A deontic-pragmatic interpretation of *obligationes*

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Obligationes provide a model of rational discursive practices, in particular concerning the management of one's discursive commitments.

1   GOGAR

R. Brandom 1994, *Making it Explicit*, Chap. 3.

- **'The game of giving and asking for reasons'**: language use and language meaningfulness can only be understood in the context of social practices articulating information exchange and actions.

- **Commitment**: the making of an assertion creates the commitment to defend it, i.e. to have had good reasons to make it. One is also committed to everything that follows from the original assertion.

- **Entitlement**: for a speaker S to be entitled to asserting a given content amounts to S being in the position to offer grounds that justify belief in the content, and thus the making of the corresponding assertion.

"Commitment and entitlement correspond to the traditional deontic primitives of obligation and permission." [Brandom, 1994, 160]

2   *Obligationes* in a nutshell

An *obligatio* disputation can be represented by the following tuple:[1]

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[1]This presentation essentially follows my previous work formalizing *obligationes* in [Dutilh Novaes, 2005] and [Dutilh Novaes, 2007, chap.3]. It has been recently pointed out

$$Ob = < K_C, \Phi, \Gamma, R(\phi) >$$

- K_C is the state of common knowledge of those present at the disputation supplemented by the *casus*.

- Φ is an ordered set of sentences, namely the very sentences put forward during the disputation.

- Γ is an ordered set of sets of sentences, which are formed by Respondent's responses to the various ϕ_n.

- $R(\phi)$ is a function from sentences to the values 1, 0, and ?, corresponding to the rules Respondent must apply to reply to each ϕ_n.

The rules for the *positum* are:

- $R(\phi_0) = 0$ iff $\phi_0 \Vdash \bot$

- $R(\phi_0) = 1$ iff $\phi_0 \nVdash \bot$

The rules for the *proposita* are:

- Pertinent propositions: $\Gamma_{n-1} \Vdash \phi_n$ or $\Gamma_{n-1} \Vdash \neg\phi_n$

  - If $\Gamma_{n-1} \Vdash \phi_n$ then $R(\phi_n) = 1$
  - If $\Gamma_{n-1} \Vdash \neg\phi_n$ then $R(\phi_n) = 0$

- Impertinent propositions: $\Gamma_{n-1} \nVdash \phi_n$ and $\Gamma_{n-1} \nVdash \neg\phi_n$

  - If $K_C \Vdash \phi_n$ then $R(\phi_n) = 1$
  - If $K_C \Vdash \neg\phi_n$ then $R(\phi_n) = 0$
  - If $K_C \nVdash \phi_n$ and $K_C \nVdash \neg\phi_n$ then $R(\phi_n) =?$

The sets Γ_n formed at each round can be seen as models of the successive stages of **discursive commitments** undertaken by Respondent at each reply. The sets Γ_n are defined as follows:

[Uckelman, 2010b, p.3] that this formalization is not "very satisfying" for different reasons, e.g. because it does not allow for a full computer-implementation of the *obligationes* framework. As will become clear, I now also think there are problems with this formalization; but given the present purposes (which are geared towards a conceptual analysis of the framework), this formalization has the virtue of simplicity, and it is sufficient to make the points I wish to make.

- If $R(\phi_n) = 1$ then $\Gamma_n = \Gamma_{n-1} \cup \{\phi_n\}$

- If $R(\phi_n) = 0$ then $\Gamma_n = \Gamma_{n-1} \cup \{\neg\phi_n\}$

- If $R(\phi_n) = ?$ then $\Gamma_n = \Gamma_{n-1}$

3 *Obligationes* as a normative model of rational discursive practices: discursive commitment

- The interpretation of *obligationes* as games of consistency maintenance had as its main limitation the fact that it did not provide a full account of the deontic aspect of the framework—of what being *obliged* to a certain statement really consists in.

- The obligational framework is prescriptive, not descriptive.

- *Obligationes* deal fundamentally with the notion of commitment.

- But one is not only committed to assertions explicitly made; commitment— obligation—transfers over by means of inferential relations.

- If respondent is committed to ϕ_n on account of having granted it, and ϕ_n implies ϕ_m, then respondent is also committed to ϕ_m and thus must grant it if it is proposed.

- Now, since respondent is always committed to at least one sentence, the *positum*, this first commitment sets the whole wheel of commitments in motion.

- So an *obligatio* is not only about logical relations between sentences and consistency maintenance; more importantly, it is about deontic states of discursive commitments and the (intrapersonal, intercontent) mechanisms of transfer of commitment.

- An *obligatio* is something of a *Sprachspiel* for the phenomenon of inferential transmission of discursive commitment, a simplified model whereby some of its properties can be made manifest.

- In practice, this model of discursive commitment management proves to be particularly suitable for the management of *theoretical* commitments in the context of scientific discourse.

4 The logic of doubting

- My own previous formalization ([Dutilh Novaes, 2005] and [Dutilh Novaes, 2007, chap.3]) did not handle doubting very well, as moves corresponding to a sentence being doubted were effectively not registered by the formalism; it is as if they had not taken place at all.

- But doubted sentences constrain the responses to future sentences available to Respondent in much the same way as granted or denied sentences, albeit by different principles.

- Principles for *dubitatio*:[2]

    One must respond to the *dubitatum*, what is equivalent to it, what is contradictory to it, what is false and follows from it, and what is true and implies it, by saying one is in doubt. [Burley, 1988, 5.05]

    This last consequence is good, and the antecedent is in doubt for you; therefore, the consequent is not to be denied by you. [Kilvington, 1990, sophism 48, p. 135]

    For everything antecedent to the *dubitatum* the response must be "false" or "prove!" and never "true". Nicholas of Paris, in [Braakhuis, 1998, p. 224]

    For everything consequent to the *dubitatum* it is possible to reply "it is true" or "prove!" and never "it is false". Nicholas of Paris, in [Braakhuis, 1998, p. 224]

- If one has doubted the antecedent of a valid consequence, then one must not *deny* the consequent, as denying the consequent would be tantamount to being in a position to deny the antecedent, which cannot be the case given that the antecedent had to be doubted.

- If one has doubted the consequent of a valid consequence, then one must not *grant* the antecedent, as granting the antecedent would be tantamount to being in a position to grant the consequent, which cannot be the case given that the consequent had to be doubted.

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[2]The quotations by Nicholas of Paris have been translated by S. Uckelman in [Uckelman, 2010a].

- If a given sentence has been doubted, then its contradictory must be doubted too, as having a definite response to the contradictory (either grant or deny) would entail having a definite response to the original sentence, which is again not the case.

- I am not so much concerned with historical accuracy (i.e. the differences between *positio* and *dubitatio*)[3], but rather with trying to capture the impact of the speech-act of doubting in terms of discursive committments, and how it interact with the pragmatic effects of other speech-acts.

- Following a suggestion by R. Strobino in [Strobino, 2009, section 1.4], let us introduce another ordered set of sets of sentences Δ alongside with the original Γ.

- While the different Γ_n belonging to Γ register the definite responses (granting and denying), the different Δ_n belonging to Δ will register the doubting responses.

- It will also prove to be useful to adapt the notion of pertinent sentences.

Thus, an *obligatio* now corresponds to the following tuple:

$$Ob = < K_C, \Phi, \Gamma, \Delta, R(\phi) >$$

New definition of pertinent sentences: ϕ_n is pertinent iff

- $\Gamma_{n-1} \Vdash \phi_n$ or

- $\Gamma_{n-1} \Vdash \neg\phi_n$ or

- $\phi_i \in \Delta_{n-1}$ and $\phi_i \Rightarrow \phi_n$ or

- $\phi_i \in \Delta_{n-1}$ and $\phi_n \Rightarrow \phi_i$ or

- $\neg\phi_n \in \Delta_{n-1}$.

Additional rules for the 'new' pertinent sentences:

- If $\phi_i \in \Delta_{n-1}$ and $\phi_i \Rightarrow \phi_n$, then $R(\phi_n) = 1$ or $R(\phi_n) = ?$

- If $\phi_i \in \Delta_{n-1}$ and $\phi_n \Rightarrow \phi_i$, then $R(\phi_n) = 0$ or $R(\phi_n) = ?$

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[3]Specifically on *dubitatio*, see [Uckelman, 2010a]

- If $\phi_n \in \Delta_{n-1}$, then $R(\neg\phi_n) =?$

Δ_n sets and Γ_n sets:

- If $R(\phi_n) = 1$ then $\Gamma_n = \Gamma_{n-1} \cup \{\phi_n\}$ and $\Delta_n = \Delta_{n-1} * \{\phi_n, \neg\phi_n\}$

- If $R(\phi_n) = 0$ then $\Gamma_n = \Gamma_{n-1} \cup \{\neg\phi_n\}$ and $\Delta_n = \Delta_{n-1} * \{\phi_n, \neg\phi_n\}$

- If $R(\phi_n) =?$ then $\Gamma_n = \Gamma_{n-1}$ and $\Delta_n = \Delta_{n-1} \cup \{\phi_n\}$

Adapted Kleene-style matrices for conjunctions and disjunctions mixing elements from Γ sets and Δ sets:

$\wedge$	Grant	Doubt	Deny
Grant	Grant	Doubt	Deny
Doubt	Doubt	Doubt	Deny
Deny	Deny	Deny	Deny

$\vee$	Grant	Doubt	Deny
Grant	Grant	Grant	Grant
Doubt	Grant	Doubt	Doubt
Deny	Grant	Doubt	Deny

Some restrictions should be in place for conjunctions and disjunctions of the form $\phi \vee \neg\phi$ and $\phi \wedge \neg\phi$.

- The obligational logic of doubting shows that the speech-act of doubting has significant repercussions for one's deontic states of discursive commitments; its effect cannot be reduced to that of granting or denying.

- Announcing that you do not know something is announcing a substantial piece of information!

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