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(Partially) Free Choice of Alternatives

Anamaria Fălăuş

Pre-final version

Abstract: This paper contributes to the semantic typology of dependent indefinites, by accounting for the distribution and interpretation of the Romanian indefinite *vreun*. It is shown that its occurrences are restricted to negative polarity and a subset of modal contexts. More specifically, the study of its behavior in intensional environments reveals that *vreun* is systematically incompatible with non-epistemic operators, a restriction we capture by proposing a novel empirical generalization ('the epistemic constraint'). To account for the observed pattern, we adopt the unitary approach to polarity in Chierchia (2006, 2013) and derive the properties of *vreun* from its obligatory association with alternatives. Its distributional restrictions are argued to follow from the interplay between the types of alternatives it activates (scalar and subdomain alternatives), the way these alternatives are factored into meaning (*via* an independently motivated mechanism of exhaustification) and the lexical semantics of the operators in the context of occurrence. We propose that the epistemic constraint arises from the lexicalization of an inference (anti-total variation) that non-epistemic operators can never satisfy.

Keywords: polarity sensitivity, epistemic indefinites, free choice, alternatives, exhaustification

1. Introducing the Romanian determiner *vreun*

1.1 Background

This paper focuses on the Romanian determiner *vreun*, whose distribution was shown by Farkas (2002) to pose a challenge to current theories of semantically dependent indefinites. Morphologically, *vreun* (and its feminine form *vreo*) is a complex variant of the standard indefinite article *un* (masculine)/*o* (feminine), combined with the morpheme *vre-* (from the Latin verb *volere* ‘want’), which occurs with singular countable nouns. As illustrated by the ungrammaticality of the episodic sentence in (1), *vreun* has a restricted distribution, a property that sets it apart from the indefinite article form on which it builds:

- (1) * Monica s-a întâlnit cu *vreun* prieten/ *vreo* prietenă
 Monica REFL-have.3SG met with VREUN friend.MASC VREUN friend.FEM
 ‘Monica met a friend.’

Exclusion from episodic sentences is typically assumed to be the hallmark of polarity sensitive, or more generally, dependent indefinites.¹ A common strategy in the literature on polarity sensitive items consists in trying to identify licensing conditions, i.e. subsume their contexts of occurrence under some common description. Among other things, this strategy led to Ladusaw’s generalization on the distribution of negative polarity items (NPIs), restricted to downward-entailing contexts (1979); or to the long-standing observation that free choice items (FCIs) are sensitive to modality (e.g. Vendler 1967). Licensing conditions are inherently descriptive, but they set the stage for an explanatory account for the phenomenon of polarity.

In line with this tradition, the first goal of the present study is to provide an accurate description of the contexts of occurrence of *vreun*. In doing so, we build on the account in Farkas (2002, 2006), which to my knowledge constitutes the only detailed study of *vreun* in the literature. We refine the empirical picture, by further probing two environments Farkas mentions, namely modal and attitude contexts. This brings out distributional contrasts previously overlooked, which I subsume under a novel empirical generalization (‘the epistemic constraint’). The outcome is that *vreun* occurs in the scope of downward-entailing and non-factive epistemic operators, a pattern that sets *vreun* apart from other dependent indefinites documented to date. This empirical investigation contributes to a more general research program that aims to identify and explain the possible parameters of variation among (dependent) indefinites (see Aloni 2007; Aloni and Port 2010; Aloni and van Rooij 2007; Alonso-Ovalle and Menéndez-Benito 2008, 2010; Chierchia 2006, 2013a; Condoravdi 2005;

¹ I use the terms ‘polarity sensitive’ and ‘dependent indefinite’ interchangeably, to refer to indefinites that are excluded from episodic sentences like (1).

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Dayal 1998, 2004; Farkas 2002, 2006; Giannakidou 1997, 2011; Haspelmath 1997; Jayez and Tovena 2006, 2007; Kratzer and Shimoyama 2002; Zamparelli 2007).

The second goal of this study is to provide an explanatory account of *vreun*, which derives its behavior from its meaning and the nature of semantic composition, without making reference to any licensing operators (be they downward-entailing or epistemic). To this end, adopting the framework in Chierchia (2006, 2013a,b), I develop an alternative-based account that captures its distribution, while providing ways to situate *vreun* in a broader typology of polarity sensitive indefinites. We analyze *vreun* as an indefinite with obligatorily active alternatives and show that its (un)grammaticality is the direct consequence of the interplay between its alternative-triggering meaning and the semantic properties of the embedding operator. More specifically, we will demonstrate that the alternatives activated by *vreun* can only be successfully factored into meaning in the presence of a downward-entailing or modal operator. The restriction to epistemic contexts is derived by positing a further requirement on the set of alternatives activated by *vreun*, which we argue to conflict with the lexical meaning of non-epistemic operators.

The discussion is organized as follows: in the rest of this section, we survey the distribution of *vreun*, drawing on the generalizations and account in Farkas (2002, 2006). In section 2, we turn to a closer examination of the behavior of *vreun* in modal and attitude contexts, which we characterize by proposing a new empirical generalization ('the epistemic constraint'). Section 3 introduces the main assumptions underlying the alternative-based approach to polarity adopted in this paper (due to Chierchia 2013a,b). Section 4 derives the distribution of *vreun*, focusing on its restriction to epistemic contexts, which is argued to follow from constraints on the alternatives it activates and the semantics of the modal operators *vreun* interacts with. Section 5 summarizes and discusses some open issues for future research.

1.2 A previous account: Farkas (2002, 2006)

We start our study of *vreun*² by introducing the data and account in Farkas (2002, 2006), which constitute the point of departure of the present study.

The properties of the Romanian determiner *vreun* are first discussed in Farkas (2002), which carefully examines its distribution and points out the difficulty in formulating the underlying generalization(s). The first important descriptive observation is that *vreun* clearly does the work of a weak negative polarity item in Romanian, like English *any* or *ever*. The following examples³ show that the determiner *vreun* can be used in interrogatives (2), antecedents of conditionals (3) and restrictors of universal quantifiers (4), all very common NPI-licensing environments:

² I restrict the discussion to DPs introduced by *vreun*, but there is another morphologically related item *vreodată* (*vre* + *odată* 'once') 'ever' to which the analysis developed here can be extended. There is also a partitive use of *vreun*, mentioned in Farkas (2002), which I briefly discuss in section 2.5. The judgments reported here have been tested with around 30 native speakers.

³ All examples in section 1.2 are taken from Farkas (2002), with glosses slightly modified to match the rest of the examples in this paper.

- (2) Ai văzut *vreun* țigan fericit?
 have.2SG seen VREUN gypsy happy
 ‘Have you seen any happy gypsy?’
- (3) Dacă găsești *vreo* carte despre asta, cumpără-mi-o.
 if find.2SG VREUN book about this buy-me.DAT-it
 ‘If you find any book about this, buy it for me.’
- (4) Fiecare fată care a dansat cu *vreun* student va fi chemată la direcțiune.
 every girl who has danced with VREUN student will be called to office
 ‘Every girl who danced with any student will be called to the principal’s office.’

In all these sentences, *vreun* has a meaning similar to polarity sensitive *any*. Furthermore, it can occur in the scope of negative operators:

- (5) a. A plecat *fără* să vorbească cu *vreun* profesor.
 has left without SUBJ speak with VREUN teacher
 ‘(S)he left without speaking to any teacher.’
- b. Nu cunosc *vreun* medicament care să-l ajute.
 NEG know.1SG VREUN medicine that SUBJ-him help
 ‘I don’t know of any medicine that can help him.’

Furthermore, like NPIs, *vreun* needs to be in the immediate scope of its licenser, a restriction that is responsible for its ungrammaticality in (6):

- (6) **Vreun* student nu a picat.
 VREUN student NEG has failed
 ‘Any student didn’t fail./No student failed.’

These facts suggest that *vreun* is subject to the same distributional constraints as NPIs. However, Farkas points out two facts indicating that the behavior of *vreun* doesn’t entirely match that of NPIs: (i) restrictions on its use in negative sentences and (ii) occurrence in non-negative polarity contexts. First, unlike standard NPIs, *vreun* isn’t always licensed by clause-mate sentential negation. The negative concord item *niciun* is used in negative sentences, rather than *vreun*, as illustrated in (7):⁴

- (7) Nu am **vreo* prietenă/✓*nicio* prietenă la Utrecht.
 NEG have.1SG VREUN friend no friend in Utrecht
 ‘I don’t have any friend in Utrecht.’

⁴ We find a reverse pattern in the case of non-local negation, which typically doesn’t license negative concord items. As a result, *vreun* is acceptable in the scope of long-distance sentential negation. On the distribution of negative concord items in Romanian, see e.g. Fălăuș (2009) and Iordăchioaia (2009).

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The determiner *niciun* constitutes the default option in the local scope of sentential negation, but it does not entirely preclude the use of *vreun*, as exemplified above in (5b). The conditions governing the choice between *vreun* and *niciun* are not clear, but in contexts where they are both possible, such as (5), *vreun* seems to make a less categorical statement. More precisely, “*vreun* is natural in the presence of a clause-mate negation in examples [...] where it is less likely that the truth of the statement can be checked by verifying all relevant values” (Farkas 2002:138), e.g. the entire set of possible medicines in (5b). Without getting into further details for the time being, let us conclude that the interaction of *vreun* with sentential negation is affected by the availability of negative concord items in Romanian.

A second set of facts not captured by characterizing *vreun* as an NPI is its occurrence in the non-negative polarity contexts in (8)-(9):

- (8) Din când în când trenul se oprea în **vreo** haltă și câte
from when in when train-the REFL stop.IMPF.3SG in VREUN station and DIST
un navetist deschidea un ochi.
a commuter opened an eye
‘From time to time, the train would stop in some station and a commuter
would open an eye.’
- (9) a. E *posibil* ca Maria să se fi întâlnit cu **vreun** prieten
be.3SG possible that Maria SUBJ REFL BE met with VREUN friend
și să fi rămas cu el în oraș.
and SUBJ BE remained with him in town
‘It is possible that Maria met some friend and stayed with him in town.’
b. *Poate* că și-a cumpărat **vreo** carte despre Utrecht.
perhaps that her.DAT-has bought VREUN book about Utrecht.
‘Perhaps she bought herself some book about Utrecht.’

In (8), *vreun* is licensed by the so-called frequentative imperfective, which refers to a series of train-stopping events. The use of *vreun* stresses the random pairing between train-stopping situations and stations. In (9), *vreun* occurs in the scope of an epistemic modal operator and conveys the speaker’s ignorance with respect to the referent of the *vreun*-DP. Crucially, none of these contexts license NPIs, as also attested by the fact that in English *some or other* would have to be used instead of *any*. From a cross-linguistic perspective, the occurrence of an item with NPI-like properties in non-negative polarity environments is expected, as it constitutes a very common behavior for NPIs across languages (see e.g. Haspelmath 1997). However, unlike NPIs that double as FCIs and thus occur in various modal(ized) contexts (e.g. *any*), *vreun* is excluded from generic sentences, imperatives or the scope of the verb *want*:

- (10) ***Vreun** lup mănâncă carne.
VREUN wolf eats meat
‘A wolf eats meat.’
- (11) *Ia **vreun** măr!

- take.IMPV.2SG VREUN apple
 ‘Take an apple!’
- (12) **Vreau* să cumpăr *vreo* carte despre Olanda.
 want.1SG SUBJ buy VREUN book about Holland
 ‘I want to buy a book about Holland.’

These facts illustrate the challenge raised by the distribution of *vreun*: it resembles other polarity items in requiring some kind of licenser, but the set of licensing operators doesn’t fall within the categories familiar from the study of other dependent indefinites. A proper account of *vreun* therefore needs to explain (i) why *vreun* has a limited distribution; (ii) why *vreun* is licensed in precisely the environments where we find it and only there; and (iii) the difference between *vreun* and other dependent indefinites in Romanian (e.g. FCIs *orice* or *un oarecare*, negative concord *niciun*).

Farkas (2006) provides answers to these questions, shedding light on the data discussed so far and situating *vreun* with respect to other dependent indefinites in Romanian.⁵ More precisely, Farkas argues that *vreun* is an obligatorily existential element (i.e. the variable it introduces has to be bound or has to agree with an existential quantifier), which requires the existence of a set of alternatives that count as equal. This is common to all occurrences of *vreun*. Depending on the alternatives involved and the requirement imposed on these alternatives, the uses of *vreun* fall under two categories. On the one hand, like NPIs and FCIs, *vreun* may denote a maximal set of alternatives that verify the expression in which the item occurs. On this use, which characterizes its occurrences in negative polarity contexts (such as (2)-(5)), *vreun* is called an *undifferentiated choice item*. More formally, its interpretation involves a maximal set of mutually exclusive verifying alternatives. Alternatives are defined as assignment function-situation pairs and differ in the value assigned to a particular variable. The alternatives associated with *vreun* are maximal in that they include all possible values of the relevant variable (within the limits of salient contextual restrictions). The mutual exclusivity requirement ensures that each alternative in the relevant set is different from all the others, with respect to the values assigned to both individual and situation variables. The fact that alternatives are undifferentiated means that the choice among them is free: whichever alternative is chosen, the expression where *vreun* occurs is verified. For example, in the *if*-antecedent in (3), *vreo carte* denotes a maximal set of mutually exclusive alternatives involving different situations and different books in them, one such alternative for each possible book. The conditional then says that each larger possible situation in which the addressee finds a book is such that the addressee should buy that book. Which book is chosen for which situation is irrelevant; the only requirement imposed

⁵ Farkas (2002) has mainly a descriptive goal, aiming to characterize the distribution of *vreun* and to identify its distinctive features with respect to other indefinites. Although this first paper on *vreun* contains some of the main ingredients of the analysis (e.g. the hypothesis that *vreun* is an obligatorily existential element, whose semantics makes reference to a set of alternatives), it is Farkas (2006) that provides a more detailed formal treatment of *vreun*. For reasons of space, I omit the presentation of the analysis in Farkas (2002) and focus on the more articulated version in Farkas (2006).

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by *vreun* is that there be one verifying alternative for each situation that satisfies the antecedent.

On the other hand, *vreun* can be used as a *random choice* item, in contexts such as (8) and (9) above, where undifferentiated choice items (e.g. NPIs and FCIs) are not possible (as the context could not satisfy the requirements imposed on the alternatives). Random choice items also make reference to a set of alternatives that count as equal, but they differ from the alternatives involved in the interpretation of undifferentiated choice items in two respects. First, undifferentiated choice items require the set of alternatives to be maximal, i.e. to involve all possible values, whereas the individual variable of a random choice indefinite does not have to exhaust the domain of possibilities. Second, random choice items must allow for the possibility that there be no verifying value for the indefinite. In (8) for instance, there are situations where the train does not stop and consequently, there is no value for the *vreun* phrase. Similarly in (9), the use of the epistemic modal is compatible with situations where Maria met no friend or no book about Utrecht is bought.

Taking stock, Farkas lays out the main properties of *vreun* and identifies the challenges they raise. On the account she proposes, there are two different uses of *vreun*, whose common thread is the reference to a set of alternatives. The context has to satisfy the requirements imposed by the use of an undifferentiated choice item (maximal mutually exclusive verifying alternatives) or those imposed by a random choice item (uncertain existence of verifying values). If neither can be done, as for example in episodic sentences, *vreun* is ruled out. For a formal implementation of the account sketched above and for details on how it rules out the use of *vreun* in environments such as those in (10)-(12) above, as well as the differences and similarities with other Romanian indefinites, the reader is referred to Farkas (2002, 2006). For our present purposes, this informal presentation of the analysis suffices to establish the main characteristics of *vreun* and sets the basis for the account to be developed in this paper. As we will see, the intuition that *vreun* is an existential element, whose distribution is restricted to two different sets of environments, as well as the idea that its semantics makes reference to alternatives, will be preserved. But first, I would like to complete the empirical picture outlined so far by further examining the behavior of *vreun* in two sets of non-negative polarity contexts, namely modals and attitude verbs. This will enable us to refine the generalizations introduced above, leading to a better understanding of the issues raised by *vreun*.

2. The epistemic constraint

This section shows that the distribution of *vreun* in modal and attitude contexts is subject to further restrictions, which I capture by proposing a novel empirical generalization, ‘the epistemic constraint’.

2.1 The basic distinction

In the previous section, we have seen that in addition to its NPI use, *vreun* occurs in non-negative polarity environments, such as (9), repeated below:

- (9) E *posibil* ca Maria să se fi întâlnit cu ***vreun*** prieten
 be.3SG possible that Maria SUBJ REFL BE met with VREUN friend
 şi să fi rămas cu el în oraş.
 and SUBJ BE remained with him in town
 ‘It is possible that Maria met some friend and stayed with him in town.’

In (9), *vreun* takes scope under the modal operator ‘it’s possible’; the sentence conveys that Maria might have met a friend, the speaker doesn’t know which friend, and she might have stayed with him in town. In order to understand this use of *vreun*, it will be useful to consider indefinites that trigger a similar ignorance (or indifference) reading, such as the closely related Romanian indefinite *un NP oarecare* (Săvescu-Ciucivara 2007:211):

- (13) Maria *poate* să rezolve o problemă ***oarecare***.
 Maria can SUBJ solve.3SG a problem OARECARE
 a. ‘There is a certain problem that Maria can solve, the speaker doesn’t know/care which problem it is.’
 b. ‘No matter what problem Maria is faced with, she is able to solve it.’

Both *vreun* and *un NP oarecare* are existential elements, occurring in modal contexts, and signaling that the speaker is unable (or unwilling) to identify the individual that satisfies the modal claim. Indefinites that convey information about the speaker’s epistemic state are often referred to as *epistemic* or *modal* indefinites and have received a lot of attention in the last decade (e.g. Aloni and Port 2010; Alonso-Ovalle and Menéndez-Benito 2008, 2010; Chierchia 2006, 2013a; Farkas 2002, 2006; Giannakidou and Quer 2012; Jayez and Tovena 2006, 2007; Kratzer and Shimoyama 2002, among others). One of the common properties of these indefinites is their incompatibility with a continuation that would identify a referent for the indefinite phrase, i.e. the sentences in (9) and (13) couldn’t be felicitously followed by something like *namely Paul*.⁶ I will employ the term *epistemic indefinite* to refer to the use of *vreun* in non-negative polarity contexts.

In the following, I argue that modals and attitude predicates provide crucial insights into the constraints governing the behavior of *vreun* as an epistemic indefinite. To show this, we examine previously overlooked contrasts in its distribution. More concretely, the contrast in (14)-(15) indicates restrictions on its occurrence in modal environments:

⁶ The *namely* test was initially used for free relatives, which also have an ignorance or an indifference reading, see e.g., Dayal (1997), von Stechow (2000), Rawlins (2008). For a comparison between *wh*-ever relatives and free choice and epistemic indefinites, see Dayal (2009, 2013).

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- (14) Cu numele lui, *trebuie* să fie *vreun* aristocrat.
with name-the his must SUBJ be.3SG VREUN aristocrat
'Given his name, he must be some aristocrat.'
- (15) **Trebuie* să mă înscriu la *vreun* curs până mâine.
must SUBJ REFL register.1SG at VREUN class until tomorrow
'I have to register for a class by tomorrow.'

Likewise, *vreun* is possible under some attitude verbs (*hope*), but not others (*want*):

- (16) ✓*Sper* / **Vreau* să gădesc *vreun* cadou pentru sora mea.
hope.1SG want.1SG SUBJ find.1SG VREUN present for sister-the my
'I hope/want to find some present for my sister.'

The first goal is to identify the factor(s) responsible for the contrasts in (14)-(16), which are unexpected given the types of dependent indefinites attested in the literature. The examples above suggest that *vreun* occurs in a subset of intensional environments, so our first task in this connection is to find a uniform way to characterize the relevant environments. As discussed in section 1.2, *vreun* occurs in contexts that are 'hypothetical', where "the choice of *vreun* over the ordinary indefinite [...] stresses the uncertainty of the existence of a verifying value in the world of evaluation" (Farkas 2006:90). Refining this observation, I argue that the distribution of *vreun* in non-negative polarity contexts is captured by the following generalization:

- (17) THE EPISTEMIC CONSTRAINT⁷
The determiner *vreun* is licensed by obligatorily non-factive epistemic operators.

By 'obligatorily non-factive epistemic operators', I refer to operators that quantify over epistemic alternatives and whose semantics makes them incompatible with situations where the proposition *p* embedded by the operator is established to be true. To put it differently, according to the epistemic constraint in (17), the epistemic alternatives must include both *p*-worlds and *non p*-worlds. This formulation seeks to capture the intuition that the uncertainty (concerning the truth of *p*) component is crucial for the acceptability of *vreun*. To make this concrete, let me demonstrate how

⁷ In previous work, I offered a somewhat more abstract formulation of the epistemic constraint:

(i) Context of occurrence: Op [...*vreun*...]

Op *p* entails that the speaker's epistemic alternatives include *non p*-worlds

However, the formulation in (i) obscures the fact that the epistemic constraint is a descriptive statement, which puts together a number of contexts of occurrence, but which ultimately has no explanatory value on its own. The formulation in (17) retains the empirical coverage of (i), but has a more clearly descriptive status.

the epistemic constraint applies to *vreun* in the scope of modal operators (2.2 and 2.3) and attitude verbs (2.4).

2.2 Presumptive mood

The epistemic constraint is based on the intuition that *vreun* is restricted to environments that are hypothetical, where the speaker communicates she is not in a position to rule out completely the possibility that the proposition containing *vreun* is false. The context that shows in a straightforward way the role of this ‘uncertainty’ component is the *presumptive* mood - a ‘specialized’ mood for conveying hypotheses - which constitutes one of the prototypical contexts of occurrence for *vreun*. Morphologically, it presents different paradigms, following the pattern AUXILIARY MODAL (conditional/future/subjunctive) + BE + PARTICIPLE (present/past). Irimia (2010) investigates the properties of the presumptive mood, and the way it differs from its homonymous future/conditional constructs, arguing that presumptive forms are subject to distinct syntactic, pragmatic, and semantic constraints. The point that bears directly on our discussion is that presumptive forms are semantically very similar to epistemic modals, insofar as they have a meaning component of *indirect evidentiality*. This means that upon using the presumptive, the speaker makes a claim that a certain state of affairs might hold (or might have held) and signals that her claim is based on an indirect source of information (e.g. inference or hearsay). This implies that the speaker is not in a position to exclude that things might be (or have been) different. The construct that is most relevant for our present purposes is the so-called *future2-based* form, which always associates with inferences based on indirect evidence. The example in (18), taken from Irimia (2010), constitutes a typical context of use, where the fact that the lights are off is taken to be indirect evidence for the claim that someone might have gone to bed:

- (18) Luminile sunt stinse în apartamentul lor. S-or fi culcat.
 lights-the are off in apartment their SE-FUT2.3PL BE sleep.PAST.PRT
 ≈ ‘The lights are off in their apartment. They might/must have gone to bed.’

The indirect evidentiality meaning associated with the presumptive form is not compatible with a proposition *p* that is taken to be true. In other words, the speaker’s epistemically accessible worlds have to include both *p*- and *non p*-worlds. As a result, the presumptive can never be used in propositions established to hold, such as the direct evidence context in (19) or the complement of a factive verb like *know* (20):

- (19) *Watching by the window and seeing pouring rain:*
 #O fi plouând.
 FUT2.3SG BE rain.1SG.PRST.PART
 ‘It must be raining.’
- (20) *Știu că oi fi având un virus în calculator
 know.1SG that FUT2.1SG BE have.1SG.PRST.PART a virus in computer

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‘I know I must have a virus in my computer.’

As predicted by the generalization in (17) above, which states that *vreun* is licensed by non-factive epistemic operators, the (inferential) presumptive plays a crucial role in the distribution of *vreun*:

- (21) Context: The house has been turned upside down and the money is missing.
- a. A intrat **vreun*/✓*un* hoț.
have.3SG entered VREUN a burglar
- b. O fi intrat *vreun* hoț.
FUT2.3SG BE enter.PAST.PART VREUN burglar
- ‘A burglar might have got in.’

The intended interpretation of (21) is a hypothesis about the reason behind the mess in the house and the disappearance of the money, but despite this hypothetical meaning, clearly indicated by the context, *vreun* is ruled out in the episodic sentence in (21a). In contrast to this, the plain indefinite *un hoț* ‘a burglar’ would be acceptable and would convey the intended ignorance effect concerning the identity of the burglar. If the indicative verbal form is replaced by the presumptive, *vreun* becomes acceptable (21b). This contrast is captured by the epistemic constraint in (17): in (21a), there is no operator that could license *vreun*, whereas in (21b), the use of the presumptive arguably supplies a non-factive epistemic licenser, which makes *vreun* acceptable.

These facts demonstrate the tight connection between *vreun* and the hypothetical meaning conveyed by the presumptive, a connection which makes the (inferential) presumptive an extremely frequent context of use for *vreun*.⁸ The contrast in (21) further shows that *vreun* is ruled out in episodic sentences (as already illustrated in (1) above) and that context is not sufficient to license *vreun*, even in cases where the intended hypothetical reading is easily available.

2.3 Modal contexts

The epistemic constraint in (17) also captures the distribution of *vreun* in a closely related set of environments, namely the scope of modals. Romanian has two modal auxiliaries, the possibility modal *a putea* and the necessity modal *a trebui*, which are used to express a wide range of modal meanings. The determiner *vreun* can occur under both these modals, but crucially, only when they are interpreted with respect to an epistemic modal base. For illustration, consider the following examples:

- (22) Se aud des sirene de ambulanță, *trebuie/poate* să fie
SE hear.3PL often sirens of ambulance must may SUBJ be.3SG

⁸ *Vreun* is also possible under the hearsay presumptive, especially in combination with the hearsay evidential *cică*, but this use is much less frequent and may be subject to dialectal variation:

- (i) *Cică* ar fi apărut *vreun* nou virus extrem de periculos.
EVID.ADV COND.3SG BE appeared VREUN new virus extremely of dangerous
‘(I hear/They say) A new, extremely dangerous virus has appeared.’

- vreun* spital prin zonă.
 VREUN hospital in area
 ‘One can often hear ambulance sirens, there must/may be a hospital nearby.’
- (23) **Trebuie* să trimit *vreun* articol până mâine.
 must SUBJ write.1SG VREUN article by tomorrow
 ‘I must send a paper by tomorrow.’
- (24) **Ca* să ajungi în centru, *poți* lua *vreun* autobuz.
 that SUBJ get.2SG in center can.2SG take VREUN bus
 ‘In order to get downtown, you can take a bus.’

Sentence (22) has an epistemic construal, both with the necessity modal and the possibility modal, and *vreun* is perfectly acceptable. In contrast to this, when the modal has a deontic (23) or teleological (24) construal, *vreun* cannot be used, even if the speaker is fully ignorant with respect to the referent of the *vreun*-phrase. The obvious source for this contrast lies in the kind of alternatives that are relevant for the interpretation of the modal operator – epistemic in (22) and non-epistemic (sets of obligations or goals) in (23)-(24). Adopting the theory of modality due to Kratzer (1981, 1991), the interpretation of (22) amounts to (universal or existential) quantification over the worlds in the epistemic modal base, which picks out worlds compatible with the available evidence (e.g. the frequent sound of sirens, the fact that ambulances typically head to hospitals). In contrast to this, the modal statements in (23)-(24) are interpreted with respect to a circumstantial modal base, in which the relevant worlds are determined by certain obligations, goals or desires. These examples show that the epistemic modal base plays a decisive role in the acceptability of *vreun*, corroborating the epistemic constraint proposed in (17).

Having confirmed the role of epistemic alternatives, we can now examine more carefully the role of non-factivity, the other factor present in the epistemic constraint. Recall that this component of the generalization in (17) seeks to capture the ‘uncertainty’ flavor that characterizes the environments where epistemic *vreun* is acceptable, i.e. the incompatibility with operators that establish the proposition containing *vreun* to hold. Epistemic modals generally fall under this pattern. More specifically, in addition to quantification over epistemically accessible worlds, the meaning of an epistemic modal has often been argued to involve an indirect evidentiality component (see von Stechow and Gillies 2010 for a recent discussion of this matter). Simplifying, epistemic modals are sensitive to the type of evidence that is relevant for the truth of *p*: upon using an epistemic modal, the speaker is not only conveying something about her beliefs,⁹ but also that she only has *indirect* evidence for her claim. This leaves open the possibility that direct evidence eventually contradicts *p*. Arguments in favor of the presence of the evidential component come from situations where direct evidence conflicts with the use of an epistemic modal.

⁹ According to the standard analysis of epistemic modals, we express possibilities on the basis of *what is known* (in the actual world). However, the behavior of embedded epistemic modals indicates that they are not necessarily knowledge-based, but rather they express compatibility with an epistemic agent’s beliefs, or his information state (e.g. Hacquard 2006).

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The typical example involves perceptual evidence, e.g. upon looking at pouring rain, one cannot utter something like *It must be raining*. Direct evidence settles the truth of *p*, and conflicts with the indirectness signal carried by an epistemic modal. This in turn means that when the speaker chooses to make use of an epistemic modal, we are entitled to draw the inference that she is not in a position to make the non-modalized claim *It is raining*, i.e. she cannot rule out the possibility that the proposition does not hold. In other words, the speaker's epistemic alternatives include (possibly unlikely) *non p*-worlds, a property that proves crucial for the distribution of *vreun*, both for its use with modal auxiliaries and the presumptive mood.¹⁰

Interestingly, there are contexts where the uncertainty associated with indirect evidence does not seem to hold, as in (25), due to von Stechow and Gillies (2010):

- (25) Chris has lost her ball, but she knows with full certainty that it is either in Box A or B or C. She says:
The ball is in A or in B or in C. It is not in A. It is not in B. So, it must be in C.

Romanian epistemic modals are no different in this respect, i.e. they can be used in contexts like (25). However, whenever the uncertainty is explicitly ruled out, *vreun* is deviant. To see this, consider the following example:

- (26) We are playing cards. In order to win, I still need the ace of spades. However, by now all cards have been played and it is clear that the ace is not in the pile of cards on the table. So the only option is that one of the other players has it:
Asul *trebuie* să fie la **vreun*/*un* jucător (și poate fi oricare din ei).¹¹
ace-the must SUBJ be.3SG at VREUN a player and could be any of them
'The ace must be with some/a player (and it could be any of them)'

The context makes it clear that one of the players has the ace, and although the speaker cannot identify the player in question, *vreun* cannot be used. Whenever the proposition embedded under the modal is established to hold, *vreun* is ruled out. However, most uses of epistemic modals differ from (25) and (26), insofar as the embedded proposition is typically not established to be true. As a result, *non p*-worlds are included among epistemic alternatives, i.e. the context is non-factive, a property that leads to the acceptability of *vreun*.

¹⁰ Further evidence in favor of the *non p*-worlds component of epistemic modals comes from the following contrast (provided by an anonymous referee and attributed to Frank Veltman):

(i) The door is ringing. It must be the pizza deliverer. No – it's the mailman.

(ii) The door is ringing. It is the pizza deliverer. #No – it's the mailman.

¹¹ As correctly noted by one of the referees, a possible issue arising in this context is the preference for a partitive indefinite (plain or epistemic). Since the set of possible values is very clear in the context, the default option used by speakers is a partitive indefinite like *one of the players*. The continuation in (26), *and it could be any of the players* is needed in order to make the use of a plain indefinite (*a player*) felicitous. However, despite the continuation, (non-partitive) *vreun* remains illicit in this context (for remarks on partitive *vreun*, see section 2.5).

Summarizing, our discussion so far underlines the role of two factors in the distribution of *vreun* (i) epistemic alternatives and (ii) non-factivity (i.e. the existence of *non p*-worlds among the epistemic alternatives). I have argued that the epistemic constraint captures two tightly related contexts, both involving a component of indirect evidentiality - presumptive forms and epistemic modals. I now turn to attitude contexts, and show that they provide further support for the generalization in (17).

2.4 Attitude contexts

We have seen that the semantic properties of intensional operators embedding *vreun* provide the key to an adequate description of its restricted distribution. In addition to modals, one other context that is particularly relevant in this connection are attitude verbs.¹² As expected in view of the previous discussion, we will be primarily concerned with the area of epistemic attitudes. Just like with modals, epistemic alternatives prove to be the crucial factor to which *vreun* is sensitive. This hypothesis is substantiated by the ungrammaticality of *vreun* under predicates whose interpretation does not involve epistemic alternatives, namely predicates referring to obligations, requests or suggestions, like the ones in (27):

- (27) *Roxana *m-a rugat/ mi-a cerut/ mi-a*
 Roxana me-have.3SG asked me-have.3SG requested me-have.3SG
ordonat/ mi-a sugerat să aduc vreun cadou.
 ordered me-have.3SG suggested SUBJ bring VREUN present
 ‘Roxana asked/requested/ordered/suggested to me to bring some present.’

Let us then focus on attitude predicates involving quantification over epistemic alternatives. On the generalization proposed here, we expect *vreun* to be ruled out under operators whose complement proposition is established to be true. The systematic ungrammaticality of *vreun* in factive contexts shows that this is borne out:

- (28) **Ştiu / *Am aflat că am vreun* virus în calculator.
 know.1SG have.1SG found-out that have.1SG VREUN virus in computer
 ‘I know/found out that I have some virus in my computer.’

In contrast to this, *vreun* is perfectly acceptable under non-factive doxastic predicates:

- (29) *Cred*¹³/*Bănuiesc/ Sunt convins/ Sunt sigur* că
 believe.1SG suppose.1SG am.1SG convinced am.1SG sure that
 am *vreun* virus în calculator.
 have.1SG VREUN virus in computer

¹² To the best of my knowledge, most of the facts introduced in this section constitute novel observations. Farkas (2002) notes the exclusion of *vreun* from the scope of *want* and emotive factives, but does not discuss further attitude contexts.

¹³ The verb *a crede* lit. ‘to believe’ is ambiguous between English *to believe* and *to think*. The verb *a se gândi* lit. ‘to think’ is less frequent and conveys a more hypothetical meaning, similar to *suppose*.

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‘I think/suppose/I’m convinced/sure I have some virus in my computer.’

How do these attitude predicates line up with the epistemic constraint? Recall the case of necessity epistemic modals: when we use *Must p* (on its epistemic construal), we assert that our epistemic alternatives are such that the proposition *p* holds, but we also typically convey that the claim is based on indirect evidence and hence we are not in a strong enough position to completely rule out *non p*-worlds. Likewise, when we assert something like ‘I think/suppose/assume *p*’, we not only communicate that it is compatible with our beliefs that a certain state of affairs holds (denoted by the complement proposition *p*), but also that we cannot fully exclude *non p*-situations. Crucially, if the complement proposition is established to be true, the speaker cannot use *think* or *suppose* (she would use *know* or *believe*). For example, in the pouring rain context, the speaker cannot felicitously utter *I think/suppose it is raining*. We find a similar incompatibility with situations where *p* is established to hold even for verbs like *be convinced/sure*, which once again, tend to be used in contexts where *non p* might hold. What is important to notice, in this connection, is the relevance of the uncertainty component for the occurrence of *vreun*. Just like with epistemic modals, if *p* is necessarily true, the embedding operators may sometimes be used, but *vreun* is ruled out. To see this, let us use the same context as in the case of epistemic modals:

- (30) We are playing cards. In order to win, I need the ace of spades. However by now, all cards have been played and it is clear that the ace is not in the pile of cards on the table. So the only remaining option is that one of the other players has it. I might not have thought this before, but now:

Cred /*Sunt convins* că asul e la **vreun*/*un* jucător.
believe.1SG am.1SG convinced that ace-the is at VREUN a player
‘I believe (=know)/I am convinced that some/a player has the ace.’

Verbs like *think/believe* or *be convinced* are generally not used in contexts where the embedded proposition is established to hold. If we enforce such a context, however, we see that *vreun* is ruled out, a fact that I take to support the generalization in (17).

The epistemic constraint defines the set of licensing operators of *vreun* as ‘obligatorily non-factive epistemic’ operators. While the role of epistemic alternatives and non-factivity is clear in the distribution discussed so far, the ‘obligatorily non-factive’ part hasn’t yet been justified. Its role is to capture the contrast already mentioned in (16) above, namely that between *want*, which precludes the use of *vreun* in its complement (31), and *hope*, which allows it (32):

- (31) **Vreau* să gădesc *vreun* cadou pentru sora mea.
want.1SG SUBJ find.1SG VREUN present for sister-the my
‘I want to find some present for my sister.’
- (32) *Sper* să gădesc *vreun* cadou pentru sora mea.
hope.1SG SUBJ find.1SG VREUN present for sister-the my
‘I hope to find some present for my sister.’

This contrast is surprising: both *want* and *hope* are non-factive predicates interpreted with respect to a set of doxastic alternatives and expressing that the worlds in which the embedded proposition holds are ranked high with respect to the attitude holder's preferences (Heim 1992, von Stechow 1999). The two attitudes have a very similar semantics, but a non-uniform behavior with respect to the acceptability of *vreun* in their complement. The epistemic constraint, I argue, captures this contrast. To show this, I build on recent work on preference verbs, due to Scheffler (2008). More precisely, in discussing the semantics of preference verbs that allow V2 complements in Germanic, Scheffler identifies an epistemic component in the meaning of *hope*, which only makes it compatible with situations where the truth of the embedded proposition is not established, a property that *want* lacks. The contrast that is relevant for present purposes is given in (33):¹⁴

- (33) (To my students, in the middle of my class) I am teaching semantics...
- a. ✓ ...because I want to be teaching semantics/ ✓ ...and that is what I want.
 - b. # ...because I hope to be teaching semantics/ # ...and that is what I hope.

Using once again a context that establishes a certain fact to hold, we notice that while *want* is perfectly compatible with this situation (33a), *hope* is not (33b). The fact that the truth-value of *p* is settled makes the use of *hope* infelicitous to refer to this fact, a restriction that does not apply to *want*. This shows that *want* does not entail that the epistemic agent countenances *non p*-worlds, whereas *hope* does. This is the conclusion reached in Scheffler (2008), who argues that *hope* implies that at the time of evaluation, the epistemic agent considers that both *p* and *non p* can hold. Of course, *want* can also be used in cases where both *p* and *non p* are considered possible, but the important point is that nothing in its meaning imposes the existence of *non p*-worlds among the doxastic alternatives, as made clear by its use in contexts like (33), where the complement proposition is established to hold. This, I argue, is the key difference between *want* and *hope* to which the distribution of *vreun* is sensitive. The epistemic constraint proposed in this paper captures this contrast, by making reference to 'obligatorily non-factive epistemic' operators.

2.5 Further empirical issues

Let us now take stock and review the main results of the discussion so far. The primary goal of this section was descriptive, and consisted in the identification of 'licensing constraints', i.e. the factors underlying the (non-)occurrence of the determiner *vreun*. I take the facts examined in this paper to indicate that the core distribution of *vreun* can be subsumed under two broad categories: (i) negative polarity environments and (ii) (a subset of) epistemic contexts.

¹⁴ I am grateful to an anonymous referee for suggesting the use of complements over which the subject has control and for helping me clarify this part of the discussion.

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On the one hand, as already shown in Farkas (2002), in negative polarity contexts, *vreun* behaves like an NPI. More precisely, *vreun* occurs in a wide range of (arguably) downward-entailing contexts¹⁵ (see examples (2)-(5) in section 1.2). To this, we may add the fact that *vreun* is sensitive to intervention effects, a property of NPIs known since Linebarger (1980). In (34b) for example, conjunction has an intervening effect, rendering the sentence ungrammatical.

- (34) a. Mă *îndoiesc* că Paul a obținut ***vreun*** rezultat interesant.
REFL.1SG doubt.1SG that Paul has obtained VREUN result interesting
'I doubt that Paul has obtained any interesting result.'
- b. *Mă *îndoiesc* că a obținut date noi *și* ***vreun*** rezultat interesant.
REFL.1SG doubt.1SG that has obtained data new and VREUN result interesting
'I doubt that he has obtained new data and any interesting result.'

The only unexpected aspect of the behavior of *vreun* in negative polarity contexts is its interaction with sentential negation. More precisely, recall that its distribution in negative sentences is affected by the availability of the negative concord item *niciun*, which constitutes the default option (see the examples in (7)). There are however contexts where *vreun* easily co-occurs with sentential negation, namely sentences with negative concord indefinites, such as (35):

- (35) ***Nimeni nu*** a avut ***vreo*** informație despre crimă.
Nobody NEG have.3SG had VREUN information about murder
'Nobody had any information on the murder.'

The reason for using *vreun* in (35), I assume, is that a sentence with two negative concord indefinites is ambiguous between a negative concord reading (with a single negation) and a double negation reading (where the two negations cancel each other out), as shown in Fălăuș (2009) and Iordăchioaia (2009). For example, if we replace *vreo* in (35) with *nicio*, the sentence becomes ambiguous between the negative concord reading we could paraphrase as 'It is not the case that anybody had any information on the murder' and a double negation reading equivalent to 'Everybody had (at least) some information on the murder'. The analysis of negative concord is not directly relevant to our discussion, the only important matter being that in order to avoid the ambiguity caused by the co-occurrence of several negative concord indefinites, whenever possible, *vreun* indefinites are used instead, yielding only the reading associated with negative concord. This indicates that *vreun* can occur in the direct scope of clause-mate sentential negation and is thus no different from other NPIs in this respect. The fact that its distribution is more restricted, as compared to

¹⁵ There are well-known issues arising with respect to the generalization that NPIs are licensed in downward-entailing contexts, which need not concern us here (see Zwarts 1998, von Stechow 1999, Guerzoni and Sharvit 2007, Gajewski 2011, Giannakidou 2011, Nicolae 2013). The only relevant observation at this point is the similarity between the distribution of *vreun* and that of other, more familiar, NPIs across languages.

NPIs like *any* or *ever*, is closely related to the existence of negative concord items, used as the default option in this context. The data considered here, then, supports the generalization that *vreun* displays an NPI-behavior.

On the other hand, *vreun* occurs in the contexts subsumed by the epistemic constraint proposed in (17), which holds that *vreun* is licensed only by operators that are epistemic and whose semantics is incompatible with situations in which the complement proposition is established to be true. In this section, I have argued that this constraint provides a uniform characterization of the distribution of *vreun* in modal and attitude contexts, thus offering a better perspective on what an explanatory account of *vreun* needs to capture.

The epistemic constraint helps disentangle an otherwise puzzling data set, but does not cover all non-negative polarity uses of *vreun*. In particular, it does not apply to its occurrence in sentences involving frequentative imperfectives, noted by Farkas (2002), illustrated in (8), repeated below as (36):

- (36) Din când în când trenul se *oprea* în *vreo* haltă și câte
 from when in when train.DEF REFL stop.IMPV.3SG in VREUN station and DIST
 un navetist deschidea un ochi.
 a commuter opened an eye
 ‘From time to time, the train would stop in some station and a commuter
 would open an eye.’

This environment doesn’t fall under the epistemic constraint in any obvious way (and is not a negative polarity context either), but a proper discussion of how the account proposed in this paper extends to frequentative imperfectives must be left for another occasion.

To complete the description of the empirical properties of *vreun*, let me also note that the epistemic constraint does not apply to partitive *vreun*, which, as already mentioned in Farkas (2002), has a less restricted distribution than non-partitive *vreun*. More precisely, insofar as I can tell, it occurs in all contexts where non-partitive *vreun* can occur, but it is also acceptable in epistemic contexts where *p* is established to hold, such as the modal statement in (37) (in the ‘factive’ context in (26) above):

- (37) Asul *trebuie* să fie la *vreunul* din jucători.
 ace-the must SUBJ be.3SG at VREUN.DEF of players
 ‘The ace must be with one of the players.’

Similar considerations apply to the scope of *think* or *suppose*, i.e. partitive *vreun* would be acceptable in (30) above.¹⁶ Furthermore, the following example shows that it can also be used in some deontic contexts:

¹⁶ The speakers I have consulted reject partitive *vreun* in the scope of factive verbs like *know* or *find out*, but further investigation is needed before reaching firm conclusions on this matter.

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- (38) Pentru a fi eligibili, candidații *trebuie* să îndeplinească *vreuna*
for to be eligible candidates-the must SUBJ meet.3PL VREUN.DEF
din condițiile prevăzute de lege.
of conditions-the specified by law
'To be eligible, the candidates must meet one of the conditions specified by
the law.'

The properties of partitive *vreun* and the connection with its non-partitive counterpart need to be carefully investigated, but the facts in (37)-(38) suffice to establish that its distribution is not subject to the epistemic constraint. In this paper, I set aside the properties of partitive *vreun* and focus on the non-partitive determiner.¹⁷

Before proposing an account for the facts described above, a cross-linguistic remark. Putting aside the use of *vreun* in negative polarity contexts, we have seen that it resembles epistemic indefinites in occurring in modal contexts and conveying some form of uncertainty with respect to the referent. However, the paradigm we uncovered represents a more restricted case of semantic dependency, which to my knowledge has not been previously documented. The present focus on accurately describing, and accounting for, the properties of *vreun* prohibits an in-depth discussion of the typology of epistemic indefinites. Let me simply note that the restriction to epistemic contexts, in the sense discussed here, does not seem to characterize other dependent indefinites described in the literature. The difference becomes obvious once we consider their distribution in modal contexts. For example, nonveridical items like Greek *kanenas* (Giannakidou 1997, 2011) or epistemic indefinites like Spanish *algún* (Alonso-Ovalle and Menéndez-Benito 2008, 2010) share with *vreun* the property of occurring in both negative polarity and modal contexts. However, unlike *vreun*, they do not impose any restriction on the type of modal operator, as attested by their occurrence under deontic modals:

- (39) a. *Prepi* na episkeftis *kanenan* jatro.
must.3SG SUBJ visit KANENAS doctor
'You should visit a doctor.'
b. Maria *tiene* que terminar *algún* artículo para mañana.
Maria has COMP finish ALGUN article for tomorrow
'Maria has to finish some paper for tomorrow.'

Distribution-wise, the determiner that seems to come closest to *vreun* is French singular *quelque*, discussed in detail in work by Jayez and Tovená (2006, 2007).¹⁸ A

¹⁷ The distribution of *any* and partitive *any* is also different. However, whereas partitive *vreun* seems to have a wider distribution than its non-partitive counterpart, in the case of *any*, the partitive version has a more restricted distribution than the non-partitive one (see e.g. Dayal 2004, 2013).

¹⁸ Jayez and Tovená show that *quelque* occurs in epistemic contexts and marks inferential evidentiality. Although they share an intriguing connection with (indirect) evidentiality, the Romanian and the French determiner differ in at least three respects: (i) *quelque* does not need an overt licenser (if the context is clearly hypothetical, *quelque* can occur in episodic sentences); (ii) *quelque* does not have an NPI use; (iii) *quelque* can also be used with abstract, uncountable nouns, unlike *vreun*.

systematic comparison between *vreun* and other indefinites is beyond the scope of this paper, but these brief comparative remarks should nevertheless suffice to make the main point: *vreun* presents an interesting pattern of restricted distribution, which can provide new insights into the parameters of variation among dependent indefinites. The approach to polarity developed in the remainder of this paper has ways to capture the cross-linguistic similarities and differences among dependent indefinites (as discussed at length in Chierchia 2013a), but my main focus at this stage of research concerns the properties of *vreun*. Accordingly, other indefinites will be considered only when this contributes to a better understanding of the Romanian pattern.

The facts considered in this section complete the picture in Farkas (2002, 2006), by drawing attention to the epistemic versus non-epistemic distinction that governs the behavior of *vreun* in modal and attitude contexts. The epistemic constraint constitutes an arguably novel way to carve out the data on the distribution of *vreun* in non-negative polarity contexts. However, both the characterization of *vreun* and the analysis proposed in the following sections preserve the core intuitions in Farkas' work. More specifically, although implemented in different frameworks, both accounts take the determiner *vreun* to be an existential element with two different uses and rest on the assumption that alternatives provide the key to understanding its limited distribution. The challenge is not only to account for the restriction to negative polarity and non-factive epistemic contexts, but also to explain the connection between these two uses, while capturing the differences and similarities with other dependent indefinites. The remainder of this paper provides an analysis for the NPI and epistemic uses of *vreun* that meets these objectives.

3. An alternatives-and-exhaustification approach to polarity

In order to provide an account that satisfies the criteria listed above, I adopt the theory developed in Chierchia (2006, 2013a,b), which derives the properties of various types of polarity sensitive items by positing an obligatory association with alternatives. This section introduces the framework and demonstrates how it captures the restricted distribution of polarity items, as well as the fact that certain negative polarity elements can also occur in 'positive', i.e. non-downward-entailing contexts. I present the theory in order to make the paper self-sufficient, but readers familiar with it can safely skip this section and go directly to section 4, which deals with the distribution of *vreun*.

3.1 Main assumptions

Building on insights in Kadmon and Landman (1993), Krifka (1995), Lahiri (1998) and Kratzer and Shimoyama (2002), Chierchia (2006, 2013a,b) develops an alternative-based account of polarity, embedded within a more general theory of meaning enrichment. On this approach, polarity sensitivity is one of the many phenomena whose semantics involves the consideration of alternative semantic values. The theory is couched in a bidimensional semantics (cf. Rooth 1985, 1992), where alternatives are introduced and computed separately from the regular semantic values. The starting point is the interpretation of sentences such as the following:

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- (40) a. A: Who came to the party? B: Paul and Sue.
 b. I went to the party, greeted everybody, hugged Paul and Sue and left.
 c. A: Mary likes the kids. B: Not really. She likes PAUL and SUE.

All these utterances convey that Paul and Sue are the only individuals in the context for which a certain property holds, a meaning that goes beyond what is literally said. For example, we understand (40b) as communicating that the speaker hugged Paul and Sue and didn't hug anyone else among the people present at the party. There are two components leading to this enriched, non-literal interpretation: (i) a set of alternatives (e.g. other contextually relevant individuals) and (ii) the exclusion of the (non-entailed) alternatives. This strengthened meaning, i.e. the one obtained via the consideration and exclusion of alternatives, is often triggered by focus, although sometimes context is sufficient to prompt this effect, as in (40b). One of the crucial assumptions in this connection concerns the way meaning enrichment is achieved. In line with van Rooij and Schulz (2006), Fox (2007), Chierchia, Fox and Spector (2012) among others, Chierchia (2013a) argues that enrichment results from applying an exhaustivity operator, such as the one in (41), which is essentially a covert counterpart of *only*:

- (41) $O_{ALT}(p) = p \wedge \forall q \in ALT[q \rightarrow p \subseteq q]$, where $p \subseteq q$ means p entails q

According to the definition in (41), the exhaustivity operator responsible for strengthening applies to a proposition p and the set of p 's (propositional) alternatives (ALT), and conveys that p (and its entailments) is the only true member of the set of alternatives.¹⁹ This meaning enrichment mechanism is used not only in the contexts in (40), i.e. question-answer pairs or focus, but is also argued to be responsible for scalar implicatures. For example, the implicature arising in (42a), according to which not all students in the context like syntax, or in (42b), where the disjunction is construed as being exclusive (Maria has a degree in physics or chemistry, but not both):

- (42) a. Some students like syntax.
 b. Maria has a degree in physics or chemistry.

Scalar terms, such as *some* and *or*, lexically activate a set of alternatives, which are factored into meaning via the exhaustivity operator defined above. Applying O to (42a), with respect to the set of alternatives in (43a), we get the interpretation in (43b), which includes the assertion and the negation of the stronger alternative with *all*:

- (43) a. $ALT = \{\text{some students like syntax, all students like syntax}\}$

¹⁹ See Fox (2007) and Chapter 2 in Chierchia (2013a) for detailed discussion of the correct definition of the set of alternatives considered for exhaustification.

- b. $O_{ALT}(\text{Some students like syntax}) = \text{some students like syntax} \wedge$
 $\neg \text{all students like syntax}$

This briefly illustrates how exhaustification (via O) leads to strengthened interpretations. The details and the motivation for an exhaustification-based theory of scalar implicatures need not concern us here (see Chierchia's work and references therein). For present purposes, the important point is the availability of a covert operator that is used whenever (lexical, focus or contextual) alternatives are factored into meaning. Crucially, for scalar terms, this process is optional; it only takes place if alternatives are relevant for conversational goals.

Polarity items also activate alternatives, an assumption that goes back to Fauconnier (1975). As we will see in section 3.2 below, a phrase such as *any student* activates domain alternatives, i.e. subsets of (contextually relevant) students. For example, if we are talking about students in humanities, the alternatives could involve students in linguistics and students in history. On the theory adopted here, this is a lexical property of polarity items, which manifests itself regardless of whether alternatives are relevant or not in a given context. What makes a polarity item dependent, as opposed to, say, a simple indefinite, is the fact that the alternatives it brings in *must* be used (just like alternatives activated through focus). In other words, whereas disjunction or simple indefinites *can* lead to meaning enrichment, as illustrated in (42)-(43), this process becomes *obligatory* in the presence of a polarity sensitive indefinite. More concretely, the main hypothesis is that polarity items are indefinites (i.e. existentially quantified elements) that systematically activate sets of alternatives. Active alternatives need to be factored into meaning, i.e. they require the presence of an appropriate alternative-sensitive operator in the structure.²⁰ If the insertion of an exhaustivity operator results in a syntactically well-formed structure and leads to a semantically coherent meaning, the polarity item is licensed. If this is not the case, the result is ungrammatical. This is a property shared by all types of polarity items. Variation in the polarity system is captured through a restricted number of parametrical choices, along two interconnected dimensions: (i) nature of alternatives and (ii) modes of exhaustification. Depending on the types of alternatives polarity items activate (e.g. domain, degree or scalar), and the selected exhaustivity operator,²¹ we can derive the properties of various subclasses of polarity items (e.g. weak, strong, emphatic NPIs, 'universal' and existential FCIs, epistemic indefinites).

An important consequence of the fact that exhaustification is conceived as a grammatical mechanism is that it can apply recursively, i.e. to structures that have

²⁰ This requirement is implemented by using a syntactic feature-checking mechanism, which ensures that the exhaustivity operator enters into a syntactic relation akin to agreement with the polarity item. The syntactic details of the theory (concerning features and checking relations with the appropriate exhaustification operator) are entirely set aside in this paper.

²¹ In addition to the operator in (41), exhaustification can also take place via a covert *even*, defined as follows (Chierchia 2013a, p.148):

(i) $E_{ALT}(p) = p \wedge \forall q \in ALT [p <_{\mu} q]$

($p <_{\mu} q$ means p is less likely than q with respect to some contextually relevant probability measure μ)
Even-exhaustification is selected by minimizers, such as *give a damn* or *lift a finger*.

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already been exhaustified. This idea, which will be relevant for our analysis of *vreun*, has been used in Fox (2007) to derive free choice effects associated with disjunction in modal contexts. To illustrate Fox’s proposal, consider the utterance in (44a), which gives rise to the free choice inference in (44b), whereby both the cake and the ice cream are permissible options:

- (44) a. You are allowed to eat the cake *or* the ice cream.
b. You are allowed to eat the cake *and* you are allowed to eat the ice cream.

The set of alternatives to the disjunctive statement in (44a) includes the corresponding conjunction (the stronger scalar alternative), as well as each of the disjuncts (see Sauerland 2004, Alonso-Ovalle 2005, among others), as represented in (45):

- (45) $ALT = \{ \diamond (\text{eat the cake} \vee \text{eat the ice cream}), \diamond (\text{eat the cake} \wedge \text{eat the ice cream}), \diamond \text{eat the cake}, \diamond \text{eat the ice cream} \}$

Exhaustification over this set amounts to exclusion of non-entailed alternatives (as defined in (41)), which in this case means we exclude all alternatives in ALT. This not only does not derive the desired free choice inference, but actually leads to a contradiction, as it says that it is possible to eat the cake or the ice cream and at the same time, it is not possible to eat either of them:

- (46) $O_{ALT} (\diamond (\text{eat the cake} \vee \text{eat the ice cream})) = \diamond (\text{eat the cake} \vee \text{eat the ice cream}) \wedge \neg \diamond \text{eat the cake} \wedge \neg \diamond \text{eat the ice cream} \wedge \neg \diamond (\text{eat the cake} \wedge \text{eat the ice cream}) = \perp$

Fox’s solution consists in assuming that the set of alternatives against which the original assertion is considered includes the exhaustified versions of each of the disjuncts, given in (47):

- (47) a. $O(\diamond \text{eat the cake}) = \diamond \text{eat the cake} \wedge \neg \diamond \text{eat the ice cream}$
b. $O(\diamond \text{eat the ice cream}) = \diamond \text{eat the ice cream} \wedge \neg \diamond \text{eat the cake}$

The exhaustified version of ‘you are allowed to eat the cake’ ($\diamond \text{eat the cake}$), with respect to the assertion in (44a) can be construed as the answer to the question ‘Which of the two options - cake or ice cream - are you allowed to have?’. A possible answer is ‘you are allowed to eat the cake’, which is typically understood exhaustively – ‘you are only allowed to eat the cake’, i.e. ‘you are allowed to eat the cake and you are not allowed to eat the ice cream’. This interpretation is represented by assuming O applies to the disjunct $\diamond \text{eat the cake}$, as in (47a). Once we exhaustify the assertion with respect to the alternatives in (47), we get the computation in (48), which derives the free choice inference in (44b):

- (48) $O(\diamond (\text{eat the cake} \vee \text{eat the ice cream})) =$

$$\begin{aligned}
& \diamond (\text{eat the cake} \vee \text{eat the ice cream}) && \text{ASSERTION} \\
& \wedge \neg \diamond (\text{eat the cake} \wedge \text{eat the ice cream}) && \text{SCALAR ALTERNATIVE} \\
& \wedge \neg O (\diamond \text{eat the cake}) && \text{EXHAUSTIFIED DISJUNCTS} \\
& \wedge \neg O (\diamond \text{eat the ice cream}) \\
= & \diamond (\text{eat the cake} \vee \text{eat the ice cream}) \wedge \neg \diamond (\text{eat the cake} \wedge \text{eat the ice cream}) \\
& \wedge \neg (\diamond \text{eat the cake} \wedge \neg \diamond \text{eat the ice cream}) \\
& \wedge \neg (\diamond \text{eat the ice cream} \wedge \neg \diamond \text{eat the cake}) \\
= & \diamond (\text{eat the cake} \vee \text{eat the ice cream}) \wedge \neg \diamond (\text{eat the cake} \wedge \text{eat the ice cream}) \wedge \\
& (\diamond \text{eat the cake} \rightarrow \diamond \text{eat the ice cream}) \wedge (\diamond \text{eat the ice cream} \rightarrow \diamond \text{eat the cake}) \\
= & \diamond \text{eat the cake} \wedge \diamond \text{eat the ice cream} \wedge \neg \diamond (\text{eat the cake} \wedge \text{eat the ice cream})
\end{aligned}$$

Both the scalar and the pre-exhaustified alternatives are stronger than the assertion, so they must be eliminated. Exhaustification is consistent, i.e. does not give rise to a contradiction (unlike what we saw in (46)). The derived meaning is that it is possible to eat the cake or the ice cream and it is not possible to eat both. Moreover, if one of them is possible, the other one is possible as well. This delivers the desired free choice inference - you are not allowed to have both the cake and the ice cream, but each one of them is an allowable option.²²

Chierchia (2013a) builds on this proposal to develop a unified theory of free choice effects. Exploiting the parallelisms between disjunction and polarity sensitive indefinites like *any* or *irgendein*, the free choice interpretation in modal contexts is argued to come about through the process of ‘recursive’ exhaustification illustrated above (see also Chierchia 2013b). Polarity sensitive items vary as to whether they tolerate pre-exhaustified alternatives. This is a matter of lexical choice, which determines their behavior. Polarity items that allow pre-exhaustified alternatives can occur in modal contexts (e.g. *any* or *irgendein*), for these are the contexts where their consideration leads to consistency and free choice effects. Polarity items that disallow pre-exhaustified alternatives (e.g. *ever* or *lift a finger*) do not give rise to free choice inferences and are excluded from modal contexts.

In the following, I will briefly illustrate how the theory captures the distribution of polarity sensitive indefinites that occur in both negative polarity and modal contexts, using examples with the German item *irgendein*. The presentation stays close to the analysis in Chierchia (2013a), Chapter 5, but the discussion of the

²² The scalar implicature can be removed, e.g. *You are allowed to eat the cake or the ice cream, in fact, you are allowed to eat both*. There are various ways to derive this. One possibility is to assume that the scalar alternative (SA) is not relevant, and therefore exhaustification is only achieved with respect to d-alternatives (i.e. the disjuncts), as discussed in Chierchia (2013a, pp. 141-143). Another possibility is to assume that the scalar inference is computed prior to the modal and separately from d-alternatives (DA):

(i) $O_{DA} (\diamond O_{SA} (\text{cake} \vee \text{ice cream}))$

Once (recursive) exhaustification over d-alternatives takes place, we obtain a formula that is compatible with eating both the cake and the ice cream:

(ii) $\diamond ((\text{cake} \vee \text{ice cream}) \wedge \neg (\text{cake} \wedge \text{ice cream})) \wedge \diamond \text{the cake} \wedge \diamond \text{ice cream}$.

Finally, yet another possibility, which would not require separating off exhaustification of scalar and d-alternatives, is to follow Fox (2007). His method of avoiding exceedingly strong scalar implicatures relies on the assumption that we start out with pre-exhaustified alternatives.

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formal details will be restricted to the elements that are necessary for an explanatory account of *vreun*, and as such, will remain incomplete. The reader is referred to Chierchia's work for a more detailed presentation of the framework, justification of its core assumptions and comparison with other approaches to polarity.

3.2 Polarity sensitive indefinites in negative polarity and modal contexts

Like many other polarity sensitive indefinites, including *vreun*, the German indefinite determiner *irgendein* can occur in both negative polarity and modal contexts (see Kratzer and Shimoyama 2002, Kratzer 2005):

- (49) a. *Niemand* hat ***irgendein*** Buch mitgebracht.
no one had IRGENDEIN book brought along
'No one has brought along any book.'
b. Du *darfst* mit ***irgendeinem*** Professor sprechen.
you can with IRGENDEIN professor speak
'You can speak with any professor.'

When occurring in the scope of a modal, *irgendein* triggers a free choice inference: the sentence in (49b) conveys that the addressee can speak to a professor and any professor (in the relevant domain) is a permissible option. No such free choice inference is present in negative polarity contexts such as (49a),²³ where *irgendein* acquires an NPI reading, similar to English *any*. Both interpretations are derived by assuming *irgendein* is an existential element that obligatorily activates alternatives. The lexical entry of *irgendein* is given in (50a) and the sets of alternatives in (50b-c):

- (50) a. $\llbracket \textit{irgendein} \rrbracket = \lambda P \lambda Q \exists x \in D [\textit{one}(x) \wedge P(x) \wedge Q(x)]$
b. Scalar Alternatives
 $SA = \{\lambda P \lambda Q \exists x \in D [n(x) \wedge P(x) \wedge Q(x)] \mid n \in \mathbf{N}\}$
c. Domain Alternatives
 $DA = \{\lambda P \lambda Q \exists x \in D' [\textit{one}(x) \wedge P(x) \wedge Q(x)] \mid D' \subseteq D\}$

According to (50), *irgendein* is an existential that activates two types of alternatives: (i) scalar and (ii) domain alternatives. The scalar alternatives activated by *irgendein* are numerical, *two*, *three* etc., on a par with the alternatives that can be activated by the simple indefinite *a* or the numeral *one*. The domain alternatives consist of all the subsets of D, where D is the contextually relevant domain of quantification.

With these assumptions in place, let us begin by deriving the interpretation of *irgendein* in modal contexts such as (49b). The assertion can be represented as in (51a), and the sets of domain and scalar alternatives as in (51b-c):

²³ Unless *irgendein* carries contrastive stress or combines with the particle *einfach (nur)* 'just'. See Kratzer (2005) for details.

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exhaustified version of $\diamond a$ with respect to the original assertion is equivalent to ‘only a can hold (and not b or c)’, and similarly for all the other alternatives:

$$\begin{array}{llll}
 (54) \quad a. & O \diamond (a \vee b) & O \diamond (b \vee c) & O \diamond (a \vee c) & \text{EXH-DA} \\
 & O \diamond a & O \diamond b & O \diamond c & \\
 b. & \diamond (a \vee b) \wedge \neg \diamond c & \diamond (b \vee c) \wedge \neg \diamond a & \diamond (a \vee c) \wedge \neg \diamond b & \text{EXH-DA} \\
 & \diamond a \wedge \neg \diamond b \wedge \neg \diamond c & \diamond b \wedge \neg \diamond a \wedge \neg \diamond c & \diamond c \wedge \neg \diamond a \wedge \neg \diamond b &
 \end{array}$$

All exhaustified alternatives are stronger than the assertion, so through exhaustification, they will be excluded, as represented in (55a), which is logically equivalent to (55b). This winds up having the enriched meaning in (55c): the assertion and the scalar inference require that only one of the alternatives holds; the computation of exhaustified alternatives amounts to the requirement that if one alternative is possible, so are the others. This can only be satisfied if each one of the three alternatives is possible:

$$\begin{array}{ll}
 (55) \quad a. & O_{DA} O_{SA} \diamond (a \vee b \vee c) = \diamond (a \vee b \vee c) \wedge \neg \diamond (a \wedge b) \wedge \neg \diamond (a \wedge c) \wedge \neg \diamond (b \wedge c) \wedge \\
 & \text{i. } \neg (\diamond (a \vee b) \wedge \neg \diamond c) \wedge \quad \text{iv. } \neg (\diamond a \wedge \neg \diamond b \wedge \neg \diamond c) \wedge \\
 & \text{ii. } \neg (\diamond (b \vee c) \wedge \neg \diamond a) \wedge \quad \text{v. } \neg (\diamond b \wedge \neg \diamond a \wedge \neg \diamond c) \wedge \\
 & \text{iii. } \neg (\diamond (a \vee c) \wedge \neg \diamond b) \wedge \quad \text{vi. } \neg (\diamond c \wedge \neg \diamond a \wedge \neg \diamond b) \\
 b. & O_{DA} O_{SA} \diamond (a \vee b \vee c) = \diamond (a \vee b \vee c) \wedge \neg \diamond (a \wedge b) \wedge \neg \diamond (a \wedge c) \wedge \neg \diamond (b \wedge c) \wedge \\
 & \text{i. } \diamond (a \vee b) \rightarrow \diamond c \quad \wedge \quad \text{iv. } \diamond a \rightarrow (\diamond b \vee \diamond c) \wedge \\
 & \text{ii. } \diamond (b \vee c) \rightarrow \diamond a \quad \wedge \quad \text{v. } \diamond b \rightarrow (\diamond a \vee \diamond c) \wedge \\
 & \text{iii. } \diamond (a \vee c) \rightarrow \diamond b \quad \wedge \quad \text{vi. } \diamond c \rightarrow (\diamond a \vee \diamond b) \\
 c. & O_{DA} O_{SA} \diamond (a \vee b \vee c) = \diamond (a \vee b \vee c) \wedge \quad \text{(Assertion)} \\
 & \neg \diamond (a \wedge b) \wedge \neg \diamond (a \wedge c) \wedge \neg \diamond (b \wedge c) \wedge \quad \text{(Scalar inference)} \\
 & \diamond a \wedge \diamond b \wedge \diamond c \quad \text{(Free Choice inference)}
 \end{array}$$

This illustrates how exhaustification yields the enriched meaning of (49b), namely ‘you can speak to a professor chosen from the relevant domain of quantification, and each one of them is a possible choice’.²⁷ The scalar inference is responsible for the fact that *irgendein* always has an existential reading; the free choice inference requires variation among the members of the relevant domain of quantification. The derivation of the two inferences is parallel to what happens with disjunction in modal contexts (see (44)). In both cases, the crucial assumption is the existence of active scalar and subdomain alternatives, which can be ‘recursively’ exhaustified. The main difference between *or* (or a simple indefinite such as *a professor*) and *irgendein* (and more generally polarity sensitive indefinites) is that alternatives associated with the former are only *optionally* active, whereas those associated with the latter are *obligatorily* active. This explains why the inferences triggered by *irgendein* are not optional.

²⁷ The strong ‘uniqueness’ implicature (‘you can speak to a single professor’) can sometimes be cancelled, just like in the case of free choice readings of disjunction (see fn. 22 for various ways to derive this effect). For simplicity, in the rest of the discussion I set aside this weaker scalar implicature.

Having seen how to derive the inferences observed in modal contexts, let us now turn to negative contexts, such as (49a), where *irgendein* has a narrow scope existential reading, just like NPIs. To see how this interpretation comes about, assume that the domain relevant for the interpretation of *irgendein* in (49a) contains three books {a,b,c}. Using the same representations as before, the assertion to which exhaustification applies looks as in (56a) and the alternatives as in (56b-e):

(56)	a.	$O_{DA} O_{SA} (\neg \exists x \in D \exists y \in D' [\text{person}(x) \wedge \text{one}(y) \wedge \text{book}(y) \wedge \text{bring}(x,y)]) =$	
	b.	$\neg (a \vee b \vee c)$	ASSERTION
	c.	$\neg (a \wedge b) \quad \neg (b \wedge c) \quad \neg (a \wedge c)$	SA
	d.	$\neg (a \vee b) \quad \neg (b \vee c) \quad \neg (a \vee c)$	DA
		$\neg a \quad \neg b \quad \neg c$	
	e.	$\neg (a \vee b) \wedge c \quad \neg (b \vee c) \wedge a \quad \neg (a \vee c) \wedge b$	EXH-DA
		$\neg a \wedge (b \vee c) \quad \neg b \wedge (a \vee c) \quad \neg c \wedge (a \vee b)$	

As before, the exhaustification triggered by the insertion of O seeks to eliminate all stronger alternatives. However, there are no stronger alternatives in this case. Both the scalar alternatives and the plain domain alternatives in (56c-d) are entailed by the assertion, so they cannot be eliminated. Assertion also entails the negation of the exhausted domain alternatives in (56e).²⁸ The result of exhaustification is therefore identical to the assertion in (56a). In other words, no scalar or free choice inference arises and *irgendein* is interpreted as an existential, i.e. it acquires an NPI-reading. The same conclusion arguably holds for all downward-entailing contexts, where the assertion is always the strongest alternative. On this theory, the NPI-behavior of items like *irgendein* is a logical consequence of the entailment relations holding in downward-entailing environments.

The hypothesis that polarity sensitive indefinites are existentials with obligatorily active alternatives predicts that these indefinites should be deviant in episodic contexts. As illustrated above, the presence of a downward-entailing or modal operator (together with the availability of pre-exhaustified alternatives) plays a crucial part in making the exhaustification process consistent. In (57), we use a toy example to show that in the absence of any of these operators, exhaustification leads to a contradiction (57b), as it simultaneously requires that one of the alternatives holds ($a \vee b \vee c$) and that none of them does:

(57)	a.	$a \vee b \vee c$	ASSERTION
		$a \wedge b \quad b \wedge c \quad a \wedge c$	SA
		$a \vee b \quad b \vee c \quad a \vee c$	DA
		$a \quad b \quad c$	
	b.	$O_{DA} O_{SA} (a \vee b \vee c) = (a \vee b \vee c) \wedge \neg (a \wedge b) \wedge \neg (a \wedge c) \wedge \neg (b \wedge c) \wedge \neg (a \vee b) \wedge \neg (b \vee c) \wedge \neg (a \vee c) \wedge \neg a \wedge \neg b \wedge \neg c = \perp$	

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This straightforwardly explains why items like *any*, *ever* or *vreun* are ruled out in episodic contexts (such as (1) above). Their alternatives cannot be properly exhaustified. The problem comes from the fact that there are stronger alternatives (every alternative in DA and SA is stronger than the assertion), but we cannot eliminate them in a contradiction-free manner, a situation that results in deviance.²⁹ This derives the ungrammaticality of alternative-activating indefinites in episodic sentences.³⁰

For certain elements in the polarity system, such as *irgendein*, a last resort strategy can rescue their use in sentences such as (58):

- (58) ***Irgendein*** Student hat angerufen.
IRGENDEIN student has called
'Some student or other called.'

Despite the fact that (58) makes reference to a single event, i.e. it is an episodic statement, *irgendein* can be used. The sentence triggers a modal inference, which we can paraphrase as 'Some student called; for all the speaker knows, it might be any student (the speaker is ignorant as to the identity of the caller)'. Following Kratzer and Shimoyama (2002), this ignorance reading, which characterizes so-called epistemic indefinites (see the discussion in section 2.1), is assumed to arise through a covert assertoric modal. The LF of (58) is thus as given in (59) below, where \Box_S means something like 'the speaker knows that':

- (59) $O_{DA} O_{SA} \Box_S$ [irgendein student hat angerufen]

The presence of the epistemic modal in (59) renders exhaustification consistent and derives the ignorance inference mentioned above. If the modal were bouletic/goal-oriented, the indefinite would convey indifference (i.e. the speaker/the relevant agent does not care about the referent of the indefinite). As Chierchia shows, if neither an ignorance nor an indifference reading is possible in a given context, *irgendein* cannot be used (Chierchia 2013a, p. 257):

- (60) John hat geschummelt. *Deshalb ist ***irgendein*** Student aus deiner Klasse ein Betrueger.
'John cheated. Therefore some student in your class is a cheater.'

Languages and indefinites vary with respect to whether and when they allow this strategy. Future empirical work needs to determine the restrictions on the distribution

²⁸ Excluding an exhaustified alternative, such as $\neg O\neg(a \vee b) = \neg(\neg(a \vee b) \wedge c)$ amounts to $c \rightarrow (a \vee b)$, and similarly for all other alternatives.

²⁹ Note that recursive exhaustification, the consideration of pre-exhaustified domain alternatives also yields a contradiction in these sentences (see Chierchia 2013a, p. 255 for details).

³⁰ For details on when and why contradictions give rise to ungrammaticality, the reader is referred to Gajewski (2002) and Chierchia (2013a, pp. 42-54).

and nature of null modals, and explain their interaction with various kinds of indefinites. We limit ourselves to pointing out the explanation offered by Chierchia (and other alternative-based approaches) for the acceptability of certain dependent indefinites in seemingly episodic sentences such as (58). If we grant the existence of covert modality as a possible rescue mechanism, the theory offers a principled explanation for three distributional properties shared by a wide range of polarity sensitive indefinites: (i) exclusion from episodic contexts, (ii) occurrence in downward-entailing contexts and (iii) the need for a modal operator in non-downward-entailing contexts.

Crucially, there is no ‘licensing’ involved: the way alternatives are computed in positive (i.e. upward-entailing), modal and downward-entailing contexts is independent of polarity items, as can be easily checked by looking at the behavior of disjunction or numerals (whose implicatures also typically disappear in downward-entailing contexts). As previously mentioned, the key difference between dependent indefinites like *irgendein* or *any* and scalar terms like *or* lies in the fact that the former, but not the latter, obligatorily activate alternatives. This is the property that is ultimately responsible for the narrower distribution of polarity sensitive elements.

4. An alternative-based account for *vreun*

This section proposes an alternative-and-exhaustification account for *vreun*, adopting the theory introduced in the previous section. We start with the distributional properties that follow without any further assumptions (section 4.1) and then focus on the epistemic constraint documented in section 2 above.

4.1 Situating *vreun* in the polarity system

The alternatives-and-exhaustification theory outlined above straightforwardly derives the properties that *vreun* shares with *irgendein* and many other polarity sensitive indefinites, namely the restriction to downward-entailing and modal contexts. The key assumption is the obligatory association with two kinds of alternatives: (i) scalar and (ii) subdomain alternatives, both of which need to be exhaustified (*via* recursive applications of O). The presence of the DE or modal operator makes exhaustification consistent, explaining why *vreun* requires them. The derivation of the sentences in (61) is thus parallel to that discussed for (49), and as such, will not be repeated here:

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- (61) a. Lisa *nu* a citit *vreo* carte.³¹
Lisa NEG has read VREUN book
'Lisa didn't read any book.'
- b. *Se poate* ca Maria să se fi întâlnit cu *vreun* prieten.
REFL may that Maria SUBJ REFL be met with VREUN friend
'Maria might have met some friend.'

There is however an important aspect in which *vreun* differs from *irgendein*, namely its behavior in episodic contexts. Recall that *vreun* is systematically ruled out from episodic sentences (as illustrated in (1)). This happens even in environments where the ignorance reading is very salient, making it plausible to assume the presence of a null modal (see (21)). On the basis of this, we must conclude that covert modality cannot rescue *vreun*. As mentioned above, the availability of this strategy varies across items and across languages. In this respect, *vreun* might be like *any-numeral* construction, e.g. *any two books*, which is also ruled out in episodic contexts (see e.g. Dayal 2013 and Chierchia 2013a). While the absence of the 'null modal' option for *vreun* needs to be understood, the crucial point is that once this rescue strategy is construed as optional, the behavior of *vreun* in episodic statements is expected on the alternative-based approach sketched in section 3. Since exhaustification leads to deviance in the absence of a downward-entailing or modal operator (see (57) above), *vreun* is predicted to be ruled out in episodic environments.

However, recall from section 2 that *vreun* is subject to a further distributional restriction, namely the epistemic constraint in (17). Nothing in the analysis given so far accounts for the different behavior in the scope of epistemic and non-epistemic operators. In the remainder of this paper, I propose a way to extend the alternative-based analysis and derive the epistemic constraint. To this end, we need to import one more piece of the formal apparatus of Chierchia's theory, namely the difference between what are known as partial and total variation indefinites (section 4.2). This will lead to a better understanding of the interpretation of *vreun* in modal contexts and the differences with other indefinites. In section 4.3, I argue that the epistemic constraint follows from a further condition on the set of alternatives activated by *vreun*, a condition that taps into the distinction between partial and total variation.

³¹ I take the restrictions on the use of *vreun* in negative sentences discussed in section 1.2 and 2.5 to be the result of a blocking effect induced by negative concord items. I am not aware of any explanatory theory of blocking, which could predict when it is active and when it isn't, but it is clear that we are dealing with a widespread phenomenon (cf. Hoeksema 1999, Horn 2001, Perelstvaig 2004, among others). In the framework adopted here, the blocking effect of negative concord can be viewed as an instance of competition between *strong* NPIs (negative concord items) and *weak* NPIs (e.g. *vreun*), with a preference for the strong version under negation. The viability of this route depends on how exactly it gets implemented (see Chapter 4 in Chierchia 2013a for an alternative-based treatment of negative concord). But the frequency of such blocking effects lends support to a unitary approach to NPIs and negative concord items, which views them as parts of the same system, with the same possible sources of variation (restrictions on alternatives and exhaustification).

4.2 ‘Total’ versus ‘partial’ variation

The first aspect of the interaction between *vreun* and modal operators that needs to be understood is the modal inference it gives rise to. More precisely, we know that *vreun* signals speaker’s ignorance with respect to the identity of the individual denoted by the indefinite. This makes it incompatible with continuations that specify the referent of the *vreun*-phrase, a property shared by a large number of epistemic indefinites, including German *irgendein* (e.g. Kratzer and Shimoyama 2002, Aloni and Port 2010), Italian *un qualche* and *un NP qualunque* (e.g. Chierchia 2006), French *quelque* and *un NP quelconque* (e.g. Jayez and Tovena 2007), Spanish *algún* (e.g. Alonso-Ovalle and Menéndez-Benito 2008, 2010) or Romanian *un NP oarecare* (e.g. Săvescu-Ciucivara 2007). One crucial dimension along which epistemic indefinites vary concerns the extent of variation (‘freedom of choice’) imposed on the domain of quantification, which can be *total* or *partial*.³² On the one hand, it has been argued that certain epistemic indefinites (e.g. *irgendein*, *un NP qualunque*, *un NP oarecare*) can sustain TOTAL variation, requiring that *all* relevant alternatives in the domain of quantification qualify as equally possible options (as in (49b) above). For example, the sentence in (62), with the Romanian epistemic indefinite *un NP oarecare*, states that Maria has the obligation to work with a colleague and it could be any colleague:

- (62) Maria *trebuie* să lucreze cu *un* coleg *oarecare*.
 Maria must SUBJ work with a colleague OARECARE
 ‘Maria must work with a colleague, any colleague.’

In contrast to this total freedom of choice, we find epistemic indefinites that trigger a weaker inference - PARTIAL variation - *some, but not necessarily all* alternatives in the relevant domain are epistemic possibilities. As such, they are compatible with the exclusion of some of the possible options. The difference can be most readily observed in the scenario in (63), due to Alonso-Ovalle and Menéndez-Benito (2010):

- (63) Maria, Juan, and Pedro are playing hide-and-seek in their country house. Juan is hiding. Pedro believes that Juan is inside the house, but not in the bathroom or in the kitchen.
 a. Juan *tiene* que estar en *alguna* habitación de la casa.
 b. Juan *trebuie* să fie în *vreo* cameră din casă.
 ‘Juan must be in a room of the house.’

The context makes it clear that not all rooms of the house are possible choices, i.e. the variation associated with the indefinite is limited to a subset of elements in the

³² There is some variation in the literature concerning the terminology used, although insofar as I can tell, all the studies mentioned above refer to the same phenomenon. In this paper, ‘Partial Variation’ corresponds to ‘Modal Variation’, while ‘Total Variation’ to ‘Free Choice’ (or ‘Domain Widening’), in work by Alonso-Ovalle and Menéndez-Benito, and Aloni and Port. For a related proposal, see Jayez and Tovena (2007).

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relevant domain. While the use of *algún* or *vreun* is perfectly acceptable in this scenario, a total variation item like *un NP oarecare* or *qualunque* would be deviant.

In order to derive the different modal inferences, the alternative-based framework adopted here capitalizes on the proposal in Alonso-Ovalle and Menéndez-Benito (2008, 2010), which attributes the total/partial variation distinction to different sets of domain alternatives. Let me first briefly summarize their account. In line with the approach in Kratzer and Shimoyama (2002) on which they build, Alonso-Ovalle and Menéndez-Benito derive the inferences triggered by epistemic indefinites as conversational implicatures arising via Gricean reasoning. The difference between total and partial variation is shown to stem from different constraints on the domain of quantification associated with the epistemic indefinite: whereas total variation indefinites like *irgendein* act as domain wideners, partial variation indefinites like *algún* impose an anti-singleton constraint on their domain (i.e. they signal that their domain is not a singleton). The quantificational domain determines the alternative assertions that would have resulted from the consideration of a different domain. They are obtained by considering either all subsets of the maximal domain of quantification (*irgendein*) or singleton sets only (*algún*). Standard Gricean reasoning over these alternatives leads to the modal inferences described above.

Let us see how Chierchia generalizes this insight and integrates it in the alternatives-and-exhaustification framework.^{33,34} On his approach, epistemic indefinites, like all other elements in the polarity system, have active alternatives (as part of their lexical semantics). The total/partial variation distinction stems from different lexically activated subdomain alternatives: if the domain alternatives are ‘large’, i.e. they include any possible subset of D, the resulting meaning is a total variation, free choice interpretation - there is a single individual satisfying the existential claim and *all* relevant alternatives qualify as possible options; if the domain alternatives to which exhaustification applies are ‘small’ (singletons), the resulting meaning is partial variation - *some, but not necessarily all*, alternatives qualify as options. The choice between these two kinds of alternatives is a lexical property of the epistemic indefinite. The observed modal inferences arise from regular (recursive) exhaustification over the sets of active alternatives.

The derivation of the meaning of *irgendein* in modal contexts (section 3.2) has already illustrated how the computation of ‘large’ domain alternatives leads to free choice effects in Chierchia’s theory. In order to show how the posited difference in domain alternatives affects the extent of variation associated with the epistemic indefinite, I will use examples with Romanian indefinites and contrast the

³³ See Fălăuș (2009) for a first attempt to integrate Alonso-Ovalle and Menéndez-Benito’s hypothesis in the alternatives-and-exhaustification framework, in order to capture the difference between *vreun* and *un oarecare*.

³⁴ A detailed comparison with Alonso-Ovalle and Menéndez-Benito’s work lies beyond the scope of this paper. Let me just point out that the two accounts are couched in different alternative-based frameworks, and refer the reader to Chierchia (2013a,b) and Fălăuș (2013) for remarks on the similarities and differences between the present approach and the Hamblin style semantics in Kratzer and Shimoyama (2002).

interpretation of *vreun* (a partial variation indefinite) and *un NP oarecare* (total variation) in the scope of a possibility modal:

- (64) a. Maria *poate* să se căsătorească cu **un** doctor *oarecare*.
 Maria may SUBJ REFL marry with a doctor OARECARE
 ‘Maria may marry a doctor, any doctor.’
 b. *Se poate* ca Maria să se căsătorească cu **vreun** doctor.
 REFL may that Maria SUBJ REFL marry with VREUN doctor
 ‘Maria might marry some doctor or other.’

Setting aside for now the fact that the possibility modal has a deontic construal in (64a) and an epistemic one in (64b),³⁵ let us consider the two sentences under the following LF representation:

- (65) a. $\diamond [a \text{ doctor}_i [\text{Maria marries } t_i]]$
 b. Assertion: $\diamond \exists x \in D [\text{one}(x) \wedge \text{doctor}(x) \wedge \text{marry}(\text{Maria}, x)]$

The assertion is identical to what we would have with a simple indefinite. However, unlike ordinary indefinites, both *un oarecare* and *vreun* activate two kinds of alternatives, scalar and domain, requiring exhaustification. As far as scalar alternatives are concerned, the two indefinites behave identically - they activate the alternatives in (66a):

- (66) a. $\text{SA} = \{ \diamond \exists x \in D [n(x) \wedge \text{doctor}(x) \wedge \text{marry}(\text{Maria}, x)] \mid n \in \mathbf{N} \}$
 b. Exhaustification over scalar alternatives
 $\text{O}_{\text{SA}} \diamond (a \vee b \vee c) = \diamond (a \vee b \vee c) \wedge \neg \diamond (a \wedge b) \wedge \neg \diamond (a \wedge c) \wedge \neg \diamond (b \wedge c)$

Assuming a domain with only three individuals, we exhaustify over scalar alternatives and add the scalar implicature to the assertion, thus obtaining (66b), interpreted as ‘Maria may marry a doctor in {a, b, c}, and it is not possible that she marries two doctors’. This meaning component is shared by *un NP oarecare* and *vreun*, and more generally, by total and partial variation indefinites, and is ultimately responsible for their existential interpretation. Nothing new thus far.

More interesting is the computation of domain alternatives, which constitutes the source of the total vs. partial variation distinction. More precisely, Chierchia assumes that (i) the activation of all subdomain alternatives leads to *total variation* (sustained by *un NP oarecare*) and (ii) the activation of singleton domain alternatives is responsible for *partial variation* (which we see in the case of *vreun*). The domain alternatives for *un oarecare* are schematized in (67):

³⁵ To provide a real minimal pair, we would have to use *un oarecare* in an epistemic context. However, most speakers find *un oarecare* degraded or entirely deviant with epistemic modal auxiliaries. For details on the distribution and interpretation of *un oarecare* in modal contexts, see Fălăuș (to appear).

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- (67) a. $\diamond(a \vee b \vee c)$ ASSERTION
 $\diamond(a \vee b) \quad \diamond(b \vee c) \quad \diamond(a \vee c)$ DA
 $\diamond a \quad \diamond b \quad \diamond c$
- b. $\diamond(avb) \wedge \neg \diamond c \quad \diamond(bvc) \wedge \neg \diamond a \quad \diamond(avc) \wedge \neg \diamond b$ EXH-DA
 $\diamond a \wedge \neg \diamond b \wedge \neg c \quad \diamond b \wedge \neg \diamond a \wedge \neg c \quad \diamond c \wedge \neg \diamond a \wedge \neg \diamond b$

In (67a), we have the plain domain alternatives activated by *un oarecare* (familiar from the interpretation of *irgendein* given in section 3.2). They consist of all the subsets of the quantificational domain, which in the case at hand means subsets of doctors. The sets of alternatives in (67b) are the exhausted versions of the domain alternatives activated by the indefinite, which are obtained by attaching O in front of each of the domain alternatives in (67a). For example, ‘ $\diamond(avb) \wedge \neg \diamond c$ ’ stands for ‘Maria may only marry doctor a or b’, i.e. she may not marry doctor c, and ‘ $\diamond a \wedge \neg \diamond b \wedge \neg \diamond c$ ’ stands for ‘Maria may only marry doctor a’, i.e. she may not marry doctor b or doctor c. Similarly for all other alternatives.

In contrast to this, the set of domain alternatives activated by partial variation indefinites such as *vreun* is smaller - it only includes (pre-exhaustified) singleton domain alternatives. In other words, for *vreun*, we only consider domain alternatives of the kind ‘Maria may only marry doctor a (and not b or c)’, as represented in (68):

- (68) a. $\diamond(a \vee b \vee c)$ ASSERTION
 $\diamond a \quad \diamond b \quad \diamond c$ DA
- b. $\diamond a \wedge \neg \diamond b \wedge \neg \diamond c \quad \diamond b \wedge \neg \diamond a \wedge \neg \diamond c \quad \diamond c \wedge \neg \diamond a \wedge \neg \diamond b$ EXH-DA

Working things out, we compute the enriched meaning of the sentences in (64), by putting together the assertion with the negation of all the exhausted alternatives, which yields the following meaning:

- (69) a. Exhaustification over the alternatives activated by *un oarecare*
 $O_{\text{EXH-DA}} \diamond(a \vee b \vee c) = \diamond(a \vee b \vee c) \wedge \neg \diamond(a \wedge b) \wedge \neg \diamond(a \wedge c) \wedge \neg \diamond(b \wedge c) \wedge$
 $\diamond a \wedge \diamond b \wedge \diamond c \quad \Leftrightarrow \text{TOTAL VARIATION}$
- b. Exhaustification over the alternatives activated by *vreun*
 $O_{\text{EXH-DA}} \diamond(a \vee b \vee c) = \diamond(a \vee b \vee c) \wedge \neg \diamond(a \wedge b) \wedge \neg \diamond(a \wedge c) \wedge \neg \diamond(b \wedge c) \wedge$
 $(\diamond a \wedge \diamond b) \vee (\diamond a \wedge \diamond c) \vee (\diamond b \wedge \diamond c) \quad \Leftrightarrow \text{PARTIAL VARIATION}$

We are already familiar with the enriched meaning obtained by exhaustification over domain alternatives of any size, given in (69a), which results in a typical free choice interpretation, requiring that *each* alternative of *a*, *b* and *c* be a possibility - a *total variation* effect. This, together with the assertion enriched by the scalar implicature, yields the standard reading of total variation indefinites like *un NP oarecare*: Maria can marry some doctor in the relevant domain ($\{a,b,c\}$) and any doctor is a possible option. In contrast to this, the meaning induced by singleton domain alternatives requires that if some alternative is true, at least some other must be (69b). To put it

differently, at least two of the alternatives are true in some world, but not necessarily all of them (*partial variation*).

This demonstrates how Chierchia is able to exploit a small difference in the choice of alternatives to derive different interpretive effects. Just like polarity elements vary as to whether they allow pre-exhaustified domain alternatives, a lexical property, the activation of all domain alternatives vs. singletons distinguishes total and partial variation indefinites. This captures the different inferences triggered by *vreun* and the closely related existential *un NP oarecare*. The restriction to singleton domain alternatives has no impact in downward-entailing contexts, where the assertion always entails the alternatives (regardless of whether they are restricted to minimal subdomains). But it proves crucial in deriving the weaker modal inference triggered by *vreun* (and other partial variation indefinites) in modal contexts. Once we adopt Chierchia's theory, we have a uniform analysis of *vreun* in NPI and modal contexts, which also captures some of the differences with other indefinites, e.g. the closely related item *un oarecare*. However, the account does not yet explain the restriction to epistemic contexts, which sets *vreun* apart from the epistemic indefinites documented to date. This is the challenge I undertake in the next section.

4.3 Deriving the epistemic constraint

In section 2 above, we examined the occurrences of *vreun* in non-negative polarity contexts and argued that the lexical semantics of the relevant operators necessarily includes an 'uncertainty' component, an intuition that I subsumed under the epistemic constraint in (17). This generalization was shown to bring together epistemic modals (closely related to the presumptive mood), epistemic attitude verbs like *think*, *assume* and *hope*, while at the same time excluding others, in particular deontic modalities and related attitude verbs (e.g. *request*, *suggest*, *want*). The question that we need to address is how to derive such a constraint on the theory of polarity adopted here. Ideally, we should be able to do it by exploiting the two elements responsible for variation elsewhere in the polarity system: alternatives and modes of exhaustification. In other words, *vreun* should activate scalar and singleton domain alternatives, like it always does; exhaustification over these alternatives will be consistent in epistemic contexts, but will clash with the lexical semantics of deontics and other intensional operators that don't fall under the epistemic constraint. The question then becomes what kind of condition on alternatives or exhaustification can generate this behavior. In the following, I submit the hypothesis that the restriction to epistemic contexts results from a further condition on the domain alternatives associated with *vreun*.

Let me first give an informal overview of the account (first proposed in Fălăuș 2010). As we will see shortly, in languages that have both total and partial variation epistemic indefinites, the use of a partial variation epistemic indefinite can optionally give rise to an 'anti-total variation' implicature. Capitalizing on this observation, I argue that this implicature is built into the meaning of *vreun*, i.e. it has been lexicalized. This hypothesis will be implemented by assuming that *vreun* includes among its active alternatives the total variation indefinite *un oarecare* (which comes

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with its own alternatives). A second building block of my proposal relates to the independently observable fact that certain modal operators, when taking existentials in their scope, trigger free choice, total variation effects. The lexical meaning of *vreun* is going to clash with the semantics of these inherently free choice modals. On the proposed account, the more restricted distribution of *vreun* will therefore once again be derivable from the interaction between its lexical semantics and the semantic properties of the embedding operator.

4.3.1 The ban on total variation

Let us start by focusing on the conjectured ban on total variation. We have seen that *vreun* behaves on a par with *algún* or *un qualche* and sustains partial variation, being compatible with situations where not all individuals in the domain of quantification constitute possible values for the existential claim (as in the hide-and-seek scenario in (63) above). Pursuing this line of thinking, I argue that *vreun* differs from other partial variation indefinites by imposing a stronger constraint, i.e. not only does *vreun* allow partial variation, but actually *requires* it. In other words, for *vreun* to be appropriate, we must rule out the option of total variation, which would allow any member of the domain to be a possible alternative. Let me now show what motivates this proposal.

As we know, partial variation epistemic indefinites like *un qualche* or *algún* convey a weaker modal inference than total variation elements. Interestingly, the use of a partial variation indefinite can give rise to an optional ‘anti-total variation’ implicature, as illustrated by the following example (due to Chierchia 2013a, p. 286):

- (70) Voglio sposare *un qualche* linguista
‘I want to marry some linguist or other,
a. ... ma non *un* linguista *qualsiasi*. Non sposerei mai un semanticista.
but not any old linguist. I would never marry a semanticist.’
b. ... *uno qualsiasi*.
a QUALSIASI
‘I want to marry some linguist; anyone will do.’

The sentence in (70) can trigger the implicature in (70a), and convey that the speaker would not be happy with any linguist in the relevant quantificational domain, e.g. not a semanticist. But this meaning effect is clearly removable, as (70b) shows.

The difference, I claim, between *un qualche* (and other partial variation epistemic indefinites) and *vreun* is that the latter ‘grammaticizes’ this anti-total variation inference. In other words, *vreun* is incompatible with total variation scenarios. If, for example, all rooms were known to be possible options in the hide-and-seek scenario in (63), *vreun* would be deviant. The following scenario, which is parallel to the card game in (28), further illustrates the ban on total variation:

- (71) The ‘shell game’ requires three shells or boxes and a small ball. The ball is placed under one of the boxes and the operator quickly shuffles the boxes around. In order to win, the player has to identify the box containing the ball.

#Mingea *trebuie* să fie în *vreo* cutie.
 ball-the must SUBJ be.3SG in VREUN box
 ‘The ball must be in some box or other.’

The context in (71) makes it clear that the ball could be in any of the three boxes under consideration, although the speaker does not know which box is the right one. However, despite the ignorance concerning the box satisfying the modal claim, *vreun* cannot be used. The reason, I submit, is the incompatibility with total variation, which I take to be a restriction built into the semantics of *vreun*. Insofar as I can tell, no such restriction is associated with other partial variation items: they are not used to convey total variation, but are perfectly compatible with such set-ups.³⁶

Let me first show how such an effect could be obtained compositionally within our general framework and then discuss its consequences for the distribution of *vreun*. We are trying to build into the meaning of *vreun* an anti-total variation inference. We know that the total variation inference in Romanian is normally triggered by *un oarecare* (cf. (64) above). The Italian examples in (70) suggest that partial and total variation indefinites form a scale, where the lower element on the scale can trigger the inference that the stronger alternative does not hold. If *vreun* and *un oarecare* are scale-mates, an arguably plausible way to implement this additional condition is to assume that *vreun* lexicalizes a (strong) form of competition with the total variation indefinite *un NP oarecare*.³⁷ More specifically, I conjecture that the set of formal alternatives activated by *vreun* includes *un oarecare*. Since *un oarecare* is itself an alternative-bearing element, this implies that *vreun* takes among its alternatives both the total variation indefinite *un oarecare* and the alternatives activated by *un oarecare*. The full set of alternatives activated by *vreun* thus includes not only the usual scalar and singleton domain alternatives (72b-c), but also the ‘complex’ alternatives brought about by the competition with *un oarecare* (72d):

- (72) a. $\llbracket \textit{vreun} \rrbracket = \lambda P \lambda Q \exists x \in D [\textit{one}(x) \wedge P(x) \wedge Q(x)]$
 b. $\text{SA} = \{\lambda P \lambda Q \exists x \in D [n(x) \wedge P(x) \wedge Q(x)] \mid n \in \mathbf{N}\}$
 c. $\text{DA} = \{\lambda P \lambda Q \exists x \in \{a\} [\textit{one}(x) \wedge P(x) \wedge Q(x)] \mid a \in D\}$
 d. $\{\langle \llbracket \textit{un oarecare} \rrbracket, \llbracket \textit{un oarecare} \rrbracket^{\text{ALT}} \rangle\}$ ³⁸

The anti-total variation effect is going to result from exhaustification over singleton domain alternatives (which preserves the usual partial variation effect) and over the

³⁶ For example, my Spanish informants accept the use of *algún* in this context, both on its partitive and non-partitive version. Partitive *vreun* is also acceptable (see the discussion in section 2.5).

³⁷ To make this point more convincingly, one would also need to provide a detailed discussion of the properties of *un oarecare*, something which cannot be done here. For evidence that *vreun* and *un oarecare* have complementary distributions and interpretations, see Fălăuș (to appear).

³⁸ Once we allow for complex alternatives of this kind, the notion of functional application for alternatives will have to be suitably generalized, as usually assumed for focus alternatives, cf. e.g. Rooth (1985), Krifka (2006):

(i) (Recursive) Pointwise Functional application

If $\llbracket (\alpha \beta) \rrbracket = f(\llbracket \alpha \rrbracket, \llbracket \beta \rrbracket)$, then $\llbracket (\alpha \beta) \rrbracket^{\text{ALT}} = \{f(X, Y) \mid X \in \llbracket \alpha \rrbracket^{\text{ALT}}, Y \in \llbracket \beta \rrbracket^{\text{ALT}}\}$

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complex alternatives in (72d) (,which leads to the ban on total variation). One question that might arise concerns the order in which these alternatives are considered. In the following, I assume that we first compute complex alternatives $\langle \phi, \phi^{\text{ALT}} \rangle$, which results in the usual total variation inference (along the lines of (67) and (69) above). The result is added to the set of domain alternatives and exhaustification then proceeds in the usual manner. For illustration, consider the following sentence with *vreun* under a possibility modal:

- (73) *Poate* Maria s-a întâlnit cu *vreun* prieten.
 maybe Maria REFL-has met with VREUN friend
 ‘Maybe Maria met some friend.’

Exhaustification with respect to scalar alternatives works as before (see (66)), so let us concentrate on the alternatives responsible for the anti-total variation inference. The novelty with respect to previous examples lies in the consideration of complex alternatives (72d). Simply put, the computation of these alternatives yields the meaning effect we would obtain if *un oarecare* were used in (73); in a domain with three elements, this winds up in the standard total variation inference, derived as in (69) above, repeated in (74):

$$(74) \quad O_{\text{EXH-DA}} \diamond (a \vee b \vee c) = \diamond (a \vee b \vee c) \wedge \neg O \diamond (a \vee b) \wedge \neg O \diamond (a \vee c) \wedge \neg O \diamond (b \vee c) \wedge \\ \neg O \diamond a \wedge \neg O \diamond b \wedge \neg O \diamond c \\ = \diamond a \wedge \diamond b \wedge \diamond c$$

In prose, this amounts to the statement that Maria could be with any of the three individuals in the domain. Now, adding this to the set of formal alternatives we are assuming for *vreun*, the full set of alternatives for the sentence in (73) to which exhaustification is going to apply is the one in (75): it includes the assertion (like it always does), the set of exhaustified singleton domain alternatives (familiar from previous examples, see (68)) and the alternatives corresponding to the complex alternative associated with *un oarecare*:

$$(75) \quad \llbracket (73) \rrbracket^{\text{ALT}} = \{ \diamond (a \vee b \vee c), \quad \text{Assertion} \\ O \diamond a, O \diamond b, O \diamond c, \quad \text{Exhaustified singleton domains} \\ O_{\text{EXH-DA}} \diamond (a \vee b \vee c) \quad \text{Total Variation } \textit{un oarecare} \textit{ (74)} \\ \diamond (a \wedge b), \diamond (a \wedge c), \diamond (b \wedge c) \} \quad \text{Scalar alternatives}$$

Exhaustification with respect to the set of alternatives in (75) yields the following anti-total variation inference:

$$(76) \quad \text{a. } O_{\text{ALT}} (\diamond (a \vee b \vee c)) = \diamond (a \vee b \vee c) \wedge \quad \text{(Assertion)} \\ \wedge \neg \diamond (a \wedge b) \wedge \neg \diamond (a \wedge c) \wedge \neg \diamond (b \wedge c) \quad \text{(Scalar alternatives)} \\ \wedge (\diamond a \rightarrow (\diamond b \vee \diamond c)) \wedge (\diamond b \rightarrow (\diamond a \vee \diamond c)) \wedge (\diamond c \rightarrow (\diamond a \vee \diamond b)) \quad \text{(Singleton domains)}$$

$$\begin{array}{ll}
\wedge \neg (\diamond a \wedge \diamond b \wedge \diamond c) & (\text{un oarecare}) \\
\text{b. } = (\diamond a \wedge \diamond b) \vee (\diamond a \wedge \diamond c) \vee (\diamond b \wedge \diamond c) & (= \text{PARTIAL VARIATION}) \\
\wedge \neg (\diamond a \wedge \diamond b \wedge \diamond c) & (= \text{ANTI-TOTAL VARIATION})
\end{array}$$

The meaning we get for a model with three alternatives is that at least two alternatives are true in some world, but no more than two are (they cannot all be true). The formula in (76) entails that one of the alternatives is false, although we don't know which one. For this to hold, more than one alternative has to be possible, thus excluding models where there is no variation (M1). In addition, *vreun* rules out total variation models (M2) and requires that at least one of the alternatives fail to be true. So (76) is only satisfied in partial variation models like M3 and M4 below.

(77)	a. Falsifying models for <i>vreun</i>		b. Verifying models for <i>vreun</i>	
	M1	M2	M3	M4
	w1 a	w1 a	w1 a	w1 b
	w2 a	w2 b	w2 a	w2 c
	w3 a	w3 c	w3 b	w3 c

This provides the first building block of our account of the epistemic constraint: the meaning of *vreun* encodes an anti-total variation requirement. This can be obtained on the assumption that *vreun* activates a richer set of alternatives, which includes its scalemate, the total variation indefinite *un oarecare*. To see how the anti-total variation condition derives the exclusion of *vreun* from deontic (and related non-epistemic) contexts, we now turn to the second ingredient of my analysis, which concerns the meaning of the modal operators interacting with *vreun*.

4.3.2 Modals and free choice inferences

In line with the alternative-based approach pursued here, we expect the narrower distribution of *vreun* in modal contexts, i.e. its exclusion from non-epistemic contexts, to fall out of the interaction between its active alternatives and the lexical semantics of the modal operators in the local structure. The remaining question is how to obtain the desired difference between epistemic and deontic (bouletic, and more generally priority modals) to which *vreun* seems to be sensitive. In the following, I argue that non-epistemic modals have, in a sense to be explained shortly, a strong free choice potential. To make this hypothesis more precise, we will proceed in two steps. First, we adopt the semantics of modalities in Aloni (2007) and derive the fact that *vreun* is ruled out in imperatives (a fact already illustrated in example (11)). Next, we extend this account to modal auxiliaries and consider various empirical facts to substantiate the claim that deontics, but not epistemics, have a strong free choice character. Building on the observed differences between the two kinds of modals, I derive the restriction of *vreun* to epistemic contexts from a clash between the conjectured anti-total variation requirement and the free choice semantics of deontic modals.

We begin by presenting the analysis in Aloni (2007), focusing on the two aspects that are directly relevant for the present account. First, disjunctions and

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indefinites are assumed to have two different representations: a regular and an alternative-inducing one, as given in (78a-b):

(78) a. Non-alternative-inducing representation:

$$\exists xA(x) \quad \text{ALT} = \{\exists xA(x)\}$$

b. Alternative-inducing representation

$$\exists p(p \wedge \exists x(p=A(x))) \quad \text{ALT} = \{A(d_1), \dots, A(d_n)\}$$

Truth-conditionally, the two representations are equivalent (and amount to existential quantification), but only the latter introduces genuine sets of alternatives (closely related to our domain alternatives). Dependent indefinites, like *irgendein* or *vreun*, always use alternative-inducing representations, i.e. their interpretation always associates with a set of alternatives.

A second key assumption is that modals and imperatives are alternative-sensitive operators (in the spirit of e.g. Kratzer and Shimoyama 2002, Menéndez-Benito 2005), a property that renders them analogous to the exhaustification operators employed by the present framework. More concretely, modals operate over (propositional) alternatives generated in their scope and entail that all alternatives should be compatible with the relevant modal base, i.e. each member of the alternative set should be possible, as in (79):³⁹

- (79) a. $\Diamond\phi$ is true iff every alternative induced by ϕ is compatible with the modal base
b. $\Box\phi$ is true iff every alternative induced by ϕ is compatible with the modal base and at least one alternative induced by ϕ is entailed by the modal base

If the modal operator applies to the alternative-activating representation of an existential (78b), it gives rise to free choice effects, whereby each member of the alternative set is possible (80a). If on the other hand, it applies to the regular representation in (78a), no free choice effects are generated. This latter option yields the reading in (80b), which can be brought out by adding ‘...but I don’t know which’:

- (80) You may have ice cream or cake.
a. \Diamond have ice cream \wedge \Diamond have cake
b. \Diamond (have ice cream \vee have cake)

Let us now see how this proposal can help capture the behavior of alternative-activating indefinites in imperatives:

³⁹ The analysis in Aloni (2007) does not extend to necessity modals, for reasons pertaining to the distribution of *any* (see also fn. 24). However, as mentioned in Aloni and Franke (2013), the properties of *any* are derived differently in Chierchia (2013a), and consequently, once we allow for modals to operate over alternatives, nothing prevents the definition of an alternative-sensitive necessity modal.

- (81) Ia **vreo* carte / ✓o carte *oarecare!*
 take.IMP.2SG VREUN card a card OARECARE
 ‘Take a card!’

On Aloni’s account, imperatives have a semantics close to necessity modals, with a free choice component built into their meaning, as in (82):

- (82) Imperative ! ϕ is true in w iff
 (i) every alternative induced by ϕ is compatible with the modal base
 (ii) the union of all these alternatives is entailed by the modal base

Applying this analysis to imperatives with alternative-activating indefinites such as those in (81) and assuming a domain with three elements, this amounts to the interpretation in (83):

- (83) \Box [pick card₁ \vee pick card₂ \vee pick card₃] \wedge \Diamond pick card₁ \wedge \Diamond pick card₂ \wedge \Diamond pick card₃

In other words, in each of the worlds compatible with the speaker’s desires (goals, etc.), one of the three cards in the relevant domain gets picked. According to clause (i) above, each card is a possible way to comply with the request (order, suggestion, etc.) expressed by the imperative. The resulting free choice effect is compatible with a total variation indefinite like *un oarecare*, but clashes with the meaning of *vreun* proposed in section 4.3.1. More precisely, with the anti-total variation constraint built into the semantics of *vreun*, represented in (84):

- (84) a. Anti-Total Variation with possibility modals
 $(\Diamond a \wedge \Diamond b) \vee (\Diamond a \wedge \Diamond c) \vee (\Diamond b \wedge \Diamond c) \wedge \neg(\Diamond a \wedge \Diamond b \wedge \Diamond c)$
 b. Anti-Total Variation with necessity modals
 $\Box(a \vee b) \vee \Box(b \vee c) \vee \Box(a \vee c) \wedge \neg\Box a \wedge \neg\Box b \wedge \neg\Box c$

We have already shown how anti-total variation is derived under possibility modals, in (76) above. The formula in (84b) spells out the ban on total variation with necessity modals (which I must leave to the reader to compute):⁴⁰ at least two alternatives must be true, but no single one is necessarily true. These formulae are only satisfied in models where one of the alternatives fails to hold, such as M3 or M4 in (85), repeated from above:

- | | | |
|------|---------------------------------------|--------------------------------------|
| (85) | a. Falsifying models for <i>vreun</i> | b. Verifying models for <i>vreun</i> |
| | M1 | M3 |
| | M2 | M4 |
| | w1 a | w1 a |
| | w2 a | w2 a |
| | w3 a | w3 b |
| | w1 a | w1 b |
| | w2 b | w2 c |
| | w3 c | w3 c |

On this proposal, the deviance of *vreun* in (81) results from two conflicting requirements: the interpretation of the imperative, given in (83), only satisfied in a total variation model (M2), and the meaning of *vreun*, which is incompatible with total variation. The only modification introduced in the system is that we allow modals to operate directly over alternatives, a move that is compatible with the present framework (see Chierchia 2013a, p. 359 for further discussion). Although we cannot properly address the details of Aloni's proposal, the predictions of this line of analysis should be clear: free choice effects are the result of the interplay between (i) an existential element with an alternative-triggering representation (78b) and (ii) a modal alternative-sensitive operator (with the semantics in (79) or (82)). If one of the two ingredients is missing, no free choice interpretation arises.⁴¹

The analysis just sketched gets us one step closer to deriving the restriction of *vreun* to epistemic contexts. More specifically, extending this approach, I submit that deontic (and other priority) modals, but not epistemics, behave like imperatives, i.e. they induce a free choice, total variation reading of alternative-activating existentials in their scope. Just like with imperatives then, this property clashes with the conjectured 'anti-total variation' meaning of *vreun*. I will make a case that such a distinction among modals is, on the one hand, plausible in view of how they affect alternatives in their scope and, on the other hand, independently needed to capture other phenomena that seem sensitive to this split. If the proposal is on the right track, we explain the epistemic constraint to which *vreun* is subject.

There are a number of empirical observations supporting the claim that certain modals have a stronger free choice character. In the following, we will concentrate on the contrast between deontic and epistemic modals, but similar considerations arguably apply to other non-epistemic modalities and attitude predicates (for bouletic, see Chierchia 2013a, pp. 264-267). Both deontic and epistemic modals can trigger free choice effects on disjunction (and existentials) in their scope. In uttering something like *You may eat the cake or the ice cream* (with unstressed *or*), we typically convey that both eating the cake and eating the ice cream are allowable options. This is precisely the reason why a sequence like *You may eat the cake or the ice cream; in fact you may only eat the cake* is perceived as contradictory. If permission holds for the initial set of options (which includes the cake and the ice

⁴⁰ For a full derivation of anti-total variation under necessity modals, see Chierchia (2013a, p. 299).

⁴¹ This leaves open the possibility that if, for some reason, the modal/imperative operator does not have the free choice-inducing semantics in (79)/(82), *vreun* becomes acceptable. This prediction is borne out. Fălăuș (2012) shows that *vreun* is acceptable in (roughly) those imperatives where English would use *some*, e.g. *Talk to some neighbor (they might be able to help)! I can see two ways to accommodate this observation. The first is to follow Aloni and argue that these imperatives do not induce total variation (they are so-called 'alternative-presenting' imperatives), i.e. they have a way of satisfying the anti-total variation constraint (as suggested in Fălăuș 2012). Another option is to maintain the semantics in (82) for imperatives, but assume that there is a second modal present in their structure, which weakens the free choice semantics of the imperative. This second strategy is in line with recent analyses of imperatives (e.g. Kaufmann 2012) and is independently argued for in Dayal (2013), which shows the need for a more fine-grained understanding of the interaction between imperatives and free*

cream), then it must also hold for each of its subsets, i.e. each of the disjuncts. Likewise with epistemic modals, e.g. *John might be in Paris or in Barcelona* can give rise to the inference that he might be in any of the two cities. However, upon closer scrutiny, there are interesting differences between these two kinds of modalities, which suggest that free choice inferences are more readily available in deontic contexts. To see this, let us consider the interaction between modals and indefinites.

One supporting empirical observation comes from their behavior with respect to implicit exceptions, which are perfectly compatible with epistemics, but not with deontics. Consider (86):

- (86) a. John must/may go to one of the rooms upstairs.
b. John must/might be in one of the rooms upstairs.

The sentence in (86a), with a deontic modal, either conveys that John must/may go to a specific room, or if not, his obligation/permission is satisfied by going to any one of the rooms in the context. Unless specified otherwise, any room in the relevant domain should be a way of complying. If it turns out that John went to, say, my bedroom, it would be odd to complain by uttering something like *Oh wait, I didn't mean this room*. Any exception should be explicitly ruled out.⁴² The epistemic statement in (86b) is compatible with a wider variety of situations. Just like with the deontic, the modal claim could be about a specific room, or could apply to any room. Crucially however, it could also apply to any subset of the relevant rooms, like in the hide-and-seek scenario we used in (63), where not all rooms are possible options. Nothing forces the free choice inference, unlike what we observe with the deontic modal.⁴³

A similar point can be made by considering cases where we clearly restrict the freedom of choice, i.e. we exclude one of the possible alternatives. Once again, a different pattern emerges in deontic and epistemic cases: whereas epistemics are compatible with such set-ups, deontics are not. For example, suppose we are playing a game consisting of negotiating moves with an oracle that answers queries and gives instructions. If the oracle knows that the treasure is in Room A, and therefore Room B is not a real option, it could still felicitously utter (87a). In contrast to this, the oracle

choice elements like *any*. A proper discussion of this complex issue would take us too far afield from the main purposes of this paper.

⁴² As suggested by an anonymous referee, the free choice induced on existentials under deontic modals may have to do with their function to restrict, or in the case of possibility operators, to un-restrict options. If a possible value is not explicitly excluded, the deontic operator rules it in.

⁴³ Alonso-Ovalle and Menéndez-Benito (2013) dispute the claim that deontic modals trigger free choice on the basis of examples like the following, where they take exceptives to indicate that the indefinite phrase does not refer to the entire set of cards (i.e. we have a partial variation context):

(i) You can take a card, except for this one/but it can't be any of the aces.

Note however that exceptives are compatible with both partial variation (e.g. *algún* or *vreun* in (63)) and total variation determiners. For example, they are compatible with universals or free choice indefinites *Take every/any card, except this one* (see von Stechow 1993) and with total variation indefinites like *un oarecare/un qualsiasi* (Chierchia 2013a, p. 268). As a result, exceptives do not provide a reliable test for the strength of free choice inferences.

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could not say (87b) knowing that Room B is not an option, because, say, it is locked (it would have to say ‘you may *try* to go into Room A or Room B’):

- (87) a. The treasure might be in Room A or in Room B.
b. You may go into Room A or Room B.

I take these facts as indicating that deontic modals with alternative-activating elements in their scope have a stronger free choice flavor, i.e. they give rise to a total variation inference. The wider range of interpretations observed with epistemic operators shows that they do not impose such a requirement, although they are of course compatible with total variation set-ups.

Further evidence in favor of the claim that deontics and epistemics can trigger different effects on embedded alternatives comes from so-called universal free choice inferences, recently discussed in Aloni and Franke (2013). It has been observed that free choice inferences associated with disjunction under deontic modals take scope under universal quantifiers (Chemla 2009). For example, the sentence in (88a) supports the free choice inference in (88b):

- (88) a. Every student may take semantics or pragmatics.
b. Every student may take semantics and every student may take pragmatics.

Crucially, this effect seems to depend on the kind of modality involved. Van Tiel (2011) provides experimental evidence suggesting that the inference in (88) is significantly stronger than the one in (89), with an epistemic modal:⁴⁴

- (89) a. According to the professor, every research question might be answered by a survey or an experiment.
b. According to the professor, every research question might be answered by a survey, and, according to the professor, every research question might be answered by an experiment.

Universal free choice inferences are possible with epistemic modals, but they are less prominent than with deontic modals. This once again suggests that deontics and epistemics induce different effects on alternatives in their scope.

The data considered here lead to the conclusion that alternative-activating elements can acquire different interpretations in epistemic and deontic contexts, corroborating the observation made for *vreun*. Furthermore, the sensitivity of *vreun* to different types of modality fits in with other recent studies showing similar differences in other domains. For example, Aloni and Port (2010) observe that *irgendein* gives rise to different inferences under the two kinds of modals: total variation in deontic contexts and partial variation in epistemic ones (see also Lauer

⁴⁴ The use of ‘according to the professor’ is meant to facilitate the epistemic reading of the modal, which is otherwise not very prominent.

(2010)). This suggests a strong correlation between deontic modals and total variation. Moreover, Crnič (2011) shows that concessive scalar particles like Slovenian *magari* are licensed under deontic modals but not under epistemic ones. Interestingly, both studies provide explanations that rely on free choice inferences being different in deontic and epistemic contexts. To this, we may add the behavior of supplementary *any* (e.g. Dayal 2004): while with epistemic necessity modals supplementary *any* is infelicitous, with deontics not only is it felicitous, but seems emphatic or even redundant.

- (90) a. # John must be with a friend, any friend.
b. John must come with a friend, any friend.

These facts provide converging evidence that deontics and epistemics have a different impact on alternative-activating elements. The differences, manifested in various constructions, should follow from the semantics of the modal operators, as we have tried to indicate here. The precise implementation of the distinction in free choice potential is at this point an open issue. The strategy pursued here consists in building this property into the meaning of deontic operators, along the lines of Aloni (2007).⁴⁵ In a recent study, which to my knowledge is the only formally explicit attempt to tackle this problem, Aloni and Franke (2013) explore a pragmatic account. The gist of their proposal is that the observed differences can be explained in terms of pragmatic relevance. More precisely, they contrast situations in which deontic and epistemic universal free choice inferences (e.g. (88)-(89)) do or do not arise. They argue that such inferences are more relevant for practical purposes, i.e. for choosing a course of action, in deontic than in epistemic contexts.⁴⁶ As a result, free choice effects are

⁴⁵ There are several other possible ways to formally capture the free choice character of deontics on a semantic account. A weaker version of the idea sketched in the text is to maintain a standard (non-alternative-sensitive) meaning for modals and assume that the free choice component is a presupposition of deontic modals, as spelled out in (i):

(i) $\Box_{\text{DEONTIC}}(\phi)$ is defined iff for every $p \in \text{ALT}(\phi)$, $\Diamond_{\text{DEONTIC}} p$

This has the effect of requiring that each alternative be true in some world of the modal base. If there are no active alternatives, this has no effect. But in the presence of an alternative-triggering element, this induces free choice effects. The anti-total variation meaning of *vreun* clashes with the free choice presupposition in (i), hence its deviance in deontic contexts.

Chierchia (2013a, p. 266) suggests a solution that consists in assuming the following meaning postulate (for deontics and imperatives):

(ii) $\Box_{\text{FC}} [\exists x \in D [P(x)] \rightarrow \forall D' \subseteq D \Diamond_{\text{FC}} \exists x \in D' [P(x)]]$

To make this work, modals would need to be treated as alternative-sensitive operators. As formulated right now, this postulate looks at ‘standard’ meaning, leaving it unclear how it deals with the difference between alternative-activating and non-alternative-activating elements.

More work is clearly needed to test the predictions of the various conceivable implementations and distinguish between these options.

⁴⁶ Aloni and Franke relate this difference to the fact that deontic and epistemic statements convey different types of information. Intuitively, epistemic information has to do with compatibility between pieces of information, without necessarily determining future courses of action. In contrast to this, deontic information is factual - it provides directly useful information about practically relevant permissions and obligations. This is formalized by adopting a dynamic account of epistemic modality (Veltman 1996, Yalcin 2007), combined with a classical relational approach to deontic modality. I refer to Aloni and Franke (2013) for further details.

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more readily and more frequently available with deontic operators. Over time, this effect can grammaticalize (via a process called ‘pragmatic fossilization’), leading to differences in the extent to which these inferences infiltrate compositional semantics.

The present paper does not seek to distinguish between a semantic and a pragmatic explanation for the different free choice potential of modals. However, I would like to address an empirical issue that Aloni and Franke view as problematic for a semantic account that combines the proposal in Aloni (2007) and the framework in Chierchia (2013a), along the lines being considered here. They argue that once we build free choice into the meaning of deontics, we make wrong predictions concerning the behavior of partial variation indefinites like *un qualche* or *algún*. More precisely, if deontics always require free choice among alternatives in their scope, we expect *all* alternative-activating indefinites to give rise to total variation effects in deontic contexts. This does not seem to be the case for *un qualche* in (91), where the continuation specifies that not any kind of basic skill is enough:

- (91) Per diventare traduttore *devi* avere ***un qualche*** tipo di base. Di sicuro devi saper leggere e in alcuni casi devi anche sapere scrivere.
‘To become a translator you must have some basic skills. For sure you must be able to read and in some cases you must also know how to write.’

Alonso-Ovalle and Menéndez-Benito (2013) make a similar point concerning (92), where *algún* simply requires that there be at least two doctors that Mary can marry:

- (92) Mary se *tiene* que casar con ***algún*** médico.
‘Mary has to marry some doctor or other.’

Without getting into a detailed discussion of the properties of *un qualche/algún*, there are two things worth pointing out in this connection. First, the facts are not entirely clear at this point. Note that Chierchia (2013a, p. 286) makes the opposite empirical claim, arguing that *un qualche* triggers total variation in examples such as those in (93), as confirmed by the infelicity of a continuation that seeks to deny this effect:

- (93) a. ?? *Prendi una qualche* carta, ma non puoi prendere una carta qualsiasi.
‘Take some card or other, but you cannot take any old card.’
b. ?? Per legge, *devo* avere ***una qualche*** assicurazione ma non un’assicurazione qualsiasi.
‘By law, I must have some insurance or other, but not any insurance.’

Moreover, there may be an underlying confounding factor, namely the fact that *un qualche/algún* can be used in deontic contexts where the elements in the quantificational domain are (possibly) unknown, hence the impression that the speaker does not intend her claim to apply to all elements in the domain. However, the possible ignorance concerning elements in the domain is in principle independent of total/partial variation. For example, imagine a situation where we are playing hide-

and-see in a house I don't know very well. If I utter (94), my claim applies to all rooms in the house (unless specified otherwise). Consequently, I wouldn't be entitled to say that you didn't follow the rules in case you hid in some secret room of the house I wasn't initially aware of:

- (94) *Tienes que esconderte en alguna habitación de la casa.*
 'You must hide in a room of the house.'

If it turns out that an element is part of the quantificational domain, this element constitutes a viable way of complying with the obligation/permission expressed by the modal. Total variation in deontic contexts therefore holds even in the absence of knowledge concerning the range of options.

A second point I would like to make concerning these facts is that the alternative-based approach pursued here has ways to capture the absence of total variation of *un qualche/algún* in deontic contexts (if this turns out to be real). More concretely, we could assume that the LF of sentences such as (91)-(92) involves two modals, as schematized in (95): the deontic modal auxiliary and a covert assertoric (epistemic) modal (discussed in (59) above):

- (95) $\Box_S [un\ qualche/algún \Box_{DEONTIC}]$

In the absence of the null assertoric modal \Box_S , this structure is illicit: epistemic indefinites always take narrow scope with respect to the modal that 'licenses' them (for reasons explained in Chierchia 2013a, p. 258). The insertion of a covert modal rescues this configuration.⁴⁷ This 'last resort' strategy might then explain the lack of total variation perceived in examples such as (91)-(92): the indefinite is not in the scope of a deontic operator. (92) simply says that Mary has to marry a doctor and the speaker does not know (or care) who that is, without imposing any constraints on whether some or all relevant doctors can satisfy the modal claim. A welcome consequence of this line of analysis is that the structure in (95) is not available for *vreun*, which we have shown to disallow the covert modality strategy (see the discussion in section 4.1). We therefore correctly predict that it can never occur in sentences such as (91): the only available LF is one in which *vreun* is in the scope of the deontic modal, which automatically generates a contradiction. If this option is available to the alternatives-and-exhaustification approach to deal with the possible absence of total variation effects with *un qualche/algún*, it would have a pay off in explaining the different behavior of *vreun*.

The conclusion emerging from our brief discussion of the properties of *un qualche* and *algún* is that the interaction between modalities and epistemic indefinites is a complex matter, still in need of empirical investigation. The crucial point for

⁴⁷ The availability of the covert modality strategy is confirmed by the acceptability of *un qualche* and *algún* in episodic sentences:

- (i) Maria ha sposato *un qualche* dentista.
 'Maria married some dentist or other.'

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present purposes is that there is a clear split in the way deontics and epistemics interact with alternative-activating elements. Regardless of how exactly this behavior is ultimately captured and formalized, I take the free choice character of deontic modals to provide a compelling explanation for the restriction of *vreun* to epistemic contexts. My account of the epistemic constraint makes use of two independent empirical observations. On the one hand, the anti-total variation inference, optional for indefinites like *un qualche* and *algún*, but obligatory with *vreun* (as spelled out in 4.3.1). On the other hand, the free choice character of deontics, supported by their interaction with alternative-activating elements and the differences with epistemic modals noted in this connection. If *vreun* is embedded under a modal that imposes no constraints on alternatives, the anti-total variation requirement can be satisfied. Under epistemic modals, then, things can go both ways. If nothing in the context imposes total variation (as we have seen to be usually the case with epistemics),⁴⁸ *vreun* can be used. If on the other hand, we have a total variation epistemic set-up, *vreun* is ruled out. This is confirmed by the deviance of *vreun* in a total variation version of the hide-and-seek scenario in (63) or in the shell game scenario in (71), which establishes that the ball could be in any one of the three boxes under consideration. Deontic modals do not have the same flexibility: they trigger free choice on embedded alternatives, which systematically clashes with the anti-total variation meaning of *vreun*. Hence its deviance. The only way out would be the insertion of a covert epistemic modal, a strategy that *vreun* disallows. The epistemic constraint thus neatly falls into place. The only item-specific property posited here is the anti-total variation requirement, triggered by the competition with the total variation indefinite *un oarecare*. This requirement aside, the (un)grammaticality of *vreun* is a direct consequence of the interplay between its alternative-triggering meaning and the semantic properties of the embedding operator, just like elsewhere in the polarity system.

5. Conclusions

This paper examined a puzzling case of polarity sensitivity, manifested by Romanian *vreun*, and argued that an alternative-based semantics makes possible a uniform account of its distribution. Our study reveals new parameters of variation among polarity sensitive indefinites (types of modality) and extends the alternative-and-exhaustification framework by using a new type of alternatives for meaning enrichment (complex alternatives, resulting from competition with other members of the polarity system). More concretely, on the empirical side, the main outcome of our investigation is the systematic incompatibility between *vreun* and non-epistemic operators, captured by the epistemic constraint. Adopting the alternative-based theory developed in Chierchia (2013a), we analyzed *vreun* as an indefinite with obligatorily

⁴⁸ There is an intuitive connection between the absence of constraints imposed on alternatives in their scope and the uncertainty/indirect evidentiality built into the meaning of epistemic operators. Recall that the modal base relevant for the interpretation of epistemics contains the worlds not ruled out by direct evidence, leaving open a large number of possibilities to satisfy the modal claim. Properly justified and worked out, this property of epistemic modals might explain why they allow for a wider range of interpretations of alternative-activating elements in their scope.

active alternatives, which can only be consistently factored into meaning in the presence of a downward-entailing or modal operator. The deviance in non-epistemic contexts was argued to arise from two conflicting requirements: the ban on total variation encoded by *vreun* and the free choice component of deontic modals. To formally implement this proposal, we hypothesized that *vreun* activates a richer set of alternatives: in addition to scalar and singleton domain alternatives, common to all partial variation indefinites, it also includes the ‘complex’ alternatives brought about by the competition with *un oarecare*. This account opens up the possibility that the set of active alternatives associated with a polarity sensitive indefinite includes not only grammatically determined alternatives (lexically activated or derived via recursive exhaustification), but also other alternative-activating elements in the polarity system.

I would like to conclude this discussion by briefly mentioning some open questions and directions for future research. First, to extend the empirical coverage of this account, we need to carefully check its predictions for other intensional contexts. This involves a detailed examination of the interaction with other non-epistemic modals (e.g. bouletic) and with attitude predicates, whose semantics and embedding properties constitute a complex area of investigation in Romanian (e.g. Brașoveanu 2006, Brașoveanu and Farkas 2007, Anand and Hacquard 2013). The use of *vreun* in certain imperfective contexts (mentioned in section 1.2) indicates that aspectual properties may also have a role in satisfying the anti-total variation requirement. A further open issue is the role of presuppositions in the (un)acceptability of *vreun*. Its exclusion under factive predicates such as *know/find out* (noted in (28)) suggests that epistemic indefinites may be sensitive not only to truth-conditional aspects of meaning (as in all the cases we have considered here), but also presuppositions.⁴⁹ A full account would also make a close comparison between the *vreun* studied here and partitive *vreun*, since its definite inner noun phrase provides an important control. Whatever further empirical properties of *vreun* will be uncovered, ideally, they should follow from the interaction between its lexical meaning and the regular semantics of the operators in the context.

The properties of *vreun* discussed in this paper contribute to our knowledge of dimensions of variation among semantically dependent indefinites, and as such pave the way to a principled explanation for the attested diversity. We have shown how to capture this pattern into a tightly regulated parametric system of polarity, preserving the insight in Farkas (2002, 2006) that alternatives are the key to understanding the behavior of *vreun*. In explaining its distributional restrictions, we made use of independent properties of the operators with which *vreun* interacts, thus eliminating traditional licensing constraints. The outcome is an account where labeling *vreun* a negative polarity item or an epistemic indefinite amounts to nothing more than a

⁴⁹ The proposal that polarity items may be sensitive to different meaning components has been put forward in Gajewski (2011) and adopted in Chierchia (2013a) to explain the ungrammaticality of strong NPIs in the scope of presuppositional operators such as *only*. More concretely, weak NPIs like *ever* are argued to be sensitive to just the truth-conditional component of their licensors, while strong NPIs like *in weeks* are sensitive also to the presuppositions and implicatures. It would therefore be interesting to find a parallel split among epistemic indefinites.

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terminological move. The proposal makes clear predictions and offers tools to explore other contexts and tackle other potentially relevant factors, like presuppositional aspects of meaning or the interaction with temporal and aspectual operators. I leave these remaining issues for future research, but I hope to have shown that the present approach provides insightful ways to address them.

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