

# Different kinds of *since*-adverbials

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## Abstract

In this paper, I try to provide a first step towards a minimal typology of *since*-adverbials in English, Spanish, German and French. A single base meaning will be presented, from which all others uses should be derived. The notion of “path” (cf. Krifka, 1998) will be presented as crucially necessary for the characterization of the behaviour of *since*-adverbials.

## 1 Introduction

In English, *since* is restricted to localizing temporal expressions (*yesterday*) or event descriptions (*World War II*). It is incompatible with durational (or ‘quantified’) temporal expressions (*two days*). In the latter case, one must use *for*:

- (1) a. John has been in Boston since yesterday.
- b. John has been in Boston since his father died.
- c. \*John has been in Boston since two days.
- d. John has been in Boston for (the last) two days.

Thus, characterized in an informal way, *since* takes a localizing temporal expression that gives the left boundary of an interval that reaches up to the moment of speech (in the case of a Present Perfect Tense in the main clause).

German *seit* does not display a restriction of the sort exposed in (1); it can be combined with localizing and durational temporal expressions, as well as with event descriptions.

- (2) a. Hans ist seit gestern in Boston.  
     H. is since yesterday in Boston.
- b. Hans ist seit zwei Tagen in Boston.  
     H. is since two days in Boston.
- c. Hans ist seit dem Tod seines Vaters in Boston.  
     H. is since the death of his father in Boston.

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As one can see, in German, one uses the simple Present Tense for the verb in the main clause rather than a Present Perfect Tense. I will not be concerned with this.

In what will follow, I will try to establish a minimal typology of such *since*-adverbials in English, German, French, and Spanish, and show that there are several parameters along which they diverge. The uses and distinctions go roughly along the following lines:

1. All *since*-adverbials can take a localizing temporal expression and transform it into an interval. The left boundary of that interval is given by the interval or point denoted by the localizing temporal expression. This seems to be the core meaning.
2. German *seit* and French *depuis* are able to take a quantified temporal expression as its complement, that measures out the length of the interval. English *since* and Spanish *desde* aren't able to do this.
3. In French and Spanish, the *since*-adverbial can denote an interval located in the future, and this without a (con-)textually fixed future denoting temporal reference point. In German and English, this is not possible.
4. In French and Spanish, one can limit the *since*-interval with an expression giving the right boundary of the interval. In German and English, this is not possible.
5. In French and Spanish, the *since*-adverbial admits spatial uses that cannot be accounted for with a time-space homomorphism based on event semantics. In German and English, this is not possible.

Finally, I will propose that all those uses can be analyzed by the notion of 'adjacency structure' or 'path', as proposed by Krifka (1998). Informally speaking, a path has several properties that can be shown to hold of the denotation of the *since*-interval (or the '*since*-path'): firstly, its members are connected and ordered in a certain way; and secondly, a path does not contain any 'holes'.<sup>1</sup>

## 2 *Since*-adverbials and time

The first function (and possibly the only one) one associates with *since*-adverbials is the temporal use. If we see time as a directed line from left (the past) to right (the future), *since* *X* gives us an interval that starts with *X*, the complement of *since*, and lasts up to some point of reference *R*. The location of *R* is given by tense, and further specified by temporal adverbials or contextual inference.<sup>2</sup>

As we will see, there is however another, closely related, and non-temporal, use of some *since*-adverbials.

### 2.1 Durational and localizing expressions

A first variation between *since*-adverbials in the languages we are looking at may be seen in the acceptability of durational adverbs as complements of the *since*-adverbial. English *since* doesn't admit them, German *seit* does. French *depuis* shows exactly the same pattern as *seit* with respect to this parameter:

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<sup>1</sup>For a formal definition, cf. (24), on page 8.

<sup>2</sup>In what follows, I will mainly be concerned with cases where *R* = time of utterance (TU) and neglect cases where *R* precedes TU or where *R* follows TU.

- (3) a. Jean est à Paris depuis hier.  
       J. is in Paris since yesterday.  
       b. Jean est à Paris depuis deux jours.  
       J. is in Paris since two days.  
       c. Jean est à Paris depuis la mort de son père.  
       J. is in Paris since the death of his father.

Spanish *desde* seems to follow the pattern of English *since*; it is incompatible with durational adverbials:

- (4) a. La conoce desde ayer.  
       Her knows since yesterday.  
       (S)He knows her since yesterday.  
       b. La conoce desde la muerte de su padre.  
       Her knows since the death of his/her father.  
       c. \*La conoce desde un año.  
       Her knows since a year.

However, *desde* can be combined with *hace* (literally: ‘makes’, ~ ‘ago’), and can form a syntactic structure of the type [*desde* [*hace* ...]] (cf. the analysis given below). *Desde hace* admits only durational adverbials as its complement:

- (5) a. \*La conoce desde hace ayer.  
       Her knows since ago yesterday.  
       b. \*La conoce desde hace la muerte de su padre.  
       Her knows since ago the death of his/her father.  
       c. La conoce desde hace un año.  
       Her knows since ago one year.

*Hace* can be used with the simple Past Tense of Spanish to deictically (or anaphorically) localize an event in the past of some point of reference *R*:

- (6) La conoció hace un año.  
       Her knew ago one year.  
       (S)He made her acquaintance one year ago.

One can see the interaction of *hace* and *since* as some kind of shifting operation: *hace* takes a durational expression and transforms it into a localizing expression; *desde* takes a localizing expression and transforms it into a durational expression (an interval).

Therefore, I propose the following, uniform base meaning for *since*-adverbials:<sup>3</sup>

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<sup>3</sup>The exact semantics of *since* will crucially depend on the semantics for tense and aspect one assumes. If someone wants to adopt an Extended-Now framework for the Perfect (as does, e.g., von Stechow (2002)), (s)he will probably get a considerably ‘lighter’ semantics for *since*, lacking the ‘right-boundary’ conditions. However, I chose here to attribute information possibly relevant to the interpretation of *since* directly to the lexical entry of the adverbial itself, rather than making it depend on other points in the tense-aspect system, or on an interaction between *since* and other constituents.

- (7)  $\llbracket \text{since} \rrbracket = \lambda p \lambda q \lambda i \exists i' \exists i'' [i \subseteq i' \wedge \text{LB}(i') = i'' \wedge \text{RB}(i') = i \wedge p(i'') \wedge q(i'')]$   
 where  $p, q$  are propositional variables;  $i, i'$  stand for intervals, more specifically: here,  $i''$  will be the denotation of the localizing temporal expression, and  $i$  the “reference time” of the sentence; “ $\text{LB}(x) = y$ ” means that  $y$  is the left boundary of  $x$ , and “ $\text{RB}(x) = y$ ” means that  $y$  is the right boundary of  $x$ .

*Since* will take as first argument a localizing temporal expression, like *yesterday* (represented as  $\lambda i [i \subseteq \text{yesterday}]$ ), and as second argument, the input of the Aspect-Phrase or of the Perfect-Phrase (I assume a tense-aspect semantics in the style of Pancheva (2003)). The right boundary of the *since*-interval will come from the interval introduced by *Tense*.

The semantics of *hace* (or the covert ‘ago’-operator), and that of the durative adverbial expression appearing as its argument are the following:<sup>4</sup>

- (8) a.  $\llbracket \text{hace} \rrbracket = \lambda p \lambda i \exists i''' [\text{LB}(i''') = i \wedge \text{RB}(i''') = n \wedge p(i''')]$   
 where  $n$  is the moment of utterance.  
 b.  $\llbracket 10 \text{ minutes} \rrbracket = \lambda i. [H(i) = 10 \text{ minutes}]$   
 where  $H$  is a measure function, as defined in Krifka (1998), which measures the length of its argument.

I leave it to the reader to check that  $[\text{desde} [\text{hace } 10 \text{ minutes}]]$  is well-formed and gives us the correct result, displayed in (9a). The result of the combination between a ‘simple’ *since* and a localizing temporal expression is shown in (9b).

- (9) a.  $\llbracket \text{desde hace } 10 \text{ minutes} \rrbracket = \lambda q \lambda i \exists i' \exists i'' \exists i''' [i \subseteq i' \wedge \text{LB}(i') = i'' \wedge \text{RB}(i') = i \wedge \text{LB}(i''') = i'' \wedge \text{RB}(i''') = n \wedge H(i''') = 10 \text{ minutes}]$   
 b.  $\llbracket \text{since yesterday} \rrbracket = \lambda q \lambda i \exists i' \exists i'' [i \subseteq i' \wedge \text{LB}(i') = i'' \wedge \text{RB}(i') = i \wedge i'' \subseteq \text{yesterday}]$

(9a) may look rather complicated; but note that in the end, after having added *Tense*, the intervals  $i'$  and  $i'''$  will have identical boundaries and will thus come out to be identical.

So, I do not simply assume *desde* to have such a representation, I generalize this to *seit* and *depuis*, which are thus assumed to be ambiguous between (7) — which is sufficient whenever the complement of these *since*-adverbials is a localizing expression — and a second representation,  $[\text{seit} [\text{‘ago’ durative}]]$ , where the covert ‘ago’-operator changes the durative expression into a localizing one.

I suppose that allowing for such a covert operator or not is a (lexical) idiosyncrasy of the *since*-adverbial in a given language.

## 2.2 Two-sided delimiters

In what we have seen so far, the right boundary of the *since*-interval was given by the interval introduced by *Tense*, and may have been further specified by contextually available information (if we are in the Past or Future).

In English and in German, it is not possible to have a right boundary for the *since*-interval that is given explicitly by a temporal adverbial:

<sup>4</sup>*Hace* is a tensed verb. I have to assume slightly different representations for the operator if the right boundary  $i$  of the interval is not the moment of utterance.

- (10) a. \*John has been in Boston since Friday until Monday.  
 b. \*Hans ist seit Freitag bis Montag in Boston (gewesen).<sup>5</sup>  
 H. is since Friday till Monday in Boston (been).

The problem is not only that *Monday* seems to get interpreted as *last Monday*. Even with an explicit marking that the Monday in question is the Monday to come, the sentence remains at least very strange:

- (11) ??/\*Hans ist seit Freitag bis nächsten Montag in Boston.  
 H. is since Friday until next Monday in Boston.

However, if one coordinates the *since*- with the *until*-phrase, the result is perfectly grammatical:

- (12) Hans ist seit Freitag und bis nächsten Montag in Boston.  
 H. is since Friday and until next Monday in Boston.

Note that this kind of coordination doesn't change the acceptability of the sentence if the right-delimiting expression precedes TU: the *since*-interval has to stretch up to the point of reference:

- (13) \*Hans ist seit Freitag und bis letzten Montag in Boston.  
 H. is since Friday and until next Monday in Boston.

In Spanish, and, to a somewhat lesser degree, in French,<sup>6</sup> one can combine introduce a right-side boundary to the *since*-interval, even if the right-side delimiter denotes a past moment:

- (14) a. Pepe estuvo<sub>PS</sub> en París desde Navidad hasta el verano.<sup>7</sup>  
 Pepe was in Paris since Christmas till the summer.  
*Pepe has been in Paris from Christmas to the summer.*  
 b. Le CHAN conserve et communique les archives de la France depuis  
 The CHAN conserves and provides the archives of the France since  
 les Mérovingiens jusqu' en 1958.  
 the Merovingians till in 1958.  
*The CHAN conserves and communicates the archives of France from the time of the Merovingians up to 1958.*

However, it is impossible to combine *desde hace*, which takes a durational temporal expression, and combine it with a rightward closing expression. According to García Fernández (1999, p. 3196), the event in the main clause must stretch up at least to the contextual point of reference, and may not conclude earlier in this case:

- (15) a. \*Pepe trabajaba en la tesis desde hacía dos años hasta el día  
 Pepe worked<sub>IMP</sub> in the thesis since ago two years until the day  
 anterior.<sup>8</sup>  
 before.

<sup>5</sup>Example (10b) is equally bad with the Present Tense or the Present Perfect Tense, or even the Simple Past Tense.

<sup>6</sup>The French native speakers I asked all preferred another construction and found the *since – until* construction literary.

<sup>7</sup>The *PS* marks the Simple Past Tense of Spanish, which is perfective. Example from García Fernández (1999), p. 3196.

<sup>8</sup>The *IMP* marks the *Imperfecto*, which has been characterized as an imperfective tense. All examples in (15) from García Fernández (1999), p. 3196.

- b. \*Vivió con su hermana desde hace tres años hasta hace dos años.  
 Lived<sub>PS</sub> with his/her sister since ago three years until ago two years.
- c. Vivió con su hermana desde la muerte de su marido hasta hace  
 Lived<sub>PS</sub> with his/her sister since the death of her husband until ago  
 dos semanas.  
 two weeks.  
*She lived with his/her sister from the death of her husband up to two weeks ago.*

If the agrammaticality of (15a) were simply a question of non-matching aspect, i.e., that the *Imperfecto* does not admit explicit delimiting temporal expressions, (15b) should be fine; the perfective Simple Past certainly does admit such delimiters. However, (15b) is not grammatical. (15c), which differs from (15b) in that it has an eventuality description as complement of *desde* instead of having a quantified expression as complement of *desde hace*, shows that it is indeed the presence of *desde hace* + *quantified expression* that made (15a) ungrammatical.

### 2.3 Future Reference

In German and English, *since*-adverbials are restricted to the past, that is, the *since*-adverbial may not take a future denoting localizing expression, unless there is a (con-)textually salient future reference point which may form the right boundary of the *since*-interval (cf. (16cd)).

- (16) a. \*I will do sports since tomorrow.  
*(Intended meaning:) From tomorrow on, I will do sports.*
- b. \*Seit morgen rauche ich nicht mehr.  
 Since tomorrow smoke I not anymore.  
*(Intended meaning:) From tomorrow on, I won't smoke anymore.*
- c. ?Tomorrow at three o'clock, I will have been swimming since two o'clock.<sup>9</sup>
- d. Morgen um drei werde ich seit zwei Stunden schwimmen.  
 Tomorrow at three will I since two hours swim.

The difference between (16ab) and (16cd) is the following: in (16cd) we have established a future point of reference *R*, namely *tomorrow at three o'clock*, which is outside the scope of the *since*-adverbial, and gives us the right boundary of the *since*-interval. In (16ab), the future denoting temporal expression does not give us *R*, that is, the right boundary of the *since*-interval, but the left boundary of the *since*-interval. We have thus a starting point of the interval, but that interval has no upper bound in the future.

If we take a look at Spanish, examples of type (16ab) are perfectly grammatical:

- (17) Desde mañana será obligatorio el uso del casco.  
 Since tomorrow will be obligatory the use of the helmet.  
*From tomorrow on, the use of a helmet will be obligatory.*

In French, simple *depuis* cannot have future reference of type (16ab), just like in German and English:

<sup>9</sup>I suppose that the fact of this sentence being strange is rather due to pragmatics than to purely grammatical reasons.

- (18) \*Le port du casque sera obligatoire depuis demain.  
 The wearing of the helmet will be obligatory since tomorrow.

However, if one adds a right-delimiting expression, the resulting sentence is grammatical:

- (19) Octave sera absent depuis demain jusqu'à lundi soir.  
 Octave will be absent since tomorrow until Monday evening.

For English or German, this manipulation doesn't change anything:

- (20) a. \*John will be in Boston since tomorrow until Monday.  
 b. \*Hans wird seit morgen bis Montag in Boston sein.  
 Hans will since tomorrow until Monday in Boston be.

As already seen in (10), it is not possible to delimit the *since*-interval such that the right end-point is not *R*.

### 3 Spatial uses of *since*-adverbials

In English and German, the *since*-adverbial may be combined with expressions denoting spatial entities. However, this is quite restricted and may be derived from the temporal characteristics of the adverbial. Imagine for the examples in (21) a context where the speaker and John drive together from Strasbourg to Paris.

- (21) a. John hasn't said a word since Strasbourg.  
 b. \*John hasn't said a word since 100 miles.  
 c. Hans hat seit Strassburg kein Wort gesagt.  
 H. has since Strassburg no word said.  
 d. Hans hat seit 100 km kein Wort gesagt.  
 H. has since 100 km no word said.

(21) shows that this spatial use shares the restrictions of the *since*-adverbial on the type of the input (localizing vs. quantifying), and may thus straightforwardly be derived from some properties of Davidsonian event-arguments. Maienborn (to appear) argues that one of the ontological properties of Davidsonian arguments is to be able to get localized in space and time. In formal event-semantics, one has to assume a mapping from events to their running time – which is generally written  $\tau(e)$ . In the same way, one may take another homomorphism, from events to the space (or path) where they take place; one may write this function  $\sigma(e)$ , and conjoin it with  $\tau(e)$  to form an ordered pair  $\langle \tau(e), \sigma(e) \rangle$ .

In French and Spanish, additionally to this “parasitic” spatial use, there is a second spatial use of the *since*-adverbial, and which cannot be described by an event homomorphism.

- (22) a. La France s'étend depuis les Alpes jusqu'à l'Océan.<sup>10</sup>  
 The France extends since the Alps until at the Ocean.  
*France reaches from the Alps to the ocean.*

<sup>10</sup>Example from Grevisse & Goose (1993), § 1010.

- b. Desde Madrid hasta Aranjuez hay siete leguas.<sup>11</sup>  
 Since Madrid until Aranjuez there is seven leguas.  
*The way from Madrid to Aranjuez is seven leguas long.*

According to the criteria given by Maienborn (to appear), the states in (22) are KIMIAN states, that is, they are not accessible to direct perception and they are not located in space.<sup>12</sup> However, they may be localized in time. On grounds of this ontological difference, Maienborn argues that Kimian states should not be treated on a par with Davidsonian states. Ontology does not concern us further, but note that without a localizable argument, a homomorphism from events to paths and times will not work.

Correlated with those non-temporal spatial uses is the fact that in French and Spanish, one can also use *since-until* to indicate continuity on some contextually determined scale:

- (23) a. Ils sont tous contre moi, depuis le concièrege jusqu' au PDG!  
 They are all against me, since the janitor until at the CEO!  
 b. Desde el botones hasta el director general estaban de acuerdo en eso.<sup>13</sup>  
 Since the footboy until the director general were<sub>imp</sub> of agreement in this.  
*From the footboy up to the CEO, they all agreed on this.*

(22-23) have some important points in common: first of all, there has to be some sort of continuity in the spatial domain; scales by definition are continuous. For the temporal domain, this is something we have to assume anyway; the requirement for intervals to have no “holes” in them is captured by the label “convex time” (cf. Krifka, 1998).

For time, this comes from the way we conceptualize time, as a directed path leading from the past to the future. For spatial or other domains, this has to be imposed, because we may move freely in space, whereas we undergo movement in time passively.

In Krifka (1998, p. 203), such a structure is characterized by the relation of adjacency, formalized as in (24a), and the set of convex elements in that structure, formalized as in (24b):

- (24) a. Adjacency ( $\infty$ ):  
 i)  $\forall x, y [x \infty y \rightarrow \neg x \otimes y]$   
 If  $x$  is adjacent to  $y$ , then they do not overlap.  
 ii)  $\forall x, y [(x \infty y \wedge y \leq z) \rightarrow (x \infty z \vee x \otimes z)]$   
 If  $x$  is adjacent to  $y$  and  $y$  is a subpart of  $z$ , then either  $x$  will be adjacent to  $z$  or  $x$  will overlap  $z$ .  
 b. The set of convex elements is the maximal set such that  
 $\forall x, y, z [(y, z \leq x \wedge \neg y \otimes z \wedge \neg y \infty z) \rightarrow \exists u [u \leq x \wedge u \infty y \wedge u \infty z]]$   
 All convex elements that are neither overlapping or adjacent are connected by a convex element.

It is clear that the way from Madrid to Aranjuez has such a property; the set of employees of a company can be structured in such a way.

It seems thus that the minimal condition on the interval or path, that is denoted by the argument of the *since*-adverbial, is that it satisfy adjacency and be convex.

<sup>11</sup>Example from de Bruyne (1999), p. 668.

<sup>12</sup>To test this, imagine (22ab) embedded under a perception verb: “*I have seen (22ab)*”. Or take them with a spatial localizer: cf. “*(22ab) in Paris/Spain*”.

<sup>13</sup>Example taken from Pavón Lucero (1999), p. 596.



## 4 Conclusion and Perspectives

Adjacency and convexity cannot, however, be the only structural requirements on the interval or path; otherwise, one would not see why languages differ from each other.

A first parametrical difference may be seen in the fact that English and German do not allow for purely spatial paths, where there isn't any homomorphism from some kind of temporal interval or path.

From our conception of time as a directed path, in the temporal domain, it is obvious that the notion of 'path' should always apply when talking about an interval. In the spatial domain, however, if one has got only one point, one doesn't readily get a path: in order to get a path, one needs at least two points. Nevertheless, in some circumstances, one may get some contextually obvious path for the spatial domain, that is, a path that is entirely predictable by our knowledge of the world or pragmatic inferences of other kinds. The inferability of such a path seems indeed to play a role in determining the acceptability of *depuis* in some contexts:

- (25) a. ??/\*Il est parti depuis le balcon.<sup>14</sup>  
He is left since the balcony.  
*He left from the balcony.*
- b. ?Il a chuté depuis le balcon.  
He has fallen since the balcony.  
*He fell from the balcony.*

If somebody leaves from the balcony, he may go at any place he likes; there is usually no way to predict the path he might take. However, if one falls from the balcony, there is one default path that is easily inferable.

It would be tempting to try to develop an explanation which would unify the fact that English and German do not allow the *since*-interval to be arbitrarily rightwards delimited, and the fact that in those languages, one may not have any properly spatial uses of the *since*-adverbial. I doubt, however, that this can and should be done. If for German and English, the notion of 'reference point' could be generalized to spatial points, too, one would expect there to be uses of the *since*-adverbial where the spatial path is contextually determined. But as far as I can see, such uses do not exist:

- (26) a. \*He left since the balcony.  
b. \*He fell since the balcony.  
c. \*Er ist seit dem Balkon (weg-)gegangen.  
He is since the balcony (away-)gone.  
d. \*Er ist seit dem Balkon gefallen.  
He is since the balcony fallen.

This is a clear argument in favour of the hypothesis that English and German *since*-intervals share an idiosyncratic and non-derivable restriction on temporal paths (and paths for which a homomorphism to the temporal domain can be established), which the French and Spanish *since*-adverbials lack.

<sup>14</sup>At least for some speakers, agentivity or control over the path to be followed seems to play a certain role, too: For Anne Zribi-Hertz, for instance, (25a) is acceptable if somebody left the balcony with a rocket; (25b) is acceptable if somebody jumped with a parachute. According to her judgement, a baby fallen from the balcony does not qualify as felicitous context for (25b).

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