When *if* or *when* specify modals^{*}

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1 Introduction: namely as a specificational adverb

- *Namely* is a specificational adverb that introduces an answer to an implicit question that is raised by its antecedent:
 - (1) Mary climbed a famous mountain, **namely** Mt. Blanc.

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implicit Q: which mountain? answer
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- Dutch *namelijk* and German *nämlich*, in addition to the specificational use, also have an *explanative* reading, that I will not be concerned with today (see Onea and Volodina 2011 for more on the explanative reading).¹
- Typical antecedents of *namely* are indefinites (1), certain definite descriptions (2), or *wh*-constituents (3).
 - (2) Fred scaled the tallest building in the world, namely Burj Khalifa. (AnderBois and Jacobson 2018: 392)

¹A Dutch example of explanative *namelijk* is the following:

(i) Linda is blij. Ze heeft namelijk haar werk af. [Dutch]
 Linda is happy she has NAMELY her work finished
 'Linda is happy, because she finished her work'

The explanative use of *namelijk/nämlich* can also be distinguished from the specificational use, because the two have different syntactic properties. See (33) in the Appendix for another example, and Onea and Volodina (2011) and Onea (2016) for further discussion.

- (3) I ate what Mary cooked, namely ratatouille. (AB&J: 392)
- In this talk I will consider cases in which *namely* takes a modal expression as antecedent, and an *if* or *when*-clause as complement:
 - (4) Working as a filmmaker <u>can be taxing</u>, namely if you're required to get sleek product shots. [iWeb corpus]

These data are worth analyzing for two reasons:

- 1. Cases like (4) are not covered by proposed generalizations about the distribution of *namely*. They thus tell us something about the behavior of the specificational adverb *namely*, as well as the question-raising potential of modal operators.
- 2. Most commonly *if*-clauses are studied as adjuncts, i.e. in **conditional** utterances. In (4), the *if*-clause takes a different position, as well as a different semantic role. Both constructions have an interaction between a modal expression and an *if*-clause, but differently so: modal restriction and modal specification are distinct.

2 The modal *namely* construction

2.1 Types of modals

- I will refer to the construction in (4) as the **modal** *namely* construction. The construction also exists in other languages (see Appendix), but I will focus on English in the talk. Below are some more examples, all drawn from the iWeb corpus:
 - (5) a. Working as a filmmaker <u>can be taxing</u>, namely if you're required to get sleek product shots.
 - b. IIN <u>may ask</u> for personal data, namely when you: request a catalog or magazine, order books, take our quiz, subscribe to our

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newsletters, or request customer service.

- c. The resultant equilibrium distribution <u>can be</u> different from a Maxwell distribution, namely if the situation is not isotropic.
- d. It means that in a world that is always mediated by different media, one <u>can still be free</u>, namely if one knows how to operate the media that dominate one's world;
- e. Mixing colors on the computer <u>can be challenging</u>, namely when you are trying to translate specific colors to work in a four-color printing process
- Note that *namely* can also take an *if* or *when*-clause as complement with an explicit nominal antecedent such as 'case' (6) or 'circumstance' (7):
 - (6) However, there might be <u>certain cases</u> where you want to use it, namely if the opponent has way too many demolishers (4 or more)[...]
 - (7) A breach of the peace may take place on private premises but only in defined circumstances, namely if a member or members of the public are likely to be disturbed.
- Not all modal expressions are a good antecedent for *namely*. First, universal force modals and veridical verbs are disallowed:
 - (8) a. Working as a filmmaker **must be** taxing, #namely if you're required to get sleek product shots.
 - b. Working as a filmmaker **is** taxing, #namely if you're required to get sleek product shots.

This is the same pattern we see in other constructions involving implicit questions, such as sluicing ((9); from Chung et al. 1995: 254), and nominal *namely*, (10):

- (9) a. Joan ate dinner with **several** students in her class, and we're all wondering (with) who.
 - b. *Joan ate dinner with **every** student in her class, and we're all wondering (with) who.
- (10) a. Joan met a student from her class, namely Peter.
 - b. ?Joan met every student from her class, namely Peter, Linda, Mary, ...
- Moreover, not all existential force modals are good with *namely*. Consider the example below:
 - (11) You can get a refund, ??namely if there was a production fault.

Intuitively, if one says "you can get a refund", it doesn't mean that there exist circumstances in which you get a refund, but rather that in <u>your</u> circumstances, you get a refund.

- *Namely* is also degraded with epistemic modals:
 - (12) (For all I know) Linda may be in her office, ??namely if she has a meeting with her student.

In order to understand these restrictions, we have to understand the type of modal expression used in (5), see

2.2 Quantificational modals

• Portner (2009) defines the (somewhat understudied) class of **quantifica-***tional modals*.

A quantificational modal "incorporates the semantics of an adverb of quantification together with some sort of additional, more properly 'modal,' meaning" (p. 213). Below are Portner's examples (p. 214):

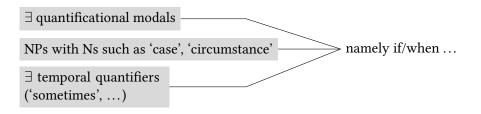
- (13) a. A dog **sometimes** bites. \leftrightarrow A dog **can** bite. b. A dog **always** bites. \leftrightarrow A dog **will** bite. adverb of q. q. modal
- I want to argue for the following descriptive generalization:

(14) Generalization

Only existential quantificational modals can serve as modal antecedents of *namely*.

- In the examples of modal *namely* in (5), each modal can be paraphrased with an adverb of quantification: "working as a filmmaker is <u>sometimes</u> taxing", "IIN sometimes asks for personal data", etc.
- In the other direction, we note that in (11), "you can get a refund" does not mean "you sometimes get a refund", so *can* does not have a quantificational modal reading here. The same holds for the epistemic modal in (12): "Linda may be in her office" ≠ "Linda is sometimes in her office".
- As further support for the generalization in (14), we find that overt temporal quantifiers such as *sometimes* or *occasionally* combine with *namely* (examples from iWeb corpus):
 - (15) a. Fear also hardens sometimes, namely when it is not great.
 - b. It has been pointed out that in British English at least, the "of" in "could of" etc. is <u>sometimes</u> clearly audible, namely when the word is stressed.
 - c. She only <u>occasionally</u> wears that engagement ring from Jeff, namely when she wants extra attention.

• Overview of possible antecedents of *namely if / namely when*:



3 Theories about *namely*

Different theories have been proposed about the precise nature of the implicit question that *namely* answers. I'll discuss below AnderBois and Jacobson (2018) (henceforth AB&J), and Onea (2016).

3.1 AnderBois and Jacobson (2018)

- AB&J claim that the antecedent of *namely* needs to introduce a **discourse referent**. The implicit question is then a specificational question about the identity of that discourse referent.
- This is reminiscent of sluicing, which has been analyzed as requiring an antecedent that makes an inquisitive contribution (AnderBois 2014). However, AB&J point out a number of differences between both constructions. One of them is the availability of 'sprouting', which is fine with sluicing (16a), but not with *namely* (16b) (p. 399):
 - (16) a. Juan celebrated his graduation, but I don't know where.
 - b. *Juan celebrated his graduation, namely on the beach.

According to AB&J, these data show that sluicing and *namely*-constructions involve different sorts of implicit questions.

• They propose the following generalization:

(17) *Namely* generalization (AB&J: 395)

"*namely* is licensed iff (i) there is material in the preceding discourse which supports a discourse referent, and (ii) the fragment serves to further specify that discourse referent."

3.2 Onea (2016)

- Onea (2016) instead argues that the implicit question that *namely* answers is directly derivable from its antecedent. This is part of a general theory of how utterances have the potential to raise implicit questions into the discourse.² The notion of a 'standard potential question' (SPQ) is rather weak:
 - (18) **Standard potential question** (Onea 2016: 120) A SPQ q licensed by some utterance u in some context c is such that:
 - (i) $c \cap \llbracket u \rrbracket \models p$ and $c \not\models p$, where $p = \inf_{q \in \mathcal{H}} (\mathcal{H}(q))^{\downarrow}$;
 - (ii) and there is no $p' \in \mathcal{H}(q)$, such that $c \cap \llbracket u \rrbracket \models p'$.

(where $\mathcal{H}(q)$ denotes the union of the highlighted alternatives of q; see Onea 2016: §3.3 and Roelofsen and Van Gool 2010)

- Examples of some SPQs raised by the sentence 'Mary danced':
 - (19) Mary danced.

(Onea 2016: 125)

SPQ:	$p = \inf(\mathcal{H}(q))^{\downarrow}$:
Who is Mary?	that Mary is somebody
When did she dance?	that Mary danced at some past time
Where did she dance?	that Mary danced at some place
Why did she dance?	that Mary danced for some reason
:	

²In the recent framework of dynamic inquisitive semantics (Dotlačil and Roelofsen 2019), the framework is extended with discourse referents and issues about their identity ('?x'). This offers the potential to integrate insights from AB&J about discourse referents and their corresponding specificational questions, with the inquisitive approach from Onea.

- *Namely* is sensitive to a more restricted type of potential question, namely a primary potential question (PPQ).
 - (20) **Primary potential question** (Onea 2016: 133) A potential question q licensed by some utterance u in some context c is a primary potential question (PPQ) licensed by u in c, iff the set of highlighted alternatives in q is compositionally derived/made salient by u.

For example, the sentence 'Mary danced' in (19) does not license any PPQs.

- The notion of PPQ is intended to explain familiar contrasts such as the following (Onea 2016: 134):
 - (21) a. Peter was with someone, namely with John. PPQ: Who was Peter with?
 - b. *Peter was not alone, namely with John. no PPQ (only SPQs)
- Onea formulates the following generalization:
 - (22) Onea's generalization about *namely* (Onea 2016: 43)
 "In English, *namely* only addresses primary potential questions (PPQs) which can be derived from the main utterance by replacing the an-chor [=antecedent] with a *wh*-word."

3.3 Back to the modal data

• The modal data are a counterexample to Onea's generalization: the modal expressions don't license a PPQ. There is no *wh*-word that can replace the modal expression.

Maintaining Onea's account would require that the modal raise a PPQ of the sort "Under what conditions/When is working as a filmmaker taxing?" for (8a), but this does not follow from the definition in (20).

- The implications of the modal data for AB&J's account are a little more complicated. Does a modal expression introduce a discourse referent? In many analyses of modal subordination this has indeed been proposed (see e.g. Stone 1999; Brasoveanu 2010 a.o.).
 - (23) A^{u_1} wolf might^{p_1} enter the cabin. It_{u_1} would_{p_1} attack John.
- However, this strategy leads to overgeneration: any modal (and tense) operator introduces a discourse referent, but not all such operators make good antecedents of *namely*. Moreover, it is not clear that this discourse referent $(p_1 \text{ in } (23))$ ranges over denotations of *if*-clauses, rather than, say, the modal base.
- Summarizing, different proposals have been made for the source of implicit questions in discourse in different constructions:

	construction	source of implicit question:
AnderBois and	namely	implicit specificational question about
Jacobson (2018)		identity of d-ref
AnderBois (2014)	sluicing	inquisitive contribution of antecedent
Onea (2016)	namely	PPC derived from the antecedent of
		namely

Table 1. Summary of accounts of implicit questions

What is the source of the implicit question in the modal case?

4 Modal specification and modal restriction

4.1 Portner's semantics of quantificational modals

• Portner (2009: 218) provides a semantics for quantificational modals that is based on an analysis of adverbs of quantification in the framework of situation semantics (Kratzer 2019):

(24) a. $\llbracket \text{sometimes} \rrbracket(\alpha, \beta) = \{s : \exists s' [s' \leq s \& s' \in \text{counting}(\alpha) \& \exists s'' [s' \leq s'' \& s'' \in \beta]] \}$

$$\begin{split} \mathbf{b}. \quad \llbracket \mathbf{can}_{\mathbf{quant}} \rrbracket(\alpha,\beta) &= \{s: \exists s' [R(s,w_{s'}) \And s' \in \mathbf{counting}(\alpha) \\ \& \exists s'' [s' \leq s'' \And s'' \in \beta]] \} \end{split}$$

Here, $COUNTING(\alpha)$ denotes the set of 'counting situations of α '. In Kratzer's (2019) terms this refers to the situations that exemplify the proposition α , and are maximally self-connected.

- In this analysis, quantificational modals adopt two properties of adverbs of quantification that set them apart from other modal operators:
 - 1. Quantificational modals quantify over situations, other modal operators quantify over possible worlds.
 - 2. Quantificational modals take two arguments instead of just one: the modal prejacent β , and the *if*-clause α .
- Example:
 - (25) a. A spider can be dangerous if it is attacked.
 - $b. \quad [\![can_{quant}]\!](spider-attacked, spider-dangerous)$
 - c. informal result of (24): "some counting situation in an accessible world of a spider being attacked, extends to a situation in which the spider is dangerous"
- Portner (p. 219) argues that when there is no overt *if*-clause is present, as in (26) below, the α argument is filled in by context.
 - (26) Working as a filmmaker can be taxing. $[can_{quant}](C, working as a filmmaker is taxing)$

- 4.2 Modal restriction, specification and exemplification: exhaustivity
 - The standard restrictor analysis of conditionals holds that *if*-clauses restrict a (possibly covert) modal operator (von Fintel 2011). The modal *namely* construction shows that modals and *if*-clauses can also interact in a different way.
 - The meaning of the modal *namely* construction in (27b) is different from that of (27a):
 - (27) a. A spider can be dangerous if it is attacked. (=(25))
 - b. A spider can be dangerous, namely if it is attacked.

One difference is that (27b) carries an implicature of **exhaustivity**. It implicates that the situations in which a spider is dangerous are fully specified as the attacking situations. (27a) merely says that some situations in which a spider is attacked are ones in which it is dangerous.

- The same contrast is observed with temporal quantifiers such as *sometimes*, which may make the contrast in (27) clearer.
 - (28) a. I am sometimes sad when it rains.= some raining situations are situations in which I am sad
 - b. I am sometimes sad, namely when it rains.
 = there are some situations in which I am sad; these situations are raining situations
- A link between *namely* and exhaustive answers has been made in the nominal domain: German *nämlich* provides a complete answer to the implicit question that was raised by the antecedent (Onea and Volodina 2011: §4.2; Onea 2016: §6.2.2).³ We have seen something similar in English, for example in (5b), repeated below, in which an exhaustive list is given:

(29) IIN may ask for personal data, namely when you: request a catalog or magazine, order books, take our quiz, subscribe to our newsletters, or request customer service.

In Onea's work, the completeness requirement is stipulated as a requirement of *namely/nämlich*, but a more explanative account is not given (see Onea and Volodina 2011: 16 for some discussion).

- Compare the reading of *namely* with *for example*, which can appear in the same position:
 - (30) Working as a filmmaker can be taxing, **for example** if you're required to get sleek product shots.

The complement of *for example* is conveyed as one of the situations in which working as a filmmaker is taxing, i.e. it is non-exhaustive. See Schwager (2005) for an analysis of the German counterpart *zum Beispiel* as an operator that forces inexhaustive modality.⁴

4.3 Licensing namely

- I argue that there is a **granularity effect** when it comes to licensing *namely*: an expression can only serve as the antecedent of *namely* if it raises an implicit question about the identity of an object that is 'large enough'/clearly identifiable.
- For example, possible worlds (as in non-quantificational modal operators), and events (as in sprouting, recall (16)), are too fine-grained. However, the 'counting situations' that quantificational modals (24b) and temporal adverbs of quantification (24a) quantify over, as well as individuals, are acceptable. See Table 2.
- I argue that the question that is raised by the quantificational modal in sentences such as (27b) asks to specify the α -situations, and the complement of *namely* gives a complete answer, in line with theories that analyze *if*-clauses as definite descriptions (Schlenker 2004).

 $^{^{3}}$ It is pointed out in these works that the completeness requirement of *nämlich* does not apply to *und zwar*, another specificational adverb in German. It would be interesting to see if/how modal antecedents and *if*-clause complements are allowed with *und zwar*, but I haven't looked into this yet.

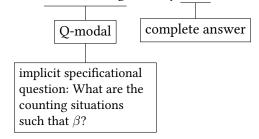
⁴Thanks to Maria Aloni (p.c.) for referring me to this work.

\exists -quantification over:	namely possible?	examples
possible worlds	N	non-quantificational modals;
		(11), (12)
events	N	sprouting; (16)
times	N	simple time adverbials;
		temporal sprouting
individuals	Y	regular cases with DPs / d-refs
counting situations	Y	quantificational modals /
		temporal adverbials of
		quantification

Table 2. Different levels of granularity

(31) Modal specification

Working as a filmmaker can be taxing, namely if



• Cases of *namely* with a non-quantificational modal (such as (11) and (12)) are typically not judged completely impossible, but degraded. I assume that in suitable contexts, a non-quantificational modal can be (re)interpreted in such a way that separate circumstances/conditions are made salient. In that case, a modal *namely* construction is licensed.

5 Conclusions and some theoretical consequences

On the distribution of *namely*

- We have seen that *namely* can take a wider variety of antecedents than just the DPs that are typically studied. An antecedent such as a modal or an adverbial operator is possible, but only when it is able to raise a question about the identity of a sufficiently large/identifiable formal entity, such as a counting situation.
- I hope that in future work, for example using dynamic inquisitive semantics (Dotlačil and Roelofsen 2019), the different notions of implicit questions in sluicing, nominal and modal *namely*-constructions can be given a unified treatment (recall the discussion in section 3.1 and footnote 2 above).

On the inquisitive status of modals

• There is some discussion in the literature on inquisitive semantics on the status of various existential quantifiers: existential quantifiers over individuals are inquisitive (Ciardelli et al. 2018), but what about existential quantifiers over other entities, such as the ones in Table 2 ($\exists w, \exists e, \exists t, ...$)? (cf. Tellings 2019).

For example, in AnderBois (2014) it is proposed that existential quantifiers over events similarly raise an issue about the identity of the event, in order to account for the behavior of sprouting.

- The data analyzed here suggest that the 'counting situations' (the informal natural "units" to count with) are coarse-grained enough to raise an issue about their identity. These appear in quantificational modals, and in temporal quantifiers (*sometimes, occasionally*).
- There is earlier work on the inquisitive status of modals (Ciardelli and Roelofsen 2018), but this is from a rather different perspective.

On the semantic role of *if* - and *when*-clauses

- In the data discussed here, *if* and *when*-clauses do not *restrict* a modal operator, but *specify* it. This corresponds to a difference in meaning (recall (27)/(28)).
- Earlier literature on the information-structural properties of conditionals has pointed out that *if*-clauses tend to be topics (Haiman 1978; Schiffrin 1992; Ebert et al. 2014), although they can also be focal (Farr 2011, cf. Tellings 2018). The construction analyzed here provides yet another example of an *if* or *when*-clause functioning as an answer to a question.

A Appendix: some notes on cross-linguistic variation

- Many languages have specificational adverbs, including Dutch, German, French, Italian, Hungarian, Romanian, Russian, and Chinese (see Onea 2016: §6.1.1 for examples).
- Languages differ in how many such adverbs they have, as well as in their semantic properties (specificational/explanative, exhaustive/non-exhaustive, discourse-starting or not, etc.):
 - Dutch *namelijk* and German *nämlich* have, in addition to the specificational use, also an explanative use (see footnote 1 above).
 - Various languages have more than one specificational adverb (German nämlich vs. und zwar; Hungarian éspedig vs. megpedig; Dutch namelijk vs. en wel/te weten; French à savoir vs. c'est-à-dire). The different lexical items may be associated with differences in distribution and semantics (see e.g. Onea and Volodina 2011; Onea 2016: §6.2 for the German contrast).
- How the modal NAMELY construction is sensitive to lexical variation of specificational adverbs in languages that have it, is a topic for future investigation. Here I will make a few brief remarks on Dutch and German.
- The modal NAMELY construction exists for Dutch and German as well. Below are examples found online:

(32) a. De positie van Major kan nog verder verzwakt worden. Namelijk als zou blijken dat zijn partij ook bij de Europese verkiezingen van gisteren zwaar heeft verloren.
 'Major's position can be weakened further. Namely if it turned

out that his party also lost the European elections'.
b. Selbst eine wissenschaftliche Arbeit, deren Inhalte in deinem Kopf einfach umwerfend sind, <u>kann noch in die Hose gehen</u>: nämlich wenn du sie nicht so formulieren kannst, wie das an

der Uni erwartet wird. 'Even a scientific paper [...] can go wrong: namely when you cannot formulate it in the way that is expected at university'

- Because Dutch and German also have an explanative use of NAMELY, a somewhat subtle difference arises between 'specifying a modal' and 'explaining a modal'. The difference, however, is clear due to the different syntactic properties:
 - (33) a. Een gestolen identiteitskaart kan u veel geld kosten, namelijk wanneer u het slachtoffer wordt van identiteitsdiefstal.
 'A stolen ID card may cost you a lot of money, namely when you become a victim of identity theft.'
 - b. Een gestolen identiteitskaart kan u veel geld kosten. Wanneer u namelijk het slachtoffer wordt van identiteitsdiefstal, *(kunnen criminelen geld van uw rekening afschrijven).

'A stolen ID card may cost you a lot of money, because when you become a victim of identity theft, criminals can withdraw money from your account'

(33a) is an example of specificational *namelijk*, found online. (33b) is the constructed explanative counterpart. It has *namelijk* in a different syntactic position, and a main clause is obligatory in the sentence containing the *wanneer*-clause.

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