Bare $sin$-PPs: Pseudoincorporation and Gradability

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1. Introduction. Properties of sin-headed bare PPs

- **Goal**: develop a formal account of the syntactic and semantic properties of Spanish adnominal PP modifiers headed by $sin$.

(1) a. *un cinturón sin hebilla* (lit. ‘a belt without clasp’)  
b. *una habitación sin luz* (lit. ‘a room without light’)  
c. *una piel sin arrugas* (lit. ‘a skin without wrinkles’)  
   *una tierra sin piedras* (lit. ‘a lot without stones’) 

- **Main empirical and theoretical issues**

a) The syntactic-semantic properties of $sin$-(bare)PPs.
   - Bare nouns (mass and count nouns) as complement of the preposition.
   - Generic properties of individuals (Carlson & Pelletier 1995). (2) receives a non-episodic reading.

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

b) Interaction between countability, degree intensification and negation.
   - *Sin*-PPs can be graded depending on the mereological properties of the N complement of $sin$.

(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’) 

- Contrast between $sin$-(bare)PPs and examples where the preposition selects for a QP as complement. (4)a expresses that the coffee has a high degree of the property *sin azúcar*; (4)b conveys that the coffee does not have a large amount/quantity of sugar. Only (4)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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(5) a. una habitación muy sin luz  (lit. ‘a room very without light’)  
b. una habitación sin mucha luz  (lit. ‘a room without much light’)  
c) Pseudoincorporation and coercion.

❖ Main claims

• Sin-(bare)PPs share syntactic and semantic properties with constructions involving light verbs that select for bare nouns (llevar mochila, tener corbata). Property-denoting bare NPs pseudo-incorporate into a null verb have that is part of the semantic-syntactic decomposition of sin → characterizing meaning.

• Sin-(bare)PPs can be coerced into gradable properties if the bare noun is cumulative and divisive.

• Graded sin-(bare)PPs (muy sin N) differ from sin+QP (sin mucho N) in that in the latter there is neither coercion nor pseudoincorporation of a bare nominal.

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

❖ Postnominal modifiers within a DP structure: predicates inside a relative clause. Relative clauses are clausal projections complement of D (Kayne 1994). 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.

❖ Sin is decomposed into a series of functional nodes: C(=p)+Neg+HAVE

(6) 

\[
\begin{array}{c}
\text{DP} \\
\text{D} \\
\text{habitatión} , \\
\text{C} = p \\
\text{NEGP} \\
\text{NEG} \\
\text{TP} \\
\text{t} \\
\text{VP} \\
\text{HAVE} \\
\text{luz}
\end{array}
\]

- C=p node introducing the relative clause and attracting the nominal antecedent to its Specifier. We follow Emonds (1985) for the collapsing of the P–C categorial distinction. Argument for a clausal projection: temporal and locative modifiers, (7).

(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.’
Negation. *Una habitación con nadie – Una habitación sin nadie* 'A room with/without anybody'

Null verb HAVE (see McIntyre 2006, Grønn et al. 2010, for the presence of a have component in the meaning of without): *Sin*(bare)PPs exhibit definiteness effects, like have constructions, (9) (Milsark 1977, Gutiérrez-Rexach 2003). Strong determiners are disallowed as complements of tener ‘have’, weak determiners can freely occur in this position. Similar restrictions operate in the complement of *sin*. Parallelism between sentences that include *sin*-PPs and those with the paraphrase *que no tiene*, (10).

The complement of HAVE: bare NP (bare singular count/mass noun, bare plural).

A) The complement of *sin* (bare singular count/mass noun, bare plural) always has narrow scope with respect to negation.

1. 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*. 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 provide → NP denotes a property.

   (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 singular count/mass) noun describes, but not if they are modifiers of individuals.

3. 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’)

- *Bare* *sin*-PPs: pseudoincorporation and gradability


8. *Una habitación con nadie – Una habitación sin nadie* N-word
   ‘A room {with/without} anybody’
✓ (6): a pseudoincorporation process takes place at the VP level: the NP (which syntactically stays *in situ*) functions as a modifier of the verb (Dayal 2011, Espinal & McNally 2011).

**Properties of the complement of HAVE:**
- 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 two questions:
  A) Syntax. Do bare singular count/mass nouns on the one hand and bare plurals on the other encode the same number of functional projections in their structure (NP or NumP)? Here we assume that both project an NP node. However, Dayal (2011) 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)).
  B) Semantics. Number-neutrality: Number neutrality has been considered the hallmark of pseudoincorporation. However, Dayal claims that pseudoincorporated nominals are not necessarily number neutral in Hindi. Be they bare singular count nouns or bare plurals, the former are interpreted as singular; the latter as plural.

**Extension of the proposal to non-adnominal positions of (bare) sin-PPs:**
- Complement of sin. Bare nominals, QPs, DPs:
  (i) *Una madre sin su hijo llora en el rincón* ‘lit. a mother without his son cries in the corner’.
  (ii) *Él lo hizo sin que le viera su madre* (lit. ‘He did it without that his mother saw him’).
- Beyond adnominal position: predicates in existential sentences, copular sentences, or as secondary predicates, (iii).
  (iii) 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’).
    d. *Juan vino sin {(el) coche/ María/ dormir}* (lit. ‘Juan came without the car /Maria /to-sleep’).

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2 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.
3. Semantic composition in \textit{sin}-(bare)PPs

- \textit{Sin}-(bare) PPs denote properties of individuals (type \(<e,t>\)), which combine with the NP in the external argument position (type \(<e,t>\)), via predicate modification (i.e. intersection).

- \textit{Sin} introduces a HAVE predicate, and behaves like a transitive verb in selecting for two individuals \(x, y\), and returning 1 only if it is not the case that \(y\) has \(x\).

\begin{equation}
[[\text{sin}]] = \lambda x \lambda y. \neg \text{HAVE}(x)(y)
\end{equation}

- Type mismatch \(\rightarrow\) an alternative mode of composition is required. Proposal: the compositional semantics of \textit{sin}+\(N\) is analogous to the compositional semantics of light verbs and BNs, as analyzed by Espinal & McNally (2011).
  - \(N\) does not fill an argument position in the subcategorization grid of the light verb.
  - Whenever the \(N\) is interpreted as the possessed argument of a predicate that introduces a \textit{have} relation (i.e. the light verb), \(N\) behaves like a verbal modifier.
  - Lexical rule that establishes the conditions of theme suppression (Dayal 2011, Espinal & McNally 2011), and an intersective rule that explains composition, (15).

\begin{equation}
[[V]] = \lambda e[V(e)] 	ext{ and } \theta \text{ is an implicit role function defined for } V, \\
\text{and if } [[N]] = N, \text{a property,} \\
\text{then } [[V \ N]] = \lambda e[V(e) \wedge N(\theta(e))].
\end{equation}

\begin{tabular}{|l|l|}
\hline
Pseudoincorporation: How do we implement it? What is the pragmatic notion restricting the \(N\) that can occur as a complement of \textit{sin}\? \\
\hline
- Dayal: transitive \text{HAVE}_{TV} \text{ and } \text{HAVE}_{\text{INC-V}} \text{;} \text{NumP}+V \text{ name an institutionalized activity or state (the predicate denoted by NumP is a prototypical theme for the activity denoted by } V). \text{;} \\
- Espinal & McNally: a lexical rule that amounts to theme suppression as long as the VP makes a characterizing property of the external argument. \text{;} \\
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\end{tabular}

- We employ \(N\)-\text{HAVE} as shorthand to refer to the pseudoincorporation process yielding theme suppression.

\begin{equation}
[[\text{sin } N]] = \lambda x_{<e>} \neg[[N\text{-HAVE}]](x)
\end{equation}

- Syntax-semantics mapping of \textit{una habitación sin luz} (‘a room without light’).

\begin{equation}
[[\text{sin luz}]] = \lambda x_{<e>} \neg[[\text{light-HAVE}](x)
\end{equation}

\begin{equation}
[[\text{una habitación sin luz}]] = \lambda Q_{<e,p}. \exists x[\text{room}(x) \wedge \neg[\text{light-HAVE}](x) \wedge Q(x)]
\end{equation}
4. Sin-PPs and gradability

- Gradable predicates $g$ denote measure functions (of type $<e,d>$) from the domain of individuals to positive degrees (Kennedy 1999). Measure functions only become properties of individuals when they carry degree morphology to this effect. The default degree morphology is the null positive morpheme: type shifter, from $<e,d>$ into $<e,t>$.

(20) $[[\text{deg pos}]] = \lambda g_{<e,d} \lambda x_{<e} \cdot g(x) \geq s(g)$ (Kennedy 2007)

- Muy: 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).

(21) $[[\text{deg muy}]] = \lambda g_{<e,d} \lambda x_{<e} \cdot g(x) > !! s(g)$

Where $>!!$ is a context-dependent relation that means ‘greater than by a large amount’ (from Kennedy & McNally 2005)

- Sin luz is a property of individuals. It can undergo type shifting into a measure function.
  - We assume type shifter $\Delta$ of type $<<et>,<ed>>$.

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

(23) [(una habitación muy sin luz)] = \( \lambda Q_{<\rightarrow}. \exists x[\text{room}(x) \land (\Delta(\neg[\text{light-HAVE}]))(x) > !! s(\Delta(\neg[\text{light-HAVE}]))) \land Q(x)] \)

Two necessary conditions for this coercion to be able to apply:

1. *N* must be cumulative and homogeneous (on this notions, see Krifka 1986, 1998, a.o.).
2. *sin N* must have a non-strict reading.

- Condition *a*): Only mass nouns and plurals are allowed in the context of *muy sin N* (recall (3) (Oltra-Massuet & Pérez-Jimenez 2011). They are cumulative and homogeneous (also called *divisive*).  

(24) Cumulativity:

P is cumulative iff: \( \forall x \forall y [x \in P \land y \in P \rightarrow x \sqcup y \in P] \)

‘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 homogenous iff \( \forall x \in P: \exists y \exists z [y \subseteq x \land z \subseteq x \land \neg O(y,z) \land y \in P \land z \in P] \)

‘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)

- Condition *b*): *sin N* ‘without N’ —and to this effect, *not have*— can be used in a loose 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.

(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*) \( \rightarrow \) *muy sin color* (lit. ‘liquid to obtain photos without color (= black and white) \( \rightarrow \) *very without color’)

- Inalienable property: loose reading is not possible if N stands in an inalienable possession with the external argument.

(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’)

*Muy con N*: One explanation based on economy. *Con mucho X* and *Muy con X* end up having the same semantic outcome, (i)-(ii) \( \rightarrow \) coercion is blocked because the non-coerced one is simpler. This issue does not arise with *Sin mucho X* and *Muy sin X*, because they have different semantic outputs (they depict slightly different scenarios, as shall be discussed).

(i) *Con mucha luz* \( \rightarrow \) \( \lambda y . \exists x[\text{light}(x) \land \mu(x) > !! s(m_{\text{light}}) \land \text{HAVE}(x)(y)] \)

Predicate of individuals P of y such that there is a large amount of x, x being light, that y has.

(ii) *Muy con luz* \( \rightarrow \) \( \lambda x . (\Delta([\text{light-HAVE}]))(x) > !! s(\Delta([\text{light-HAVE}]))) \)

Predicate of individuals P of x such that the degree of light-having of x largely exceeds a standard of light-having.
Another explanation that relies on the conceptual basis of coercion. Con X may have a non-strict reading, but it is not symmetric to the non-strict reading of sin X.
- The use of una habitación sin luz includes a reading where we may infer that there is some light (e.g. 80% of darkness and 20% of light). ΔSin luz behaves in this sense like a closed-scale adjective with an upper bound, such as lleno (‘full’).
- The use of una habitación con luz does not involve the inference such that there is little light, because there is some amount of darkness in the room. Muy sin luz is possible because there are portions of light that can still be removed from the room such that the more portions we remove, the more we tend to the maximal degree of darkness. In contrast, muy con luz would require quantifying over amounts of portions of light that can be added to the room to achieve the maximum amount of light-having. However, no inference is generated to this effect.

5. ‘muy sin N’ vs. ‘sin mucho N’

- Coercion of a PP denotation (<e,t>) into a gradable predicate (<e,d>) vs. quantification over amounts of portions in the denotation of a mass noun.

(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’)

- 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. \(m_N\) represents the measure function of a nominal with cumulative and homogeneous reference \(N\).

(30) a. [[mucho/a]] = \(\lambda N_{<e,t}>\lambda Q_{<e,t>}\exists x[N(x) \land \mu(x) > !! s(m_N) \land Q(x)]\)
b. [[mucha luz]] = \(\lambda Q_{<e,t>}\exists x[\text{light}(x) \land \mu(x) > !! s(m_{\text{light}}) \land Q(x)]\)

- The interaction between negation and the QP should yield two possible interpretations depending on their scopes.

(31) [[ [pp sin mucha luz] ]] 

a. \(\lambda y_{<e>},\neg \exists x[\text{light}(x) \land \mu(x) > !! s(m_{\text{light}}) \land \text{HAVE}(x)(y)]\)
b. \(\lambda y_{<e>},\exists x[\text{light}(x) \land \mu(x) > !! s(m_{\text{light}}) \land \neg \text{HAVE}(x)(y)]\)

Scope: Is it true that the QP mucho N only has narrow scope with respect to the negation introduced by sin? If so, what prevents wide scope, a syntactic or a semantic constraint? Licensing of NPIs tells us that narrow scope is possible. But are there any further tests to identify wide scope?
- Narrow scope: There isn’t a large amount of \(x\) such that someone has.
- Wide scope: There is a large amount of \(x\) such that someone does not have.

- QP moves to a position between negation and HAVE.
Compare the output meaning of *sin mucho N* with *muy sin N*.

(33)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 not exceeded in *sin mucho N* concerns amounts of N.

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

6. Conclusions
   - A full account of adnominal *sin*-bare PPs that builds on the decomposition of *sin* into two layers of functional elements —negation and a HAVE relation— for which we have provided syntactic-sematic evidence.
   - Our proposal exploits a pseudoincorporation account of V+N structures, whereby we have established a relation between our *sin*-PPs and constructions with light verbs (*tener/llevar mochila*).
   - 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).

7. References


