

MODALS ARE MONSTERS: ON INDEXICAL BINDING IN ENGLISH

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1. Synopsis. I argue, *contra* Kaplan (1989), that all English indexicals are bindable. The argument is based on a puzzle involving epistemic modals (‘EMs’ henceforth): I present a solution on which indexicals are systematically bound in the scope of EMs. Thus EMs turn out to be monsters, though (interestingly) ones of a different breed from the monsters which populate recent semantic literature.

2. The puzzle. Consider this scenario:

Two amnesiacs, Rudolf Lingens and Gustav Lauben, are informed that they will be subjected to the following experiment. A coin will be tossed. If the outcome is tails, Lingens will be released in Main Library, Stanford, and Lauben will be killed. If the outcome is heads, Lauben will be released in Widener Library, Harvard, and Lingens will be killed. The experiment is executed. Later, one of the amnesiacs wakes up in a library and says:

- (1) If the coin landed tails, I am in Main Library, Stanford.
- (2) If the coin landed heads, I am in Widener Library, Harvard.

Utterances of (1) and (2) are true, but standard accounts miss this prediction. Take an off-the-shelf version of Kratzer’s semantics for conditionals, and for simplicity (even though it’s not required) assume that modal bases of unembedded EMs default to the epistemic state of the speaker. Let Lingens be the speaker. (2) gets truth-conditions:

$\llbracket (2) \rrbracket^{c,w}$ = true iff for all w' in Lingens’s epistemic state such that the coin landed heads in w' , Lingens is in Widener Library in w' .

and hence is wrongly predicted to be false: in the heads-worlds in Lingens’s epistemic state, Lingens is dead. Conversely, (1) is false if the speaker is Lauben. The puzzle generalizes: similar problems arise when indexicals occur in antecedents; analogous examples can be constructed for all English indexicals.

3. Conservative attempts. A first attempt consists in diagonalizing (cf. Stalnaker (1978)) on the two conditionals. The strategy is ineffective: one of the two resulting propositions is still false. A second account provides a semantics for modals in the spirit of Kaplan’s (1968) semantics for *de re* attitude reports. This semantics yields truth-conditions compatible with the data. But, as is well known, it suffers from important problems of implementation: it is non-compositional (cf. Cresswell & von Stechow (1982)); or it requires *ad hoc* syntactic assumptions about movement (cf. Anand (2006)). These flaws motivate the search for a better alternative.

4. A monstrous account. An intuitive diagnosis of the problem suggests: *I* in (1) and (2) doesn’t denote the actual speaker, but rather the individual who’s speaking in the circumstances individuated by the antecedent. My proposal endorses and implements this intuition. Indexicals embedded under EMs work as bound variables and range over *epistemic counterparts* of their actual referents: i.e., roughly, objects that, for all a relevant subject knows, might be their actual referents. The idea is grounded in philosophical work on attitudes and counterpart theory due to Hintikka (1969) and Lewis (1983).

The technical implementation involves treating EMs as Kaplanian monsters of a new kind. EMs will ‘overwrite’ the context parameter with an n -tuple of coordinates derived from the index by means of a *pairing function*, provided by context. Schematically:¹

¹Notation: ‘ χ ’ and ‘ ψ ’ are variables over sentences, ‘ i ’-variables range over indices, ‘ MB ’ denotes the modal base. For simplicity, throughout the abstract I ignore the time component of indices.

$$(3) \quad \llbracket \text{MUST} [\text{if } \chi] [\psi] \rrbracket^{c,i} = \text{true} \text{ iff } \forall i': i' \in MB(i) \text{ and } \llbracket \chi \rrbracket^{f_c(i'),i'} = \text{true}, \llbracket \psi \rrbracket^{f_c(i'),i'} = \text{true}$$

The pairing function recovers counterparts of the elements of the context from the modal base. More precisely: it pairs with each index in the modal base a sequence of epistemic counterparts of elements of the actual context (speaker, hearer, time, etc.). I argue that, for the case of unembedded modals like those in (1) and (2), the relevant counterpart relations should default to identity. As a result, (2) is assigned plausible truth-conditions, which solves our puzzle:

$$(4) \quad \llbracket (2) \rrbracket^{\langle w_c, x_c \rangle, \langle w_i, x_i \rangle} = \text{true} \text{ iff for all } \langle w', x' \rangle \text{ s.t.: } \langle w', x' \rangle \text{ is compatible with what } x_i \text{ knows in } w_i, \text{ and the coin landed heads in } w', x' \text{ is in Widener Library in } w'.$$

5. Two breeds of monsters. It's interesting to contrast the operator in (3) with monsters that have gained currency in recent literature (cf. e.g. Schlenker (2003), Anand (2006)). The latter simply 'overwrite' the context with the index. Construing epistemic *must* on this model we get:

$$(5) \quad \llbracket \text{MUST} [\text{if } \chi] [\psi] \rrbracket^{c,i} = \text{true} \text{ iff } \forall i': i' \in MB(i) \text{ and } \llbracket \chi \rrbracket^{i',i'} = \text{true}, \llbracket \psi \rrbracket^{i',i'} = \text{true}$$

New and old monsters differ both empirically and conceptually. The difference in predictions is brought out by embeddings. Consider e.g.

(6) John believes that, if the coin landed tails, I am in Main Library, Stanford.

On plausible assumptions about the interaction of attitude verbs and modals, the account in (5) wrongly predicts that *I* in (6) ranges over individuals that John takes *himself* to be, rather than individuals that John takes *the actual speaker* to be. By contrast, the account in (3) is flexible enough to accommodate (6). The counterpart relation which determines the range of *I* will be provided by the attitude verb, and will capture the way John locates the actual speaker in his belief state.

Conceptually, the two accounts differ in the kind of cognitive significance they associate with indexicals. The account in (5) lets the range of indexicals be fixed by their characters: for example an embedded *I* invariably picks out the individual speaking in all indices in the modal base. This reflects Kaplan's idea that the cognitive significance of indexicals coincides with their character. By contrast, the account in (3) divorces cognitive significance from linguistic meaning: the cognitive significance of indexicals is given by counterpart relations provided by context. This idea seems worthy of further exploration, in particular in connection with other non-metaphysical modals like belief operators.

References

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