

Bouletic and Deontic Modality and Social Choice

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Abstract

This paper argues that bouletic and deontic modality has decision makers and involves social choice. Bouletic modal is participant-internal while possibly intransitive and disconnected.

1 Decision Maker in Bouletic/Deontic Modality

The state of *wanting something* reflects personal preference and involves personal decision making. In that sense, wanting act follows the Condition of Liberalism, which says that, no matter how other people oppose, personal decisions can be made on certain matters. A weak Condition of Liberalism à la (Sen 1970, 1979) is that each individual is entirely decisive in the social choice over at least a pair of alternatives. It is that everyone has a say on something no matter what other people think. In actuality, what we want may not come out due to restrictions, but wanting something is a liberal act.

To put things in the possible world semantics (Lewis 1973, among others), in the best possible worlds for a decision maker, her wants are fulfilled. Her want-worlds are the subset of the worlds where her wants are fulfilled. The meaning of Oliver's utterance in (1a) is expressed as in (1b) which says that, in all the accessible worlds which accord with Oliver's wants at world w_c , he watches *Sword and the Stone*.

- (1) a. Oliver: I want to watch *Sword and the Stone*. (BNC KDE 1917)
- b. $\forall w.[\text{BOUL}_s(w)(w_c) \rightarrow \text{watch-Sword-and-the-Stone}(s,w)]$ (s: speaker, w: world, w_c : actual world, BOUL_x : bouletic accessibility relation of the individual x)

From the perspective of decision making, if the speaker is the agent of wanting something, the speaker is the single decision maker regarding her preference. If the first person plural *we* wants something unanimously, the group members including the speaker are the decision makers as in (2b).

- (2) a. Oliver: We want to watch *Sword and the Stone*.
- b. decision maker = {I, hearer}

Even when Oliver wants something different, the want Bill's desire remains unaffected, in (3).

- (3) a. Oliver: I want to watch *Sword and the Stone*
Nicola: Hm
Bill: Yes and *Pinocchio* and *Scooby Doo* and *Robin Hood*
Oliver: I don't like
Bill: And *Batman* and *Robin* and *Rescuers* and *Ghostbusters*.
(BNC KDE 1917-1920)
- b. decision maker = {Bill}
- c. $pP_b s \wedge sP_o p \rightarrow pPs$ (p: *Pinocchio*, s: *Sword and the Stone*, b: *Bill*, o: *Oliver*, $xP_i y$: x is strictly preferred to y by i)

In contrast, the decision maker of deontic modals such as *must*, *should*, and *ought to* differs from the attitude holder. Traffic laws are imposed on public by the lawmakers: therefore, the decision makers are not drivers but a lawgiver in (4). If a teacher decides that Oliver should submit a homework, she is the decision maker of the deontic modal, in (5). The decision that Oliver should study Spanish may be imposed due to the linguistic situation of people in Chile in (6).

- (4) a. We should follow traffic lights.
 b. decision maker = $\{x: \text{lawmaker}(x)\}$
- (5) a. Oliver should submit her homework.
 b. decision maker = $\{x: \text{instructor-of-Oliver}(x)\}$
- (6) a. Oliver should study Spanish, to communicate in Chile.
 b. decision maker = $\{X \subseteq \text{people in Chile}\}$

2 Previous Analyses

(van der Auwera and Plungian 1998) classify participant-internal and participant-external modality. Ability modal like *can* and necessity modals like *need* are participant-internal—the ability and necessity originates in the participants. Even though volition or bouletic modality are excluded from the core of modality, bouletic modality appears to be participant-internal. In *Mary wants to play the piano*, the desire originates in the attitude holder *Mary*.

3 Incorporating Decision Makers

Now that bouletic and deontic modals depend on decision makers, the accessibility relations between possible worlds depend on decision makers. When the group preference is involved, the group members' social decision is reflected.

- (7) a. Oliver wants to watch *Sword and the Stone*.
 b. $\forall w. [\text{BOUL}_o(w)(w_c) \rightarrow \text{watch-Sword-and-the-Stone}(o)(w)]$
- (8) a. We want to watch *Robin Hood*.
 b. $\forall w. [\text{BOUL}_{s,h}(w)(w_c) \rightarrow \text{watch-Robin-Hood}(s,h)(w)]$ (s: speaker, h: hearer)
- (9) a. Oliver should submit homework.
 b. $\forall w. [\text{DEON}_i(w)(w_c) \rightarrow \text{submit-homework}(o)(w)]$

Such incorporation of modal judges may be reminiscent of (Stephenson 2007)'s analysis on epistemic modality, built on (Lasertsohn 2005) on predicates of personal taste such as *fun* and *tasty*. I further claim that bouletic and deontic modals have decision makers. It is related to (von Finckel 1999) who incorporates the wanter argument α (cf. Kratzer 1981, Heim 1992).

4 Social Choice

Group decision is a social choice (Arrow 1963, Sen 1979, Chevaleyre et al. 2007). The social choice function SCF returns a single choice, which is going to a movie. The decision may not be unanimous but follows Pareto principle, in that when nobody has contrary preference, the mass decision agrees with individual's preferences.

- (10) a. decision makers $I = \{o, b, n\}$
 b. alternatives $\chi = \{\text{Sword and the Stone, Pinocchio, Robin Hood}\}$
 c. A profile, a vector of linear orders, or preference $R = (R_o, R_b, R_n) \in L(\chi)^3$
 d. Social Choice Function $\text{SCW}(L(\chi)^3) = \{\text{Sword and the Stone}\}$

Also Independence of Irrelevant Alternatives is adhered because the relative ranking between *Pinocchio* and other alternatives only matters to the group decision even with cyclicity.

- (11) a. $sR_o pR_o r \wedge sR_b pR_b r \rightarrow sRpRr$
 b. $sR_o bR_o pR_o r \wedge bR_b sR_b eR_b h \rightarrow sRpRr$

The domain of the Social Choice Function should be restricted because the order may not be transitive. Subjective and personal preference can order alternatives cyclicly and intransitively as in (12a). Moreover, some elements in the domain may not be connected with preference relation. Some movies may not be compared with other movies. The utterance (12b) is perfectly plausible.

- (12) a. I want to watch *Sword and the Stones* more than *Scooby Doo*. I want *Scooby Doo* than *Robin Hood* but *Batman* to *Sword and the Stones*.
 b. I like *Sword and the Stones* better than *Pinocchio*. I do not know about the *Rescuers*.

Thus, deontic/bouletic modals have decision makers and bouletic modal is participant-internal. Bouletic modality can be intransitive and disconnected even though Pareto condition and IIA applies, in harmony with Arrow's Impossibility Theorem.

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