

## 1 Modals and *ought*

### 1.1 The English modal auxiliary system

1. Two primary dimensions
  - (a) Dualizability: autodual ( $M = \neg M \neg$ : *will* and *would*); allodual ( $M \neq \neg M \neg$ )
  - (b) Tense: present (ps: ‘modal perspective’ = ‘contextual perspective’); past (ps: ‘modal perspective’  $\neq$  ‘contextual perspective’)—Partee-style
    - Themselves bearing tense, MAs act syntactically on tenseless VPs
2. Among alloduals, two secondary dimensions
  - (a) Height: lower ( $\Box$ -like:  $M\varphi \vdash \neg M\neg\varphi$ ); upper ( $\Diamond$ -like:  $\neg M\neg\varphi \vdash M\varphi$ )
  - (b) Tonicity: isotonic (‘strong’); antitonic (‘weak’)
3. Focusing on alloduals, we have these *tense-variants* (ordered ⟨pres, past⟩):
  - (a) Isotonic
    - i. Lower: ⟨*mote* (Page et al. 1970, side 1, leadout groove), *must*⟩
    - ii. Upper: ⟨*can*, *could*⟩
  - (b) Antitonic
    - i. Lower: ⟨*shall*, *should*⟩
    - ii. Upper: ⟨*may*, *might*⟩

### 1.2 Is *ought* a modal?

4. *Ought* is not an MA
  - (a) Syntactically, *ought* is an INF-clause operator
  - (b) Despite carrying lower-modal connotations, no upper-modal partner is realized in English; nor is any tense-variant
  - (c) Etymologically, it derives from *owe* and *own* (an eccentricity casting doubt on the assertion of cross-linguistically widespread synonymy with *ought*)

5. Although the mathematical study of artificial operators roughly paraphrasing *ought* was a starting point of deontic logic (von Wright 1953), a full assessment of this move has not yet been triggered by the subsequent (Kratzer 1977) transition to empirical study of natural operators (for some foundational worries, see Hellie 2016b, 284n6)
6. Perhaps ‘the logic of *ought*’ will not ‘seem so unruly’ (1) without the starting assumption that it shares common semantic structure with MAs
  - (a) In light of its syntax and etymology, a better starting point might be INF-clause operators like *try*, *intend*, or *seem*
  - (b) Or perhaps a quasi-polysemy, with *oughta* a re-pronunciation of *should*

### 1.3 Does Boylan think *ought* is a modal?

7. On the one hand, *ought* is not discriminated from *should*, which is an MA
8. But on the other, the proposed mixing of ‘upper’ and ‘lower’ meaning is uncharacteristic of modals
  - (a) Roughly, *ought*- $\varphi$  is analyzed as ‘some best proposition entails  $\llbracket\varphi\rrbracket$ ’ (for modals as quantifiers over propositions, compare Hellie 2016a, IV, in particular 443ex(23a), 444ex(26)ff; and Hellie 2016b, sec. 8; 285n12)
  - (b) But the existential is ‘upper’ ( $\neg\exists p\neg\Phi(p) \vdash \exists p.\Phi(p)$ ), while entailment is ‘lower’ (relative to *consistency*: if  $p \subseteq q$ , then  $p \not\subseteq \neg q$  aka  $p \cap q \neq \emptyset$ )
  - (c) In consequence, the analysis predicts that neither of *not-ought-not*- $\varphi$  nor *ought*- $\varphi$  entails the other (compare:  $\exists y\forall x.\varphi$  and  $\neg\exists y\forall x.\neg\varphi$  are orthogonal)
  - (d) The unattestedness of such ‘height-mixing’ elsewhere in natural language suggests that no NL expression with the proposed meaning could exist
  - (e) Pervasive duality in the ‘logical’ natural language lexicon (connectives; quantifiers; MAs) suggests that any expression forming a semantic natural kind with allodual modals must also have a duality partner
9. With synonymous *should* and *ought* and *ought* dual to nothing, *should* and *might* are not duals; with tense not affecting height, nor are *shall* and *may*—strangely

## 2 The status of AGGLOMERATION

10. M-AGGLOMERATION:  $M\varphi; M\psi \vdash M.\varphi \wedge \psi$  (M distributes over  $\wedge$ )
11. Boylan: *ought*-AGGLOMERATION is valid for ‘deontic’ but not ‘epistemic’ uses

### 2.1 Epistemic AGGLOMERATION

12. Concerning epistemic uses, Boylan appeals to *preface sets* of sentences ‘each of which we expect to be true, but whose conjunction we do not’
  - (a) Apparently to endorse *Ann oughta be here* is to expect *Ann is here*
  - (b) And, simplifying THE OFFICE, let’s endorse *Ann oughta be here*, *Bob oughta be here*, and *Cal oughta be here*—Boylan claims that we need not endorse *Ann, Bob, and Cal oughta be here*
13. A case against *preface sets*
  - (X) To ‘expect’  $\varphi$  is to think  $\varphi$  holds if nothing neglected is the case
    - (a) So we think that *Ann is here* holds if nothing neglected is the case, that *Bob is here* holds if nothing neglected is the case, and that *Cal is here* holds if nothing neglected is the case
    - (b) So suppose nothing neglected is the case: then *Ann is here* holds, and *Bob is here* holds, and *Cal is here* holds; so *Ann, Bob, and Cal are here* holds
    - (c) So we think that *Ann, Bob, and Cal are here* holds if nothing neglected is the case—so we endorse *Ann, Bob, and Cal oughta be here*
14. But perhaps to ‘expect’  $\varphi$  is less demanding than (X) maintains
  - (a) Boylan likes Lockeanism (expectation as above-threshold credence)
  - (b) Antiprobabilists can weaken (X) by *most*-quantifying over ways of neglect:
    - (X<sup>-</sup>) To ‘expect’  $\varphi$  is to think that, over a certain range of distributions of neglect, for most of those distributions,  $\varphi$  holds if nothing neglected under that distribution is the case
15. Even if *oughta* and *should* allow *preface-sets*, *shall* seems not to: why?

### 2.2 Deontic AGGLOMERATION

I *must* finish this chapter—and here I am, working away. To type this sentence, as I am doing, I *must* push the hyphen key three times—lo and behold, I just did it. Conversely, although I surely *should* donate a lot more to causes fighting the prison-industrial complex, and doubtless *oughta* do much more on behalf of ending fossil-fuel use, I will not do either (hey, nobody’s perfect!).

The link between ‘must’ and intentional action appears tight. Whatever one thinks one must do (whether important or trivial), one does. More cautiously—one might be stymied, after all—one acts with the *intention* of doing it.

Indeed, among the English modal auxiliary verbs I understand, the connection appears uniquely tight. What one thinks one *can*, *could*, *may*, *might*, *should*, or *would* do (whether important or trivial), one often enough does not even try to do; and much of what one *will* do, one won’t do intentionally. (Hellie 2016b, 283)

16. So neither *should* nor *oughta* (deontically) agglomerates: there is too much stuff I think I *should* and *oughta* do for imperfect me to ever do, as I well recognize
17. Boylan I: that’s *ought to do*, where what I have in mind is *ought to be*; but
  - (a) This is ‘monster-barring’, and undermines the presupposition that *ought* is a modal
  - (b) *Ought to be*-talk requires forcing (Boylan’s examples attest to this)
  - (c) I do not see how to get *should do* versus *should be* off the ground
  - (d) When we force *ought to be* talk, it acts the same: ‘although there ought to be perfect streets, and there ought to be all the subways we need, and there ought to be enough social housing for all the homeless and under-housed and house poor, and there ought to be unbridled freedom of entrepreneurship, and there ought to be perfect autonomy and complete tolerance for personal expression, and there ought to be dedication to preserving order and tradition—there is no way for all that stuff to happen; so because *ought* implies *can*, it is not the case that all that stuff ought to happen’
18. Boylan II: *ought* guides action, and we need our actions to be consistent; but
  - (a) This is in significant tension with the banishment of *ought to do*
  - (b) It is neither *ought* nor *should* which guides action, but rather *must*
  - (c) Better (Hellie 2018, 4.1), *imperatives* guide action (obligative *must* crams imperatives into declarative format: Hellie 2016a,b)
  - (d) As desired, *must* (like imperatives) does agglomerate
  - (e) *Shall* acts like *must*, guiding action and agglomerating

### 2.3 Boylan's analysis and AGGLOMERATION

19. The analysis represents *ought* as looking, on the outside, like a  $\diamond$ : *ought*-AGGLOMERATION is then invalidated as a general matter because there is no intuitive or theoretical motivation for  $\diamond$ -AGGLOMERATION
20. Still, when there is a unique best proposition  $p^\circ$ , the exterior  $\diamond$  goes away: then *ought*- $\varphi$  means ' $p^\circ$  entails  $[\varphi]$ ', and acts like the lower—and thus AGGLOMERATION-validating—modal rigidifying operator  $\nabla$  ('*Dart*': Hellie 2014, 259, Hellie 2016a, 443; compare Hellie 2016b, 316; and see Veltman 1996, Gillies 2001, Yalcin 2007)
21. Boylan uses an ingenious strategy to preserve the  $\diamond$ -like exterior of his *ought* for epistemic uses while revealing its  $\nabla$ -like interior for deontic uses—yielding the putative asymmetric validity of *ought*-AGGLOMERATION between epistemic (invalid) and deontic (valid) uses; the idea, more or less, is this:
  - (a) Let  $p$  and  $q$  be pairwise consistent, both discriminata of partition  $\pi$ : then  $\pi$  discriminates also their conjunction  $p \wedge q$ ; if  $p \not\subseteq q$ ,  $\pi$  discriminates also the set-difference  $p \setminus q$ ; and if  $q \not\subseteq p$ ,  $\pi$  discriminates also the set-difference  $q \setminus p$
  - (b) Let  $S$  be a set of pairwise consistent discriminata of  $\pi$  containing both  $p$  and  $q$ : if  $S$  contains  $p \wedge q$ , it contains neither set-difference
  - (c) For such a set  $S$  of  $\leq$ -best (least) discriminata: if  $p \wedge q \in S$ , then (i)  $p, q$ , and  $p \wedge q$  are  $\leq$ -alike, but (ii)  $p \wedge q < p \setminus q$  and  $p \wedge q < q \setminus p$  (in both cases assuming nonvacuity)
  - (d) Boylan requires that *ought*- $\varphi$  is defined only if the set of  $\leq$ -best propositions is pairwise consistent (his CONSISTENCY)
  - (e) He then maintains that, for deontic  $\leq$ : if  $a \subseteq b$ , then  $a \leq b$  with  $\leq$ -alikehood just if  $a$  and  $b \setminus a$  are  $\leq$ -alike: so, for  $S$  a set of deontically  $\leq$ -best discriminata for which *ought*- $\varphi$  is defined, if  $p, q \in S$ , then  $p \wedge q \in S$  (in which case if either set-difference is nonvacuous, it too is in  $S$ , contra (c-ii) just above—so they are both vacuous), requiring  $p = q$ : any set of deontically-best discriminata of a partition where *ought*- $\varphi$  is defined is a cell-singleton—revealing the  $\nabla$ -like interior
  - (f) But Boylan maintains also that, sometimes, for epistemic  $\leq$ : if  $a \subseteq b$ , sometimes  $b < a$ : so, for  $S$  a set of epistemically  $\leq$ -best discriminata for which *ought*- $\varphi$  is defined,  $p, q \in S$  but  $p \wedge q \notin S$ , permitting distinctness of  $p$  and  $q$ : sometimes, the set of epistemically-best discriminata of a partition where *ought*- $\varphi$  is defined sometimes contains several distinct discriminata—preserving the  $\diamond$ -like exterior

22. Key here is CONSISTENCY: strengthening to presuppose *setwise* consistency yields  $\nabla$ -like epistemics; weakening to permit inconsistent best-propositions permits  $\diamond$ -like deontics
23. What is the 'deep' explanation of this presupposition?
  - (a) For *at-most-pairwise*: because 'we do not want such a restriction for epistemics' (14)—not an explanation but a data-driven reason to posit
  - (b) For *at-least-pairwise*: because '*oughts* are supposed to be action-guiding' (14)—an explanation, despite its dubious presupposition and the ensuing sec. 7 monster-barring ... which, sadly, undermines the need for *semantically*  $\diamond$ -like epistemics ('multiple orderings': 27)

### 3 Where should semantics contact psychology?

24. Boylan affirms the credo of Carr, Charlow, and Lassiter that '[ (a) ] a semantics for *ought* should aim for deontic neutrality. [ (b) ] Best just to say various different sources of value can supply an ordering to the semantics when the context is right. [ (c) ] I trust our judgements of betterness in context to tell us how propositions are ordered deontically' (11)
25. What to make of these claims?
  - (a) Indeed
  - (b) Not 'best': *deontic* neutrality does not go far enough; better still to move meaning-structure from semantics to psychology, so far as compatible with data of various sorts (both linguistic and 'phenomenological')
  - (c) Less sanguine about this capacity: it is not obvious phenomenologically that conversation invariably demands keeping track of any deontic-betterness ordering; an approach with more phenomenological adequacy would be preferred (all else equal)
26. Return to Boylan's earlier-noted contention that preface sets are associated with *expectation*
  - (a) There is no doubt that we do expect things
  - (b) As noted, *epistemic* expectation does seem intuitively to yield preface sets; and the data are compatible with several theories of rational architecture
  - (c) But expectation is 'polymorphous', taking sometimes also a *deontic* form ('I expect you to take out the trash before dinner')

- (d) Perhaps there is a general component of rationality involving ‘expectational reasoning’, into which we might pipe either ‘theoretical’ or ‘practical’ considerations: in a given case of expectational reasoning, if  $p$  is among its output, one then bears the attitude of *expectation* toward  $p$
- (e) Sticking with  $(X)/(X^-)$ , epistemic v deontic expectation goes with epistemic v deontic neglect (ignoring possibilities v failing to take actions)
27. Perhaps antitonic modals (*shall–should*; *may–might*) just ‘express expectation’ (as suggested at Hellie 2016a, 412–13)
- (a) More specifically:
- i.  $\Box$ -es (*shall–should*) express entailment by expectation;  $\Diamond$ -s (*may–might*) express consistency with expectation
  - ii. pres-es (*shall, may*) express  $(X)$ ; past-s (*should, might*) express  $(X^-)$  (compare Boylan’s ‘multiple orderings’, 27)
- (b) Implement ‘express’ with semantic ‘tests of context’ (plus, to get  $(X^-)$ , pragmatic ‘endorsement-most-supervaluation’)
28. Some advantages
- (a) Predicts structural aspects of MA system
- i. Lower v upper is analyzed height-appropriately
  - ii. Present v past can be pegged to presupposed identification with v alienation from expectations considered (Partee-style)
- (b) Associates validity of M-AGGLOMERATION to present tense on M, invalidity to past tense, in line with intuitive data
- (c) Free from the troubled pairwise-consistency presupposition
- (d) No redundancy of rational architecture in linguistic meaning-structure
- i. Standardly, Kratzerian kit (the various indices dedicated to putative features of conversational psychology) is motivated by alleged embedding under ‘in light of what we want’ and such
  - ii. Not super-clear that this is compositional—plausibly instead metalinguistic/metaconversational
- (e) Predicts various contrasts between deontic antitonicity and obligative *must*
- i. ‘Pseudo-factivity’ (Ninan 2005; compare Hellie 2018, 7.4; on Boylan’s (47)–(48), compare Hellie 2016a, II.ii)
  - ii. Obligation–aspect effect (Ninan 2005, Hellie 2016a, 404, 412–13)
  - iii. Ross paradox (Charlow 2009, 31, Hellie 2016b, 286n15, 288–9n19; on *should/oughta*, compare Boylan sec. 8, contrast Cariani 2013; on *must*, contrast Boylan’s *must*-INHERITANCE, 26)

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