond p$
2. $\Diamond (p \vee q)$
3. $\Diamond p \vee \Diamond q$
4. $\Diamond q$

Also, free choice doesn't seem like an entailment because the classical meaning for negated disjunctions still seems plausible:

$$\neg(\Diamond p \vee \Diamond q) \leftrightsquigarrow \neg\Diamond(p \vee q) \leftrightsquigarrow \Box\neg p \wedge \Box\neg q$$

Though the negated FC reading seems possible, too.

2 Kratzer/Shimoyama/Fox

There's a semi-standard story that goes something like this:

- the speaker said $\Diamond (p \vee q)$
- if they had said the simpler $\Diamond p$, which entails this, it would have implicated that $\Diamond q$ is false
- so it's not the case that $\Diamond p \wedge \neg\Diamond q$
- reasoning similarly, it's not the case that $\Diamond q \wedge \neg\Diamond p$
- given the assertion, it follows that $\Diamond p \wedge \Diamond q$

There are many reasons to worry about this approach: as Fusco argues, the pragmatic reasoning involved seems pretty fishy. But as Fox and ff have shown, it can be semanticized.

And it requires $\Diamond p \wedge \Diamond q$ not to be an alternative to $\Diamond (p \vee q)$.

And it doesn't extend to WSFC, since $\Diamond p \vee \Diamond q$ should implicate $\neg(\Diamond p \wedge \Diamond q)$.

However, Nouwen focuses on an easily overlooked step: the inference from $\Diamond(p \vee q)$, together with $\Diamond p \equiv \Diamond q$, to $\Diamond p \wedge \Diamond q$. As Nouwen points out, this inference is valid only if $\Diamond(p \vee q)$ entails $\Diamond p \vee \Diamond q$.

But according to Kenny and the many following, this doesn't follow.

(1) I can (hit the top or hit the bottom). $\not\rightsquigarrow$
I can hit the top or I can hit the bottom.

Even if you think this does follow for specific abilities, I think all of Nouwen's points can be made with general ability ascriptions, where this failure should be uncontroversial.

Although, if they have the LF $Gen(\Diamond(p \vee q))$ and we have distribution for $\vee$ under $\Diamond$ then we're fine.

3 Ability free choice

But there do seem to be ability free choice inferences:

(2) a. Betty can balance a fishing rod on her nose or balance a fishing rod on her chin.
b. $\rightsquigarrow$ Betty can balance a fishing rod on her nose and she can balance a fishing rod on her chin

Geurts 2011

Indeed, this is one of the points Annina made about Kenny's examples: there is some inclination to reject

(3) I can hit the top or the bottom of the dartboard.

exactly because it naturally leads to the conclusion

(4) I can hit the top of the dartboard and I can hit the bottom.

4 Homogeneity

Suppose $A_s\varphi$ means something like 'it's possible for S to φ in a controlled way', for brevity $\Diamond\Box\varphi$.

Some actions are *necessarily controlled*: if you do them, you do them with control; balancing a fishing rod on your chin, walking, getting married.

In his terminology, they are *homogenous*: on the relevant interpretation, $\Box(\Box\varphi \vee \Box\neg\varphi)$ is true (you control what happens).

By contrast, hitting a bullseye isn't like this.

Now reasoning in the Kratzer-Shimoyama way, we can get from $\Diamond\Box(p \vee q)$ to $\Diamond\Box p \equiv \Diamond\Box q$.

The problem is that these don't jointly entail $\Diamond\Box p$ (to see this set $q := \neg p$).

But they will do so in the presence of homogeneity: these premises

- $\Diamond\Box(p \vee q)$
- $\Diamond\Box p \equiv \Diamond\Box q$
- $\Box(\Box p \vee \Box\neg p)$
- $\Box(\Box q \vee \Box\neg q)$

yield $\Diamond\Box p \wedge \Diamond\Box q$.

So a nice prediction would be if you get free choice inferences just in case homogeneity is a reasonable assumption.

But Nouwen thinks there are clear cases where you have homogeneity without FC:

I'm not 100% clear on why these lack homogeneity.

(5) My four-year-old son Oscar can walk or talk.

(6) Betty can balance a fishing rod on her nose or juggle four hot potatoes with just her left hand.

I'm not sure about these judgments. But I definitely agree it's not as clear as deontic/epistemic:

(7) My four-year-old son Oscar may walk or talk.

(8) Betty is allowed to balance a fishing rod on her nose or juggle four hot potatoes with just her left hand.

(9) Betty might be balancing a fishing rod on her nose or juggling four hot potatoes with just her left hand.

> what can be observed is that free choice ability is quite a limited phenomenon, but that the limitation seems disconnected from homogeneity / the validity of DOD. I think what is crucial to good examples of ability free choice is that they typically involve two variations of the same ability. . . Speculating somewhat, free choice ability always seems to involves a conjunction of inferences that concern the same general ability. This is obviously not a very precise statement and I have no explanation for this observation, but I do have this to say: Whatever accounts for the differences between the example with and those without free choice inferences, it is not the absence versus presence of DOD.

My best guess about the correct generalization is slightly different, namely: we get the FC reading when there's a salient goal.

(10) a. What can Oscar do to impress grandpa?
b. He can walk or talk. — FC

(11) a. What abilities has Oscar acquired at this point?
b. He can walk or talk. — Ignorance

FWIW, scope seems to make no difference.

(12) a. How can they get to Japan?
b. What can the newly discovered creatures do?
c. They can fly or they can swim.

In other cases it's not so clear to me.

(13) a. Let's go to the gym; we can lift weights or do a HIIT.
b. In the international space station, can you lift weights or do a HIIT?

5 Fusco

Fusco points out that there are in fact two pieces missing from agentive modals that have been appealed to in explanations of free choice for other modalities: distribution over disjunction as well as *performativity*; which makes them an interesting test case for theories of free choice.

She goes in a completely different direction, building on her early work on deontic modals.

5.1 Opaque vs. transparent readings

(14) John can take the elevator to the basement.

> This hard line reading [the transparent one] is difficult to square with a flatfooted account of rational agency, since in Elevator, John might desire to go to the basement, believe he can go to the basement, and still wind up not going to the basement. Yet it seems unquestionably correct as well, insofar as there is clearly a sense in which [(14) is] true in Elevator,
>
> I propose to reconcile the conflicting intuitions. . . by means of a broadly Fregean distinction, between intensional and extensional readings of the claim that an agent brings about, or realizing, some outcome.

5.2 A baseline semantics

Basically Brown's:

- ⧫ is historical possibility which quantifies over a *set* of historically possible worlds h

  why not relativize this to worlds? because of an approach to entailment, as preservation of truth throughout h, that will turn out to be important

- $\Box$ is a necessity operator whose semantics is given by an accessibility relation R, with wRv iff v is compatible with everything the agent's powers are able to necessitate in w.

  Simple worry: won't $R(w)$ usually be empty? Fusco: relativize to

(you have the power to necessitate p and $\neg p$ for some p)

what you try.

Fusco glosses $\Box\varphi$ as 'φ is realized$_{ex}$'. Maybe don't worry too much about the accessibility relation.

- Then define $A\varphi$ as $\blacklozenge(\varphi \wedge \Box\varphi)$.

Distribution fails for usual reasons.

5.3 Nonspecific de re

I think this semantics is somewhat independent of the account of free choice.

That account starts with the observation that indefinites and disjunctions can sometimes be interpreted relative to a world other than the (local) world of evaluation. Two starting cases:

- non-specific de re: Fodor (1970):

  imagine Mary looks at the ten contestants and says

  (15) I hope one of the three on the right wins—they are so shaggy—I like shaggy people.

  She doesn't know that those [three] are my friends. But I could still report her hope with:

  (16) Mary wants a friend of mine to win.

von Fintel and Heim

  Note both the de re and de dicto readings are false, however. A parallel reading can be observed with disjunction. If those three people are (unbeknownst to Mary) the president, secretary of state, and treasurer:

  (17) Mary wants the president, secretary of state, or treasurer to win.

- whether-reports:

  (18) Mark knows whether John or Sue won.

  (18) is equivalent to 'Mark knows that John won' in worlds where John won, and to 'Mark knows that Sue won' in worlds where Sue won.

  It looks like the disjunction here is world sensitive: it is a function *ans* which takes two propositions and a world argument to whichever of those is true in that world; where the world argument is supplied, again, not by the local world of evaluation but by the global one.

5.4 Free choice

> The intuition I want to pursue is that free choice-triggering readings of modally embedded disjunctions... are nonspecific de re readings.

Not completely clear to me whether she wants to claim that *the meaning of 'or'* is *ans* or rather if 'or' is ambiguous between $\vee$ and *ans*.

In any case, the free choice reading is derived like this: $\lambda u.A_s(ans_u(p,q))$ will end up being true at w,h iff there is some historically possible world $v \in h$ where $ans_w(p,q)$ is true and realized by S.

So, when p and q are both historically possible, it's true *throughout* a set of historical possibilities h whenever $A_s p \wedge A_s q$ is.

Worries:

- overgeneration: does 'Mark knows John or Sue won' have a reading equivalent to 'Mark knows whether John or Sue won'?

  I'm pretty sure the non-factive *doesn't*:

  (19) Mark believes John or Sue won.

- Don't we get free choice without historical possibility? If I don't know whether Mary is in France or Spain, I say,

  (20) She can dine by the Seine or the Ebro tonight.

  I think this has a false reading (the free choice reading).

- probabilities (an objection to any information-based theory of free choice?)

  (21) We can probably walk or fly.

References

Fodor, J. D. (1970). *The linguistic description of opaque contexts*. PhD thesis, MIT, Cambridge, MA.