

Priority modality

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May 22, 2026

1 Introduction

Modal language allows us to talk about states of affairs other than the actual here and now. One dimension of variation concerns possibilities and necessities grounded in what is required by laws, moral principles, or the desires or goals of one or more agents. We can, for instance, use (1a) to describe an obligation resulting from Connecticut laws, (1b) to describe a moral obligation for Mary, or (1c) to describe something John is entitled to according to his supervisor’s plans for the day.

- (1) a. Car owners need to pay taxes.
- b. Mary ought to get her cat vaccinated.
- c. John can go home early today.

These cases exemplify **deontic** modality as concerned with laws, rules, regulations, or ethical considerations (from Ancient Greek *déon* ‘what is binding/proper’). In contrast, (2) employs **teleological** modality (from Ancient Greek *télos* ‘goal’) to convey necessary means and options for reaching a certain goal (for instance, arriving at McGill University).

- (2) You have to take the subway, and then you can walk.

Finally, **bouletic** modality (from Ancient Greek *boulē* ‘desire, wish’) may convey a desire on the part of the speaker, as in (3a), or may constitute an invitation based on what the addressee’s desires are assumed to be, as in (3b):

- (3) a. She has to be here!
- b. You should have a cookie.

To support the classification of a specific example, adverbial phrases like *in view of standards of good pet ownership*, *according to Connecticut State Law*, *in view of what you want*, . . . can be added to make explicit the intended interpretation. In the absence of overt modifiers, sentences often allow for various interpretations (for instance, we could also read (3b) as an instance of teleological modality relying on the addressee’s goal of sampling tasty foods, or (1a) as characterizing an internal urge experienced by car owners).

What deontic, teleological, and bouletic modality have in common is that they are somehow concerned with selecting best choices. Portner uses this intuition (“some choice is given

priority over another”, Portner 2007:355) to define an overarching class of **priority modality** as the third main **modal flavor** next to epistemic (see 7. EPISTEMIC MODALITY in this volume) and dynamic modality (covering circumstantial and ability modality; see 9. CIRCUMSTANTIAL AND ABILITY MODALS in this volume). In other works, ‘deontic’ (for Portner, a subflavor of priority modality) is sometimes used for the entire class of priority modals, or, absent a cover term for deontic, teleological, and bouletic modality, they are grouped together with dynamic modality under **root modality** (Hofmann’s 1966 term). A fourth category of priority modality, **deliberative** or **practical** modality, is sometimes added to the three standardly distinguished subflavors discussed above (see Sect. 3.3.3). Below, we will see the relevance of these categories for linguistic inquiry: the distinctions between different subflavors have repercussions both in the lexicon and in syntactic distinctions.

Our initial (1)–(3) use English modal verbs, many of which do duty across all three main modal flavors. As in the epistemic and dynamic domain, we find variation in the **modal force** (see 11. MODAL FORCE AND ITS REALIZATION ACROSS LANGUAGES in this volume) of priority modals. For instance, considering Mary and her cat, the deontic notion expressed with the **weak necessity modal** *ought* in (1b) is strengthened to an obligation with a **strong necessity modal** *have to* in (4a). von Stechow and Iatridou (2008) adduce felicity contrasts between sequences like (4b) and (4c) in support of a scalar relationship between these two kinds of necessity:

- (4) a. Mary has to get her cat vaccinated.
 b. Mary ought to get her cat vaccinated, but she doesn’t (actually) have to.
 c. #Mary has to get her cat vaccinated, but it’s not that she (actually) ought to.

In (5), the **possibility modal** *can* characterizes Mary’s getting the cat vaccinated as a course of events that is compatible with the relevant rules or guidelines.¹

- (5) Mary can get her cat vaccinated.

Differences in modal force are generally considered to be orthogonal to the ones in modal flavor, an assumption that may merit greater scrutiny in future research.²

As with other modal flavors, research on priority modality has focused primarily on modal verbs. Related concepts can, however, also be expressed by a large variety of other constructions. Languages differ in the extent to which they employ different form types to express priority modality. In English (and other well studied Indo-European languages) other forms are overshadowed by a rich system of (semi-)auxiliaries. In contrast, many of the most idiomatic markers for priority modality in Japanese or Korean are **conditional evaluative**

¹Portner’s characterization of priority modals applies less straightforwardly to possibility modals than to necessity ones; possibility modals do not serve to select a course of events as superior to another one. However, they also depend on ‘rules, desires, and goals [which] all serve to identify some possibility as better than, or as having higher priority than, others’ (Portner 2009:135) and convey that adopting the selected course of events is not superior to avoiding it. This reflects the standard assumption that (strong) necessity modals and possibility modals are **duals** (see Sect. 2.1; 3. FROM MODAL LOGIC TO MODAL SEMANTICS).

²I am, for instance, not aware of clear examples of bouletic possibility. Rubinstein (2012) and Yanovich (2014) discuss connections between weak and strong necessity modals and subflavors of priority modals.

constructions (see Sect. 5.2). Upon closer inspection, English, too, avails itself of a rich inventory of different modal expressions. Other constructions display systematic differences to the better studied modal (semi-)auxiliaries (such as greater restrictions on which flavors they may express). Studying them in more detail thus promises a deeper understanding of priority modality and modality in general. For instance, as shown in (6), priority modality can also be expressed by lexical verbs (23. MODALITY AND ATTITUDE VERBS in this volume), adjectives (16. MODALITY IN ADJECTIVES AND ADVERBS in this volume), or nouns with or without complement clauses:

- (6) a. You are { obligated / supposed / obliged / required / under an obligation } to be home by 7pm.
 b. Everyone is { allowed / permitted / has permission / has the right } to leave at 7pm.

Syntactic differences between individual constructions have been discussed as crucial for our understanding of the role of the subject (Sect. 3.2). Differences between the speech acts that can be carried out by sentences as in (6) versus by sentences with modal verbs promise insights into the interface between semantics and pragmatics (Sect. 4; 27. SPEECH ACTS AND MODALITY in this volume). Nouns like *permission* and *obligation* can be seen as evidence for enriching the semantic ontology beyond possible worlds and situations to include various types of modal objects (Sect. 3.3.2). Priority modality is conveyed also by comparative expressions like English (7a) and (8a) (Brennan 1993, her (55,56)), or by a main verb-like use of *would* as in (7c) (Brennan 1993, her (58)):

- (7) a. John would rather stay.
 b. I would rather you didn't tell her about it.
 c. I would that it were so.

While (7a)–(7c) express bouletic modality, *better* as in (8a) expresses deontic or teleological concepts. The similar-looking Japanese *hoo ga ii* ‘better’ in (8b) is one of the language’s most idiomatic markers of teleological modality (Narrog 2009; Mizutani and Ihara 2021, a. o.).

- (8) a. You better leave now.
 b. Kimi-wa basu-de iku hoo ga ii.
 you-TOP bus-by go direction NOM good
 ‘It is better for you to go by bus.’/‘You should go by bus.’ Mizutani and Ihara (2021:(6))

Some such comparative constructions involve remoteness markers that appear also in hypothetical conditionals (X-marking, von Stechow and Iatridou 2023). X-marking plays a role specifically in the derivation of weak necessity expressions (11. MODAL FORCE AND ITS REALIZATION ACROSS CATEGORIES; von Stechow and Iatridou 2008; Rubinstein 2020; but see Ferreira 2023). These effects are, however, not limited to priority modality. Studying the effects of X-marking across modal flavors and looking for communalities at a more abstract level promises important insights in our understanding of natural language modality in general. However, some effects of X-marking seem idiosyncratic, as Kratzer (1981) observes

for German *dürfen*. While the indicative serves as a possibility priority modal, cf. (9a), the subjunctive (X-marked form) is ambiguous between hypothetical possibility priority (9b-R1) and weak epistemic necessity with inferential evidential character (9b-R2).

- (9) Hans {a. darf /b. dürfte } daheim bleiben.
Hans DARF.IND DARF.SBJ at.home stay.INF
a. Hans {may/is allowed to} stay at home.
b. R1: ‘(Under those circumstances) Hans would be allowed to stay at home.’
R2: ‘It looks like Hans will stay at home.’

The indicative version (9a) has only a deontic reading; the additional teleological reading observed by Kratzer (2012) is available only in the presence of negation:

- (10) Wir dürfen hier {a. – / b. nicht } aussteigen.
we DARF.1PL.IND here not get.off.IND
a. only: ‘We are allowed to get off here.’
b. R1: ‘We are not allowed to get off here.’
R2: ‘(In light of our goal), getting off here is not an option.’

Building on English, Hindi-Urdu, Czech and Hebrew, Rubinstein (2012) discusses systematic interactions between priority subflavors and syntactic properties. Strong necessity modals that can take both what she identifies as verbal vs. nominal (DPs, subjunctive CPs, *for*-CPs) complements allow for deontic or teleological readings in the former, but only teleological readings in the latter. For instance, only (11a) (containing a verbal complement) can be used if two neighbors would prefer to not have a fence but find themselves obligated to put one up by city regulations; the nominal complement in (11b) and the (*for*)-*to*-infinitival in (11c) suggest that having a fence is a goal of the plural subject referent.

- (11) a. We need to put up a fence.
b. We need a fence.
c. We need (for) there to be a fence.

Data along these lines are interesting for at least two reasons. On the one hand, they emphasize the need to distinguish subflavors of priority modality. While deontic modality seems hard to tease apart from teleological modality under a goal of ‘staying within the range of what is permissible’ (Finlay 2009; Hacquard 2006), effects as in (7)–(11) support the linguistic relevance of the distinction. On the other hand, examples like (10) and (11) provide insights into the interaction of priority modals with grammatical categories like negation (21. MODALS, NEGATION, CONCORD AND POLARITY in this volume) and syntactic complementation (10. MODAL FLAVOR-SYNTAX INTERACTIONS in this volume).

This chapter aims to provide an overview of phenomena and accounts pertaining to various aspects of priority modality in natural language. I begin with a short introduction to the standard account in possible worlds semantics (Section 2), which strives to assign a uniform semantics across modal flavors, and I explain the specific settings of contextual parameters it assumes for priority modals. Section 3 discusses general challenges for this unified picture and specific assumptions which have been argued to account for the properties of individual subflavors of priority modality. Section 4 explores the extent to which modals used for non-

assertive speech acts (such as permissions and commands) require special provisions in their conventional semantics. Section 5 discusses an alternative to the quantificational standard semantics. While originally developed in the philosophical tradition, this alternative account receives support from linguistic data in languages other than English. Section 6 concludes by briefly mentioning topics this chapter cannot address in greater detail. With occasional pointers to alternative frameworks, I focus mostly on the analysis of modality in the standard (static) possible worlds framework (for dynamic semantic accounts, see 5. DYNAMIC SEMANTICS FOR EPISTEMIC MODALITY in this volume).

2 Standard interpretations for priority modality

2.1 Priority modality in classical modal logic

The investigation of priority modals in formal semantics builds on the framework of classical modal logic (3. FROM MODAL LOGIC TO MODAL SEMANTICS in this volume). In the simplest case, a propositional logic is enriched by a one-place modal operator $\Box$ representing necessity and, for convenience, its dual $\Diamond$ representing possibility to yield modal propositional logic $\mathcal{L}_M$. A possible worlds semantics for this language is given as a model M that builds an interpretation function I on a frame, a pair of a non-empty set of possible worlds W and an accessibility relation $R \subseteq W \times W$. The fragment of $\mathcal{L}_M$ that does not contain occurrences of $\Box$ and $\Diamond$ is interpreted like standard propositional logic at each $w \in W$; clauses for possibility and necessity are added as in (12):

- (12) a. $\llbracket \Box \phi \rrbracket^{M,w} = 1$ iff for all worlds w' s.t. wRw' , $\llbracket \phi \rrbracket^{w'} = 1$.
 b. $\llbracket \Diamond \phi \rrbracket^{M,w} = 1$ iff there is a world w' s.t. wRw' and $\llbracket \phi \rrbracket^{w'} = 1$.

This system provides an analysis for priority modals of necessity, such as *must*, *have to* and of possibility, such as *may*, if their translations introduce $\Box$ and $\Diamond$, respectively. Additionally, R must be chosen to relate worlds to either other worlds which verify all that is required by relevant laws or moral principles, or worlds where, for the agent(s) of interest, all goals are reached or all desires realized. Suitable constraints on the accessibility relation characterize principles desired specifically for priority modalities. For instance, usually, what is commanded is also permissible. To ensure this, R can be required to be **serial**³, which corresponds to the validity of schema D ($\Box \phi \rightarrow \Diamond \phi$). In contrast, schema T ($\Box \phi \rightarrow \phi$) is generally not considered valid for priority modalities, meaning that their accessibility relations tend to not be reflexive.

Classical modal logic predicts that conjunctions of conflicting possibilities can be contingent, while (with seriality) conjunctions of conflicting necessities are contradictions:

- (13) a. $\Diamond \phi \wedge \Diamond \neg \phi$
 b. $\Box \phi \wedge \Box \neg \phi$

The possibility to make true (13a) is clearly desirable; (13b), however, appears to be the translation of at least some sentences with priority modals that are intuitively true (von

³Relation $R \subseteq W \times W$ is serial iff for all $w \in W$ there is w' s.t. wRw' (“no dead ends”).

Fintel 2012 for discussion and references). Further problems arise for the interaction of priority modals with disjunction: sentences like (14) are often interpreted as entailing the possibility of either disjunct (**free choice**; von Wright 1968; Kamp 1973; 24. MODALITY, DISJUNCTION, AND FREE CHOICE in this volume):

- (14) You may take an apple or a pear.
 a. $\Rightarrow$ You may take an apple.
 b. $\Rightarrow$ You may take a pear.

These inferences are not valid in classical modal logic. While not restricted to priority modality, they play a significant role in the investigation of many topics discussed in the following (Sect. 3.3.2, 4). The issues with logical connectives mentioned here persist also in **doubly relative modality** as introduced below (also 4. THE CONSTRUCTION OF MODAL DOMAINS–THE KRATZERIAN VIEW in this volume).

2.2 The standard framework for priority modality in linguistics

Kratzer’s work as developed in (1976; 1978; 1977; 1981; 1991; 2012, a.o.) constitutes the standard approach to modality in linguistics. It builds on the logical tradition but implements a series of modifications many of which are motivated and developed specifically against the backdrop of priority modality. First, in the standard modal logic setting, accessibility relations are independent from facts in the individual worlds. If possible worlds are considered as primitive, two numerically different but factually identical worlds (i.e., worlds that verify the same atomic propositions) could be distinguished solely in terms of what is accessible from them. In contrast, Kratzer derives accessibility (the domain of quantification) from **conversational backgrounds**, functions from worlds to sets of propositions. For instance, the deontic conversational background corresponding to Connecticut State Law is a function f from worlds w to sets of propositions P such that P contains the content of the Connecticut State Law in w . The corresponding accessibility relation R^f for any such conversational background f can be obtained as $R^f := \{\langle w, w' \rangle \mid w' \in \bigcap f(w)\}$ (Kratzer 1991). By their very nature (or in a suitable model of interpretation), the values of conversational backgrounds correlate with non-modal properties of the individual worlds. Kratzer moreover treats modals as sensitive to whatever conversational background(s) are salient in the context of the utterance. This allows her to avoid not only the broad ambiguity between epistemic, deontic, teleological, bouletic, and dynamic *must*, but also an infinite number of subtypes for each flavor (e.g., deontic *must* as reflecting Connecticut State Law, Massachusetts State Law, . . . , house rules at Ned’s, . . .); same for any other modals.

In Kratzer’s works, conversational backgrounds assign sets of propositions that are expressed without the use of modals. For instance, to represent the collected (and jointly inconsistent) recommendations the former principals of “a kind of University in the Maori Society” (Kratzer 1977, p. 352) have issued, she uses a set containing ‘The pupils practise striding and flying’ and ‘The pupils do not practise striding’. However, this point receives little to no explicit discussion and it is not clear if it is meant as a commitment of the theory. Theoretically, the move strikes me as crucial at least for some base cases: if conversational backgrounds are to elucidate the interpretation of modal verbs in the possible

worlds framework, their specification in the metalanguage cannot contain modals that are themselves still in need of interpretation (see also Sect. 3.3.3). However, Nauze (2008:163f) finds the move problematic for empirical reasons. To interpret (15), he pulls out the relevant provision in the Dutch law, which translates to (16), as well as (17) for the corresponding issue in Massachusetts general law (his (12) and (13), respectively).⁴

- (15) In the Netherlands, they may not sell cigarettes to people under 16.
- (16) Taaksweet, Article 8, alinea 1: It is forbidden to sell tobacco products to persons under 16.
- (17) Whoever sells a cigarette [...] to any person under the age of eighteen shall be punished by a fine of not less than one hundred dollars [...].

Both statements are modalized in themselves (*is forbidden*, *shall*,...), which suggests that actually existing bodies of laws cannot serve as repositories listing the content of the relevant conversational background. Instead, the legal texts themselves are made up from statements containing deontic expressions in need of interpreting. A conversational background reflecting ‘what the law provides’ does not contain the propositions expressed by the sentences in the legal text. Following Kratzer’s intuition, we have to reverse engineer a sequence of (unmodalized) propositions that describe what is the case in a deontically optimal world. While Nauze’s point does not strike me as damning criticism, it should be considered an incentive to make explicit the underlying assumptions and commitments associated with the concept of conversational backgrounds.

Simple relative modality as presented above relies on only one conversational background. It faces a series of problems stemming mostly from its failure to distinguish between **facts** and **ideals** (Portner 2009:62). Intuitively, what is selected as preferable typically depends on what the options are to begin with. In Kratzer’s framework, this distinction is reflected as sensitivity to (at least) two conversational backgrounds (**doubly relative modality**), which play different roles: a **modal base** (customarily indicated with meta-language variable f) assigns to each world a set of propositions that are true at this world, reflecting relevant facts or pieces of knowledge; an **ordering source** (customarily indicated with g) reflects stereotypes, laws, preferences, etc. and is used to rank worlds according to how well they correspond to them. The ranking induced by the ordering source g at a world w is standardly defined as the pre-order in (18a), which says that a world u is at least as good according to the content of g at w as world v if u verifies at least all those propositions in the set $g(w)$ that v verifies. This ordering allows us to select from the worlds compatible with the modal base at w (i.e., the worlds in $\bigcap f(w)$) those for which we cannot find strictly better ones, yielding the set $O(f, g, w)$ as defined in (18b).⁵

⁴Note that (17) appears to prohibit the selling of cigarettes to minors only indirectly by requiring that a specific punishment be imposed on anyone who does so. At least the current version (accessed June 09, 2025 on <https://malegislature.gov/Laws/GeneralLaws/PartIV/TitleI/Chapter270/Section6>), presents the equivalent of (17) after (i), a statement that explicitly bans selling tobacco to persons under 21:

- (i) No person shall sell or provide a tobacco product to a person who is under 21 years of age.

⁵Kratzer’s original semantics does not rely on sets of best worlds, thus allowing for infinite approximation to ideals. As the discussion in this chapter does not involve any such cases, I adopt this common simplifica-

- (18) a. $u \leq_{g(w)} v \text{ iff}_{def} \{p \in g(w) \mid p(v) = 1\} \subseteq \{p \in g(w) \mid p(u) = 1\}$
 b. $O(f, g, w) := \{u \in \bigcap f(w) \mid \forall v \in \bigcap f(w)[v \leq_{g(w)} u \rightarrow u \leq_{g(w)} v]\}$

Necessity modals like *must*, *have to*, *ought*,... express that $O(f, g, w)$ entails the prejacent; possibility modals like *can*, *may*,... express that the prejacent is compatible with $O(f, g, w)$ (see also 4. THE CONSTRUCTION OF MODAL DOMAINS–THE KRATZERIAN VIEW; 11. MODAL FORCE AND ITS REALIZATION ACROSS LANGUAGES in this volume).

Kratzer (1981, 1991) proposes that epistemic modals use epistemic modal bases (e.g., what the speaker knows, what the participants to the conversation know) paired with less reliable assumptions or stereotypes as the ordering source. She takes root modals to have circumstantial modal bases, functions that assign each world w a set of propositions that are true at w and represent relevant facts or circumstances. The choice of a circumstantial modal base is motivated in detail for circumstantial modals, which can zoom in on a relevant subset of all facts. This contrasts with epistemic conversational backgrounds, which arguably need to take into account the entire belief state of the relevant agent (9. CIRCUMSTANTIAL AND ABILITY MODALS in this volume). Like all other root modals, priority modals are assumed to rely on a circumstantial modal base, but pair it with a deontic, teleological, or bouletic ordering source, reflecting a body of rules, an agent’s goals, or an agent’s desires, respectively. Here, less discussion is offered to motivate the choice of modal base. However, intuitively, what is necessary to achieve one’s goals depends on what is the case, not on what one believes to be the case. Similarly, what is required by the law depends on the facts rather than the possibly limited knowledge of an agent.⁶ The need for a distinction between epistemic information and facts about the world can be seen clearly when modals are stacked as in (19).

- (19) a. We may have to take a left here.
 b. I’m not sure he can come along. He may have to do his homework.

Example (19a) is read naturally with epistemic possibility scoping over teleological necessity, (19b) as epistemic possibility over deontic necessity. On the most natural interpretation, (19a) describes a situation where the speakers are (i) sure of their goals (the relevant teleological background assigns the same set of propositions to all epistemic alternatives) and of what they do (not) know, but (ii) not entirely sure of the facts about the area they are navigating (different epistemic alternatives w are assigned different sets of propositions describing the relevant area in w). If the modal base of the embedded teleological modal were epistemic in nature, the variation across epistemic alternatives would be hard to explain.⁷

Doubly relative modality as dependent on a circumstantial modal base and a deontic, teleological, or bouletic ordering source has come to be the standard semantics for priority modals in linguistics. However, as pointed out by Kratzer (1991), the pairing of epistemic modals with epistemic modal bases and of root modals with circumstantial modal bases

tion, known as **Lewis’s Limit Assumption**. Following Kaufmann and Kaufmann (2015), I take it to mean that, for all worlds w , for each world $v \in \bigcap f(w)$ there is a $u \in O(f, g, w')$ s.t. $u \leq_{g(w)} v$; for discussion, see Kaufmann (2017).

⁶But see Sect. 3.3.3 for information sensitivity in deliberative modality.

⁷At least while upholding standard assumptions about knowledge and belief (7. EPISTEMIC MODALITY in this volume).

remains a stipulation. In Kratzer (2012), she abandons the distinction between epistemic and circumstantial modal bases; the worlds to be considered are identified as containing counterparts of the specific ‘epistemic or factual situation’ (the *anchoring situation*) that exists in the world of evaluation. The updated framework is couched in *situation semantics*, and what worlds are accessible for the interpretation of a given modal depends crucially on what properties of its anchoring situation are considered essential. Spelling out a fully predictive version of the idea constitutes a challenge reminiscent of the need to determine what propositions should appear in a circumstantial modal base (for discussion of the latter point, see 9. CIRCUMSTANTIAL AND ABILITY MODALS in this volume). Hacquard (2006, 2009) attempts to maintain the distinction between epistemic and circumstantial modal bases, while deriving the choice from independent assumptions. Specifically, she takes modals to depend on events (rather than worlds or worlds at times; *event-relative modality*). Depending on a modal’s syntactic position in the sentence, different events become relevant: for modals merged high in a main clause, it is the utterance event; high in an embedded clause, the event described by the matrix predicate; when merged beneath aspect, the event introduced by the aspectual head and described by the verb phrase. What modal base a modal receives depends on what sort of event it combines with: speech events render salient both epistemic modal bases (epistemic modals) and circumstantial ones (performative priority modals, “true deontics”), ‘mundane events’ as described by any verb phrase render salient circumstantial modal bases. While generating certain combinations that are not generally available (see Hacquard 2009 and fn. 9), the account makes accurate predictions especially for the interactions of modal flavors with tense and aspect marking (18. TENSE AND MODALITY in this volume).⁸

3 Challenges for the unified standard account

The unified standard semantics in terms of doubly relative modality as laid out in Section 2.2 is successful in capturing the distinction between facts and ideals, as well in accounting for similarities in linguistic inventory and logical properities across modal flavors, yet it also faces a series of challenges. For one thing, not all languages agree with the better studied Indo-European systems of modality in using modal expressions across epistemic, priority, and dynamic modality (see 6. EMPIRICAL FOUNDATIONS OF MODALITY: EXPRESS-

⁸A crucial contribution of Hacquard’s work is the ability to account for *actuality entailments*. Like dynamic modals, priority modals (tend to) entail the truth of their prejacent when marked for perfective aspect, but not with imperfective aspect, see the teleological modal in (i) from Hacquard (2006) (her 38a,b):

- (i) Jane {a.a pu/b. pouvait} prendre le train pour aller à Londres, {a. #/b. ok} mais elle a
 Jane could-PFV/ could-IMPF take the train to go to London but she has
 pris l’avion.
 taken the plane

Hacquard derives the effect from the event relativity of modals together with assumptions about essential properties of events, i.e., properties (the counterparts of) events have across possible worlds. Other works on actuality entailments with dynamic modals rely on the causal networks speakers appear to impose on the eventualities under consideration (Nadathur 2019, 2025; Santorio 2025, a.o.). Developed mostly against the backdrop of dynamic modality, full-fledged extensions to priority modality await further research.

ING MODALITY ACROSS LANGUAGES in this volume). For instance, the modals of St’át’imcets (Lillooet Salish) are lexically specified for modal flavor, but not for modal force (Rullmann et al. 2008). Languages like Korean and Japanese tend to encode both modal force and modal flavor (Narrog 2009; Larm 2006; Kaufmann and Tamura 2020, a.o.). While such findings can be reconciled with the standard framework of doubly relative modality, they have been argued to diminish the elegance and appeal of the account (Nauze 2008). Other issues provide more specific challenges for the actual assumptions of the standard account. In Section 3.1, I briefly discuss a series of issues resulting from how priority modals interact with and compare to epistemic modality. Section 3.2 turns to the question of how priority modals relate to the agents whose actions they evaluate or constrain, and if they can be analyzed as the propositional operators the standard framework supplies. Section 3.3 discusses challenges specific to individual subflavors of priority modality.

3.1 Priority modals in interaction with other flavors

The standard approach distinguished epistemic and non-epistemic modals only in terms of the values assigned to context dependent parameters. This predicts that they should behave uniformly in their interactions with modals of the respectively other flavor and with other operators; at least to the extent that a specific combination cannot be excluded on conceptual grounds. Yet, epistemic modals tend to outscope other quantificational elements. Some modals take scope over tense and negation on their epistemic, but not their priority readings (e.g., English *may*). Minimally, the reverse is unattested. The finding that the restrictings against epistemic modals in the scope of negation or other quantifiers are not absolute suggests that conceptual conflicts cannot explain this behavior (Brennan 1993; Hacquard 2006; 10. MODAL FLAVOR-SYNTAX INTERACTIONS in this volume). Specifically, the unified treatment suggests that epistemic and priority modals should be able to appear in either order. However, while priority modals in the scope of epistemic modals give rise to natural sentences (e.g. (19b)), the inverse order is usually hard to make sense of.⁹ Nauze (2008) conjectures that it is ‘an unrestricted universal’ that epistemic modals outscope any non-epistemic ones. This finding is significant as deontic (particularly teleological and bouletic) modality is not conceptually banned from outscoping epistemic notions. Hacquard (2011) uses an example with teleological modality from unpublished lecture notes by von Fintel and Iatridou to make the case:

- (20) For the test costs to be reimbursed, it has to_{deontic} be possible_{epistemic} that the patient has Alzheimer’s.

The claim is that, at least in English, the same idea could not be expressed with modals. Von Fintel and Iatridou’s discussion suggests that the same restriction might not be operative in

⁹Unlike the standard account, which freely predicts the modals to appear in either order, Hacquard’s (2006) event relative account allows for epistemic readings only when a modal applies to an event that can supply epistemic content. Low scope for epistemics is predicted only if the main predicate characterizes events of that sort. For *Kitty may have to know it*, we would expect, following Hacquard’s account, that *may* can express deontic possibility with respect to the utterance event, *have to* entailment by Kitty’s belief state (roughly: ‘I grant permission that Kitty is in an epistemic state that entails the relevant piece of knowledge’). At least in English, the reading is unavailable.

German; (21) does allow for the reading in question at least marginally:

- (21) Damit die Kosten für den Test erstattet werden, muss der Patient
 in.order.to the costs for the test reimbursed get, must the patient
 Alzheimer haben können.
 Alzheimer's have can
 ?'The costs of the test can be reimbursed only if it is an epistemic possibility that
 the patient has Alzheimer's.'

Nauze (2008:176, his (28)) discusses and rejects the following German counterexample from Kratzer (1976:13-15):

- (22) Und auch in Zukunft muss diese Schnecke [...] Saugfüße haben können...
 and also in future must this snail suction.feet have might
 'And even in the future, this snail must possibly have suction feet.'

The example appears in the context of a despot imposing requirements on the information available in the future. Nauze (2008:177) maintains, "The second modal does not stand for the uncertainty of an agent (neither that of the speaker or that of the addressee of the obligation) as a typical epistemic modal would." He rejects the sentence as a counterexample, but stops short of providing an alternative classification of the embedded modal's flavor. It seems natural to argue that the embedded modal is epistemic in nature after all, and that assumptions about belief states and discourse participants force us to find a suitable value for the conversational background different from the ones automatically salient in any ongoing conversation (speaker and addressee). Cases where the laws or rules of deontic modality constrain the belief states of other individuals tend to be relatively marked. However, for all I can tell, with an elaborate enough background story, (22) can also be read such that the despot requests that someone ensure that he himself will never cease to believe in the snail's possibly having suction feet (*pace* Nauze 2008). Minimally, the German data should not be dismissed too quickly as counterexamples to Nauze's proposed universal, and a more careful crosslinguistic investigation remains called for.

3.2 Priority modals, subjects, and agents

The philosophical literature highlights a distinction between deontic modality that imposes a restriction on an agent (*ought-to-do*) and deontic modality that expresses an ideal as such, without there being anyone who is responsible or even able to bring about the relevant state of affairs (*ought-to-be*). Feldman (1986) argues persuasively against reducing the one to the other (against for instance Chisholm 1964).¹⁰ The linguistic literature is especially interested in establishing to what degree this distinction is reflected in syntax and compositional semantics.

Observations about syntactic differences between epistemic modals and root modals spur

¹⁰Following Brennan (1993), much of the linguistic literature credits Feldman (1986) for the terminology. The terms appear, however, at least in Chisholm (1964) as well as in Castañeda's (1970) systematic comparison, who contrasts his agency based logic of ought-to-do with classical modal logic as reflecting a notion of ought-to-be.

the idea that all root modals might be control constructions. In a sentence like (23), a control analysis would have the subject referent, as the bearer of the obligation, stand in a thematic relationship with the modal verb. Meanwhile, the thematic role available for the subject of *go to bed at 6pm* is associated with this individual through a co-bound empty category (*PRO*) in the subject position of the infinitival (10. MODAL FLAVOR-SYNTAX INTERACTIONS in this volume).

(23) Mary has to go to bed at 6pm.

A uniform analysis of priority modals as control constructions is rejected already by Brennan (1993), who argues that they can form both control constructions (like all dynamic modals) or raising constructions (like all epistemic modals). She shows that priority modals can combine with idioms (cf. (24a), her (26)) and expletive subjects (cf. (24b), her (24)), and allow for de dicto readings of their subject (cf. (25) from Wurmbrand 1999, her (17b)).

(24) a. Tabs may be kept on their spies.
b. There may be up to five cars in the lot at one time.

(25) An Austrian must win the next race (in order for Austria to have the most gold medals).

The phenomena illustrated in (24) and (25) are hallmarks of raising constructions, in which a propositional operator takes scope over the prejacent, and the subject does not enter into a thematic relationship with the higher predicate (here, the modal). As she herself admits, Brennan's arguments that some priority modals are control constructions are less compelling; they rest partly on a perceived synonymy with other expressions that are unambiguously control constructions (like *have a right to*). Additionally, Bhatt (1998) and Wurmbrand (1999) rely on case assignment patterns in Hindi and Icelandic, respectively, to argue that root modals are always raising constructions. Wurmbrand (1999) argues that this assumption is further supported by the interaction of modals with passivization. Their arguments settle the matter only for the specific elements in the specific modal flavors investigated. However, in the absence of strong positive evidence for cases where priority modals form control constructions, standard principles of economy in scientific theory compel us to assume that priority modals are uniformly raising constructions (e.g., Hacquard 2006).¹¹

Semantic considerations appear to suggest a special status for the subject in some priority modal sentences, be it as a syntactic control construction or in terms of an interaction with the modal's conversational backgrounds. Brennan (1993) points out that equivalences from symmetric predicates (cf. (26a)) persist under epistemic modals (as expected for propositional operators), but can disappear on the deontic reading:¹²

(26) a. The governor shook hands with the prisoner.
↔ The prisoner shook hands with the governor.

¹¹Kratzer (1991) presents patterns of implicit control into adverbial clauses as evidence in favor of control constructions for root modals. The issue has, to the best of my knowledge, not been pursued further in the subsequent literature.

¹²(26) is a modification of Brennan's original (37a,b) to eliminate a possible confound with collective readings.

- b. The governor may shake hands with the prisoner.
 R_{epi} : $\Leftrightarrow$ The prisoner may shake hands with the governor.
 R_{deo} : $\nrightarrow$ The prisoner may shake hands with the governor.

Moreover, quantificational subjects show that different and possibly mutually conflicting bodies of rules can be taken into account in covariation with a subject quantifier. Assuming that a race is supposed to have exactly one winner, (27) is still felicitous on the assumption that two children are such that according to their respective parents' requirements, or according to their respective goals of advancing to a particular level, a victory is necessary.¹³

- (27) Exactly two children {have/need} to win.
possible: 'Exactly two children x are such that x 's parents' requirements (deontic)/ x 's goals of advancing to the next round (teleological) entail that they win.'

Data along these lines suggest that modal accessibility relations (in the Kratzerian framework: conversational backgrounds), have to be accessible to quantifier binding. To capture cases along these lines, Portner (2009) suggests that either some priority modals are control constructions or that, following a suggestion by Hacquard (2006), these modals may combine with a covert pronoun which can be bound by the subject. If the first strategy is on the right track, the Hindi and Icelandic constructions tested by Bhatt and Wurmbrand should disallow effects as exemplified in (27); the second strategy makes no such prediction. However, both strategies single out the subject position as the source of co-varying conversational backgrounds. This would lead us to expect that conversational backgrounds cannot depend on quantifiers in non-subject positions. But, given a quick consideration of German (28) and the English translation as offered, this seems possible:

- (28) Für genau zwei Kinder muss das Rennen mit einem Sieg enden.
for exactly two kids must the race with a win end
'For exactly two kids, the race has to end in a win.'

If data like (28) can be corroborated, non-subject quantifiers can also bind into accessibility relations (or conversational backgrounds). Data like (27) would cease to provide evidence for a control construal of the priority modal.

The more recent philosophical literature proposes that the syntactic distinction between raising and control construals and the corresponding semantic one between propositional operators and relations between agents and actions (or properties) could draw a line between different subflavors of priority modality. Schroeder (2010) argues that *ought* sentences with non-expletive subjects are generally ambiguous between a raising and a control construal. The raising construal encodes *evaluative ought* as underlying cases like (29a); the control construal underlies *deliberative ought* as on the most straightforward reading for (29b). In contrast to evaluative *ought*, deliberative *ought* (i) can be used for advice and to close deliberation, (ii) imposes accountability on the subject, (iii) implies 'can', and (iv) is both stronger and weaker than obligation (deliberative *ought* does not imply an obligation, but in contrast to obligations, deliberative *oughts* cannot conflict) (Schroeder 2010; see also Sect. 3.3.3). In

¹³Crediting Ede Zimmermann in email communication with Angelika Kratzer, Schwager (2006) presents a German version of (27) with *sollen* 'should'.

line with his syntactic claim, Schroeder (2010) points out that a paraphrase with an expletive subject as in (29d) disambiguates in favor of the evaluative reading (strongly preferred for the ambiguous (29c), as winning the lottery is typically not something the agent can bring about or can be accountable for).

- (29) a. There ought to be world peace.
 b. Larry ought to buy a lottery ticket.
 c. Larry ought to win the lottery.
 d. It ought to be that Larry wins the lottery.

In a similar vein, Shaw (2023) argues for an ambiguity between attributive and non-attributive *need*. The former is a control construction expressing a relation between an individual and a property they have a need for, as opposed to a raising construction which would characterize a proposition as necessary. Only the control construction can be paraphrased with *have a need* (see also Sect. 1 and Rubinstein 2012). More research will be required to determine how the specific semantic distinctions discussed in the philosophical literature align with further linguistic contrasts as relating to case assignment, quantifier binding, and the full array of possible complement types.

3.3 Challenges associated with individual subflavors

In addition to possible differences between the main modal flavors of epistemic, priority, and dynamic modality, full uniformity has also been challenged for the subflavors within each of these main categories. Specific semantic issues for priority modality arise for teleological (Sect. 3.3.1) and deontic modality (Sect. 3.3.2). Section 3.3.3 discusses the possibility of a distinct deliberative or practical subflavor (see 3.2) in addition to the established deontic, teleological, and bouletic ones. In future research, challenges from individual subflavors like the ones discussed below may lead to ambiguous entries for priority modals, the recognition of more abstract patterns across domains (resulting in a more involved unified semantics, possibly depending on syntactic distinctions), or a better understanding of the interaction between conventional (semantic) meaning and language use in discourse.

3.3.1 Teleological modals and designated goals

In the standard Kratzerian picture, teleological modals express (in)compatibility with the set of worlds that, among those compatible with the relevant circumstances, rank highest according to the relevant agents' goals (Sect. 2.2; 4. THE CONSTRUCTION OF MODAL DOMAINS—THE KRATZERIAN VIEW in this volume). The result seems appropriate for teleological modals as appearing in (30) and (31):

- (30) A: How would you recommend that I spend my summer?
 B: (In view of your goals,) you can relax for a week {and then you should/but then you have to} begin studying for your US history class.
- (31) Passenger: My train leaves at 5pm. Do you think I have time to buy something to eat?

Conductor: You can go and buy something; you just have to be at the platform at 4:50.

The proposed semantics runs into two problems in constructions that, by grammatical means, single out a particular goal. Both issues were observed and discussed initially with *anankastic conditionals*¹⁴, conditionals specifying a goal or an intention in the antecedent where the prejacent of a modal in the consequent names a condition for obtaining it (for an overview, Sæbø 2020).

(32) If you want to go to Harlem, you have to take the A-train.

Similar effects result for rationale clauses or disjunctions (Werner 2006; (33a) is his (16), (33b) his (18)), as well as practical questions like (34):

- (33) a. (In order) to get to Harlem, you have to take the A-train.
b. You have to take the A-train or you won't get to Harlem.

- (34) A: How do I get to Harlem?
B: You {have to/should/can} take the A-train.

The issues are the following. First, once a particular goal has been made salient along some such lines, further goals of the relevant agent (both compatible and incompatible ones) lead to problematic predictions. If the A-train is the only means for the addressee to reach Harlem (at least, amongst the practically feasible ones), (32)–(34B) seem true even if the addressee's actual goal in the world of evaluation is a destination that cannot be reached by the A-train (for instance, Hoboken); such an unmentioned actual goal is apparently irrelevant. At the same time, if there are two equally feasible ways to get to Harlem but the A-train allows you to achieve an additional but orthogonal goal of yours (meeting your favorite soccer player, Ruud van Nistelrooy, in Huitink's 2005b illustration) this does not intuitively verify the cases with *have to* in (32)–(34B).

Second, in the presence of a rationale clause, it is difficult to use a teleological modal with a prejacent that fails to name a (crucial part of a) means to achieve the goal.¹⁵

- (35) a. ?To get on the 5pm train, you have to breathe.
b. #To get on the 5pm train, you can buy lunch.

Nissenbaum (2005) points out that rationale clauses specify goals of events even in the absence of modals, leading him to build event-relative teleological modality into the meaning of the rationale clause.¹⁶ By this, (36) (his (45)) is true iff there is a past event *e* of Varitek taking the A-train such that he goes to Harlem in all worlds compatible with the goals

¹⁴Sæbø (2001) credits von Wright (1963) for inspiring his term. von Wright (1963) maintains that conditionals like his *If the house is to be made habitable it ought to be heated* imply necessities, which he calls 'anankastic statements' (in this case, 'Heating is necessary for the house to be habitable').

¹⁵Will Rimer (p.c.) cautions that the judgment for (35b) is less sharp than it appears initially even if buying lunch is not construed as a means to the goal. An orthogonal felicitous construal is available if buying lunch yields a free train ticket (Walter Shaw, p.c.).

¹⁶Nissenbaum (2005) is concerned specifically with infelicities with teleological possibility modals, compare (39b).

relevant to this event e .

(36) Varitek took the A-train to get to Harlem.

Nissenbaum derives the anankastic interpretation of the teleological modal by letting it outscope a prejacent modified along these lines. His interpretation for (33a) amounts to the following (see his (52b)):

(37) $\llbracket (33a) \rrbracket^w = 1$ iff in all w' in $O(f, g, w)$ (where f is a circumstantial modal base, g addressee bouletic), you are the agent of an A-train-taking event e whose goal is that you go to Harlem.

von Fintel and Iatridou (2006) object, noting that to achieve the goal, it is not necessary to carry out the relevant action with the particular goal; just carrying out the action is sufficient.¹⁷

von Fintel and Iatridou (2006) modify the semantics of teleological modals to include an additional propositional argument, the **designated goal** (see also Huitink 2005a). Weak and strong necessity modals differ in whether or not they take into account additional goals reflected in the ordering source (see (38a) vs. (38b), underlining mine):

- (38) a. *to p, ought to/should q* is true relative to a modal base and an ordering source iff all the best (according to the ordering source) worlds in the modal base where p is achieved are q -worlds
- b. *to p, have to q* is true relative to a modal base and an ordering source iff all the worlds in the modal base where p is achieved are q -worlds

Singling out a designated goal derives favorable predictions for compatible and incompatible goals. Actual goals b , which are incompatible with the designated goal p , have no effect (even when present in the ordering source of a weak necessity modal) as b is false across the quantificational domain which, by the rationale clause, is restricted to p -worlds. Additional compatible goals (like meeting Ruud van Nistelrooy) can, due to their presence in the ordering source, single out one of several strategies with a weak necessity modal; the version of (34B) with *should* is in this case predicted to differ in truth value from the one with *have to*. The proposal does not, however, ensure that the prejacent describes a means to the designated

¹⁷A further complication results from a difference relating to the attachment height of *to*-clauses (von Fintel and Iatridou 2006 and references therein): at VP level these require agentive VPs; no such restriction pertains to higher attaching rationale clauses as in (ia).

- (i) a. You have to know French in order to work in public schools. Nissenbaum 2005:(59b)
b. #Jean knows French in order to get a job in the public schools. Nissenbaum 2005:(60)

Nissenbaum (2005) concludes that *to*-clauses are free to attach higher with universal modals, but have to attach at VP-level with existential modals, where a non-agentive predicate results in infelicity indeed, see (ii):

- (ii) #You can know French in order to work in the public schools. Nissenbaum 2005:(61b)

While the contrast between (ii) and (ia) requires an explanation, the proposed flexibility seems stipulative and undermines the applicability of Nissenbaum's proposal to the issues with universal modals (33a)–(35a).

goal. von Fintel and Iatridou (2006) do not see this as a problem for cases with strong necessity modals like (35a) (*pace* von Stechow et al. 2006).¹⁸ For weak necessity modals, they suggest to add a condition that the prejacent describe an ‘essential part of a way of achieving the designated goal’ to predict the infelicity of cases like (39a). Depending on whether possibility modals are sensitive to an ordering source, the condition may have to be added there as well to derive the infelicity of (39b).

- (39) a. #To go to Harlem, you ought to kiss Ruud van Nistelrooy.
 b. #To go to Harlem, you can kiss Ruud van Nistelrooy.

Werner (2006) aims to ensure more directly that the prejacent relates to a classification of the circumstantially relevant ways in which the goal is reached. He establishes the quantificational domain of a teleological modal in three steps: for a world w and time of evaluation t , determine the worlds at which the goal is reached and that up to t are identical to w ; of these, select the ones closest to w ’s physical laws in terms of how things develop after t (the realistic goal worlds), and of these, the ones best according to the relevant goals (the success worlds). Teleological necessity statements are true if the prejacent is entailed only after the third step (i.e., once goals are taken into account). This rules out cases like (35a). Teleological possibility modals are moreover sensitive to a contextually salient classification S of the success worlds (technically, a supercover in the sense of Simons 2005), and require the prejacent to be an element of this (intuitively, it has to describe one of the contextually given alternative ways in which the goal can be reached). This rules out cases like (39b). While both (35a) and (39b) are predicted to be awkward, this happens for different reasons. Additionally, no provision is made for (39a), as Werner focuses on strong necessity modals. Intuitively, the three cases are similar in that a prejacent fails to provide information about what it takes to reach the goal, which may be worth considering for future theories that craft a connection between goals and means into the semantics of teleological modals.

Overall, building sensitivity to a designated goal into the semantics of teleological modals (von Fintel and Iatridou 2006, Werner 2006, a.o.) comes at the expense of giving up a unified semantics not just for modals in general, but for different types of priority modals in particular (possibly along different lines of what has been proposed based on the considerations in Sect. 3.2). While much insight has been gained especially on the compositional make-up of anankastic conditionals (von Fintel and Iatridou 2006; Condoravdi and Lauer 2016; Sæbø 2020, a.o.), the degree to which goals and means should receive a special status in the conventional semantics of teleological modals remains unclear. Future research may profit from revisiting how teleological modals interact compositionally with purpose and rationale clauses, how their semantic interpretation relates to speech act theoretic notions (practical questions, giving advice, see 27. SPEECH ACTS AND MODALITY in this volume), and how hypothesized causal structures (playing a bigger role in recent works on dynamic modality, 9. CIRCUMSTANTIAL AND ABILITY MODALS in this volume) as well as contextually given action choices (as appearing with information sensitivity in practical modals, Sect. 3.3.3, and conditional evaluative constructions, Sect. 5.2) may figure in the semantics

¹⁸ “[T]hese sentences do seem to be true. They are less than helpful of course, because for example, just breathing won’t get you to Harlem. But that doesn’t make them false to our ears”. (von Fintel and Iatridou 2006:17)

of teleological modals.

3.3.2 Permissions, rights, and possibilities

The standard framework for priority modals in linguistics follows the tenet of classical modal logic in treating possibility and (strong) necessity modals as duals of one another. Deontic possibility is thus equivalent to (or can be defined as) the absence of an obligation to the contrary (e.g., Kratzer 1981, 1991; 3. FROM MODAL LOGIC TO MODAL SEMANTICS).

However, reminiscent of what we observed for teleological possibility, the notion of compatibility with what is required reflects just one concept of what it means to be permitted (or deontically possible), so-called *weak permission*. In contrast, *strong permission* reflects that an action is explicitly allowed (Hansen et al. 2007). One way of thinking about strong permission is that any (normal enough) way of carrying out that action is acceptable by the relevant rules, or that no (normal enough) way of carrying it out will lead to sanctions. The distinction has obvious linguistic relevance: in English, for instance, both strong and weak permission can be expressed by copula and impersonal adjectival, whereas complex constructions consisting of a light verb and a noun are reserved for strong permission (Moltmann 2020):

- (40) a. Mary is permitted to take a walk.
b. Mary has permission to take a walk.

The distinction has gained attention specifically in connection with free choice readings for disjunction (Sect. 2.1; 24. MODALITY, DISJUNCTION, AND FREE CHOICE in this volume). Asher and Bonevac (2005) maintain that ‘[f]ree choice permission is strong permission.’ (p. 305). However, upon closer inspection, the actual connection is between utterances that give permission (performative modality, Sect. 4) and strong permission; the connection between strong permissions and free choice inferences is more indirect and also not absolute. In contrast to performative modals, which give permission, and hence per definition express strong permission,¹⁹ descriptive modals can describe either what results from an explicit permission and thus constitutes a right (strong permission), or also what remains compatible after a possibly longer series of permissions and obligations (weak permission). Crucially, descriptive deontic modals can support free choice inferences (von Wright 1968; Kaufmann 2016, a.o.). If the connection were between free choice and strong permission, we would not expect descriptive modals to allow free choice inferences on weak permission readings. This is, however, possible, (41) being a case in point (assume that the domain of what is permissible is determined by the mother; the two brothers merely discuss what are permissible options):

- (41) [One brother to the other, who just lamented that they cannot eat any fruit because their mom had bought it to make fruit salad:] You can eat an apple or a pear; there’s definitely enough of these. Just stay away from the kiwis and oranges.

¹⁹In principle, it seems conceivable to give a permission that ensures only that an action becomes compatible, maybe *I am hereby changing the rules so that you can eat an apple*. But here *can* occurs in an embedded clause. It is not itself performative and its prejacent is not the content of the actual permission given (i.e., the strong permission). Instead, the content of the actual change in rules is left implicit.

Sentences with performatively used modals (arguably all expressing strong permission) typically support free choice inferences, but the connection is not absolute (see also Sect. 4).

In the philosophical literature, strong permission has been adduced in support of **deontic reduction**, where deontic possibility is analyzed as conditional goodness (‘can p’ as ‘if p, GOOD’, see Sect. 5.1). A different analysis is developed by Moltmann (2015; 2018; 2020, a.o.) in **truthmaker semantics**. As an alternative to possible worlds semantics, the framework introduces a rich ontology that contains not only situations (serving as truthmakers and falsifiers of declarative sentences) and actions (which, for instance, fulfill or satisfy imperative sentences) but also a large range of modal objects that come both as particulars (*Mary’s thought that it is raining*, *Mary’s right to eat an apple*) and kinds (*the right to eat an apple*,...). Unlike events or states, modal objects have satisfaction conditions, and depending on their nature, only satisfiers (permissions) or satisfiers and violators (obligations). While a full explication of this framework goes beyond what can be offered in this survey, it is important to emphasize its promise for capturing some of the notions that have not been addressed satisfactorily in (extensions of) the standard framework. This includes not only strong permission, but also the semantics of nominal expressions like *permission*, *obligation*, *right*,.... The truthmaker analysis proposes a semantics for these items and a compositional account of their occurrences with (apparent) clausal complements and with predicates of fulfillment and violation (*fulfill*, *satisfy*, *follow*, *violate*, *ignore*,...) or acceptance (*accept*, *take up*,...). Moreover, it makes predictions about the inferential patterns linking such expressions to the better studied modals and to unmodalized sentences. More research is required to compare the results in truthmaker semantics to the results in situation semantics as embedded in the possible worlds framework and applied to the analysis of modality as familiar from Kratzer (1989; 2012; Sect. 2.2; 4. THE CONSTRUCTION OF MODAL DOMAINS–THE KRATZERIAN VIEW in this volume).

3.3.3 Information sensitivity and practical modality

More recent works recognize that modals used in practical deliberations display behaviors that set them apart from deontic, teleological, and bouletic cases as distinguished standardly in the linguistic literature. Modal expressions of this kind are sometimes labeled as instances of **practical modality** or **deliberative modality**.²⁰ A key finding about this subflavor is that what an agent is supposed to do can depend not only on facts about the world simpliciter, but also on the agent’s (typically) limited information state. Much of the debate is spurred by Kolodny and MacFarlane’s (2010) discussion of the Miners Puzzle, which involves an apparent clash between simple and conditional obligations. Cariani et al. (2013) argue that the issue for the standard framework results from its inability to predict the intuitively correct truth-conditions for the simple sentences, which I will focus on in the following. The background story has ten miners trapped in shaft A or in shaft B, which are at risk of flooding. The agents (‘we’) do not know (and have no means to find out in time) which shaft the miners are in. They have enough sandbags to block one shaft, which will however completely flood the other (drowning all ten miners if that is where they are); not blocking a shaft will kill the lowest miner in whichever shaft the ten miners are. Assuming

²⁰See also the discussion of Schroeder (2010) in Sect. 3.2, who relates the category to a distinction in argument structure that is not presupposed in this section.

that saving as many lives as possible reflects the relevant goals or ethical ideals, the standard Kratzerian semantics (Sect. 2.2) predicts the following: (42a) and (42b) are true; of (42c) and (42d) exactly one is true, one is false (the description of the scenario does not allow us to tell which); (42e) is false.

- (42) a. We ought to block the shaft they are in.
 b. There is a shaft we ought to block.
 c. We ought to block shaft A.
 d. We ought to block shaft B.
 e. We ought to block neither shaft.

These predictions result because the modal base assigns as relevant facts to each world w a set containing the location of the miners (a relevant fact if ever there was one), together with the information of how many sandbags there are and how their placements correlate with the survival or death of miners. The ordering source reflects the intuitively operative ethical considerations if set to $g(w) = \{\text{all ten miners are saved, at least nine miners are saved, } \dots, \text{at least one miner is saved}\}$.

Many speakers, however, including Kolodny and MacFarlane (2010), consider (42e) true (or, like Cariani et al. 2013, take it to have a true reading). (42a) and (42b), standardly omitted from discussions of the Miners Puzzle, have a reading that seems true but orthogonal to the puzzle under consideration.

The intuition, motivated further by the behavior of hypothetical conditionals omitted from the illustration here, is that priority modals can be sensitive to the information available to the relevant agents (*information sensitivity*). At first glance, this might suggest that the circumstantial modal base assumed standardly is to be replaced by an epistemic modal base. However, Cariani et al. (2013) show that this predicts all sentences in (42) to be false (they do not discuss (42a), which results true on the narrow scope construal of the definite).

Cariani et al. (2013) propose to solve the problem by letting deliberative modals depend on a third conversational background that assigns to each world the set of actions from which the relevant agent can choose at that world, a decision problem δ . They use δ (in combination with the relevant circumstances as given by the modal base) to coarsen the ordering imposed by the criteria that make up the ordering source: worlds are ranked not in terms of which of the ordering source propositions they individually make true, but in terms of which ordering source propositions are true at all worlds that agree on how the decision problem is resolved, i.e. which action is chosen. Consequently, a world in which shaft A is blocked and all miners are saved no longer counts as optimal for the purpose of deliberative *ought*; all shaft A-blocking worlds are merely as good as their fatal variants in which all miners were in shaft B and drown.²¹ This proposal builds in the *MaxiMin* principle, a decision theoretic rule by which agents evaluate actions according to their worst possible output (in contrast to *MaxiMax*, which evaluates actions according to their best possible outcome and is reflected in the standard semantics). It seems problematic, however, to craft

²¹In a similar spirit, Charlow (2013) removes from the ordering source non-actionable ends like ‘saving all ten’; this, however, fails to derive the truth of (42e), as worlds where the correct shaft is blocked are now tied with worlds where no shaft is blocked. In his footnote 28, he suggests as a remedy to treat unactionable ends as undesirable, a move that strikes me as counterintuitive and potentially problematic.

a specific decision taking rule into the semantics of a natural language modal. In fact, if facts, goals, and choosable actions are known and agreed upon, (42e) can be used to argue in favor of this particular decision taking strategy (which selects blocking no shaft as optimal) and against taking chances by arbitrarily selecting a shaft to block (the competing MaxiMax solution). If the decision rule was hardwired into the semantics, the sentence should not be useable in this way; with facts, goals and chooseable actions agreed upon, no room for disagreement could remain. Responding to criticism along these lines, Cariani et al. (2013) point out that the separation between what is known about the facts and the agents' criteria in evaluating available actions (the goals) allows us to keep flexible the decision taking rule which is used to rank actions (similarly, Carr 2015).

Deviating further from the standard framework, information sensitivity results automatically if the semantics of priority modals is spelled out in terms of expected utilities (Goble 1996; van Rooij 1999; Levinson 2003, a.o.). Lassiter (2011) proposes such an account for the Miners Puzzle. Cariani (2016) criticizes the use of expected utilities to account for deliberative modality. He extends Cariani et al.'s (2013) proposal to rely on probabilistic information (*probabilistic premise semantics*).

Finally, some scholars dispute that cases like the Miners Puzzle call for an amendment of the standard framework. von Fintel (2012) (crediting Buring 2003 and unpublished notes by Angelika Kratzer) maintains that “the ordering source might plausibly be something like {“If we know where the miners are, our chosen action yields the optimal outcome for the miners”, “If we do not know where the miners are, our chosen action yields a still acceptable outcome for the miners and would not yield a less acceptable outcome if they weren't where they in fact are”}, which, given the relevant facts including the one about the ignorance of the agents, should obtain the desired ranking absent an additional parameter.” (p. 25) While an intriguing road to explore, an account along these lines owes us a way of identifying the intended propositions. Stating the truth conditions of the conditionals in this set seems non-trivial and requires analyzing some of the notions it aims to eliminate from the semantics of the modals (choosable actions and their respective outcomes). The strategy also no longer reflects a sense in which a more risk-averse agent who judges (42e) as true and a risk-seeking agent who rejects (42e) as false share the goal of saving as many lives as possible.

The extent to which some (or all) priority modals are sensitive to decision problems remains to be explored in future research. Construed as a set of propositions each of which describes a chooseable course of events, decision problems can also be understood as *questions under discussion* (Roberts 1996) that are practical in nature (‘what should agent do?’ rather than ‘what is the world like?’). Sensitivity to decision problems along these lines has been argued to be crucial for imperative clauses (Davis 2009; Kaufmann 2012, a.o.) as well as specific modal elements.²² More generally, comparative evaluations of the pre-jacent in comparison to its negation or to focus alternatives appear in the analysis of bouletic modality (Heim 1984; Villalta 2008 for desire predicates), of weak necessity modals (Arregui 2011), and conditional evaluative constructions (Chung 2019, Sect. 5.2).

²²Kaufmann et al. (2024) argue that Japanese *beki* presupposes a decision problem that has not (yet) been resolved correctly, thereby deriving counterfactuality inferences for past marked occurrences.

4 Performativity in priority modals

Priority modals are used not only to describe what is necessary or possible in light of rules, goals, or desire (*descriptive modality*), but also to actively change such states of affairs, constituting cases of *performative modality*. Effects of this kind are easy to imagine when sentences like (43a) or (43b) are issued by a figure of authority (say, a parent to a child, or a teacher to a student):

- (43) a. You must stay indoors all afternoon.
b. You may take an apple.

In such cases, an utterance of (43a) has a similar effect to the one of a (grammatically marked) imperative clause (*Stay indoors all afternoon*). Moreover, like imperative clauses, (43a) and (43b) appear to lack truth-values when used along these lines.²³

From a linguistic point of view, at least two issues require explaining: first, how can we account for this (seemingly) non-truth-conditional use of a declarative sentence; second, what is the connection between modals on their performative and descriptive uses. Accounts that aim to honor the formal identity have to explain how a unified semantics interacts with the discourse settings to give rise to radically different effects at the level of the speech act or the discourse more broadly speaking.

While permission and obligation creating uses are the most salient cases of performative modality, non-assertive effects result also when no actual change in the relevant modal state of affairs takes place. Kaufmann (2012) discusses this for imperatives, which can be used for instructions (or ‘disinterested advice’), consider (44):

- (44) A: How do I get to Harlem?
B: Take the A-train.
B’: You should take the A-train.

Unlike a command, which imposes a new restriction on what is permissible for the addressee, neither B nor B’ obviously change accessibility (beyond restricting the epistemic alternatives of the addressee regarding what is needed to achieve their goals). Yet, even in such cases, the question of truth and falsity does not intuitively arise, and the speaker appears to endorse the course of action named by the prejacent (taking the A-train) in a way not observed in an assertion. The move in B/B’ thus goes beyond a mere description of what the addressee’s goals necessitate; at the speech act level, the difference between the imperative and the version with *should* seems very subtle for (44).²⁴ Including modals in cases like (44) leads to a broader understanding of performative modality as covering modals in any non-assertive utterances (see also Kamp 1973, 1978; Schulz 2005; Kaufmann 2012).²⁵ A similar class

²³The philosophical literature sometimes uses ‘imperative’ to include sentences like (43a) when uttered to impose an obligation (e.g. Ross 1967; Hamblin 1987; Lewis 1979). Here, I stick to the form based tradition in linguistics, reserving ‘imperative’ for a formally marked clause type and morphology characteristic of it (e.g., verbal inflection).

²⁴See also 27. SPEECH ACTS AND MODALITY in this volume.

²⁵Further assumptions are required if modals in interrogatives about existing states of affairs are to be excluded from performative ones (e.g., to a fellow non-authority: *Do I have to file my tax report by April 15?*). Descriptive/performative may capture the intended classes more naturally than assertive/non-assertive.

seems intended by Portner (2009): “I refer to a modal as ‘performative’ if, by virtue of its conventional meaning, it causes the utterance of a declarative sentence to perform a speech act in addition to, or instead of, the act of assertion, which is normally associated with declarative clauses.” (Portner 2009: 137). At first glance, this might suggest that English *may* is not a performative modal: (43b) can be a permission (when uttered by an authority) but also an assertion (when uttered by a bystander). While Portner does not discuss the point in detail, his definition is compatible with the assumption that *may* is ambiguous between a performative and a descriptive modal. An ambiguity analysis along these lines is offered by Williamson (2021), who analyzes sentences with performative modals as propositions that are undefined if the utterance does not temporally coincide with a change in what is permissible.

The alternative to a conventional semantic analysis is a pragmatic account: modals are interpreted uniformly across descriptive and performative utterances, and the contextual settings determine what sort of speech act the utterance amounts to. An analysis along these lines is first laid out by Lewis (1979). He enriches the representation of the discourse context with a ***permissibility sphere***, the set of possible worlds in which all obligations are met. He then sketches conversation as going on between three individuals in the roles of master, slave, and kiebitzer: *may* ϕ and *must* ϕ express compatibility with, and entailment by, the permissibility sphere, respectively, but interact with it differently depending on who utters the sentence. Upon an utterance by the kiebitzer, the sentence is evaluated as true or false depending on whether the permissibility sphere is compatible with, or entails, ϕ . Upon an utterance by the master, the permissibility sphere adjusts itself to verify the proposition expressed.²⁶ If a pragmatic account along these lines can be maintained, semantic ambiguity can be minimized. Moreover, conjunctions and disjunctions that combine sentences with descriptive or performatively used modals can be assigned a uniform semantics.

Yet, it is precisely the interaction with disjunctions that has provided an early argument for an ambiguity analysis of performative vs. descriptive modals (Kamp 1978). Disjunctions of performative modals tend to grant free choice, whereas disjunctions of descriptive modals can easily be understood as expressing ignorance. This correlation was, however, shown to be imperfect early on (disjunctions of performative modals and even imperatives can lack free choice effects, Kamp 1973; Kaufmann 2012, 2016; disjunctions of descriptive modals can be interpreted as expressing free choice, see also Sections 2.1, 3.3.2).

At the same time, a fully uniform pragmatic analysis is challenged by the finding that, unlike English *may*, not all modal expressions allow for descriptive and performative uses to the same extent. On the one hand, English *must* has been claimed to be invariably performative when appearing on a deontic reading in a matrix clause (Ninan 2005). On the other hand, complex modal predicates like *is supposed to*, *is obligated to* have been argued to lack performative occurrences (***anti-performative***, Lauer 2015).

To track the inherently performative behavior of English *must*, the linguistic literature tests follow-ups that should be acceptable in combination with assertions. First, we find what I will call ***epistemic prejacence support***. It feels inconsistent to issue a *must*-statement

²⁶The main interest of Lewis’s paper is the problem of how to model the adjustment for the possibility sentence, which is supposed to be the effect of the master permitting ϕ to the slave. As Lewis emphasizes, not all ϕ worlds can be added. An implementation building on a similarity ordering is offered by van Rooij (2000). See Sect. 5.2 for related problems with deontic reduction and conditional evaluative constructions.

and at the same time claim that the prejacent will not, or may not, come true; this does not pertain to *ought* and *should* (Ninan 2005, his (1,4)):

- (45) Sam {ought/should/#must} go to confession, but he's not going to.

Ninan notes that this behavior is similar to imperative clauses, which do not allow this kind of avowal either. *must* patterns with imperatives also regarding a second property, which Stegovec and Kaufmann (2015) call ***distancing ban***: issuing a *must*-statement in conjunction with a strong desire against the prejacent (roughly, an effective preference, Condoravdi and Lauer 2016) is as marked as it is with an imperative.

- (46) a. #You must go to Paris, but I absolutely don't want you to.
b. #Go to Paris, but I absolutely don't want you to.

Upon closer inspection, infelicities along the lines of failed epistemic prejacent support and distancing ban can be observed also with sentences that involve *ought*, *should*, or *have to*. In fact, the distancing ban is inspired by an example that Frank (1996) pointed out as a similarity between deontic modality and classical Moore sentences as in (47b) (Moore 1941):²⁷

- (47) a. #You should go to Paris, but I don't advise you to go.
b. #It's raining, but I don't { know / believe } it's raining.

Conversely, Mandelkern (2019) argues that even *must* does not always display these properties; for instance, when modified with *according to*, the requirement of epistemic prejacent support vanishes even for *must* (cf. (48)). In contrast, a contextually salient deontic source different from the speaker is insufficient to trigger the effect (cf. (49)).

- (48) According to local custom, you { have to/ must } take exactly two lumps of sugar in your coffee. But you should not feel bound by local custom, and for all I know you will take more than two.
- (49) Client: 'What is my legal obligation, and what do you expect me to do?'
Lawyer: 'You { have to / #must } report your liability, but I don't know if you will; you may prefer to push the limits of the law and just conceal it.'

Mandelkern offers these and further data in support of a fully pragmatic derivation of epistemic prejacent support. According to him, these effects arise when the modals are used to obligate, but not when they are used to describe an obligation. He calls the effect ***posturing***: independently of whether or not you believe your command to be successful, to felicitously give a command, you have to pretend that you think it will be. A fully pragmatic solution along these lines fails to account for the fact that linguistic expressions differ in the ease with which they can be pushed into a descriptive use. For most English modals (*have to*, *should*, *may*, ...) it depends solely on the contextual constellations, they can be interpreted descriptively or performatively, and this will determine what follow-ups are acceptable (and

²⁷Mandelkern observes this parallel for the combination of performative necessity modals with expressions of agnosticism (e.g., '*must* p, but I don't know if p', a subcase of failed epistemic prejacent support). He calls them ***practical Moore sentences***.

follow-ups can therefore help to recover the intended interpretation). However, as Mandelkern himself shows, *must* requires overt modification; by default, it seems tied to parameters that ensure a performative use. Imperatives take it a step further in not even allowing overt adverbial modification to shift to a deontic source other than the speaker, see (50):

(50) #According to local custom, take exactly two lumps of sugar.

The data discussed in this section suggest that performative or descriptive uses arise thanks to different contextual constellations, including the setting of the modal parameters (in the standard Kratzerian framework: the particular ordering source chosen). Lexical items and grammatical constructions seem to differ in the extent to which they constrain the setting of parameters. Invariably performative modals (possible candidates being imperatives, if, as maintained by Kaufmann 2012; Grosz 2009; Oikonomou 2016, 2022, a.o., they have a modal semantics) impose restrictions on these parameters through their conventional semantics; in contrast, *must* should be associated with such settings only as the default value, which may be overwritten in the compositional process (e.g. (48)).²⁸ Anti-performatives like *is obligated to*, in contrast, impose restrictions on the contextual parameters that ensure a descriptive use.²⁹

A precise model of the interaction between conventional semantics, default values, and contextual salience may profit also from the core idea of Hacquard’s (2006) event-relative framework. In it, priority modals are performative (“true deontics”) when anchored to the utterance event rather than an event argument introduced lower in the structure (e.g., by an aspectual head).

5 Priority modality and conditional goodness

5.1 Alternatives to quantificational accounts and deontic reduction

The quantificational framework that has become the standard analysis in linguistics is not the only framework on the market to understand priority modality. The relevant meanings can also be understood in terms of (comparative) goodness of the prejacent. Lassiter (2011) develops an account of modals as degree predicates (12. MODALITY, GRADABILITY, AND PROBABILITY in this volume), where strong necessity, weak necessity, and possibility are captured as relations to a threshold value on the contextually relevant scale. For priority modality, this reflects goodness according to the contextually relevant rules, goals, or desires. Another strain of accounts builds on conditional notions of what is good, an idea tracing back to Leibniz: ‘*p* is obligatory for [subject] *S* if and only [if] *p* is necessary for *S*’s being a good person’ (Hilpinen and McNamara 2013:39³⁰). The intuitive appeal of this strategy is

²⁸Evaluation following criteria that are centered on and endorsed by the speaker is sometimes considered a form of *perspective sensitivity* or *subjectivity* (see Portner 2009 and Kaufmann and Tamura 2020 for the connection with performative modality).

²⁹An explanation along these lines is put forth by Lauer (2015) in defense of a pragmatic treatment of performative modality.

³⁰The additions in brackets are mine.

defended vigorously by Anderson (1967):

In a number of papers written over the past six or seven years, I have tried to defend [...]the following thesis: If a set of rules states or implies that it is obligatory that a certain state-of-affairs p obtain, and if in fact p does not obtain, then the set of rules in question has been violated. Or, put less ponderously: When a rule says you are supposed to do something, and you don't do it, that means you've broken that rule. The thesis so put sounds innocuous enough, but such is the perversity of my professional colleagues and critics (the two collections being *almost*, if not exactly, coextensive) that arguments on the matter seem to be required. (p. 345) [...] The leading idea behind the suggestion that *it is obligatory that p* can be taken to mean *if not- p , then V* (where V is some *bad* state of affairs) lies in the fact that this sort of reasoning is involved in many common justifications of “ought” statements. (p. 346)

Formulating deontic concepts in terms of conditionals along these lines is called **deontic reduction** (see also Kanger 1971; von Wright 1968). It relies on a special proposition **GOOD**, which signifies the deontically ideal state (‘the good thing’, ‘all obligations are fulfilled’, ...). Deontic concepts are then expressed in terms of how the prejacent of the modal relates to this special proposition. The resulting accounts differ widely depending on the overall logical framework chosen (e.g., non-monotonic logic, Asher and Bonevac 2005; linear logic, Barker 2010) and what notions of epistemic or circumstantial accessibility feed into the definition of the special proposition itself and into its relation to the prejacent. In linguistics, the idea has gained attention in light of various challenges for the standard account (Asher and Bonevac 2005; Barker 2010; von Fintel 2012) and of crosslinguistic findings (Barker 2010; Kaufmann 2018; Chung 2019). Specifically, to express notions of priority modality, Japanese and Korean make heavy use of conditionals that look surprisingly like the paraphrases used to elucidate the ideas of deontic reduction.

5.2 Conditional evaluative constructions (CECs)

For deontic and teleological (strong) necessity, as expressed by *must* or *have to* in English, Japanese uses strings that translate literally to ‘if not ..., BAD’ as in (51a). For possibility, Japanese uses ‘even/also if ..., GOOD’ as in (51b). Both constructions can serve to report existing modal states of affairs as well as to impose obligations or give permission (see Sect. 4).³¹

- (51) a. Tabe-nakere-ba nara-na-i.
eat-NEG-COND become-NEG-NPST
lit.: ‘If you don’t eat it doesn’t work.’; ≈ ‘You have to eat.’

³¹As observed in Sections 1 and 3, Japanese and Korean are less prone to use the same expressions across different modal flavors, specifically for the main divide between epistemic, priority, and dynamic modality, but also within the field of priority modality. Which CECs allow for which subflavors of priority modality and which of the phenomena discussed in 3 may relate to them will require more investigation in further research; see Larm (2006) and Narrog (2009) for detailed descriptions in English.

- b. Tabe-te mo i-i.
 eat-GER also good-NPST
 lit.: ‘If you eat it’s also good.’/‘Even if you eat, it’s good.’ ≈ ‘You may eat.’

As suggested by the literal translations, both constructions display the structure of regular conditionals, exemplified in (52).

- (52) a. Tabe-nakere-ba onaka ga suk-u.
 eat-NEG-COND stomach NOM be.empty-NPST
 ‘If you don’t eat you’ll be hungry’;
 b. Tabe-te mo onaka ga suk-u.
 eat-GER also stomach NOM be.empty-NPST
 ‘Even/also if you eat you’ll be hungry.’

Korean employs ‘only if...GOOD’ for necessity; possibility looks the same as in Japanese (examples from Chung 2019):³²

- (53) a. John-un maykcwu-lul masi-eya toy-n-ta.
 John-TOP beer-ACC drink-only.if GOOD-PRES-DECL
 lit.: ‘Only if John drinks beer, good.’
 b. John-un maykcwu-lul masi-eto toy-n-ta.
 John-TOP beer-ACC drink-even.if GOOD-PRES-DECL
 ‘John may drink beer’
 lit. ‘If John drinks beer, it’s also good.’/‘Even if John drinks beer, it’s good.’

Kaufmann (2018) coins *conditional evaluative constructions* (CECs) for cases like (51) and (53) with GOOD/BAD predicates in the consequent that result in meanings similar to sentences formed with modal auxiliaries in languages like English.

Japanese and Korean conditional markers appear antecedent finally (as verbal inflection and/or particles). For CECs, this results in strings consisting of conditional marker and evaluative predicate that, in their entirety, are sometimes glossed with a corresponding English modal auxiliary. This obscures two questions (Kaufmann 2018): (i) to what extent the constructions are semantically transparent, and (ii) to what extent their interpretation, independently of whether it is assigned lexically or derived compositionally, matches the interpretation of the corresponding English items. Focusing on Japanese, Kaufmann (2018) argues in favor of a compositional interpretation. First, the general schema underlying CECs, ‘If *p*, EVALUATION’, can employ a large variety of lexical elements to express EVALUATION. For Japanese, Akatsuka (1992) observes that positive evaluations (‘GOOD’) can be realized by at least *ii* ‘good’, *ureshii* ‘happy’, *yoroshii* ‘fine’, *daizyoubu* ‘all right’, *kamawanai* ‘not to mind’, while negative evaluations (‘BAD’) can be realized by *ikenai* ‘can’t go’, *dame da* ‘is

³²I modified Chung’s (2019)’s translation ‘Even if John were to drink beer, good’ to match the Japanese case and the prose descriptions in Chung’s paper. Both Korean *eto* and Japanese *mo* can have scalar or purely additive meanings (roughly, ‘even’ vs. ‘also’). Neither language requires overt morphological marking in conditionals about more far-fetched or counterfactual states of affairs; contrary to what is suggested by my (and the standard translations), these deontic constructions can thus also concern remote (*future less vivid*, Iatridou 2000) or counterfactual states of affairs (Chung 2019). An anonymous reviewer points out that *toy* literally means ‘become’, similar to Japanese *naru*.

not good’, iyada ‘dislike’, *zannen da* ‘sorry’, *komaru* ‘terrible’, and *tae-rare-nai* ‘can’t bear’. Moreover, of the existing inventory of conditional markers, at least *-reba*, *-temo*, *-tewa*, and *-tara* surface in CECs. The individual conditional markers and evaluative predicates maintain semantic and morphological restrictions as observed elsewhere. The distinction between Japanese (51a) and Korean (53a) also follows the pattern of regular conditionals; ‘only if *p*, *q*’ is generally expressed as ‘if not *p*, not *q*’ in Japanese (Yurie Hara, p.c.). Second, while not all combinations are felicitous and some combinations feel more idiomatic than others, even the most idiomatic ones can be split up by adverbials like *zettai* ‘absolutely’, see (54) (Kaufmann’s 2018 (5)).

- (54) Konna subarasii ningenkankei=o taisetsu ni suru honkoo no
 such wonderful human.relations=ACC important DAT make this.school GEN
 tokusyoku=o nagaku nokosi-tei-nakere-ba **zettai**
 characteristic=ACC long preserve-PROG-NEG-COND absolutely
 nara-na-i to omot-tei-mas-u
 become-NEG-NPST COMP think-PROG-POL-NPST
 ‘I think that this school’s wonderful characteristic of valuing such human relations
 must be preserved by all means.’

Kaufmann (2018), Kaufmann and Tamura (2020) and Chung (2019) develop accounts of CECs in Japanese and Korean, respectively, that combine ingredients from the toolbox of standard possible worlds accounts of modality (Sect. 2.2, 4. THE CONSTRUCTION OF MODAL DOMAINS–THE KRATZERIAN VIEW in this volume) and conditionals.^{33,34}

A compositional account for CECs faces several challenges, some of which besiege theoretically motivated attempts of analyzing priority modals through deontic reduction in general. First, the syntactic make-up of CECs makes it difficult to determine what the evaluative predicate applies to (–The antecedent proposition or a contextually restricted subset thereof? A world or situation at which the antecedent is true?). An additional challenge relating to this question is that, for possibility constructions as in (51b) and (53b), typically not all antecedent situations are GOOD: even if eating or beer drinking are permissible, specific eating or beer drinking situations can be ‘BAD’ due to other violations (see also Fn. 26). Second, in current linguistic theory, conditionals are standardly considered intensional constructions: the consequent is evaluated not (only) at the world of evaluation, but at (select) worlds that verify the antecedent. However, what counts as GOOD in the CEC depends intuitively on what counts as permissible, desirable, successful, etc. in the world of evaluation, not in other worlds reached by interpreting the conditional construction.³⁵ Third, for an issue not considered in the theoretical literature on deontic reduction, the possibility constructions in both Japanese and Korean employ an additive or scalar particle: ‘also/even if *p*, *q*’. A compositional analysis should thus predict that it is unlikely or unexpected for *p* to be GOOD (‘even’, scalar meaning), or else, that some alternative to *p* is also GOOD (‘also’,

³³For conditionals in the standard possible worlds framework, see Kaufmann and Kaufmann (2015).

³⁴Nauze (2008) rejects a unified analysis of modals across different flavors. He develops an analysis for priority modal constructions (including CECs) in terms of plans as a separate ontological category of natural language semantics.

³⁵See Blumberg and Holguín (2019) and von Fintel and Pasternak (2025) for a related effect with desire predicates.

additive meaning). It is easy to come up with situations where the scalar meaning is not warranted, leaving the additive meaning as the more plausible candidate. This, however, yields a notable difference to English-style modals: the inference from ‘may’ to ‘not must’, usually considered a conversational implicature, would in this case constitute an entailment. Failing to find supporting evidence in Japanese, Kaufmann and Tamura (2020) worry about the prediction; for Korean, Chung (2019) adduces evidence that the inference from (53b) to ‘John doesn’t have to drink beer’ cannot be cancelled.

While the works cited provide a promising starting point, more research will be needed to fully resolve the issues discussed here and to explore how the results for CECs integrate with the overall study of modality and other intensional constructions.

6 Conclusions

I have aimed to offer an overview of priority modality as relating to rules, goals, preferences and practical deliberations. I have shown how standard assumptions about modal semantics apply specifically to priority modality, and what issues result for the analysis of specific phenomena in this domain. I have offered a brief introduction to deontic reduction, a seemingly competing view, which builds on intuitions that are reflected overtly in how modal notions are expressed in Japanese and Korean. Apart from the conditional constructions studied in this last chapter, I have focused mostly on modal (semi-)auxiliaries as familiar from English and German. Nominal and adjectival constructions have been mentioned but not explored in detail, bound morphology (like the Japanese bouletic inflectional marker *tai*) has been left out entirely. As far as subflavors are concerned, the chapter has focused largely on deontic and teleological modality, neglecting in-depth discussion of bouletic modality, which has been studied largely in connection with verbal predicates like *wish* and *want*. Many of these topics are discussed in more detail in Section 4 of this handbook.

Finally, it is worth pointing out at least some limitations in terms of the theoretical work that is discussed in this chapter. I have not discussed accounts that build on the comparison of (counterfactual) alternatives (Arregui 2011; Silk 2022; Chung 2019, a.o.). Much of this work relates to challenges involving simple sentences in interaction with conditionals (a topic not discussed in this handbook, see von Stechow 2012) and distinctions in modal force (11. MODAL FORCE AND ITS REALIZATION ACROSS LANGUAGES in this volume). Focusing on the Kratzerian standard semantics in the possible worlds framework, I have mentioned truthmaker semantics only briefly, and I have not done justice to quantitative notions as underlying works that rely on measurement semantics or expected utilities. The hope is that this chapter can provide a backdrop for enterprises that focus on other aspects in comparison to what I was able to cover, and that it will invite further research that brings together rigorous conceptual considerations from the philosophical tradition with fascinating patterns to be uncovered in natural language.

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