Having an iota of talent: A gradable HPSG analysis of the syntactic distribution and semantics of the minimizer *an iota*

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Abstract

The exhaustificational account predicts that the polarity distribution of minimizers is due to the effect that exhaustificational/focal operators have on their semantics: they cause minimizers and their alternatives to be organized in likelihood scales while requiring the former to be in the lowest position. This approach excludes positive sentences as licensing environments for minimizers, but a defining characteristic of partitive minimizers, such as *an iota*, is that they can occur in these kinds of sentences. The aim of this paper is to give a scalar account of the polarity distribution of the minimizer *an iota* that determines its polarity as being the product of satisfying an absolute minimum standard provided by a relevant gradable predicate: in positive contexts, the minimizer meets the standard, while it does not in negative contexts. The proposal is implemented for the phrase *an iota of talent*, utilizing the combinatoric tools of LRS and the feature geometry of HPSG. This treatment motivates a lexicalist alternative to proposals engaging with polarity phenomena based on exhausitifcational operators.

1 Introduction

Minimizers, phrases such as *a drop*, *a red cent*, or *lift a finger*, have commonly been treated as strong negative polarity items (NPIs), licensed only by negative operators and negative quantifiers (van der Wouden 1997, Zwarts 1998). The purpose of the exhaustificational approach is to capture such distribution by positing that minimizers need to be compared to a set of relevant alternatives along a scale of likelihood. However, this account ignores the distribution of partitive minimizers like *an iota* in plain positive contexts, an environment in which they are predicted to be infelicitous.

I propose an alternative scalar account that leaves the definition of the dimension of measurement to a relevant gradable predicate, and compares the minimizer to absolute minimum standards of satisfaction, also defined by the predicate. I argue that partitive minimizers in positive contexts meet the standard, while those in negative contexts do not. To illustrate this, I offer a detailed analysis of the phrase *an iota of talent* using the combinatoric tools of Lexical Resource Semantics (LRS) (Richter & Sailer 2004).

This paper is structured as follows: Section 2 will provide a detailed account of the exhaustificational approach to the polarity of minimizers as well as the empirical issues associated with it. Section 3 deals in detail with the issues associated to the exhaustificational approach. Section 4 develops

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the scalar analysis to be implemented in this article and the role of absolute minimum standards. Section 5 illustrates the HPSG/LRS implementation through the analysis of *an iota of talent*. Section 6 concludes the present article.

2 The Exhaustificational Account

The exhaustificational account of the distribution of minimizers assumes that they are associated with a focal operator that sets them in the lowest position of a likelihood scale along which a set of alternatives is also ordered (see Eckardt & Csipak (2013) and Eckardt (2005)). Such an analysis borrows heavily from the research on the semantics and pragmatics of the focal operator *even* (Crnič 2011, Karttunen & Peters 1979, Lahiri 1998, Rooth 1985) and it intends to capture the infelicitous use of minimizers in positive contexts (1a), their degraded acceptability under the scope of quantifiers such as *few* (1b), and their felicitous use in the scope of negative operators (1c) and negative quantifiers (1d).

(1) a. I saw a living soul.
b. Few people saw a living soul.
c. I didn't see a living soul.
d. Nobody saw a living soul.

In other words, the exhaustificational account aims to capture the NPI-hood of minimizers, while also attempting to account for their more restricted distribution, at least when compared with other NPIs like *ever*, which is welcome in plain downward-entailing (D.E.) (2a), anti-additive (2b), and anti-morpic (2c) contexts (see van der Wouden (1997) and Zwarts (1998)). As exemplified above, the minimizer *a living soul* is expected to be felicitous only in the latter two. The differences in the distribution of *ever* and *a living soul* have motivated the classification of ever-like expressions as *weak NPIs*, while a-living-soul-like expressions have been labelled *strong NPIs*.

(2) a. Few people have ever been to Peru.
b. Nobody has ever been to Peru.
c. I haven't ever been to Peru.

Let us illustrate the mechanisms set in motion by exhaustification with the analysis of the expression *a living soul*, adapted from Eckardt (2005). Let us first assume that *a living soul* triggers the following alternatives:

(3) **ALT**(a living soul)= {a priest, a carpenter, a baker,...}

The alternatives to the minimizer denote more specific entities than the one denoted by the minimizer itself. That is, *a living soul* stands for the most generic person one is keen to find in any given situation: the denotation of *a living soul* itself is the union set of the set of its alternatives (Krifka 1995).

Given the general nature of the minimizer, the likelihood of it taking part in any given event is high compared to its alternatives. For example, one is more likely to see an anonymous passerby than to see a particular, easily identifiable person, like a baker or a priest. This scalar relation can be informally illustrated with the following formula:

(4) **Likelihood**(P(living soul)) > **Likelihood**(P(ALT(living soul)))

However, the presence of a focal operator would position the minimizer at the lowest point on a likelihood scale relative to the alternatives. This means that the expected scalar relationship should be completely opposite to the one shown in (4) and resemble (5).

(5) **Likelihood**(P(ALT(living soul))) > **Likelihood**(P(living soul))

A minimizer in a positive sentence like (1a) generates alternatives towards which it keeps a scalar relation as in (4), while the expected likelihood value of the minimizer and its alternatives should be (5). The clashing scalar implicatures render *a living soul*, and minimizers in general, infelicitous in positive contexts.

In turn, negative contexts preserve the scalar implicature imposed by the emphatic operator. Intuitively, in any given event involving people, one is highly unlikely **not** to see at least some generic individual compared to the alternatives; for example, **not** seeing a priest is more likely. These intuitions concerning a sentence like (1c) can be captured by the informal representation below:

(6) **Likelihood**($\neg P$(ALT(living soul))) > **Likelihood**($\neg P$(living soul))

The expected likelihood relations between the minimizer and its alternatives, shown in (5), and the ones generated by (1c) as in (6) are structurally similar, pointing to the felicity of *a living soul* in negative contexts.

To sum up, minimizers generate alternatives, and they are by default the most likely element to take part in an event with respect to such alternatives; however, they are only licensed in environments in which the exact opposite holds: the minimizer ought to be highly unlikely to (not) take part with respect to the alternatives.

Formal attempts to capture these insights postulate special exhaustificational operators activated at the utterance level (Krifka 1995), or as part of the semantic content of lexical items, an approach implemented in HPSG treatments of NPI licensing in Romanian (Rizea & Sailer 2019, 2020). Likewise, minimalist accounts assume the presence of an optionally overt focal

operator *even* as part of the abstract syntactic structure of minimizer phrases (Tubau 2016).

Disregarding whether one's theoretical stance favors a pragmatic, lexical-semantic, or syntactic treatment of exhaustification, this hypothesis fails to account for the complete distribution of English minimizers given its inability to predict their occurrence in contexts such as *do*-support environments (Sailer 2021, 2022, Sedivy 1990), and simple positive sentences (Martínez García 2022, 2023). In the following section, we will discuss these problems in turn.

3 Problems

The exhaustificational hypothesis intends to capture the more restricted distribution of minimizers with respect to other NPIs, but it ultimately fails in two ways: it predicts the occurrence of minimizers across the entire spectrum of D.E. licensing contexts, with a distribution parallel to weak NPIs, while not being able to account for their attestation in non-D.E. environments such as *do*-support sentences (Sailer 2021, 2022, Sedivy 1990). On the other hand, the formulation of this hypothesis has its basis in the received knowledge that minimizers do not happen in plain positive sentences, a premise that has been called into question by more recent research in the polarity systems of the languages of the Iberian peninsula (Pinto 2015, San-Segundo Cachero 2019), and English (Martínez García 2022, 2023). Let us explore each problem in turn.

3.1 Minimizers in other D.E. Environments (Eckardt & Csipak 2013)

Eckardt & Csipak (2013) note that exhaustificational accounts would predict strong NPIs, such as minimizers, to be licensed in all downward-entailing contexts, violating the distributional constraints these expressions are expected to set on environments that license them. To illustrate this, assume properties P and P_1 such that $P_1 \subset P$ so that whenever these properties appear in a downward entailing context S, it follows that $S(P) \rightarrow S(P_1)$. Now, in reasoning of the form $p \rightarrow q$, if p is true, q will also be true. In other words, q is necessarily as likely as p, and probably more. Since minimizers are theorized to denote the union set of all their alternatives, any environment for which $S(P) \rightarrow S(P_1)$ follows will allow minimizers as well: given that $\textsc{alt}(min) \subset min$ then $S(min) \rightarrow S(\textsc{alt}(min))$ is predicted to hold. That is, downward-entailing contexts preserve likelihood relations among propositions, and thus they are bound to license inferences from the least likely proposition to more likely ones.

In other words, enriching minimizers with an exhaustification operator will not prevent minimizers from being licensed by plain D.E. operators, such

as *few* or *rarely*, predicting their acceptability in sentences in which they should be barred, such as the following (Eckardt & Csipak 2013: 277):

(7) a. ? Few students even lifted a finger.
b. ? Otto rarely lifted a finger.

However, the attestation of minimizers in such contexts has been well-documented, motivating calls to classify them as *weak* NPIs, given their broad distribution (Giannakidou 2011). This is illustrated by the following attested examples from the enTenTen21 Corpus (2022). Emphasis is mine:

(8) a. (...) whilst residents of both Brightlingsea and Shoreham were prepared to go to huge lengths to stop the live-export trade, few **lifted a finger** to stop scab coal being brought in through these same ports to break the miners strike.
b. Corbyn is still sitting on the same fence he did three years ago. He hardly **lifted a finger** to help.

In short, exhaustificational accounts license NPIs in the same contexts as D.E. accounts of NPIs licensing, but such overgeneralization does not seem to be a problem for at least some minimizers since their distribution has been attested to be wider than initially assumed.

3.2 Attestation in non-D.E. environments

Consider these data from the enTenTen21 corpus (emphasis mine):

(9) a. I most definitely do **give a damn** if female characters have a better representation in games
b. She really does **give a damn** about the walfare [sic] of the city!!

These examples defy licensing theories of NPI that restrict the occurrence of minimizers to the scope of D.E. operators. Likewise, they are not accounted for by other dominant theories of polarity sensitive items such as Giannakidou's non-veridicality theory (1998). Let us explore Giannakidou's proposal in some detail.

Concisely, a non-veridical operator cannot guarantee the truth of the proposition on which it is applied (Giannakidou 2014). Thus, for any proposition p such that it is scoped over by a non-veridical operator Op.

(10) $Op(p) \rightarrow p \vee \neg p$

Additionally, if the following holds:

(11) $Op(p) \rightarrow \neg p$

Op is said to be anti-veridical (Giannakidou 1998, 2014).

The relevance of non-veridicality to the discussion of NPI licensing lies in its capturing properties of operators that allow NPIs in their scope, but that cannot be classified within the hierarchy of negative environments proposed by Zwarts (1998) and van der Wouden (1997). In general terms, Giannakidou proposes that NPIs are licensed by non-veridical or anti-veridical environments. Classical negation is an example of the latter, while modals and subjunctives are examples of the former. For instance, consider the attested occurrence of the minimizer *give a damn* licensed by the modal *willing to* (from enTenTen21):

(12) the reason they're so willing to appreciate the efforts of any celebrity wrestler *willing to* **give a damn** is that the business has been victim to countless celebrities who clearly had no interest in sports entertainment

Willing to is not D.E., but it is non-veridical as illustrated by the tests below:

(13) a. I am willing to eat vegetables $\not\rightarrow$ I am willing to eat broccoli
b. I am willing to eat vegetables $\not\rightarrow$ I eat vegetables

In other words, *willing to* does not allow set to subset inferential reasoning as D.E. operators do (13a), and neither does it preserve the truth of its subjacent proposition (13b): From *I am willing to eat vegetables*, it is not possible to deduce that *I eat vegetables*.

Applying a similar test to (9b) shows that *do*-support is not D.E., but that it preserves the truth of the proposition (i.e., it is veridical).

(14) a. I do eat vegetables $\not\rightarrow$ I do eat broccoli
b. I do eat vegetables $\rightarrow$ I eat vegetables

Likewise, *do*-support environments do not license weak NPIs such as *ever* (Sedivy 1990: 98):

(15) * Bert did ever kiss Marilin Monroe.

In short, *do*-support sentences do not fit in current licensing theories of NPIs: they are not D.E. or non-veridical, and they license *strong* NPIs but block weak ones. This is surprising, considering that the set of licensing operators that allow strong NPIs is regularly assumed to be a subset of the set of operators licensing *weak* NPIs. This last assumption is central to the exhaustification theory, thus, it cannot give account of the occurrence of minimizers in *do*-support sentences by design.

3.3 Minimizers in positive contexts

Recent research focused on the polarity systems of languages spoken in the Iberian peninsula (Pinto 2015, San-Segundo Cachero 2019) has provided evidence of the use of noun phrases normally labeled as NPIs in positive contexts while unlicensed. These NPs tend to be derived from measure expressions and appear in partitive contexts, hence their classification as *partitive minimizers*. The examples below illustrate this phenomenon with the NP *un ápice* (from the esTenTen23 corpus 2023):

(16) a. no nos vamos a apartar un ápice de este camino
NEG 1PL.DAT go.PRES to separate.INF one *ápice* of this path
'We will not deviate from this path even one bit'

b. sin que tu look tenga que perder un
without COMP 2SG.POSS look have.SUBJ COMP lose.INF one
ápice de estilo.
ápice of style
'Without your look having to lose one bit of style.'

c. Y si tuviera un ápice de dignidad, debe renunciar
and if have.SUBJ one *ápice* of dignity must resign
'And if you had even one bit of dignity, you must resign'

d. la despedida deja un ápice de esperanza a
DEF.F.S farewell leave.PRES one *ápice* of hope DAT
los que quieren a Ana.
REL.PL COMP love.PRES ACC Ana
'The farewell leaves a bit of hope for those who love Ana.'

The data selection above showcases examples of partitive *un ápice* in negative (16a), D.E. (16b) non-veridical (16c), and positive environments (16d). This list illustrates the NPI uses of this expression as well as its use in positive contexts in the absence of a licensor.

My work on NPIs in both English and Spanish (Martínez García 2022, 2023) has shown that the former language boasts a set of expressions that behaves similarly to Spanish partitive minimizers: they are derived from measure nouns, are commonly classified as NPIs, but they can also appear in positive contexts. This is the case of phrases such as *a crumb* or *an iota*. The examples in (17a) exemplify the use of these phrases as NPIs, and the examples in (17b) show their use in positive contexts (from enTenTen 2022).

(17) a. *An iota* and *a crumb* as NPIs
i. There is not *an iota of evidence* that she questioned anything about the dreary reality in the Soviet Union
ii. With Campbell(...) barely garnering *a crumb of acclaim* in the pages of the unforgiving music press

b. *An iota* and *a crumb* in positive contexts
   i. Good thing someone in the family had *an iota of talent*.
   ii. Many people experience heartburn and belching after having a meal with *an iota of beans* in it.
   iii. Alas, there remains *a crumb of satisfying hope*

A common take regarding minimizer distribution is that they would trigger literal readings when in positive contexts (Tubau 2016), in which case the expressions can no longer be considered NPIs. This seems to be the case for expressions such as *a red cent*, whose only available reading in the example below is that the utterer is the owner of a cent that is red or has been painted red.

(18) I have a red cent

The choice of examples in (17b) shows that this is not always the case. Both *an iota* and *a crumb* remain idiomatic in positive contexts with an active quantificational reading similar to that of the construction *a bit of NP*. Indeed, San-Segundo Cachero (2019) sets the quantificational nature of partitive minimizers as a determinant factor in their polarity distribution. Importantly, the exhaustificational hypothesis predicts the ill-formedness of plain positive sentences containing minimizers.

3.4 Summary

The exhaustificational hypothesis endeavors to capture the distribution of minimizers as strong NPIs. However, minimizers have been found to have a distribution that both imitates and exceeds the distributional behavior of weak NPIs. They have been attested under the scope of D.E. operators, such as *few*, while also being possible in contexts barred for run-of-the-mill weak NPIs, like *do*-support and plain positive sentences. Through this section, we have seen that the exhaustificational account of the distribution of minimizers fails doubly: it fails to limit the distribution of minimizers to the kind of environments they were thought to be secluded to initially (anti-morphic and anti-additive contexts), and it also aims to exclude as part of their distribution environments in which they are attested, like positive sentences.

These failures originate from the exhaustificational hypothesis being a generalization built on incomplete data, the treatment of scales that this hypothesis is based upon, and the erroneous assumption that all minimizers should be treated equally. In what follows, I will address the latter two issues by adopting the position that partitive minimizers are better accounted for if scale-forming dimensions are left undefined and their position on the scale is compared to a standard of satisfaction, instead of a whole set of alternatives.

4 Standards and polarity: the case of *an iota*

In this section, I will spell out some features of scales relevant to the analysis of the distribution of the partitive minimizer *an iota* in positive and negative environments. I have chosen this expression given the ease of analysis its plain quantificational meaning would grant. As mentioned above, minimizers may be interpreted literally in positive contexts, but for this to be possible, the interpretation of a minimizer must have extensional value. The noun *drop*, for example, designates amounts of liquid, while *crumb* is normally used as a measure of food. Thus, the examples below can be read as referring to literally a drop of syrup and a crumb of bread.

(19) a. I drank a drop of syrup
b. I ate a crumb of bread

As far as I am aware, the noun *iota* does not have an extensional value that would license literal interpretations. In turn, its impoverished semantic content will facilitate the development of a lexicalist analysis in section 4, in which its main semantic contribution is simply the predicate over degrees **minimal**. An analysis on these lines can be further applied to partitive minimizers with richer semantic content in the future.

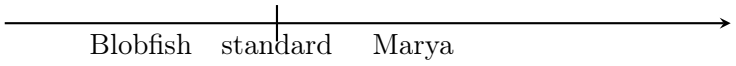
In my treatment of *an iota*, I embrace two notions central to the exhaustificational approach. First, I agree that the distribution of partitive minimizers needs to be approached from a scalar perspective, and second, I also uphold that comparison among scalar items is central to this endeavor. However, I reject that the scale-forming dimension has to be one of likelihood by default, and that the comparison needs to be between the minimizer and all its possible alternatives. Rather, scalar dimensions should be lexically encoded as a property of gradable predicates or defined by the contexts, and minimizers should be compared against a standard.

In what follows, I will introduce the concept of standard in more detail, the differences between absolute and relative standards, and the entailments pertinent to scales with absolute standards.

4.1 Different kinds of standards

Succinctly, a standard is a point that separates a scale into levels where the subjacent gradable predicate is true from those where it is false (Kennedy & McNally 2005). For example, consider a toy universe with a blobfish and Marya Bolkonskaia from Tolstoy's *War and Peace*. Let us further assume that we wish to compare their beauty. Blobfish are usually considered ugly or funny-looking, at best. Conversely, the only information we have about Marya's appearance from Tolstoy is that she is somewhat plain but has beautiful eyes and a sad expression, which was seen as an attractive physical

trait during the 19th century. Therefore, a visual comparison of their positions on a beauty scale would look like this:



In other words, blobfish do not satisfy the standard of the beauty scale, while Marya does. In turn, the predicate "x is beautiful" subjacent to the scale would turn "false" for the blobfish and "true" for Marya.

How to establish the standard depends on whether the scale has identifiable minimum values, maximum values, or neither (Kennedy & McNally 2005, Solt 2015). If a scale has minimum or maximum values, the standard will be associated with one of them. Since this is the case independently of contextual factors, the standard of the scale is absolute. When a scale has neither maximum nor minimum values, the definition of the standard depends on contextual factors; here, the standards are relative. Consider the examples below:

(20) a. I ate bread for lunch
b. I am tall

Since an eating event has a clear start and end, these can be mapped onto a scale and be interpreted as minimum and maximum values, respectively. One of these can serve as the standard of a bread-eating scale. Given that eating rather small portions still constitutes eating, the standard for a bread-eating scale is absolute and minimum. That is, the predicate "x ate bread" will return "true", even if a very small amount was consumed.

On the other hand, defining the truthfulness of (20b) depends on contextual factors. Assume that the utterer of (20b) is 1.80m tall; if the comparison class in the context is a group of basketball players, the utterance in (20b) could be considered false. If the height of the utterer is compared to the height of primary schoolers, (20b) could be evaluated as true. That is, the standard for scales of tallness is relative.

For the discussion at hand, I will adopt the position that minimizers, particularly partitive minimizers, associate with scales whose standards are absolute and minimum. Additionally, I will further assume that the features of standards are lexically defined (Kennedy & McNally 2005); concretely, this means that the predicate will encode information about the standard. A desirable entailment of defining features of standards in this manner is that denying that an entity x can satisfy a gradable predicate G with a minimum absolute standard entails that x has G to a zero degree (Kennedy & McNally 2005: 358).

This allows drawing common implicatures connected to minimizers without appealing to exhaustificational operators, such as their compliance with Fauconnier's scale principle applied to negated gradable predicates (1975:

362): if a property does not hold for the lowest element in a scale, it will not hold for any other element.

To sum up, similarly to the exhaustificational approach, I will give an account of the distribution of the partitive minimizer *an iota* in positive and negative environments focusing on their scalar features. However, unlike exhaustification, I will allow the dimension of measurement to be defined by a gradable predicate that, in turn, encodes a minimum absolute standard for its scale. This setup permits inferences commonly associated with minimizers in negative contexts without postulating abstract focal operators as part of their semantics.

5 HPSG/LRS treatment

In this section, I will present an analysis of the phrase *an iota of talent* cast in the HPSG feature geometry of Lexical Resource Semantics (LRS). LRS is a system of underspecified semantics combinatorics that uses standard representation languages such as HoL or Ty2 while implementing constraints and metavariables to allow for multiple possible final representations (Richter & Sailer 2004). An LRS principle at the heart of the present analysis is that lexical items make semantic contributions that are put together in well-formed formulas.

To date, several LRS analyses have attempted to capture the distribution of minimizers; noteworthy among these are the work of Rizea & Sailer (2019, 2020) on Romanian NPIs and Sailer (2021) use-conditional theory of expressions licensed in *do*-support environments. Rizea & Sailer (2019, 2020) propose complex feature geometries that implement both standard satisfaction for polarity-sensitive constructions and exhaustificational operators for minimizers. Likewise, Sailer (2021) proposes the licensing of *lift-a-finger* type of expressions by an appropriate operator constrained by contextual felicity of use. My proposal differs in that the feature geometry I implement for the analysis of the partitive minimizer *an iota* makes use of vanilla LRS feature-value pairs, does not invoke special exhaustificational operators, and does not require licensing at the use-conditional level.

Rather, I assume a simple semantics that depends on lexically encoded features of both the minimizer phrase *an iota* and the gradable predicate that supplies scalar attributes, such as the dimension of measurement and a standard.

I will illustrate the representational constraints closely following the feature geometry proposed by Levine et al. (in press) while introducing the lexical entries pertinent to the phrase *an iota of talent*. Let us start with the determiner *an*:

(21)
$$\left[\begin{array}{ll} \textit{word} & \\ \textsc{phon} & \left\langle \textit{an} \right\rangle \\ \textsc{syns}|\textsc{loc}|\textsc{cat} & \left[\textsc{cont}\left[\begin{array}{ll} \textsc{index} & \left[\begin{array}{ll} \textsc{dr} & \boxed{1a} \\ \textsc{phi} & \left[\textsc{num}\ \textit{sg}\right] \end{array}\right] \\ \textsc{main} & \boxed{1b}\exists \end{array}\right]\right] \\ \textsc{lrs} & \left[\begin{array}{ll} \textsc{ex-cont} & \boxed{1}\exists\boxed{1a}[\alpha : \beta] \\ \textsc{in-cont} & \alpha : \beta \\ \textsc{parts} & \boxed{2}\left\langle \boxed{1a}, \boxed{1b}, \boxed{1} \right\rangle \end{array}\right] \end{array}\right]$$
$\&\ \boxed{1a} \lhd \alpha\ \&\ \boxed{1a} \lhd \beta$

In the AVM above, The MAIN contribution of the determiner is an existential quantifier. At this point, we remain agnostic as to what sort of entities this quantifier ranges over. I illustrate this by simply placing the tag $\boxed{1a}$ as its index value. Additionally, the lexical entry includes the feature structure LRS subsuming the feature-value pairs EX(TERNAL) CONT(ENT), IN(TERNAL) CONT(ENT), and PARTS.

The value for EX-CONT is the semantic representation of the maximal head projection. The lexical entry for *an* has a specified value for its EX-CONT, but it may be allowed to remain underspecified. The value for IN-CONT specifies that part of the representation that is scoped over by all the scope-taking operators along a maximal projection. Since *an* does not provide information concerning restrictor or scope values, IN-CONT will contain only the metavariables that stand for the restrictor and the scope respectively: α and β. These metavariables will be saturated as the derivation continues. The value for PARTS contains the contribution constraints supplied by every lexical item. Here, the PARTS value specifies that a quantifier, its restrictor and scope, as well as an indexical value have been contributed. Finally, the entry is accompanied by component constraints that specify the relation between the referential index and the IN-CONT value: the index should appear both at the restrictor and the scope of the quantifier.

Let us now focus on the lexical entry for *iota*.

(22)
$$\left[\begin{array}{ll} \textit{word} & \\ \textsc{phon} & \left\langle \textit{iota} \right\rangle \\ \textsc{syns}|\textsc{loc}|\textsc{cat} & \left[\textsc{cont}\left[\begin{array}{ll} \textsc{index} & \left[\begin{array}{ll} \textsc{dr} & \boxed{1a}\mathrm{d} \\ \textsc{phi} & \left[\textsc{num}\ \textit{sg}\right] \end{array}\right] \\ \textsc{main} & \boxed{3}\mathbf{minimal} \end{array}\right]\right] \\ \textsc{lrs} & \left[\begin{array}{ll} \textsc{ex-cont} & \textit{me} \\ \textsc{in-cont} & \mathbf{minimal}(d) \\ \textsc{parts} & \boxed{4}\left\langle \boxed{1a},\ \boxed{3}\mathbf{minimal},\ \boxed{1a}\mathrm{d} \right\rangle \end{array}\right] \end{array}\right]$$

The index value for the entry for *iota* shares a tag with that of the determiner. However, here that value has been made explicit: the quantifier binds a degree argument. The semantic import of *iota* is limited to the predicate over degrees **minimal**, adapted from Sailer's (2006) lexical entry for the German minimizer *ein Dreck*. This predicate designates a degree that satisfies the standard provided by a gradable predicate either by sharing its location with the standard or slightly higher. Such a definition of the predicate guarantees that the use of the minimizer *an iota* in positive contexts is allowed. Let us turn now to the entry of the word *of*.

(23)
$$\left[\begin{array}{ll} \textsc{phon} & \left\langle \textit{of} \right\rangle \\ \textsc{syns}|\textsc{loc}|\textsc{cat} & \left[\begin{array}{ll} \textsc{head} & \left[\begin{array}{ll} \textit{prep} & \\ \textsc{select} & \left[\begin{array}{ll} \ldots & \left[\begin{array}{ll} \textsc{cat} & \left[\begin{array}{ll} \textsc{head} & \textit{noun} \\ \textsc{comps} & \langle\rangle \end{array}\right] \\ \textsc{cont} & \boxed{4} \end{array}\right] \\ \textsc{lrs} & \boxed{5} \end{array}\right] \end{array}\right] \\ \left[\textsc{cont}\ \boxed{4}\right] & \end{array}\right] \\ \textsc{lrs} & \boxed{5} \end{array}\right]$$

This lexical entry, as well as basic theoretical notions concerning the syntacticosemantic characteristics of *of* in pseudo-partitive constructions, have been adapted from Van Eynde & Kim (2023). Importantly, I will assume with these authors that *of* is semantically transparent. Likewise, I will adopt their classification of pseudo-partitives, and propose that partitive minimizers form structures of type B. This means that *of* does not head a PP, but it selects an NP that ultimately projects. That is, the final structure formed by *of* and the downstairs noun is equivalent to the one in (24b):

(24) a. of+NP= PP
b. of+NP= NP

In type B pseudopartitives, *of* behaves like a head-selecting functor, rather than a fully fleshed-out head of a phrase. Thus, a mechanism of selection must be established other than valence feature saturation, as is normally done in HPSG. As a solution, Van Eynde & Kim (2023) implement the SELECT feature defined as a value of HEAD in the feature geometry of functors. This allows functors to impose constraints on the head daughter of the phrase, an NP in this case. For more details, see Van Eynde (1998).

Finally, *of* lifts the semantic content from the downstairs noun given its semantic transparency. This is represented by the tag sharing of the CONTENT and LRS values of the preposition and the selected noun. The final lexical entry is that of *talent*.

(25)
$$\begin{bmatrix} \textit{word} \\ \textsc{phon} & \left\langle \textit{talent} \right\rangle \\ \textsc{syns|loc|cat} & \left[\textsc{cont}\ \boxed{4}\left[\textsc{main}\ \textbf{talent} \right] \right] \\ \textsc{lrs} & \boxed{5}\begin{bmatrix} \textsc{ex-cont} & \textit{me} \\ \textsc{in-cont} & \boxed{6}\textbf{talent}(x)(d) \wedge d \geq \textit{stand}_{min} \\ \textsc{parts} & \boxed{7}\left\langle \textbf{talent}(x)(d), x, d, \textit{stand}_{min} \right\rangle \end{bmatrix} \end{bmatrix}$$

The main contribution of *talent* is the semantic constant **talent**, which is further defined as a gradable predicate with minimum absolute standards of satisfaction.

The combination of the determiner and the upstairs noun generates the following structure:

(26)
$$\begin{bmatrix} \textit{phrase} \\ \textsc{phon} & \left\langle \textit{an iota} \right\rangle \\ \textsc{lrs} & \begin{bmatrix} \textsc{ex-cont} & \boxed{1} \\ \textsc{in-cont} & \textbf{minimal}(d) \\ \textsc{parts} & \boxed{2} \oplus \boxed{4} \end{bmatrix} \end{bmatrix} \ \& \ \textbf{minimal}(\mathrm{d}) \lhd \alpha$$

While the resulting structure shares the EX-CONT value with the determiner, it has the IN-CONT value of the noun. This is because the predicate **minimal**(d) is, at this point, the most deeply embedded subformula in the derivation. Additionally, another component constraint has been introduced: the predicate introduced by the minimizer needs to saturate the restrictor position of the quantifier, which to this point is the place held by the metavariable α. Finally, the phrase collects the contribution constraints from each lexical item contained in their PARTS value.

The structure *of talent* generates an NP represented as follows:

(27)
$$\begin{bmatrix} \textit{phrase} \\ \textsc{phon} & \left\langle \textit{of talent} \right\rangle \\ \textsc{syns|loc|cat} & \left[\textsc{cont}\ \boxed{4} \right] \\ \textsc{lrs}\ \boxed{5} \end{bmatrix}$$

The phrase has identical CONTENT and LRS values to those of the entry for *talent*, due to the lifting performed by *of*.

The following is the representation for the phrase *an iota of talent*:

(28)
$$\left[\begin{array}{ll} \textit{phrase} & \\ \textsc{phon} & \left\langle \textit{an iota of talent} \right\rangle \\ \textsc{lrs} & \left[\begin{array}{ll} \textsc{ex-cont} & \boxed{1} \\ \textsc{in-cont} & \boxed{6} \\ \textsc{parts} & \boxed{2} \oplus \boxed{4} \oplus \boxed{7} \end{array}\right] \end{array}\right] \;\&\; \boxed{6} \lhd \beta$$

The EX-CONT value of the final representation is identical to that of *an*. This illustrates that the contributions of the other lexical items will be scoped over by the quantifier ∃ contributed by the determiner. On the other hand, the IN-CONT is identical to that of *talent* because the main semantic contribution by this lexical item will be part of the scope of the quantifier, thus constituting the most deeply embedded subformula in the representation. Precisely, the final component constraint added to the AVM (i.e., & $\boxed{6} \lhd \beta$) intends to ensure that the IN-CONT be part of the scope of ∃. All the contribution constraints have been collected in PARTS.

Considering the EX-CONT and IN-CONT values collected in the final entry, a final possible semantic representation for *an iota of talent* is as follows:

(29) $\exists d[\mathbf{minimal}(d) : \mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$

So far, I have shown in a stepwise fashion how the different components of the phrase *an iota of talent* contribute to its final representation using the combinatorial tools of LRS. The representation makes no use of exhaustificational operators since their implementation is antithetical to the distribution of *iota* in positive contexts. However, little has been said concerning the behavior of *iota* in negative contexts.

We have partially addressed this issue in section 3, by proposing that minimizers (partitive minimizers, in particular) associate with scales whose standards are absolute and minimal. Negating a sentence with a gradable predicate that complies with these requirements would ensure that the gradable predicate cannot be had at any degree. That is, for any gradable predicate G with absolute minimal standards, if $\neg G_{min}(x)$ holds, x has a zero degree of G-ness. Let us call this the zero G-ness entailment, (Kennedy & McNally 2005). Zero G-ness due to negation renders the predication concerning degrees higher up in the scale contradictory. In practical terms, this means that a sentence such as the one below is necessarily a contradiction:

(30) She doesn't have an iota of talent, but she is somewhat talented.

This is desirable, since inferential patterns such as the one illustrated in (30) are expected of minimizers used as NPIs, but they are usually attributed to the presence of a focal operator (Tubau 2016). Here, the weight of generating the right sort of inferences is shifted to the interaction of negation with a predicate with minimum absolute standards.

To represent this interaction more formally, I will assume here that the operator ¬ contributed by negation is scopally ambiguous. This means that there are, at least, two possible representations of the interaction between ¬ and the formula in (29), each one with a distinctive reading:

(31) a. $\neg\exists d[\mathbf{minimal}(d) : \mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$
b. $\exists d[\mathbf{minimal}(d) : \neg\mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$

An approximate reading for (31a) would be that there is no degree of talent above or equal to the standard; for (31b), there is a minimal degree, but it is not the case that it reaches the standard set for talent (i.e, it is below the standard). Both readings are compatible with the zero G-ness entailment generated by the interaction of negation with gradable predicates with absolute minimum standards.

The semantic combinatorics of LRS deal with ambiguity by allowing metavariables to scope over subformulae on which the negative operator could *plug* without imposing constraints on the scope of the operator itself (Richter & Sailer 2004, Sailer & Richter 2021). That is, we remain agnostic about the scope of ¬, and do not commit to a fully-especified representation. Below, I enrich the representation in (29) and the negative operator ¬ with metavariables.

(32) a. $\neg\xi$
b. $\gamma\exists d[\mathbf{minimal}(d) : \delta\mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$

In (33a) the negative operator plugs γ, scoping over the entire formula generating a representation corresponding to (31a). The scope of the negative operator in (33b) plugs δ, generating a representation equivalent to (31b):

(33) a. ¬ with a wide scope
i. $\xi = \gamma = \neg\exists d[\mathbf{minimal}(d) : \mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$
ii. Resulting reading:
$\neg\exists d[\mathbf{minimal}(d) : \mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$
b. ¬ with a narrow scope
i. $\xi = \delta = \exists d[\mathbf{minimal}(d) : \neg\mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$
ii. Resulting reading:
$\exists d[\mathbf{minimal}(d) : \neg\mathbf{talent}(x)(d) \wedge d \geq stand_{min}]$

6 Conclusion

In this paper, I have proposed a novel analysis of the partitive minimizer *an iota* that intends to capture its distribution based on scalar semantics. I began by critically analysing the exhaustificational account, which relies on the comparison of minimizers with a set of alternatives on a likelihood scale

to model their occurrence in anti-additive and anti-morphic environments. I have shown that this account cannot explain the attestation of minimizers in contexts such as *do*-support and positive sentences, the latter of which welcomes partitive minimizers.

The analysis developed here rests on two main assumptions: first, the dimension of measurement is not one of likelihood by default, and second, the meaning of *iota* should be evaluated relative to a standard of satisfaction: minimizers in positive sentences sit above the standard, while they are located below the standard in negative contexts. I have further proposed that minimizers associate with scales holding absolute minimal standards. This association explains the implicatures generated by minimizers in negative contexts, normally attributed to exhaustificational operators.

This article has finished with a detailed analysis of the phrase *an iota of talent*, making emphasis on the semantic contributions that each lexical item provides towards a final representation. The analysis has been cast in the feature geometry of HPSG utilizing the combinatoric tools of LRS. The implementation proposed here shows that a lexicalist scalar account can capture the attested distribution of partitive minimizers without recourse to special focal or exhaustificational operators.

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