

Spatial prepositions for original (and richer) meanings: the case of Spanish

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Abstract

Spatio-temporal prepositions like *hasta* ‘until’ find crucially distinct uses across Spanish varieties. In many cases, uses disallowed in more restrictive variants alternate nontrivially with canonical P distribution, raising pressing questions on spatiotemporal prepositions, lexicalized denotational properties, and their potential exploitation in complex semantic representations.

In Central American varieties in particular, Ps like *hasta* ‘up to’ show puzzling behavior in two instances: (i) with spatial situation verbs and copulas, in nondynamic,

nondurative predications locating an object relative to a perspectival landmark; (ii) with punctual verbs, situating the V-described happening relative to a distal (temporal) vantage point. Both cases are unexpected for general crosslanguage principles touching on aspectual requirements imposed by projective or directional Ps and the specific nature of the verbs combined.

Here, we draw on a general crosslanguage condition for otherwise unpredicted uses of directional spatial Ps building on perspectival location and extend the analysis to accommodate progressive uses in the locative/temporal domain accordingly. We follow the premise that directional/projective prepositions express directions on an interval, and that such directions can be defined either by inherent ground properties or by the relative position of an observer. In noncanonical uses, we contend, the object is situated relative to a landmark serving as *origo* of the relevant conceptual space. Polar coordinates in the analysis guarantee proper inclusion of all points in the perspectival path, accommodating negation effects accordingly.

Keywords: space, time, preposition, abstract path, endpoint

1. Introduction

The conceptualization of space and time, the role played by prepositions, and language-specific construals arise as three main topics surrounding grammatical representation. Here, we propose an original theoretical account for an often-noticed empirical problem.

In Spanish, spatio-temporal prepositions [P] like *hasta* ‘until, up to’ find a different but consistent use in many varieties. This use contrasts significantly with the one found in more restrictive (canonical) varieties like South American and Iberian (European) Spanish [IS]. Crucially, when available, the alternative use does not replace the canonical one; instead, both alternatives coexist, yielding a nontrivial alternation with different semantic (structural) implications. Regular productivity of the noncanonical alternative in progressive¹ varieties moreover challenges general crosslanguage predictions on V-P combinations, raising key questions on P denotation and productive exploitation in less restrictive variants.

The phenomenon is seen across main Central American [CAM] Spanish. In Mexican, Colombian, Peruvian, Dominican, Costa Rica, and Ecuador Spanish, among other varieties, the preposition *hasta* ‘up to’ shows distinct behavior in two particular instances.²

On the one hand, *hasta* is productively combined with the temporally-bounded, locative copula *estar*. This yields nondynamic, nondurative predications merely expressing the location of an object (trajector) relative to a designated landmark, like the *village* or the *end of the road* in (1).

¹ We use this term following e.g., Putnam (2011), Kiss & Alexiadou (2015), Kauffman (2007). We will not enter a specific discussion on alternative ontologies here.

² Mexican Spanish is included strictly following empirical patterns. We do not intend to make wider generalizations beyond this point. For specific analysis, see M. Butragueño (2014).

- (1) a. La casa **está hasta** la punta del pueblo/hasta la derecha.
 the house is_{ESTAR} up to the tip of.the village up.to the right (^{OK}CAM/*IS)
 ‘The house is at the end of the village/on the right.’
- b. La casa **está hasta adelante, hasta el fondo de la calle.**
 the house is_{ESTAR} until ahead until the end of the road
 ‘The house is ahead, at the end of the road.’

The construction, utterly unexpected for speakers from more restrictive (canonical) Spanish varieties, extends to verbs of spatial location in equally nondynamic (situational) predications like (2).³

- (2) a. Sigue el obvio camino que **queda hasta** la salida.
 follows the obvious path that stays until the exit
 ‘It extends along the clear path that lies at the exit.’
- b. En el funeral de Allison todas se **sientan hasta adelante.**
 In the funeral of Allison all REFL sit.3P until ahead
 ‘In Allison’s funeral, they all sit ahead.’
- c. Se **amplió el bono para aquellos que se ubican hasta el 3er**
 SE.CL widened the bonus for those that SE.CL locate until the 3rd
tramo.
 cluster
 ‘The bonus extended for those that are [find themselves] in the third cluster.’

The pattern is striking for general, crosslanguage semantic reasons concerning the denotational properties of the preposition, the conditions imposed (e.g., verb type combined), and the aspectual nature of the total predication. Essentially, directional or projective boundary Ps like *hasta* generally require a trajectory – a temporal or spatial path – on which the lexically coded bound can operate. Given that both extended uses like (2) and prototypical examples like (1) are centrally stative and locative (no event/motion involved), the occurrence of a directional boundary P is eye-catching as it reaches regular productivity in unexpected contexts and under unexpected conditions.⁴ The resulting distinction between two major types of spatial Ps, locative vs. directional, is in fact pervasive in the literature.

On the other hand, progressive (noncanonical) uses are also found with verbs naming punctual happenings, as in (3).⁵ Such combinations are puzzling for reasons similar to those mentioned above, involving the putative clash between the denotational properties of P, the consequent need for a trajectory or process to bound, and the aspectual nature of the verb entailing no event duration (i.e., any interval to bound) whatsoever, which is, in fact, a crucial property shared with progressive locative uses above. More strikingly, common examples of noncanonical temporal

³ All data in the paper comes from corpora search or were suggested by natives, and in all cases cross-checked with informants from different varieties of those mentioned above in anonymous online surveys. None of them obeys to mere introspection. We follow Méndez (2003: 441), who raises strong arguments against adhoc-created examples providing misleading data instead of relying on real occurrence patterns, on which we agree.

⁴ Spatial stative verbs involving no path in their core denotation.

⁵ Following Piñón’s *i.a.* distinction between *happenings* (“the familiar collection of (thick) eventualities” states, processes, events) and *boundary* happenings (1997: 277).

uses involve not only terminative verbs like *acabar* in (3b) – which would seem ultimately comprehensible given the right-bounded nature of the P – but also inceptive verbs, as in (3).

- (3) a. *El proceso se inicia/comienza hasta la enseñanza superior.*
 the process SE.INCH begins/starts until the teaching superior
 ‘The process begins/starts by graduate school.’ (OKCAM/*IS)
- b. *Esto acaba (recién) hasta que se cuenten todos los votos.*
 this ends only until that se.CL count all the votes
 ‘This ends once all votes are counted.’

The assumed clash between V’s and P’s denotational properties is visible, namely, in the way these constructions are redeemed in nonprogressive varieties. Consider ^{??}*This begins/ends until 10 pm*. As in English, the only reading possible in canonical Spanish would most likely require semelfactive (re)interpretation. This follows from a well-known principle, whereby cyclic repetitions of a punctual happening produce a temporal interval – i.e., spanning over the set of points defined by these iterations – P can impute a boundary on (cf. *It started/ended (many times) until 10 pm*). Although this repair strategy could be eventually allowed in CAM, it would be somehow beside the point as the progressive use available requires no further tampering to accommodate the P.⁶ Moreover, the predication obtained is completely distinct from the one produced by the repair strategy. Arguably, the innovative use involves a sort of *waiting time* flavor – a projective vantage point from which location in space/time is calculated – not seen in the canonical *hasta* use. In this sense, the repair is pointless as the P, in its progressive use, is apparently targeting a distinct aspect of the predication.

It has been noted that inceptive semantics obtains in canonical constructions also combining *hasta* and the locative copula *estar*, as in (4). These cases are often explained by involving an entailed preparatory phase.

- (4) *Estuvo lista en media hora.* CAM/IS
 be_{ESTAR}.PRF.3S ready in half hour
 ‘She was ready in half an hour.’ (Brucart 2012, 23).

Even if this *preparatory phase* component is not explicit, it is generally admitted as part of the structural semantic representation of the locative/inchoative predication. Namely, it motivates the selection of the copula *estar* (generally associated with temporally-bounded or *stage-level* predications) over *ser*, at the same time that it accommodates telic and resultative readings compatible with *in-x-time* adverbials (Brucart 2012).⁷ From this perspective, finding *estar* and *hasta* in projective result state expressions like (5) as a recursive use in progressive varieties would make sense. For this, we need to consent to the possibility that P can operate on this abstract component.

⁶ We thank an anonymous reviewer here.

⁷ With eventive subjects (usually combined with *ser*) the progressive pattern is possible, it is equally puzzling for the reasons just posed, and accounted for under the approach proposed here.

- (5) a. *La tarea **estará** terminada hasta el final del día.* CAM/*IS
 the work be_{ESTAR.FUT.3S} finished up.to the end of.the day
 ‘The work will be finished by the end of the day.’
- b. *La pintura **será** develada con un marco provisional porque el oficial **estará** listo hasta finales de mayo.* CAM/*IS
 the painting be_{FUT.3S} displayed with a frame provisional because
 the official be_{ESTAR.FUT.3S} ready until ends of May
 ‘The painting will be displayed in a provisional frame because the official one will be ready by the end of May.’

This possibility could naturally solve our problem, as the involvement of an abstract trajectory or interval in nondurative verbs would provide an eligible temporal span for P to bound. This has two welcome consequences: (i) the predication would involve an additional variable – a certain starting point from which the situation is estimated –, thus explaining the distal component reported in earlier works (Méndez 2003, Lope Blanch 1993, cf. 8 below); (ii) the P-required boundary would not be imputed on the event lexicalized by the verb, but on a more complex predication to which this abstract path is crucial, contributing to the distinct meaning expressed, coherent with the intuitions on canonical uses like (4). If correct, the establishment of such an abstract preemptive interval would accommodate the occurrence of the P to a coherent result in terms of a right boundary on a fictive path along with a distal sense of location in time, capturing cases like (3)-(5) at once. The proposal would be furthermore compatible with the anticipated quite important fact that both readings coexist in CAM and alternate nontrivially, finding different and specific uses shown in (6). As two distinct applications – the canonical (*until*) one, and the progressive (the distal, *waiting time*) one (see also Bosque & Bravo 2015) – are available, a significative alternative in computation arises in CAM, depending on whether the endpoint placed by P refers to the event described by the verb or to the entailed abstract interval or *preparatory phase*.⁸

- (6) a. *La Selección **estará** completa hasta el lunes.*
 the team be_{ESTAR.FUT.3S} complete until the Monday
 ‘The Team will be complete **until** Monday.’ CANONICAL (IS/CAM) READING
 ‘The Team will be complete **by** Monday.’ PROGRESSIVE (°IS/°OKCAM) READING
- b. *La tienda abre hasta las 7.*
 the store opens up.to the 7
 ‘The store opens **until** 7.’ CANONICAL (IS/CAM) READING
 ‘The store opens **by** 7.’ PROGRESSIVE (°IS/°OKCAM) READING⁹

⁸ Interestingly, even informants who do not have progressive constructions as the primary choice acknowledge potential ambiguity in these constructions, admitting to the availability of the distal (waiting time) reading. There is, however, intersubject variation as to which interpretation is more prominent. Further work on contextual conditions in this sense is needed to reach reliable conclusions.

⁹ Asked to speculate on negation, is problematic as it yields counterfactual expressions: if there is no (opening) event, there is no abstract temporal interval (waiting time) for *hasta* to bound (or any event to be located in perspective, for the matter). The expression *la tienda no abre* ‘the shop does not open’ does not talk about a (delayed) happening the speaker can place

Summing up, we believe that analyzing progressive uses of temporal/spatial Ps like *hasta* based on the possibility to place an endpoint on an abstract interval – rather than assuming an altogether different meaning for the P – produces a natural, unified solution for the problem under a consistent right-boundary denotation. The possibility that progressive Spanish varieties exploit temporal/spatial functions encoded by certain items of the lexicon, like directional/projective Ps, in predications involving a fictive path would effortlessly explain further noncanonical occurrence patterns like (7) and the distinct semantic flavor obtained automatically dismissing elided negation or semelfactive repairs (see below).¹⁰ Moreover, this would be done crucially in line with cases previously reported in the literature as involving this distinct distal (waiting time) flavor, like (8).

(7) a. *Hasta ahora tuve tiempo de escribirte.*
 until now had.1S time of write.DAT.you
 ‘Only now I had time to write.’

b. *Hasta ahora logré desocuparme.*
 until now achieved.1S free.me
 ‘Only now I got free.’

(8) *Y hasta ahorita me lo dices.* (Méndez 2003: 436)
 and until now.DIM me.DAT it.ACC say.2SG
 ‘And now you say it.’

2. Facts and discussion

The upshot of this section is to dismiss, based on the data, a semantically trivial innovation or a mere *anomaly* (Lope Blanch 1993, 2008, but cf. Bosque & Bravo 2011). Instead, we will contend that systematic noncanonical uses should be seen as legitimate grammatical choices conforming to a distinct predication progressively produced by exploiting *hasta*’s core denotational (projective) properties to a distinct (perspectival) sense of location in space/time. This approach avoids coercion solutions to the alleged conflict between the denotational properties of P and the aspectual (nondurative) nature of the verbs combined. Moreover, it captures data not supported by previous accounts (e.g., the elided negation approach), while remaining coherent with a specific constructional denotation motivating its choice over other Ps, thus accommodating also intuitions in early literature (e.g., the *waiting time* flavor suggested by Lope Blanch 1993 *i.a.*) in a principled way. Finally, as the proposal centrally preserves the projective right-boundary semantics of the P, it remains independent of P ambiguity, redefinitions (e.g., lexicalizing a left boundary instead of

in spatiotemporal space, following the meanings reported by Méndez (2003) *i.a.* Explicit negation, along the standard lines, already includes an interval on which *hasta* can operate, setting an endpoint on the interval created by a non-open state (cf. *the shop does not open until 10*). Negation on locative predications, conversely, provides further motivation for a convex (polar) analysis (Section **Error! Reference source not found.**).

¹⁰ Semelfactive repair would yield a predication amenable to ‘until now you [keep] say[ing] that’ crucially contrasting with the one reported in progressive uses.

a right one), lexical proliferation, repair strategies, and other *ad-hoc* solutions, basically by incorporating standard semantic and cognitive principles on how space can be represented in natural languages.

Two empirical observations are central. First, these occurrences not only contrast non-trivially with standard P choices, but also produce distinct patterns concerning adverbial distribution coherent with a distinct predication, as shown next. Second, regular and systematic productivity is not less important. Thus, even if the matter has been attested in the literature, we believe no satisfactory explanation has been offered yet, leaving a missing generalization behind.

Hasta is essentially a right-boundary directional or projective P, generally used to mark the endpoint of different predications. In space, it defines the endpoint of a trajectory. In time, it defines the endpoint of a time interval generally associated with the runtime of the event. Both uses, summarized in (9), are present in most Spanish varieties (Caravedo, 2011; Lope Blanch, 2008; Moliner, 1998; *i.a.*).

- (9) *Caminé hasta la esquina/ hasta las 10 pm.*
 walked.1S until the corner until the 10 pm.
 ‘I walked up to the corner/until 10 pm.’

However, a seemingly deviant use, anticipated above, emerges. This use, described before as “anomalous” (Lope Blanch, 2008), was first attested in Mexican Spanish. Yet, occurrences show regular productivity across variants, indicating a more general and coherent problem.

- (10) *Está hasta la esquina/ Abre hasta las 10 pm.*
 be_{ESTAR}.3S until the corner opens until the 10 pm.
 ‘It is over the corner/ It opens by 10 pm.’

A common view on the topic involves the putative elision of negative operators. This idea is extensively entertained by early works on the matter (Kany 1970, Dominicy 1982 *i.a.*). The idea is that, since constructions like (11a) below are fine in standard Spanish and accommodate the right boundary defined by *hasta* accordingly, then uses like (10) would simply follow from some sort of elided or nonphonetically-realized negation. Thus, a noncanonical use like (11b) would be seen as still marking the endpoint of a temporal interval, yet, this would be the one not containing events denoted by the verb (= *we do not begin until...*).

- (11) a. *No empezamos hasta las 10 pm.* IS
 not start.1P until the 10 pm
 ‘We don’t start until 10 pm.’
 b. *Empezamos hasta las 10 pm.* CAM
 start.1P until the 10 pm
 ‘We start by 10 pm.’

This solution, however, has many problems, starting from missed data. In fact, the elided negation proposal bluntly fails to accommodate data like locative uses like (1) above, along with temporal uses like (12) or (10), even including examples cited by these same authors amenable to (13) (cf. also 16 below). Another problem that gets

worse in subsequent cases is the difference in meaning, as the repaired version of (11b) reads ‘We don’t start until 10’, contrasting with its actual meaning in CAM, where the event is asserted to occur.

(12) *Tengo que llegar a Puerto Plata hasta el lunes.*
 have.1P that arrive to Puerto Plata until the Monday
 ‘I must be at Puerto Plata by Monday.’

(13) *La bomba parte de 0 y sólo hasta que ese litro termina dice 1.0.*
 the pump starts from 0 and only until that liter ends says 1.0
 ‘The pump starts from 0 and only when that liter gets ends, it marks 1.0.’

Numerous arguments against this hypothesis have been extensively discussed in specific works on the matter (cf. Méndez 2003). The argumentation based on elliptical negation becomes even trickier since, as Méndez also notes (2003: 433), many examples of the divergent use would either require additional adverbs to be acceptable in canonical Spanish varieties, as in (14) – or else produce a distinct result, as argued above about (11b). The contrast in (15a-b) is, we believe, clearer in this respect.

(14) a. *La medida será levantada hasta que el alcalde permita el reajuste.* CAM
 ‘The restriction will be terminated once the Mayor allows the adjustment.’

Cf. *La medida no será levantada sino hasta que el alcalde permita el reajuste.* IS
 ‘The restriction will not be terminated until the Mayor allows the adjustment.’

b. *Los transgénicos deben ingresar hasta que existan normas legales.* CAM
 ‘Transgenic [food] must enter the country when there exist legal rules.’

Cf. *Los transgénicos no deben ingresar sino hasta que existan normas legales.*
 ‘Transgenic [food] must not enter the country until legal rules exist.’ IS

(15) a. *Los niños se han peleado hasta que tú has llegado.*
 the kids REFL have fought until that you have arrived
 ‘The kids have fought only once you arrived.’

b. *Los niños no se han peleado hasta que tú has llegado.*
 the kids not REFL have fought until that you have arrived
 ‘The kids haven’t fought until you arrived.’

Another classical approach draws on lexical proliferation and P ambiguity. The idea is that progressive varieties include two distinct *hasta* prepositions in their lexicon, or else that *hasta* has an alternative meaning corresponding to ‘not until’ (cf. Lope Blanch 2008, Caravedo 2011). Crucially, however, in canonical Spanish either explicit negation (cf. 11a) or else a fully distinct (nondirectional) P, as in (16), are required to match the predication naturally allowed by the projective P in progressive varieties, as just mentioned. Even then, the waiting time flavor crucially involved in CAM (Lope Blanch 1993, in 8 above) would be still missing. The important point is that in all cases multiple repair strategies are ultimately needed to cover CAM occurrence patterns. Additional putatively elided adverbials like *sólo* ‘only’, *recién* ‘just then’, *finalmente* ‘finally’ are successively proposed (see Dominicy 1982).

Crucially, Méndez (2003) highlights how such arguments usually draw on ‘artificial’ (ad-hoc-created) examples, hindering the analysis of true linguistic production by native speakers.

- (16) *Empezamos (recién a las 10 pm.*
 Start.1P **just** at the 10 pm
 We start at 10 pm.

P ambiguity lies behind another frequent, but not less problematic, approach to the matter. The idea is that *hasta* would codify both the starting and endpoint of an interval. However, and as known, lexical ambiguity, especially in Ps, is not a welcome solution for any theory and, moreover, it does not come without a cost – rather, there are good arguments to assume that there are no lexically ambiguous Ps but actually distinct semantic compositional results (cf. Gehrke 2006 for a summary).¹¹ Moreover, and setting this aside, the fact that *hasta* alternates nontrivially showing distinct but coherent combination patterns with verbs and adverbials has nevertheless to be explained.

The aspectual properties of the verbs productively combined in progressive uses are not trivial. Patterns in (1)-(3) above are particularly striking since, as anticipated, they involve verbs naming stative and punctual eventualities. In a canonical construction like *Los niños caminaron hasta la noche* ‘The kids walked until night’, a verb describing a durative, atelic event (a Vendlerian activity) combines with *hasta* to set the endpoint of a trajectory in spatiotemporal space, setting a limit for the event designated by the verb (see 9 above). The productive combination of *hasta* with punctual and stative events (i.e., event types involving no event runtime/motion) in progressive varieties, as in (17), is problematic for the traditional approach as the right boundary defined by P would find no spatial spatiotemporal interval to bound.

- (17) *Los niños llegaron hasta la medianoche.*
 The kids arrived until the midnight
 ‘[the] Kids arrived until midnight.’ CANONICAL READING (IS/CAM)
 ‘The kids arrived by midnight.’ PROGRESSIVE READING (*IS/CAM)

This situation generally creates an iterative repair strategy interpretation (see above) in which the P-coded endpoint is computed in relation to an interval created by a series of repeated events extending up to the endpoint defined by *hasta* – that is, a series of punctual arrivals taking place during a certain time span, with the resulting interval correctly bounded by the P. This is the case of Spanish varieties where the progressive use is unavailable. Yet, this is not the default reading in CAM, since

¹¹ A major argument against potential ambiguity in directional Ps like *hasta*, and one crucially supporting endpoint (perspectival) location, builds on crosslinguistic availability of examples like (i) (cf. Zwarts 2008, following Cresswell 1978). Ambiguity is quickly dismissed by showing that a directional P choice for static situation coincides with a constructional result (cf. Gehrke 2006 for a summary).

- (i) a. *The train is ahead/through the tunnel.* (Jackendoff 1983, 167).
 b. *Alex lives over the hill/around the corner/across the road/past the railroad station.*

another, more economical reading is available. On the progressive reading, the kids meet the endpoint of the trajectory at the time designated by the Landmark (*the night*), and only at this time.¹²

The solution we propose builds on intuitions on a distal component involved. This distinct semantic flavor accommodates data escaping other accounts. More importantly, it would capture consistent distributional asymmetries like (18)-(19) below. On this account, P would still impose a right boundary on an interval. This interval, however, would not be the one designated by the event lexicalized by the verb, but rather overlap it at its right boundary. In other words, the relevant interval measured by P would be closer to Brucart's (2012) *preparatory phase* or Méndez (2003) *waiting time* entailment, i.e., a perspectival approach. This function locates the eventuality as a whole (a holistic location), thus explaining the contrast in (17).¹³

In fact, simple corpus-based explorations indicate that the standard 'until' reading of *hasta* mainly occurs with activities and accomplishments. Progressive uses instead take states and achievements; that is, the two Vendlerian types that do not include event duration in the denotation. In this light (and with 8 above in mind), consider (18).

- (18) a. *Álvarez se dio cuenta hasta que llegó a eso de las 9:00 de la noche.*
 Alvarez SE.CL realized until that arrived at that of the 9:00 of the night.
 'Álvarez realized only when he arrived, around 9:00 in the night.' CAM
 'Álvarez realized until he arrived, around 9:00 in the night.' IS
- b. *Hasta ayer me lo entregaron.*
 until yesterday me.DAT it.ACC give.PRF.3P
 'They gave it to me only yesterday.' CAM READING
 'They gave it to me until yesterday.' IS READING

Even if states do allow for durative readings, the limit imposed by *hasta* does not correspond to its end but rather to the onset of a subsequent (result) state. Thus, the progressive use of *hasta* to yield inceptive readings in punctual verbs and the nontrivial alternative arising for constructions like (18) – also allowing for a 'telic' reading based on an abstract waiting time interval – follow principles similar to those motivating canonical uses as (4).

The pattern, crucially coherent with the idea of P operating on a distal perspectival interval, also accommodates adverbial distribution. Adverbs like *adelante* 'beside, ahead', *atrás* 'behind', *arriba* 'above' or *abajo* 'below' should not be allowed between the verb or copula and the PP. In progressive varieties, however, co-occurrence is optional **but** nontrivial: instead, it reinforces the possibility of a perspectival (vantage point) representation.

- (19) a. *El otro está hasta arriba de la lista.*
 the other ISESTAR up.to above of the list
 'The other [one] is on top of the list.'
- b. *En la escuela solía ser de las niñas que en los coros estaba hasta atrás.*

¹² That is, without implying subject multiplicity (kids arriving at different times) nor event duplication (multiple arrivals).

¹³ Readings involving agent/event multiplicity (multiple kids arriving at different moments).

- In the school used be of the girls that in the choirs be_{ESTAR} up.to behind
 ‘In school, I used to be one of those girls who stands behind.’
- c. *Llegamos y como que pasamos para estar hasta adelante.*
 arrived.1P and like that passed.1P to be_{ESTAR} up.to upfront
 ‘We arrived and we kind of passed to be at the front.’
- d. *De todos, Romero está hasta abajo.*
 of all Romero be_{ESTAR} up.to below
 ‘Of all [of them], Romero is (located) below.’

Summing up, most data discussed in this section and throughout the paper are ungrammatical or at least odd for more restrictive Spanish speakers and yet show regular productivity in CAM. We think that sufficiently distinct distributional patterns as to verbs and Ps or AdvS combined along with a distinct denotation are arguments strong enough to narrow down analytic options. Problematic theoretical aspects could be avoided if the data is seen as the result of a motivated grammatical alternative motivating a non-trivial alternation with canonical constructions. The key question remains as to what the specific nature of this special predication is – rather than how it can be adjusted to canonical structures.

3. Proposal

3.1 The abstract path approach

Three assumptions are central. First, we take the assumption that in certain Spanish varieties Ps like *hasta* are engaged in the regular production of temporal and spatial situational predications with distinct semantic and combinatorial properties; second, that these special properties are linked to the denotational properties of the (directional/projective) P, preserving its original definition; third, that the selection of *hasta* in progressive varieties responds to the possibility of a sense of location crucially involving an abstract perspectival interval or path accommodating the right boundary described by P.

In noting how the innovative use of the P extends from temporal to spatial boundaries, works like Lope Blanch (1993) and Montes (1986) suggestively note a certain sense of ‘distance’ from the Landmark. Such a sense of distance, also present in data produced by native speakers, is compatible with the “waiting time” or “delay” flavor described in progressive temporal location deploying *hasta* (Méndez 2003, Lope Blanch 1993 *i.a.*); and, moreover, key to explain the nontrivial selection of a directional/projective P over a locative one. Below, we advance that a general condition on projective Ps can account for this. If correct, an elegant solution drawing on spatial perspectival locations, which is readily extensible to apparently puzzling patterns related to projective location, emerges.

3.2 General conditions

The analysis below includes a preliminary condition: we need to consent to the possibility that *hasta* somehow instantiates a directional boundary P involved in circumstances other than right-bounding a trajectory/interval explicitly described by the verb. We also thus need to assume that there are additional semantic components in the predication motivating systematic (noncanonical) selection patterns. Even if this

may seem stipulative at first blush, the analysis would efficiently bring together insights from descriptive works on noncanonical uses and important, theoretical conditions on P selection.

Arguably, certain contexts create a specific circumstance where projective Ps find a circumstance compatible with lexical endpoint codification even with unexpected Vendlerian verb classes like statives, especially when used to locate objects in topographical space. To support this, we draw on the specific problem posed by the locative stative reading of *hasta* and a crosslanguage condition under which its occurrence is expected.

As anticipated, the location produced by spatial configuration verbs including the copula *estar* when combined with *hasta* seems to involve a non-trivial contrast with the canonical distribution for locative predications, namely, *estar a/en*. This results in a distributional asymmetry with locative constructions productively recruiting a directional P over locative ones – which, by definition, entail no conflict with stative locative predications (e.g., *be at/in*). The question then is how to pin down the factors guiding *hasta* selection in progressive varieties over the canonical (nondirectional) P choice.

In preliminary experimental surveys on natives (M. Rasia 2021),¹⁴ respondents unanimously report a clear difference between a canonical location of the sort yielded by *estar en/a* ‘be in/at’ (i.e., the canonical P choice) and the sense of location produced by progressive uses. When prompted for an explanation, the specific nuance in *estar hasta* constructions is defined in terms of *lejanía* ‘remoteness’ (50%), *distancia* ‘distance’ (30%), *recorrido* ‘route’ (10%), and *dirección* ‘direction’ (10%). Conversely, *estar a/en* (copula + nondirectional P) is unanimously associated with a simpler sense of location lacking additional entailments. By associating these results with early comments in the literature mentioned above, a fuller picture emerges. Presumably, the distinct meaning – the relevant semantic factor behind a non-trivial P choice – is related to some sort of vantage (distal) point from which object location is estimated. This projective or perspectival situation explains the reported sense of path, route or distance. This, in turn, is directly amenable to the additional variable introduced by relevant adverbials supporting general conditions licensing directional Ps in stative locations, outlined next.

3.3 Creswell’s condition

As anticipated, it is generally assumed that whereas locative Ps can always be used in combination with copulas like *estar* ‘be’ and other situational stative verbs to form a locative predication, directional Ps are, by contrast, somewhat unexpected in stative locative contexts. Crosslinguistically, directional Ps can be, however, specifically selected for stationary location under certain conditions. Specifically, they may be used in two contexts: if accompanied by measure phrases, as in (20b); or when the location described is understood as the endpoint of a hypothetical journey from an implicit point of view (Cresswell 1978, Zwarts 2005:742), as in ((20)a). We will call them Measure Phrase Condition [MPC] and End Point Condition [EPC], respectively.

¹⁴ Available at <https://www.surveymonkey.com/r/XKBDMLX>.

- (20) a. *The house is {behind/outside/across} the woods (from here).* EPC
 b. *The house is one mile {from here/to the east/outside the town/behind the hill}.* MPC

The EPC offers key observations directly touching on what has been discussed thus far. Cresswell (1978) explains that the condition allowing these constructions depends on the denotational properties of directional Ps, which must introduce a *contextually determined point of view from which the object is located*. This condition is directly consistent with the restriction imposed by *hasta* – i.e., the need for an (abstract) path to bound. Since the distal component, described by Cresswell as the *journey sense* of directional Ps, lies behind the directional/projective P choice, it may also account, we believe, for its selection over canonical P distribution. Even if other analyses are always possible, Cresswell’s condition fits strikingly well with both the descriptive studies and the experimental data seen above. More importantly, it readily captures empirical evidence like the vantage point entailment in CAM *hasta* locative constructions being strong enough to render the addition of a ‘from here’ phrase redundant if the directional P is already heading the predication, as (22) shows.

- (21) *The Post Office is through the hill *(from here)* (Cresswell 1978:112)

- (22) *La casa está hasta (detrás de) el muro (*?desde aquí).* CAM
 the house ISESTAR up.to (behind) the wall from here
 ‘The house is (at/behind of) the wall (from here).’

Quite crucially, for the EPC to apply, the interval licensing P choice can be instantiated by any *fictive* path (Cresswell 1978, Talmy 2000 *i.a.*), be it a line of sight, a walking distance, or a route in a hypothetical journey – the kind of abstract trajectory also known as *access paths* (Talmy 2003). Specifically, the notion of *fictive* responds to the representation of a *sensory path* represented as a stretch of space extending from the experiencer to the experienced object (Talmy 2003: 25). According to the examples and intuitions collected above, progressive *hasta* uses match the category by also describing a stationary object’s location based on a path that other entities might follow “to the point of encounter with the object” (Talmy 2003:25). The fictive trajectory being abstract, however, does not mean it cannot be empirically brought up: notably, it can be measured, as (23) indicates. The presence of *hasta* in this sense is crucial.¹⁵

¹⁵ The MPC clearly does not explain *per se* progressive *hasta* uses. Nevertheless, in CAM (unlike IS) *hasta* can be found heading measure phrases like (i). Crucially, this does not affect the perspectival interpretation of the predicate, allowing the measure phrase to operate on the fictive path (distance estimated from the abstract vantage point). In canonical readings, a measure phrase, if allowed, would instead only operate on the interval described by the verb-named event (how outside/behind something is from the landmark) (see Section **Error! Reference source not found.**). The MPC highlights this contrast.

- (i) *La casa está hasta una milla {fuera/detrás} del pueblo.*
 the house is up to one mile outside/behind the town
 ‘The house is one mile outside/behind the town [from here]’ (CAM reading)
 ‘The house is up to one mile outside/behind the town’ (IS reading)

- (23) *Está a 20 metros hasta el semáforo.*
 i_{ESTAR} at 20 meters up.to the streetlight
 ‘[it] is 20 meters [from here] up to the streetlight.’ (cf. ‘20 meters ahead *from here*’)

Crucially also, noncanonical adverbial distribution is readily accommodated on the same condition. Cooccurrence of additional adverbs like *adelante* ‘beside’, *atrás* ‘behind’, *arriba* ‘above’ or *abajo* ‘below’ (described in 19 above), for instance, agrees with the expression of some sort of vantage point from which the reference position introduced by P (the Landmark) is estimated. P selection thus coincides with adverbial distribution in the construction of a perspectival situation, so that the occurrence of *up/down/ahead/behind* only makes sense if allowed by a **from here** entailment that, thus, proves grammatically relevant. Consider (19b-d) above, repeated in (24).

- (24) a. *En la escuela solía ser de las niñas que en los coros estaba hasta atrás.*
 in the school used be of the girls that in the choirs be_{ESTAR} up.to behind
 ‘In school, I used to be one of those girls who stands [from here] behind.’
 b. *De todos, Romero está hasta abajo.*
 of all Romero be_{ESTAR} up.to below
 ‘Of all [of them], Romero is (located) [from here] below.’

Summing up, independent of the ontology pursued, it is empirically clear that an additional semantic component – an abstract path/interval/trajectory – is needed to license a directional boundary P and capture semantic intuitions behind this use. The existence of a widely embraced notion of perspectival location has an important advantage, as it dismisses P polysemy, ambiguity, the need for additional lexical entries, or elliptic negation, while it efficiently connects with semantic observations coming from cognitive studies on spatial representation and linguistic realization (Talmy 2019). We contend that the EPC is a sufficient semantic condition defining a sense of vantage point relative to which a stationary location is described by a projective P, allowing it to impute a bound on the abstract interval defined by this perspectival distance, as required, even if not V-coded. The whole proposal is crucially consistent with further observations made in mainstream literature (Jackendoff 1990, but see also Lakoff 1987, Talmy 2000, *i.a.*), remaining amenable to situations conceptually treated as inserting a basic semantic prime like the Place-function AT-END-OF [FROM []] (Jackendoff 1990: 115).

Thus, under this analysis, *hasta* would consistently work as a directional right-boundary P, preserving its basic, traditionally-assigned meaning (see 25 below) simply by being allowed to impute a locative (boundary) condition on an abstract path facilitated by its own denotational properties, in its capacity as projective (directional) boundary P. What is different here – in contrast to nonprojective P selection – is that the P does not so much give information about the spatial position of one argument with respect to the other (located object, Landmark) (cf. 27-28 below), but rather refers how these two entities are located based on an additional variable, defining a more complex, relative sense of location. In this sense, it is interesting to note that the progressive use of *hasta* is often found in contexts where the landmark is realized via

complex DPs setting a geometric or topographical boundary (*punta, límite, final de* ‘top, end, limit of’) and working coherently to stress the abstract path or fictive journey sense.

- (25) The Spanish P *hasta* appears to capture exactly the g-notion (for both space and time) of motion or temporal continuation along an extent bounded at only one end, so that *hasta* Chicago means ‘as far as/up to Chicago’ and *hasta* las 3:00 means ‘until 3:00’.

G-NOTION: A point MOVE ALONG-TO an extent bounded at a terminating point/bounded extent of time (The car reached the house at 3:05) (Talmy 2000: 254).

If correct, then a fictive or abstract path would sufficiently motivate further occurrences like those found in (26) together with the perspectival nuance motivating its distribution over locative (canonical) P choice (i.e., *en/a* ‘in/at’), while capturing the semantic underpinning that motivates its use (EPC). This is especially important as such data conform to the set of facts that cannot be accounted for by elided negation or coercion accounts.

- (26) a. *Sigue el obvio camino que queda hasta la salida.*
Follow.3S the obvious path that stays up.to the exit
‘Follow the clear path that lies at the exit.’
- b. *En el funeral de Allison todas se sientan hasta adelante.*
In the funeral of Allison all REFL sit.3P up.to ahead
‘In Allison’s funeral, they all sit ahead.’
- c. *Se amplió la bonificación para aquellos que se ubican hasta el 3^{er} tramo.*
SE-CL widened the bonification for those that SE.CL locate up.to
the 3rd cluster
‘The bonification was extended for those that are [located] in the third cluster.’

The question remains as to how our account could support other ‘unpredicted’ Vendlerian selectional patterns, like punctual verbs. Before we proceed to this issue, let us introduce the formal analysis and how it applies to spatial representation.

4. Formalization: vectors, space, and convex coordinates

4.1 The general approach

While the general insight behind our proposal remains compatible with standard definitions of *hasta* like Talmy’s (2000:254, see 25 above), and Jackendoff’s AT-THE-END-OF function, here the implementation builds on works where the aspectual contribution of spatial Ps is laid out in terms of Vector Space Semantics (Winter 2001 *i.a.*) [VSS]. In doing this, we follow the assumption (Zwarts & Winter 2000) that such an approach could be particularly sensitive to cognitive implications on how space location and directions are represented in natural languages. This allows us to develop an account of progressive uses of *hasta* that captures the relevant condition (EPC),

while retaining the measure function defined by P (=up to), preserving the sense of magnitude. Polar coordinates (Zwarts & Gärdenfors 2016) are in turn especially useful to guarantee proper inclusion of all points in the relevant interval.

Locative or nonprojective Ps are structurally simpler, which makes them a good starting point. As mentioned above, nonprojective Ps are the standard P choice for situational predications, locating an object (the *trajector*) relative to a reference object (the *landmark*) introduced by P. This produces locative expressions like (27).

- (27) *El semáforo está al final de la avenida.*
 the light is at.the end of the avenue
 ‘The light is at the end of the avenue.’

In VSS, this situation is represented by a set of vectors and points. These vectors have their *origo* at some reference object, a point (defined by the landmark) in a conceptual space *S*. Whereas a landmark *L* (in this case, the end of the avenue) fixes the starting point of these vectors, P defines their nature and orientation (Zwarts 2017, cf. Zwarts and Winter 2000 *i.a.*),¹⁶ thus establishing the region of space that the object occupies (its “Eigenspace”: Wunderlich 1991). In this case, a ‘at’ being a *boundary* locative (nonprojective) P, the relation between the object and the region is one of contact (*i.e.*, adjacent to the landmark), defining an intersective set of points. The spatial situation of the trajector (the light) corresponds to a *tangential proper part* of a landmark-defined region (cf. Zwarts & Winter 2000). This situation is formalized as a variable *q* ranging over vectors.

- (28) $\exists q [q \in \text{at}(\text{end-of-avenue}) \ \& \ \text{be}_{\text{estar}}(\text{light}, q)]$
 ‘The light is at the end of the avenue.’

In defining *q*, we take *S(L)* to represent an inner area within *S* where the position of the trajector and *L* are contained, guaranteeing that all relevant vectors emanate from *S(L)*’s *origo* and that the position of the trajector is defined relative to it. This is particularly important to the discussion next.

4.2 Directional or projective Ps

Directional Ps are more complex and involve particular restrictions. Unlike locative Ps they often resist simple spatial/stative predicative constructions (Zwarts & Winter 2000). Therefore, the apparent semantic clash discussed above (Sections **Error! Reference source not found.**-**Error! Reference source not found.**) simply follows from a structural asymmetry: whereas locative Ps only require spatial information on the situation of two objects (located object, reference object), directional or projective Ps demand additional information (cf. Zwarts 2017).

As mentioned, in VSS paths are seen as ordered sets of points (Jackendoff 1983; Talmy 2000; Zwarts 2005, Zwarts & Winter 2001, Winter 2001)¹⁷ on which P

¹⁶ As Talmy (2019) *i.a.* notes, the *shape* of the landmark could be considered. In this case, we believe the problem can be saved by seeing the landmark as a point (determined, namely, by its center). This is a strong idealization to make, but we believe minor variations in structure and shape are beside the point here.

¹⁷ Alternatively, paths are seen as *nested sequences of places* (Verkuyl and Zwarts 1992) or *functions from some ordered domain to places* (Cresswell 1978) *i.a.*

imposes an ordering direction coherent with its core (lexical) denotation. Even if vectors appear in simpler locative structures, as just seen above, directional or projective Ps centrally involve **axes** (Herskovits 1986) and **directions**. Directions can be defined either based on intrinsic properties of the ground or absolute features of the environment (allocentric view), or, as Herskovits (1986) notes, by the relative position of an observer (egocentric view). This additional information crucially captures the possibility that the speaker can “cognize the scene as if from a stationary distal perspective point” (Talmy 2019: 10).

In recruiting this additional value represented as a zero-point defined by the observer’s position, location becomes twice-relative: the object’s location is relative to the (region defined by the) landmark, just as in simple locatives, but, at the same time, it is relative to a vantage point x from which location is estimated. Our idea here is that progressive varieties could make spatial Ps sensitive to such complex ontological types in ways which, although puzzling to more restrictive varieties, are optimal in terms of grammatical realization of a complex sense of location incorporating perspectival perception, to a grammatically relevant result. The impracticality of ‘from here’ phrases in progressive *hasta* constructions in (22) above and the asymmetric adverbial distribution are good examples.

Thus, instead of representing a location merely as an absolute position, one can also view it as a complex function, a combination of regional location and the abstract perspectival trajectory set from the relative position of the observer. To analyze this, we will follow the standard view (Zwarts 2005, 2017) of paths as directed two-dimensional stretches of space, modeled as a continuous function from the real interval $I [0,1]$ to some domain of places. Convexity guarantees proper inclusion of all relevant points.

(29) Define I as a continuous function from the real interval $[0,1]$, with a starting point $I(0)$, and endpoint $I(1)$. Thus, for any point of the path $i \in [0,1]$.

(30) *El semáforo está hasta la esquina.*
the traffic.light is until the corner
‘The traffic light is at/by the corner [from here].’

Now, to match the locative situation expressed by a projective/directional P, a simpler locative function like the one considered in (28) must be reformulated. What this formulation must incorporate is the condition that the location defined by q is true iff its relation to the *origo* of the conceptual space S is set in a perspectival frame of reference, accommodating the relative complexity inherent to projective/directional Ps. Given S , we take x to designate the distal point ($x = I[0]$) from which the perspectival *sense of distance* reported by natives is defined. That L is found at $I[1]$ and not $I[0]$, or at any intermediate value $I(i)$ [$0 < i < 1$], directly follows from the denotational properties of P: in this case a locative condition on the final point of the path (right boundary P). This means that the spatial reference to situate the trajectory obtains at the maximal value of the interval that goes from the distal vantage point to the reference point L . In consequence, the locative situation q is established relative to the spatial reference (the point in $S(L)$) identified by $I [1]$.

(31) q [[*hasta la esquina*]] $\Rightarrow \exists q$ [$q \in$ (at-corner)] & [(corner) = L] **iff** $L = I(1)$

& $x = I(0)$

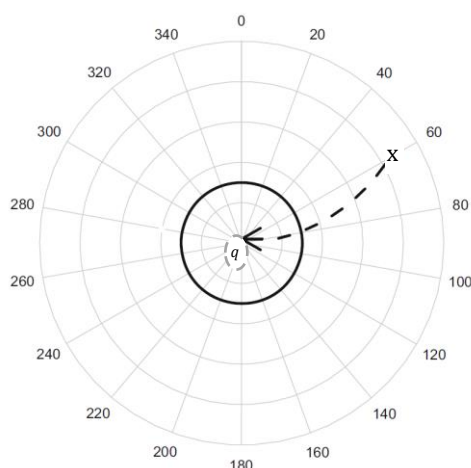
The condition follows that the smallest subset of potential locations for q must include I [1]. This guarantees that q is properly contained in the neighborhood N of the landmark, under the standard definition – i.e., as a set of points containing a point L within which one can move in any direction away from or past this point to a certain extent without leaving the proper set. Therefore, $q \in N(L)$.

4.3 The polar view

A principled way to represent these ideas in VSS integrates geometrical notions and polar coordinates. Such concepts have been successfully applied to the analysis of spatial Ps in natural languages (Zwarts & Gärdenfors 2016).¹⁸

0 illustrates the circumstance just discussed above, with the trajector's location determined relative to a region which contains it, defined by L , which, in turn, marks the *origo* of the conceptual space $S(L)$ in which the locative relation q is defined. The locative relation could also be the one in canonical locations headed by nonprojective locative Ps (cf. 28 above).

(32)



Thus, what innovative varieties achieve by recruiting a more complex P, is, we contend, to establish a complex denotation where location is calculated based on an additional element, a path or direction, relatively set by the observer; that is, the perspectival interval defined in (29) above. We express this notion with the dotted line representing the fictive path that extends from x (the zero-point for the perspectival mapping) to L to situate q , defining a complex (egocentric) perspectival location accordingly. Here, we allow for the assumption that the fictive path could ultimately be a directed spatial curve (cf. Zwarts 2008), so that it can serve to reflect also how this trajectory can be shaped in forms other than a straight line (cf. 32 below) – i.e. in nonoptimal ways subject to the speaker's perception.¹⁹

¹⁸ Crucially, in those studies, the specific case of directional boundary Ps like *hasta* or *until* is missing (cf. Winter 2006).

¹⁹ As Zwarts notes, if a discrete domain is considered, two conditions hold: (i) linear ordering must be preserved; (ii) the ontology remains elastic enough to accommodate variations imposed by natural language representation.

Polar convexity incorporates the notion of *P continuity* (Zwarts 2005), based on a relation comparable to that of *betweenness* proposed for the region defined by similar spatial Ps. The idea is to guarantee that all points in the abstract/perspectival trajectory are also included in the path. Given a conceptual space S , a subset R of S is polarly convex iff for all points a - c in R , any point b between a - c belongs to R as well. In terms of polar coordinates: (r, θ, ϕ) where r =radius, θ = azimuth angle, ϕ =polar angle, any point $b=(r_b, \theta_b, \phi_b)$ lies polarly between (p-between) a point $a=(r_a, \theta_a, \phi_a)$ and a point $c=(r_c, \theta_c, \phi_c)$, if there is some k , $0 < k < 1$, such that:

$$(33) \quad \begin{aligned} r_b &= k r_a + (1 - k) r_c \\ \theta_b &= k \theta_a + (1 - k) \theta_c \\ \phi_b &= k \phi_a + (1 - k) \phi_c \end{aligned}$$

In our case, recall, the speaker defines a point $I[0]$ in the interval I which has $I[1]$ at the landmark. The path is represented as a function on the $[0,1]$ interval within S , so that $r(I(0)) > r_L$ and $r(I(1))=0$. This produces a set of points included in the landmark's region $S(L)$ within which the object can be found, hence $q \subset S(L)$, as anticipated. This kind of positioning, where the object is located within L 's neighborhood, motivates a polar approach. As $I(S(L))$ instantiates a path directed towards the conceptual space of the landmark, convexity determines that for every intermediate point $i \in [0,1]$, represented in polar coordinates, then $p(i) = (r, \theta, \phi)$, with a k so that $0 < k < 1$, then (34) is correctly satisfied. Here, $\{I \in p(S(L))\}$, $I(0)$ corresponds to the observant position (x in the image), $I(1)$ is the origo, and the path results of a $[0,1]$ function I in $S(L)$, such that $radio(I(0)) > r_L$ y $radio(I(1)) = 0$. Path convexity requires that for all intermediate points $i(I)$ in the path expressed by polar coordinates $I(i) = (x, \theta, \phi)$, given a k such that $0 < k < 1$, then *hasta* fulfills convexity or *P continuity* (cf. downward monotonicity in Zwarts 2017: 6, Winter 2006).

$$(34) \quad \begin{aligned} r(p(i)) &= k r(p(0)) + (1 - k) r(p(1)) \\ \theta(p(i)) &= k \theta(p(0)) + (1 - k) \theta(p(1)) \\ \phi(p(i)) &= k \phi(p(0)) + (1 - k) \phi(p(1)) \end{aligned}$$

Polar coordinates are particularly useful under negation. In progressive uses, negative operators yield a circumstance guaranteeing that none of the points in the perspectival interval matches the location of the trajector. Thus, in *El semáforo no está hasta la esquina* 'the light is not (located) (from here) up to the corner', if allowed at all, what is stated is that if there is at all a region q containing the object's location, then no point in the interval from the perspectival vantage point x to the landmark includes it. Given a property $P(q)$ locating the trajector in a region, convexity guarantees that every point i in I satisfies the negation of q .

$$(35) \quad \exists I := \forall I(i) \neg P(q).$$

Summing up, progressive varieties like CAM would come to show that directional spatial Ps can also be used to set the endpoint perspectival intervals, equally introducing an origo, a set of vectors radiating from it, and points in-between, to define a region in which the object is contained. The difference follows from the fact that location can be alternatively estimated based on an egocentrically-defined abstract

path with a relative zero-point set by the speaker (Zwarts 2005:744). This generates the proposed *from here* entailment explaining progressive uses under a general condition like EPC, therefore rendering *hasta* a non-trivial choice behind a principled grammatical alternative. P *continuity* or convexity is key to guarantee proper inclusion of all relevant points in the perspectival interval and proper exclusion under negation.

5. Temporal uses

The question now remains as to how the present analysis can capture the progressive use of *hasta* as a time frame adverbial. Here, we contend that a perspectival approach could equally accommodate those cases where *hasta* is progressively used to locate eventualities in time relative to the perception of the speaker. This approach remains compatible with the standard account of canonical constructions yielding an inchoative reading out of nondurative verbs, also matching the perspectival semantic flavor behind locative uses analyzed above.

VSS allows for an account of those constructions where the predicative relation has been often argued to work the other way around – i.e., in apparent left-boundary (inchoative) uses. Such an approach seems not only counterintuitive: it also violates the basic premise that the ordering relation is defined following the denotational (lexicalized) properties of the P involved. Instead, *hasta* use with punctual verbs in CAM is naturally captured by the present analysis without assuming multiple entries, redefinitions, or lexical P ambiguity. On a perspectival approach, the directional boundary P would be still placing a locative condition on the final part of the relevant (perspectival) interval, centrally preserving the ‘at-the-end-of’ meaning that characterizes it (cf. 25 above), now used to locate objects (happenings) in temporal space.²⁰

The motivation comes from canonical constructions showing similar semantic implications. Above we have seen that predications combining nondurative verbs with telic adverbials are explained in Spanish grammars based on the presence of an abstract interval with an endpoint marking the onset of the eventuality described by the verb, analyzed as a *preparatory phase* (Brucart 2012: 23, cf. 4 above). Even if we are not necessarily dealing with resultative predications here, the presence of an abstract path is nonetheless compatible with our notion of abstract interval or fictive path (the dotted line in 32 above) at the end of which the object is located. Applied to temporal coordinates, the perspectival use immediately captures the *waiting time* flavor reported by Méndez (2003) and Lope Blanch (1993) *i.a.*

Here, by taking a geometrical VSS approach we incorporate the cognitive component (Zwarts & Winter 2000 *i.a.*) involved in this semantic result. We know that the perspective system (in ways relevant to natural languages) includes *perspectival distance*: a schematic category defined by a perspective point's spatial (or temporal) positioning within a larger frame and its distance away from the reference (Talmy 2003). Our intuition is that *hasta* is progressively used to mark the endpoint of some abstract interval with a maximum value set at the point where an eventuality sits. An abstract interval would be coherently involved in the delivery of an apparent inceptive interpretation in otherwise unexpected contexts, facilitating composition with a P that

²⁰ See Winter (2001, 2006) and the specific discussion on Spanish in M. Rasia (2021).

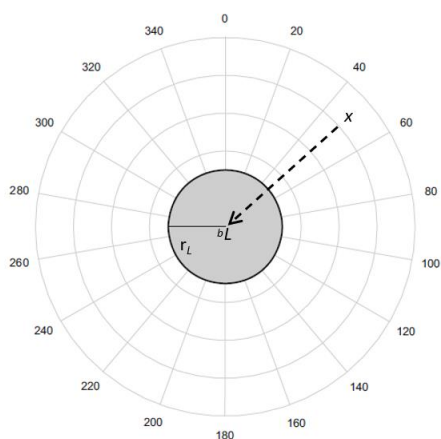
by definition requires a path structure or interval to bound, especially with verb classes that do not provide one (i.e., stative and punctual classes).²¹

Thus, the solution comes from intersecting the P's traditional definition (*a terminus on time, places, or quantities*, Real academia Española 2020 [DRAE]), with analyses integrating abstract paths and relative or perspectival frames of reference on which both traditional (e.g. Brucart's 2012) proposals and general approaches on directional Ps like the EPC draw. Hence, *hasta* would be equally used here to define a right boundary on an abstract path ending at the landmark, now instantiated by a temporal reference location. That the P imposes a telic (right boundary) condition on a perspectival path is crucial to explain two key facts: the eventuality is not interpreted as having a duration,²² and P is not computed in relation to the interval described by the verb, but to a prefix interval ending at the reference time introduced by the landmark, locating the happening named by the verb relative to the conceptual space $S(L)$. Whereas the first claim accounts for the absence of a semelfactive reading (recall the discussion in Section **Error! Reference source not found.**), the latter captures the idea of a *preparatory phase* in comparable canonical constructions. Thus, intuitively speaking, in cases like (36) *hasta* would be marking the endpoint of this waiting time at the end of which the happening (classes starting) is situated.

- (36) *Las clases empiezan hasta el día 3 de septiembre.*
 the classes start until the day 3 of September
 'Classes start by September, 3rd.'

Now, recall the representation in 0 above, but with (36) modeled as 0.

(37)



Here, a happening b is situated in a temporal region that contains its position. A fictive path, defined by the observer and directed towards the landmark, creates the relevant interval, assuming that abstract spatial paths apply just as well to temporal representations. This *perspectival* interval, as an eligible frame of reference for

²¹ In the sense of extended in time, but not in a dynamic reading.

²² Assuming that an achievement can be placed within a temporal stretch, but it cannot occur over or throughout a temporal stretch (Piñon 1997).

directional/projective Ps, would also have a starting $I[0]$ point defined by the relative position of x , and an endpoint $I[1]$ at L (September 3rd in this case).

r_L defines a region (a neighborhood) for q . The condition that $r(I(0)) > r_L$ and $r(I(1))=0$ produces an area originating at landmark in which the object (the happening) is situated. This marks the *origo* of $S(L)$, which in turn defines the orientation and the origin of relevant vectors. If a measure phrase is provided, r_L would instantiate the limit of this conceptual space. Otherwise, its value remains open – to conceptually-acceptable extents – under the condition that the object’s location (q) is included in it, conforming to convexity.²³

$$(38) S(L) \subset q \rightarrow r_q \leq r_L$$

Having the *origo* set at L (cf. **Error! Reference source not found.** above) explains why the starting point for adverbial modification is calculated based on the P-introduced reference. In a construction like *Las clases abren hasta el 3 en adelante* ‘Classes open [from] 3rd onwards’, the vectors on which the adverbial operates find their *origo* at L , while their endpoints (when a value is assigned) define the radius of the space in which the happening or eventuality is contained.²⁴ Given convexity, this means that the object’s location can fall at any point in the area that extends from the *origo onwards*, assigning the object or happening an estimated location in space/time or *Eigenspace*.²⁵ Consider (39).

- (39) a. *Hasta ahora logré desocuparme.*
 Until now achieved.1S free.me
 ‘Just now I got free/managed to get free.’
 b. *Hasta ahora pude entenderte.*
 until now could.PRF.1S understand.you
 ‘Only now I get to understand you.’

Here, we have two punctual predicates with an apparent inchoative reading – the establishment of a result state (being free/understanding). These constructions resemble more closely those analyzed in canonical Spanish grammars as involving an abstract preliminary interval ending at the verb-denoted happening, reinforced in the present cases by the sense of ‘struggle’ at the end of which the happening described by the verb (free, understand) occurs. This interval or preliminary phase is construed exactly as a fictive perspectival path. Also here, P imposes an ordering on all

²³ Not vague or undefined, but rather as an open value determined in each specific circumstance.

²⁴ Polar representation allows us to model regions in $S(L)$ with coordinates by expressing the radius of a point or angles (*azimuth/polar* angles).

²⁵ What is measured is the location of the happening as a whole, situated from a perspectival distance, i.e., how far it goes from the relevant reference set by L in its capacity as *origo*. Because the boundary does not apply to the verb-described event, the interpretation does not amount, quite crucially, to a (start) event repeating onwards up to the limit set by r_L – i.e., that the lessons will keep starting from the day 3rd onwards (semelfactive repair). By assigning this location a radius, we do not imply that there is an interval over which a repetitive/semelfactive predication spans, but rather one that allows to estimate to what extent q is distant from L .

intermediate points $i(I)$ in the interval as well as a locative condition (at-the-end-of) binding it.

Above, we argued that major differences in the use of directional Ps follow from the fact that location can be estimated based either on absolute or intrinsic properties of the conceptual space, or else on the relative position of an observer, producing important differences in how location is represented and expressed in natural languages (Herskovits 1986).²⁶ Systematic availability of the egocentric or perspectival representation, where P operates on an interval preceding the object (the happening described by the verb), would explain the alternative reading and potential ambiguity arising in constructions like (39b) for progressive speakers. Given the option between reference frames for directional Ps, it seems natural that progressive speakers compute (39b) on a fictive path representation, as the gloss suggests, while speakers of canonical varieties preserve instead a (nonetheless odd) reading where P sets its locative condition on the interval defined by verb-mediated predication, producing the allocentric option amenable to ‘Until now I could understand you’. Thus, even if allocentric vs. egocentric representation is a general cognitive function, applicability on *hasta* for spatiotemporal location would arise as main point of linguistic variation in this respect.

This being a *fictive* interval (and not a proper subpart of the event described by the verb), however, does not mean that it is grammatically irrelevant. In fact, it explains why adverbial modification scope over it, setting aside the fact that its presence is empirically required based on the denotational properties of *hasta*, as repeatedly discussed above. That the punctual verb *lograr* ‘achieve, attain’ is interpreted as part of a result state predication rather than an iterative one (as seen in varieties where progressive *hasta* is not available) is also dependent on the existence of this path leading to the reference point introduced by *L*. The same holds for *pude* in (39), resisting the iterative reading, for the reasons just discussed.

A fictive or perspectival path also accounts for adverbial combinations disallowed in canonical Spanish syntax. In (40), an abstract interval accommodates the right-boundary semantics that characterizes *hasta* (8 above), along with otherwise (canonically) unexpected adverbials clearly indicative of this waiting time component like *recién*.

- (40) a. *Ugarte dijo que le extraña que hasta ahora recién surjan estas denuncias.*
 Ugarte said that DAT puzzles that until now just emerge.SBJ.3P these reports
 ‘Ugarte said that it puzzles him that these reports come out just now.’
- b. *Hasta ahora recién puedo compararme una buena computadora.*
 until now just can buy a good computer
 ‘Finally, now I can get a good PC.’

²⁶ Concerning cognitive differences reported in speakers making use of different reference frame systems. Cf. Zwarts (2017) *i.a.*

- c. *Es por esta razón que hasta ahora recién me doy cuenta del problema.*
 is for this reason that until now just me.DAT give account of.the
problema.
 problem
 ‘It is for this reason that just now I see the problem.’

Such data are particularly important since they cannot be explained by the elided negation hypothesis. Setting aside the problem of *recién* ‘just now’ which is incompatible with negation, in (39), adding a negative operator yields the opposite meaning: *hasta ahora [no] pude entender/desocuparme* ‘until now I didn’t manage to understand/get free’ and fails to produce the resultative state (=being free/able to understand) that naturally obtains with the progressive use of *hasta*, let alone the distal waiting time entailment. Even if the additional operator (*sino*) is added, the result is quite different again (cf. *Hasta ahora [no] pude [sino] entenderte* ‘Until now, I could do nothing but understand you’). In (40a), an additional problem arises: the use of the subjunctive, unexpected in nonprogressive varieties, is perfectly natural in the progressive construction, especially in combination with the adverb *recién* ‘just now’. Cases like b and c in (40) would also yield completely different constructions under the traditionally proposed repair strategy (notably, 40b would read ‘Until now [to this day] I cannot buy a good PC’).

On the present account, the productive combination of this directional P with punctual verbs to locate a conceptual object (a happening) in a temporal space, just as it locates objects in topographic uses, seems natural. A fictive path would thus not only capture occurrences that escape traditional analytic proposals, but it would also accommodate examples like (41), along with canonical constructions receiving similar treatment, under a unified, systematic, and more comprehensive analysis.

- (41) *Hasta ahora tuve tiempo de escribirte /logré salir.*
 Until now had.1S time of write.DAT achieved.1S exit
 ‘Just now I got free/managed to go out.’

6. Conclusion

We develop an account for a well-known empirical problem based on a general crosslanguage condition on directional Ps. Applied to stative locations, the *EndPoint Condition* (Cresswell 1978) supports our proposal that *hasta* can be associated with a predication visibly distinct from the one yielded by locative Ps in similar contexts, while benefitting from its directional nature to different but coherent results. The distinct semantics of these predications, when related to perspectival location, becomes (i) amenable to the additional variable introduced by adverbials like *from here* in prototypical examples illustrating this condition; (ii) extendable to temporal (equally perspectival) uses; (iii) consistent with intuitions offered in early literature on Spanish; (iv) directly compatible with the asymmetric distribution of verbs and adverbs in progressive uses and extensive data not captured by other accounts.

In doing this, we take seriously the premise that directional/projective prepositions express directions on an interval or axis that can be either defined by inherent properties of the ground (allocentric view) or by the relative position of an

observer (egocentric view). This idea strictly agrees with widely-embraced Talmian considerations on the possibility to cognize the scene as if from a stationary distal perspective point. From here, an argumentation couched on the EPC follows. We submit that in IS and CAM the use of *hasta* is systematically accommodated by a birelational function AT-END-OF, whereby P imposes a distinct locative condition (right boundary) on a path (interval), preserving its standard definition (Jackendoff 1990, *i.a.*). The idea is that progressive varieties allow for the possibility that the locative condition (right boundary on a projective path) be placed on abstract, perspectival intervals extending from an relatively-defined vantage point. This projective interval would have its endpoint at the landmark (the P-introduced reference), which in turn serves as *origo* of a conceptual space relative to which the object (trajector) is located. In formal terms, the reference is situated from a perspectival point, defined as x , out of the conceptual space of the landmark ($S(L)$) that establishes the initial (zero-point) of the perspectival interval, from which the grammatically visible *from here* flavor obtains. Polar coordinates efficiently capture the need for a convex hull such that all the intermediate points are correctly contained in a proper inclusion relation – and properly excluded from the relevant interval under negation.

That progressive varieties (even in other languages) could exploit existent birelational elements like prepositions in innovative uses packing new information like perspectival situation, simply by applying P denotation to different components of the predication (namely, an abstract path), is a possibility worth focusing on, especially with a view to considering how languages can become more efficient in coding and constructing meaning.

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