NON-FINAL VERSION

# BARE PPS AND THE SYNTAX-SEMANTICS INTERFACE[1]

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Bare PPs, specifically *sin*-(bare)PPs (*sin*-PPs for short) – i.e. PPs headed by *sin* 'without' where the nominal complement is bare: *una habitación sin luz* 'a room without light'; *un cinturón sin hebilla* 'a belt without clasp' – show interesting gradability properties. *Sin*-PPs allow degree modification if the N complement is a mass noun (*una habitación muy sin luz* 'a room very without light'; **un cinturón muy sin hebilla* 'a belt very without clasp'). We claim that *sin*-PPs share syntactic and semantic properties with constructions involving light verbs that select for bare nouns. We argue that (a) a property-denoting bare NP pseudo-incorporates into a null verb *have* that is part of the syntactic-semantic structure of *sin,* and (b) *sin*-PPs can be coerced into gradable properties as long as the bare noun is cumulative and homogeneous. Our proposal explains the differences between *sin*-(bare)PPs and PPs headed by *sin* where the preposition selects for a QP/DP, since in the latter there is neither coercion nor pseudo-incorporation of a bare noun.

## *1. Introduction. Properties of* sin*-headed bare PPs*

The goal of this paper is to develop a formal account of the syntactic and semantic properties of Spanish adnominal PP modifiers headed by *sin* 'without' where the preposition selects for a singular or plural bare noun (count or mass), i.e. a non-DP/QP, as complement, (1). We call these structures *sin*-(bare)PPs (*sin*-PPs for short).

(1) a. *un cinturón* ***sin hebilla*** (lit. 'a belt without clasp'), *un hombre* ***sin corbata*** (lit. 'a man without tie')
b. *una habitación* ***sin luz*** (lit. 'a room without light'), *un problema* ***sin importancia*** (lit. 'a problem without importance')
c. *una piel* ***sin arrugas*** (lit. 'a skin without wrinkles'), *una tierra* ***sin piedras*** (lit. 'a lot without stones')

These PPs express a generic property of an individual (Carlson & Pelletier 1995). Therefore, only those modifiers indicating that the property is intended to

[1] XXXXXX

characterize the individual are possible in *sin*-PPs. Accordingly, (2) can only be interpreted with a non-episodic reading: 'a room where, from 5 p.m. onwards, there is not enough light', but not with a reading like 'a room where light was lacking at 5 p.m. yesterday'.

(2) *una habitación sin luz a las 5* (lit. 'a room without light at 5 p.m.')

In this paper we focus on the interaction between countability, degree modification and negation in these structures in order to explain the contrast in (3). On the one hand, as Oltra-Massuet & Pérez-Jiménez 2011 (henceforth OP) noticed, *sin*-PPs can be graded depending on the mereological properties of the N complement of *sin*. Only if the complement of *sin* is a cumulative and homogeneous noun (non-count noun or bare plural) does the PP allow degree modification, (3)a vs. (3)b.[2]

(3) a. *una habitación muy sin luz* (lit. 'a room very without light'), *una piel muy sin granos* (lit. 'a skin very without pimples'), *un terreno muy sin piedras* (lit. 'a land very without stones').
b. **un cinturón muy sin hebilla* (lit. 'a belt very without clasp'), **un hombre muy sin corbata* (lit. 'a man very without tie')

On the other hand, examples like (3)a contrast with *sin*-headed PPs that select for a QP as complement.[3] Consider **¡Error! No se encuentra el origen de la referencia.**: **¡Error! No se encuentra el origen de la referencia.**a expresses that the coffee has a high degree of the property *sin azúcar* 'without sugar / sugarless'; **¡Error! No se encuentra el origen de la referencia.**b conveys that the coffee does not have a large amount/quantity of sugar. Only **¡Error! No se encuentra el origen de la referencia.**a felicitously describes a situation in which the coffee is bitter because of the extreme lack of sugar.

(4) a. *un café muy sin azúcar* (lit. 'a coffee very without sugar' ≈ 'a very sugarless coffee')
b. *un café sin mucho azúcar* (lit. 'a coffee without much sugar')

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[2] OP's account of the empirical generalizations underlying this paradigm is based on two main claims: (a) some nouns have a scalar denotation and (b) *sin* is a negative measure function.

[3] The preposition *sin* can also take DP complements when the PP is an adnominal modifier: *Una madre sin su hijo llora en el rincón* 'lit. a mother without his son cries in the corner'. Moreover, *sin*-(bare)PPs also occur as predicates in existential sentences, copular sentences, or as secondary predicates, (i). Full clauses can also be complement of *sin* in these cases, (ii). Extending our proposal to these contexts is a matter for further research.

(i) a. *Hay un hombre sin corbata* (lit. 'There is a man without tie').
b. *Ese cinturón es sin hebilla* (lit. 'That belt is without clasp').
c. *Su piel quedó sin arrugas* (lit. 'His skin remained without wrinkles').

(ii) a. *Juan vino sin {el coche/María/ dormir}* (lit. 'Juan came without the car /Maria /to-sleep').
b. *Él lo hizo sin que le viera su madre* (lit. 'He did it without that his mother saw him').

In this paper, we study these facts and connect them with other empirical phenomena, specifically with V+N combinations of the kind *llevar mochila* 'carry backpack', *tener corbata* 'have tie' in Spanish and Catalan, as analyzed in Espinal and McNally (2011) [EM henceforth]. First we discuss the syntactic properties of *sin*-(bare) PPs. We focus on the decomposition of *sin* into a series of functional nodes including a verbal projection that combines with a bare nominal via pseudo-incorporation; this operation obtains a characterizing meaning, and accounts for the necessarily non-episodic interpretation in (2). Second, we explore the semantic properties of these structures, and claim that a well-constrained coercion process makes it possible to reinterpret the PP as gradable. The conditions constraining this coercion process explain the paradigm in (3) above. Finally, we address the question of whether *muy sin* and *sin mucho* are truth conditionally different.

## *2. The syntax of* sin*-(bare)PPs. Pseudoincorporation*

We analyze *sin*-PPs that appear as postnominal modifiers within a DP structure as predicates inside a relative clause, (5). We follow Kayne's (1994) proposal that relative clauses are clausal projections complement of a determiner. The antecedent (in traditional terms) originates inside the relative clause. The surface order is derived by moving the head N from its base position to Spec CP. In addition, we decompose *sin,* (6), into a series of functional nodes including a null verb HAVE (see McIntyre 2006, Grønn *et al.* 2010, for the presence of a *have* component in the meaning of *without*), a node encoding negation, and a C=*p* node that introduces the relative clause and attracts the nominal antecedent to its Specifier. We follow Emonds (1985) for the collapsing of the P–C categorial distinction (which, we believe, opens a way to account for the fact that *sin* introduces nominal and clausal complements, as stated in fn. 3). The existence of a clausal projection inside the *sin*-PP structure is supported by the fact that temporal and locative modifiers are possible in these structures, (7).

(5) *una habitación sin luz* (lit. 'a room without light')
[$_{DP}$ una [$_{CP}$ *habitación*$_i$ [$_{C'}$ C(= *p*) [$_{NEGP}$ NEG [$_{TP}$ $t_1$ [… [$_{VP}$ HAVE *luz*]]]]]]]
(6) [$_{CP/PP}$ C=*p* [$_{NegP}$ ¬ [$_{VP}$ HAVE [NP]]]]
(7) una casa sin luz {por la mañana/a partir de las cinco/en el ala oeste}
'a house without light in the morning/from five/in the west wing.'

The proposal of a syntactic Neg component in the internal structure of *sin* is supported by the fact that *sin* behaves as a negative quantifier, since it licenses N-words (Bosque 1980 for Spanish; Espinal 2002 for Catalan *sense*; de Swart & Sag 2002, Corblin *et al*. 2004 for French *sans*).

(8) *Una habitación con nadie – Una habitación sin nadie$_{N\text{-word}}$
'A room {*with/without} anybody'

Finally, the presence of a null verb-HAVE in these structures is supported by the fact that *sin*-PPs exhibit definiteness effects, just like *have* constructions, as shown in (9) (Milsark 1977, Gutiérrez-Rexach 2003). While strong determiners are disallowed as complements of *tener* 'have' (with an existential reading), weak determiners can freely occur in this position.[4] Similar restrictions operate in the complement of *sin.* There is a parallelism between the sentences that include *sin*-PPs and those with the paraphrase *que no tiene* ('that doesn't have'), (10).

(9) a. Juan tiene un perro. / *Juan tiene {el/cada} perro. Gutiérrez-Rexach (2003: 205)
'John has a dog.' / 'John has the/every dog.'
b. Juan tiene cuatro primos. / *Juan tiene {los primos/cada primo}.
'John has four cousins.' / 'John has the/every cousin.'

(10) a. *Una habitación sin la luz de la mañana no se alquila.
'A room without the morning light is difficult to rent.'
b. *Una habitación que no tiene la luz de la mañana no se alquila.
'A room that doesn't have the morning light is difficult to rent.'

We take these facts as evidence for the decomposition of *sin* as negation + HAVE. In the next section, we suggest that this null verb HAVE pertains to the class of *have* predicates claimed to appear in verbal structures like *tener/llevar corbata* (lit. 'have/wear tie') by EM. Another parallelism between these two structures is that the complement of HAVE in (6) is a bare nominal (i.e. it is an NP not a DP with a null D). The following arguments (inspired also by EM) provide evidence for this proposal.

A) The complement of *sin* (be it a bare count noun, a mass noun or a bare plural) always has narrow scope with respect to negation, contrary to what happens when the complement of *sin* is an indefinite DP, (11).

(11) a. *Una directora sin {secretario/secretarios}*
'a director without secretary/secretaries'
unambiguous: 'there are no secretaries at all'
b. *Una directora sin un secretario* 'a director without a secretary'
ambiguous: a) 'there is no secretary'
b) 'there is a specific secretary that the woman lacks'

B) Secondary predicates are not compatible with the nominals (bare singular count/mass) introduced by *sin*, (12). As EM claim, small clause predication requires the noun to appear in a subject position and such a position requires some sort of discourse referent associated to it, which the nominal in these cases cannot

[4] The sentences can be assigned a plausible meaning to the extent that they do not have a strict existential reading. See Gutiérrez-Rexach (2003: 204) for details.

provide. This suggests that the (bare count/mass) nouns selected by *sin* do not introduce a discourse referent to a token individual, but denote a property.

(12) a. *Sin {*luz encendida/la luz encendida} no puedo trabajar* ('I cannot work without the light on')
b. **Sin bombilla encendida no puedo trabajar.* (lit. without light-bulb on (I) cannot work)

C) Nominal modifiers are only allowed if they specify the kind of object the (bare count/mass) noun describes, but not if they are modifiers of individuals.

(13) a. *Una habitación sin {luz natural/*luz que entra por la ventana }* ('A room without natural light / light coming through the window')
b. *Un hombre sin sombrero de copa / *Un hombre sin sombrero caro/bonito* ('A man without top hat / a man without expensive/nice hat')

We claim that at the VP level in (5), (6), a pseudo-incorporation process takes place whereby the NP (which syntactically stays *in situ*) functions as a modifier of the verb, and is thus interpreted as a predicate modifier (Dayal 2011, EM).[5] This is explained in detail in the following section. At this point, it is important to note that bare count nouns, mass nouns and bare plurals behave alike only with respect to the diagnostic (A). In the contexts described in B-C, bare count nouns and mass nouns pattern alike, but not bare plurals. This fact raises the question of whether bare count nouns and mass nouns on the one hand and bare plurals on the other encode the same number of functional projections in their structure, specifically whether they project NP or NumP. We will leave aside this question here and assume that both project an NP node. However, Dayal (2010) shows that all types of pseudo-incorporated nouns in Hindi project a NumP. NumP denotes in type <e,t>, so pseudo-incorporation is possible (see her (40)).[6]

## *3. Semantic composition in* sin-*PPs*

*Sin*-PPs, e.g. *sin luz* 'without light', *sin corbata* 'without tie', in (1), denote properties of individuals, of type <e,t>, which combine with the NP in the external argument position, *habitación* 'room', *hombre* 'man', of type <e,t>, via predicate modification (i.e. intersection). Let us develop the semantic composition of these structures in detail. As shown in §2, we have decomposed *sin* as the combination of negation and a null verb HAVE. Semantically, we propose that *sin* behaves like

[5] Contra Grønn *et al.*'s (2010) analysis of bare PPs headed by *sin/without*, where the bare noun selected by the preposition is existentially bound.
[6] We will not address the question of number-neutrality in our structures. Dayal claims that pseudo-incorporated nominals are not necessarily number neutral in pseudo-incorporation cases in Hindi. Be they bare count nouns or bare plurals, the former are interpreted as singular; the latter as plural.

a transitive verb in selecting for two individuals *x*, *y*, and returning a truth value only if it is not the case that *y* has *x,* as in (14).

(14) [[sin]] = $\lambda x \lambda y. \neg$HAVE $(x)(y)$

However, the complement of *sin* in *sin*(bare)-PPs is not a DP that denotes an individual, but it rather takes a bare nominal (BN), e.g. *luz, corbata*, which denotes a property of individuals (of type <e,t>). To avoid a type mismatch, an alternative mode of composition is required. We propose that the compositional semantics of *sin+N* is analogous to the compositional semantics of light verbs and BNs (e.g. Catalan *portar motxilla* 'carry backpack'; Spanish *tener/llevar corbata* 'have/wear tie'), as analyzed by EM. We assume with EM that N does not fill an argument position in the subcategorization grid of the light verb. Following Bothern (2003), whenever the N is interpreted as the possessed argument of a predicate that introduces a *have* relation (i.e. the light verb),[7] N behaves likes a verbal modifier. In order to turn the (transitive) light verb into an intransitive verb, EM propose a lexical rule that establishes the conditions of theme suppression, as Dayal (2010) puts it. Therefore, V+N do not combine via Functional Application. Alternatively, EM propose the intersective rule in (15). In (15), verbs denote properties of events and nouns denote properties. Verbal modification by N amounts to the description of the implicit role function (i.e. the *theme* role) defined for the verb.

(15) If [[V]] = $\lambda e$[V($e$)] and $\theta$ is an implicit role function defined for V,
and if [[N]] = N, a property,
then [[ [V N] ]]= $\lambda e$[V($e$) $\wedge$ N($\theta$($e$))].

In our analysis, we follow EM's proposal for the semantics of the null verb HAVE present in the decompositional analysis of *sin*, but we adopt a formal shortcut for simplicity.[8] Specifically, we employ *N*-HAVE as a shortcut to refer to the pseudo-incorporation process yielding theme suppression, and formalize [[sin *N*]] as in (16).

(16) [[sin *N*]] = $\lambda x_{<e>}.\neg$[*N*-HAVE]($x$)

*N*-HAVE is supposed to cash out both the lexical rule that restricts the bare nominals that are available as verbal modifiers and the intersective rule that spells

[7] To account for the Catalan and Spanish facts, EM add to this idea that the resulting VP must denote a characterizing property of the external argument. This is crucial for licensing V+singular count Ns but our structures include any bare nominal.

[8] In fact, EM aim to account for the more restrictive V+singular count noun constructions. As mentioned earlier, we will abstract away from the possible differences between these three types of nouns and essentially adopt EM's analysis of pseudo-incorporation to account for the mode of composition of a verb and a property denoting NP.

out that HAVE and the property denoting N (NP) do not combine via Functional Application. To illustrate our proposal, consider the syntax-semantics mapping of *sin luz* (‘a room without light’), which has the formal translation in (17), where the PP is viewed as a property of individuals that do not have light.

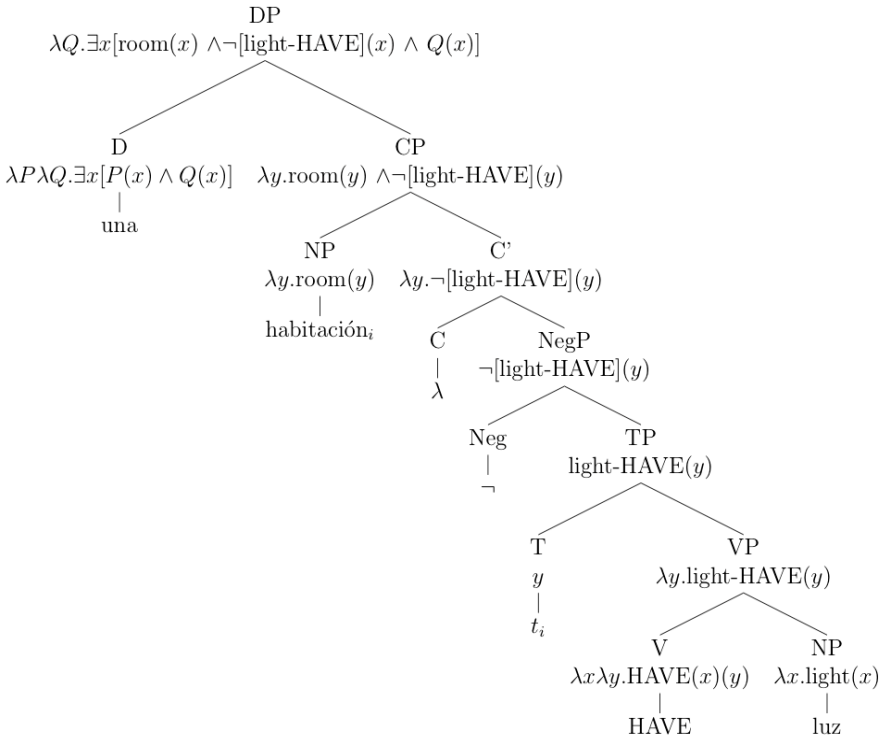
(17) [[sin luz]] =$\lambda x_{<e>}.\neg$[light-HAVE]($x$)

Assuming for simplicity that the indefinite article is a function from properties to generalized quantifier meanings, *una habitación sin luz* has the denotation in (18).

(18) [[una habitación sin luz]] = $\lambda Q_{<e,t>}.\exists x$[room($x$) $\wedge\neg$[light-HAVE]($x$) $\wedge$ $Q$($x$)]

The indefinite *una* in (18) is a function that takes a predicate $Q$ and returns a truth value if there is a room $x$ that has the property of light lacking and the predicate $Q$ applies to $x$. In (19) we see the semantic composition of the DP *una habitación sin luz* (lit. ‘a room without light’). Note that HAVE and *luz* (‘light’) do not combine via Functional Application. We have assumed that *luz* pseudo-incorporates in HAVE via a lexical rule.

(19)



In this analysis, *N*-lacking is a property of individuals, so in principle it is not gradable. However, we assume that it is coercible into a gradable predicate in Spanish, which is why it allows intensification by *muy* (e.g. *una habitación muy sin luz* 'a room very without ligt'). However, coercion applies only in a particular set of well-defined cases. We consider these cases in detail in the following section.

## *4.* Sin-PPs *and gradability*

Before we move on to spell out our proposal about gradability in *sin*-PP structures, we need to make a few assumptions regarding the semantics of gradability. As in Kennedy (1999), we take gradable predicates *g* to denote measure functions (of type <e,d>) from the domain of individuals to positive degrees. Measure functions only become properties of individuals when they carry degree morphology to this effect. The default degree morphology is the null positive morpheme, which acts as a type shifter, from <e,d> into <e,t>. This is shown in (20) below.

(20) $[[\ [_{\text{Deg}}\ pos]\ ]] = \lambda g_{<e,d>}\lambda x_{<e>}.\ g(x) \geq \mathbf{s}(g)$ (Kennedy 2007)

Crucially, *pos* bears on the notion of standard **s**, which is a context-sensitive function that "chooses a standard of comparison in such a way as to ensure that the objects that the positive form is true of 'stand out' in the context of utterance, relative to the kind of measurement that the adjective encodes" (Kennedy 2007).

Along the same lines, we assume that *muy* in Spanish takes as input a gradable predicate *g* and returns a property of individuals only if the measure function applied to the individual returns a degree that exceeds **s**(*g*) to a large extent (but see a different analysis for *very* in Kennedy & McNally 2005). This is illustrated in (21) below.

(21) $[[\ [_{\text{Deg}}\ \text{muy}]\ ]] = \lambda g_{<e,d>}\lambda x_{<e>}.\ g(x) >!!\ \mathbf{s}(g)$
Where >!! is a context-dependent relation that means 'greater than by a large amount' (from Kennedy & McNally 2005)

Going back to the example *una habitación sin luz* 'a room without light', as mentioned above, *sin luz* is, by default, a property of individuals. Nevertheless, under the specific circumstances, which we clarify shortly, it can undergo type shifting into a measure function. Just like *pos* may be viewed as a type shifter of a measure function into a property of individuals (<<ed>,<et>>), we assume another type shifter, say Δ, as being responsible for doing the same but in the opposite direction (<<et>,<ed>>). The coerced version of *sin luz* is then a measure function that applies to an individual (e.g. a room) and returns the positive degree to which the room lacks light. (22) shows the result of combining *muy* with the coerced *sin*

*luz*. This is a function from individuals *x* to truth values such that the degree to which *x* lacks light exceeds to a large extent a contextual standard for light lacking. (23) provides the fully worked out semantics for *una habitación muy sin luz* 'a room very without light' for completeness.

(22) [[muy sin luz]] = $\lambda x_{<e>}$. ($\Delta(\neg$[light-HAVE]))($x$) > !! **s**($\Delta(\neg$[light-HAVE]))

(23) [[una habitación muy sin luz]] = $\lambda Q_{<e,t>}.\exists x$[room($x$) $\wedge$ ($\Delta(\neg$[light-HAVE]))($x$) > !! **s**($\Delta(\neg$[light-HAVE])) $\wedge$ $Q(x)$]

We move now to the issue of when coercion is possible, because this is not a restriction-free process (cf. **un hombre muy sin corbata* 'a man very without tie'). We propose two necessary conditions for this coercion to be able to apply: *a*) *N* must be cumulative and homogeneous (Krifka 1986, 1998, among many others), and *b*) *sin N* must have a non-strict reading.

Condition *a)* makes reference to OP's insight that only mass nouns and plurals are allowed in the context of *muy sin N* (recall (3)). What these two have in common is the fact that they are cumulative and homogeneous (also called *divisive*), as defined in (24) and (25). On the one hand, light + light forms an entity that is *light* itself, and ties (plural) + ties form a plural entity referred to as *ties*. On the other hand, quantities of light split into two result in two quantities of stuff that are also light, and quantities of ties (plural) split into two give quantities of stuff that are also ties.[9,10]

(24) Cumulativity:

P is cumulative iff: $\forall x \forall y[x \in \text{P} \wedge y \in \text{P} \rightarrow x \sqcup y \in \text{P}]$

'P is a cumulative predicate if when *x* and *y* are in P, then the sum of *x* and *y* is also in P.'

(25) Homogeneity (divisiveness):

P is homogeneous iff $\forall x \in \text{P}: \exists y \exists z[y \sqsubseteq x \wedge z \sqsubseteq x \wedge \neg \text{O}(y,z) \wedge y \in \text{P} \wedge z \in \text{P}]$

'P is a divisive (homogeneous) predicate if for every *x* in P, there is a way of splitting *x* into two non-overlapping parts, both of which are also in P.'

(Adapted from Krifka 1998 by Rothstein 2010: 350, 351)

Note that in *sin*-PPs the mereological properties of the bare noun correlate with the possible interpretation of the PP as a measure function. The measure function *sin luz* may apply to an individual and return the degree to which this individual, e.g. a room, lacks light. Degrees of N-lacking correspond to the portions of N that we

[9] See Rothstein (2010) and references therein for relevant criticism of these criteria for distinguishing mass and count entities. Homogeneity and cumulativity are fine-grained enough for our purpose here.

[10] We assume with Chierchia (1998) that the denotation of plural count nouns is derived from the denotation of singular count nouns but does not include them.

can remove from N while still having N. That is, we can count portions of light that we can remove from the concept *light* without exhausting it. If the amount of portions removed is large, then we can truthfully apply *muy sin luz* to *una habitación*. Observe that if we use a singular count noun instead, such as *corbata* 'tie', coercing *sin corbata* 'without tie' into a measure function would involve removing portions of tie from the denotation of *tie* and these portions would not be ties themselves. Tie-lacking makes a property that can be either true or false, but considering a set of degrees of this property is not possible.

Condition *b)* refers to the fact that we can use *sin N* 'without N' — and to this effect, *not have* — in a relaxed way to convey not that there are zero instances of N, but that there may be some instances of N that the speaker considers to be few. For example, the phrase *A man without money* need not refer to a man that has exactly zero money, but it may mean that he does not have *much* money. The former would be the strict reading, and the latter, the relaxed reading. *Sin N* allows both, and the measure function *sin N* derives from the relaxed one.

This restriction allows us to explain the contrast in (26)-(27) noted in OP (2011). *Sin volumen* 'without volume' can be graded when the external argument is *melena* 'hair' but not when it is *esfera* 'sphere'. We argue that this has to do with the fact that the relaxed reading is not available when we talk about the volume of a sphere. Similarly, *sin color* allows a relaxed reading (27)a, and a strict reading, (27)b. Only in the first case is the PP gradable.

(26) a. **una esfera muy sin volumen* (lit. 'a sphere very without volume')
b. *una melena muy sin volumen* (lit. 'a hair very without volume')

(27) a. *una foto muy sin color (= descolorida)* (lit. 'a photo very without color (= faded)')
b. *líquido para obtener [fotos sin color] (= en blanco y negro)* → **muy sin color* (lit. 'liquid to obtain photos without color (= black and white)→*very without color')

Related to this, OP also observed that *sin*-PPs that encode the negation of an inalienable property cannot be turned into a graded *sin*-PP, (28). This follows from the same line of reasoning, namely that 'not having N', where N stands in an inalienable possession with the external argument, does not have a relaxed reading. A school without children cannot be interpreted as a school that has a few students. The same applies to (28)a.

(28) a. **una paella muy sin arroz* (lit. 'a paella very without rice')
b. **una escuela muy sin estudiantes* (lit. 'a school very without students')

So far we have established the necessary conditions that need to be fulfilled for a *sin*-PP to be coerced into a measure function. We now want to lay out the

conditions that have to be satisfied for the availability of *muy sin N*. First, *sin N*, of type <e,t>, has to be coercible into a measure function, of type <e,d>, i.e. it must comply with the two previously stated conditions. Second, there must be a contextually-determined degree of *N*-lacking that can be exceeded by a large extent. This follows from the denotation of *muy* given in (21) above.

To conclude this section we would like to address the question of why *muy sin N* is possible while *muy con N* 'very with *N*' is clearly ill-formed, independently of the kind of noun complement of the preposition. Our tentative answer is that this has to do with an economy principle. Specifically, whereas – as will be shown in the next section – *muy sin N* ('very without N') is truth-conditionally different from *sin mucho N* ('without much N'), *muy con N* ('very with N') would yield the same interpretation as *con mucho N* ('with much N'). Since the former involves coercing a property of individuals into a measure function, it is rejected in favor of the latter.[11]

## *5.* '*muy sin* N' vs. '*sin mucho* N'

Now we want to address the contrast in (3), repeated in (29).

(29) a. *una habitación muy sin luz* (lit. 'a room very without light' ≈ 'a very lightless room')
b. *una habitación sin mucha luz* (lit. 'a room without much light')

In (29)b there is no coercion of a PP denotation (<e,t>) into a gradable predicate (<e,d>). Instead, we have quantification over amounts of portions in the denotation of a mass noun. We assume that *mucha* ('a lot of') introduces the function μ, which maps (dense) individuals to measures (Rett 2008), and a >!! *super-greater-than*-relation with a standard (as in *muy* 'very', (21)). $\mathbf{m}_N$ represents the measure function of a nominal with cumulative and homogeneous reference N. *Mucha luz* is not a bare noun, but a QP, so we do not have pseudo-incorporation here, but regular Functional Application. We treat *mucho/a*[12] as a generalized quantifier, so *mucha luz* is of type <et,t> and has the denotation in (30).[13]

(30) a. $[[\text{mucho/a}]] = \lambda N_{<e,t>}\lambda Q_{<e,t>}.\exists x[N(x) \wedge \mu(x) > !! \ \mathbf{s}(\mathbf{m}_N) \wedge Q(x)]$
b. $[[\text{mucha luz}]] = \lambda Q_{<e,t>}.\exists x[\text{light}(x) \wedge \mu(x) > !! \ \mathbf{s}(\mathbf{m}_{\text{light}}) \wedge Q(x)]$

[11] We are grateful to M. Romero (p.c.) for this suggestion.
[12] *Mucho* is the form for the masculine mass noun, *mucha* is for the feminine mass noun.
[13] For simplicity, we do not discuss whether *mucha* should be rather treated as a modifier (cf. Landman 2003, Etxeberria 2005, a.o.). Nothing in our argument hinges on this decision.

As a QP, *mucha luz* moves at LF (cf. 0) to avoid a type mismatch since the object of *sin* has to be of type <e>. The interaction between negation and the QP should yield two possible interpretations depending on their scopes, as formulated in (31).

(31) [[ [$_{PP}$ sin mucha luz] ]]
a. $\lambda y_{<e>}.\neg\exists x[\text{light}(x) \wedge \mu(x) > !!\ \mathbf{s}(\mathbf{m}_{\text{light}}) \wedge \text{HAVE}\ (x)(y)]$
b. $\lambda y_{<e>}.\exists x[\text{light}(x) \wedge \mu(x) > !!\ \mathbf{s}(\mathbf{m}_{\text{light}}) \wedge \neg\text{HAVE}\ (x)(y)]$

In (31)a, the PP denotes a function from individuals to truth values such that there is not any *x* that is a large amount of light that *y* has. In (31)b, on the other hand, the function is true if we apply it to an individual *y* and there is a large amount of light *x* that *y* does not have.

Before moving on, a few comments are in order. First, we treat *mucho* 'much' as a weak determiner. This entails that, among other properties, *mucho* can occur as the object of an existential construction. Consider the contrast in (32)-(33).

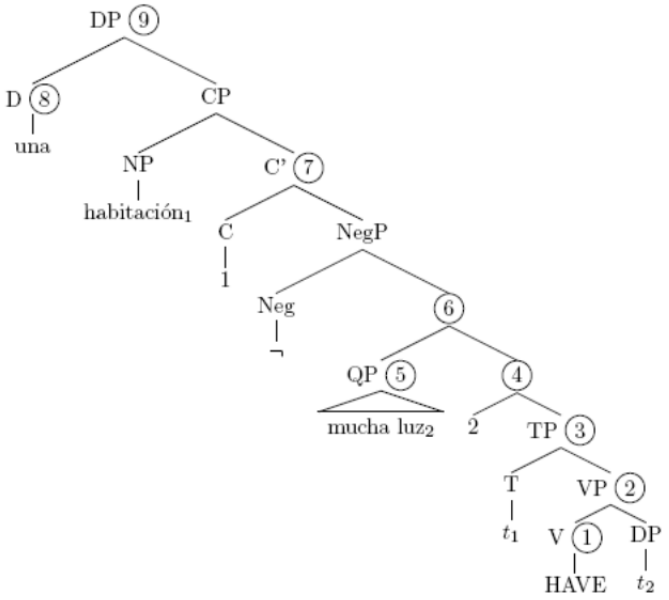
(32) Weak: *Hay {mucha luz/un niño} en la habitación de al lado*. ('There is {a lot of light/a boy} in the room next door'.)
(33) Strong: **Hay todos los niños en la habitación de al lado*. ('There are all the children in the room next door'.)

As argued for in Gutiérrez-Rexach (2003), when *muchos* is weak, it has a cardinal reading. This means that a comparison is established between the amount of N and some contextually-determined threshold, which is in accordance with our proposal for *mucho* in (30).

Our second comment concerns the two readings spelled out in (31), which are supposed to emerge from the interaction between negation and *mucha luz* 'much light'. However, the reading where the QP has wide scope over negation strikes us as extremely weird. The default reading is the one where *mucha* has narrow scope. Interestingly, this corresponds to Catalan *gaire*, which is a Negative Polarity Item, and NPIs are indefinite determiners that need to be under the scope of a specific kind of operator to be licensed.[14] The tree in **¡Error! No se encuentra el origen de la referencia.** shows that the QP has moved to a position between negation and HAVE, which can be interpreted as additional evidence for the proposed decomposition.

[14] For some, a downward entailing operator, for others, a non-veridical operator (cf. Ladusaw 1979, Giannakidou 1998, a.o.).

(34)




① $\lambda x \lambda y.\text{HAVE}(x)(y)$

② $\lambda y.\text{HAVE}(g(2))(y)$

③ $\text{HAVE}(g(2))(g(1))$

④ $\lambda x.\text{HAVE}(x)(g(1))$

⑤ $\lambda Q.\exists y[\text{light}(y) \wedge \mu(y) \succ !!\text{s}(\mathbf{m}_{light}) \wedge Q(y)]$

⑥ $\exists x[\text{light}(x) \wedge \mu(x) \succ !!\text{s}(\mathbf{m}_{light}) \wedge \text{HAVE}(x)(g(1))]$

⑦ $\lambda y.\neg\exists x[\text{light}(x) \wedge \mu(x) \succ !!\text{s}(\text{light}) \wedge \text{HAVE}(x)(y)]$

⑧ $\lambda P \lambda Q.\exists x[P(x) \wedge Q(x)]$

⑨ $\lambda Q.\exists y \neg \exists x[\text{light}(x) \wedge \mu(x) \succ !!\text{s}(\mathbf{m}_{light}) \wedge \text{room}(y) \wedge \text{HAVE}(x)(y) \wedge Q(y)]$

According to this representation, the entire DP denotes a set of properties *Q* such that there is a room *y* that does not have a great amount of light, and *y* has the property *Q*. We can now compare the output meaning of *sin mucho N* with *muy sin N*. Even though both phrases denote in <e,t>, they exhibit a number of differences, listed in (34).

(34) a. *muy sin N* is a DegP and *sin mucho N* is a PP.
b. *muy sin N* involves turning the PP into a measure function via coercion. *Sin mucho N* involves quantification over amounts/portions of N (which are N themselves).
c. the standard that is exceeded in *muy sin N* is a standard of *N*-lacking, while the standard that is <u>not</u> exceeded in *sin mucho N* concerns amounts of *N*.

Consider now the contrast in (35). In (35)a, the coffee has a high degree of sugar-lack (considering that lack of sugar can be measured), i.e. it is very bitter. On the other hand, in (35)b, the coffee does not contain a large amount of sugar: it has some, but not a lot of it; it need not be bitter.

(35) a. un café muy sin azúcar.
b. un café sin mucho azúcar.

Thus, even though it is difficult to find examples where there is a clear divide in meaning between the two constructions, (35) illustrates it and our semantic composition provides the expected outcome.

### *6. Conclusions and prospects*

In this paper we have provided a full account of adnominal *sin*-bare PPs that builds, on the one hand, on the decomposition of *sin* into two layers of functional elements, negation and a HAVE relation (cf. McIntyre 2006), for which we have provided syntactic-semantic evidence. On the other hand, our proposal also exploits EM's pseudo-incorporation account of V+N structures, whereby we have established a relation between our *sin*-PPs and their bare N-selecting constructions. In addition, the analysis of degree intensified *sin*-PPs that contrast with *sin*-PPs selecting a QP as complement has contributed interesting insights for a restricted theory of coercion (Lawers & Willems 2011). There are many open issues, and other questions remain still unexplored. Among the former, we must investigate the restrictions imposed from the external argument and their effect on the acceptability of *sin*-PPs; whether *mucho/a* means the same under the scope of negation and without negation; or, whether coercion with *muy* 'very' is user-based coercion or systemic coercion. As for the latter, it remains to be explored whether and how this proposal can be applied to the remaining types of possible *sin*-complementation (cf. examples in footnote 3).

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