

A prepositional cycle in French*

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Abstract This paper discusses the morphosyntax and semantics of locative prepositions in French, with a particular focus on the prefix *de-* in complex prepositions (e.g., *en dessous de* [in from.under of] ‘below’) and in axial nominalizations (e.g. *le dessous de* [the from.under of] ‘the bottom part/region of’). We propose that in these formations, *de-*, which developed historically from an ablative marker, retains a Path (Source) semantics and lexicalizes the function PROJECT, which defines the region outward from the axial part of an object (Matushansky & Zwarts, 2019). We support our analysis with a corpus study on French child data showing that children acquiring L1 French tend to overuse *de-* in transitive contexts, overtly expressing conceptual structure that is typically implicit in the standard adult language, but replicating patterns present in Old and Medieval French.

Keywords: locative prepositions, ablative-locative transfer, axial nominalizations, child French

1 Introduction

1.1 French locative prepositions and the ablative-locative transfer

Like many other languages, French has morphologically simple and complex locative prepositions (Ruwet 1982, Zribi-Hertz 1984, Borillo 2001, Roy & Svenonius 2009). As shown in Table 1, many of these locative prepositions contain the prefix *de-*, which has been claimed to be an ablative Source (Path) preposition in previous stages of French.

In this paper, we provide evidence for the idea that *de-* remains an ablative marker in locative formations in modern French. Ablative markers have been co-opted in

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Simple P	de-prefixed P	multi-word P
Transitive	Intransitive (standard Fr.)	Transitive
<i>en, dans</i>	<i>dedans</i>	<i>au/en dedans de</i>
in, from.in 'in'	from.from.in 'inside'	at.the/in from.from.in of 'at/in the inside of'
<i>sur</i>	<i>dessus</i>	<i>au/en/sur le dessus de</i>
on 'on'	from.on 'above'	at.the/in/on from.on of 'at the/in/on (the) top of'
<i>sous</i>	<i>dessous</i>	<i>en/au/sur le dessous de</i>
under 'under'	from.under 'below'	in/at.the/on the from.under of 'in/at the/on the bottom of'
—	<i>derrière</i>	<i>au derrière de</i>
	from.back [also transitive] 'behind'	at.the from.back of 'at the backside of'
—	<i>devant</i>	<i>au devant de</i>
	from.front [also transitive] 'in front, ahead'	at.the from.front of 'in front of, ahead of'
<i>hors</i> (archaic)	<i>dehors</i>	<i>en/au dehors de, hors de</i>
out 'out'	from.out outside	in/at.the from.out of, out of 'in/at the outside of, out of'

Table 1 Simple, *de*-prefixed and multi-word locative prepositions in French

locative prepositions in many other languages; this is known as ‘ablative-locative’ transfer (Mackenzie 1978, Nikitina 2017 a.o.).¹ Further examples of locative prepositions with an ablative morpheme in their morphosyntactic make-up are given in (1).

- (1) a. *in.tus* (in.ABL) ‘in’, *de.super* (ABL.above) ‘above’ (classical Latin)
 b. *d.entro* ‘ABL.in’ (Spanish, Italian)
 c. *mi.taxat* (ABL.under) ‘under’ (Hebrew)

The addition of an ablative (Path) form in preposition with a locative meaning can in fact take place iteratively in the same language (MacKenzie 1978, Nikitina 2017). The diachronic development of French *dedans* ‘inside’ from Classical Latin

¹ The presence of a Path morpheme in locative prepositions may at first sight be surprising, since it is at odds with the locative semantics of the complex prepositions at hand (cf. the ‘locative ablative dichotomy’ in Anderson’s 1971 theory of case). As Nikitina (2017) observes, there are much fewer locative prepositions with an allative (Goal) morpheme, which is rather surprising given the frequent syncretism across languages between locative and allative prepositions (see, e.g., *à* ‘at/to’ in French).

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intus ‘inside’ is a good example of such iterative patterns, as shown in (3) (ablative morphemes are put in bold font); see Rainsford (2019), Amiot et al. (2020: 876), and Troberg (2021) on the diachrony of *de*-prefixed prepositions.²

- (3)
- | | | |
|----|--|---|
| a. | <i>in.tus</i> ‘from inside’ | (source meaning, classical Latin) |
| b. | <i>in.tus</i> ‘inside’ | (locative meaning, classical Latin) |
| c. | de . <i>intus</i> ‘from inside’ | (source meaning, vulgar Latin) |
| d. | d . <i>en.z</i> ‘inside’ | (locative meaning, Old/Medieval French) |
| e. | de.d . <i>en.z</i> ‘from inside’ | (source meaning, Old/Medieval French) |
| f. | de.d . <i>en.z</i> ‘inside’ | (locative meaning, Old French) |
| g. | d . <i>an.s</i> ‘inside’ | (locative meaning, Modern French) |
| h. | de.d . <i>an.s</i> ‘inside’ | (locative meaning, Modern French) |
| i. | de de.d . <i>an.s</i> ‘from inside’ | (source meaning, Modern French) |

1.2 Syntactic properties of *de*-prefixed formations in French

Among the languages showing the ablative-locative transfer, French exhibits two interesting properties. The first, illustrated in (4)-(5), is that for all prepositional doublets that alternate between a simple preposition and a *de*-prefixed counterpart (e.g., *dans* ‘in’ and *dedans* ‘inside’), the variant without *de*- is strictly transitive (it needs an overt complement), while the variant with *de*- is strictly intransitive in standard French.

(4) Strictly transitive prepositions

- a. *dans* *(*le vase*)
in the vase

² The difference between what we call the source and the locative meaning in (3) is particularly visible in the context of path verbs that require a Source complement, like *sortir* ‘go out’. In Modern French, since the preposition *de* ‘from’ in *dedans* ‘inside’ has lost its source meaning, *dedans* must be preceded by *de* ‘from’ in order to be used as the Source phrase required by the verb *sortir* in (2).

- (2)
- | | |
|----|---|
| a. | <i>Il était dans la boîte et est sorti de dedans.</i>
it was inside the box and is exited from inside
‘It was in the box and came out from inside.’ |
| b. | * <i>Il était dans la boîte et est sorti dedans.</i>
it was inside the box and is exited inside
Intended: ‘It was in the box and came out from inside.’ |

- b. *sur* *(*la table*)
on the table
- c. *sous* *(*la table*)
under the table

(5) Strictly intransitive prepositions

- a. *Il est dedans* (%*le vase*).
it is from.in the vase
- b. *Elle est dessus* (%*l'armoire*).
it is from.top the cupboard
- c. *c'est dessous* (%*le lit*).
it is from.bottom the bed

In regional, colloquial or archaic varieties, however, these *de*-prefixed locative Ps with an overt complement have been reported (Frei 1929, Hagège 1997: 23, Ruwet 1982, Zribi-Hertz 1986: 601, Abeillé & Godard 2021: 792), as illustrated in (6); the symbol ‘%’ indicates availability in non-standard variants, following the convention adopted in Abeillé & Godard (2021).

- (6) a. %*Ils sont cachés dessous les ailes.* (non-standard variant)
they are hidden from.bottom the wings
‘They are hidden underneath the wings.’
- b. *Ils sont cachés sous les ailes.* (standard variant)
they are hidden bottom the wings
‘They are hidden under the wings.’

In child French, a similar non-target transitive use of these *de*-prefixed Ps has been reported. As illustrated in (7), learners of L1 French, also occasionally use *de*-prefixed locative Ps that are strictly intransitive in standard French with an overt direct complement (Pallaud & Savelli 2001).

- (7) *je veux pas laver dedans la cuvette.*
I want not wash from.in the basin
‘I don’t want to wash in the basin.’

(Madeleine, 2;09, Paris Corpus, CHILDES)

The Source preposition overused by the child and in non-standard French varieties is also found in the morphological make-up of transitive locative Ps in earlier

developmental stages of the language (Rainsford 2019, Amiot et al. 2020, Troberg 2021), as shown in (8) below. French children, then, appear to be returning to a prior stage of a sort of prepositional cycle. In this perspective, the non-target addition of *de-* can be seen as a tendency for the ablative marker to re-enter the cycle of change.

- (8) *Desoz le col Tristan a mis son braz.*
from.under the neck Tristan has put his arm
'Tristan put his arm under the neck.' (Bérout, *Le Roman de Tristan*, 1170)

A second interesting property of French among languages with locative-ablative transfer is that the Source P is often retained in DPs that are morphologically related to the locative simple P, as illustrated in (9). We call such nouns axial nominalizations. Axial nominalizations are derived from axial morphemes, such as *sur* 'on' in French, and are used to name parts of an object.³

- (9) *le *(de)ssous de la maison.* (French)
the from.under of the house
'the bottom part/region of the house'

Standard Modern Hebrew is another language with locative-ablative transfer; however, the Source P cannot appear in the DP in Hebrew, as shown in (10) (XX, p.c.).

- (10) *(*mi).taxtit ha-bayit.* (Hebrew)
from.bottom the-house
'the bottom part of the house'

This paper addresses the following research questions:

- What is the role of *de-* in complex Ps in French? Why does a Source P often appear in the morphological make-up of locative Ps across languages?
- Why is *de-* banned in transitive Ps in standard French? Why does *de-* occasionally surface in transitive Ps in child French and other non-standard varieties of French?
- What is the semantic difference, if any, between derived DPs built with or without a Source preposition (e.g., between Hebrew and French DPs in (9) and (10)?

³ As our translation of (9) already hints at, we will argue that this is not the only meaning that *de-*prefixed nominalizations can have.

The paper is organized as follows. In section 2, we discuss the syntax and semantics of simple and complex locative prepositions. We then focus on the role of the prefix *de-*, first in axial nominalizations in section 3, and then in complex prepositions in section 4. Section 5 investigates at the non-target transitive use of *de*-prefixed Ps in child French, and then discusses ways to account for this trend.

2 Syntax and semantics of locative prepositions in French

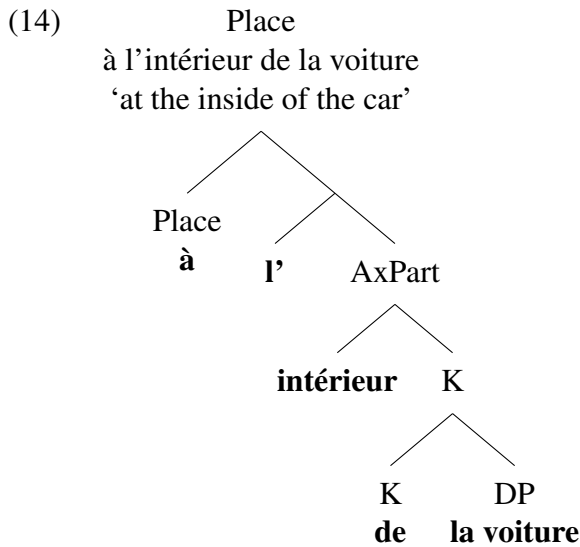
Following Svenonius (2006, 2010) and Roy & Svenonius (2009), we assume that morphologically simple and complex locative Ps can be decomposed into the same complex conceptual structure involving multiple projections. Morphologically simple and complex Ps roughly have the same syntax/semantics; simple Ps leave much of the conceptual structure unrealized. As Roy & Svenonius (2009) note, this view was prefigured by Ruwet (1982: 318), who proposed that simple prepositions like *sur* ‘on’ are underlyingly complex prepositions (e.g. *à dessus* [at from.on] in the case of *sur*).

On this view, the (a) and (b) sentences in (11) and (12) for instance, which only differ in the morphological complexity of the preposition, roughly convey the same truth-conditional meaning (a view explicitly endorsed by Ruwet 1982).

- (11) a. *Il se cache sous la table.*
 He REFL hides under the table
 ‘He’s hiding under the table.’
 b. *Il se cache en dessous de la table.*
 He REFL hides in from.under of the table
 ‘He’s hiding underneath the table.’
- (12) a. *Il est dans le cratère.*
 it is in the crater
 ‘It is in the crater.’
 b. *Il is au dedans du cratère.*
 it is at.the from.in of the crater
 ‘It is inside the crater.’

Meaning differences, if they exist, are in general subtle and non-at-issue.⁴ We suggest that these meaning differences may be derived as manner implicatures via the *Be Brief* submaxim of manner (Grice 1975, Rett 2015, Levinson 2000).⁵

The syntax and semantics we adopt for the prepositions under study largely builds on Matushansky & Zwarts (2019), Svenonius (2006, 2010) and Roy & Svenonius (2009). (14) provides the structure proposed by Roy & Svenonius (2009) for *à l'intérieur de la voiture* 'at the inside of the car'.



4 See section 4 on the apparent counter-example of superessive Ps, which often require contact between the Figure and the object of reference when they are morphologically simple.

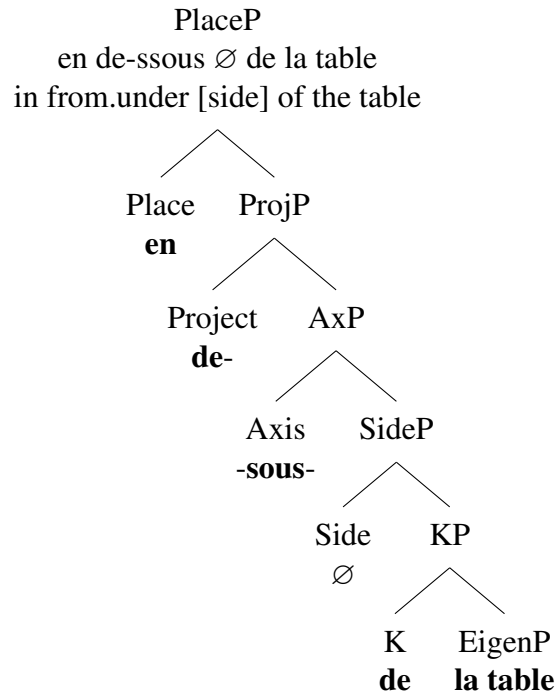
5 The reasoning proceeds as follows: If the speaker chooses the marked form out of two truth-conditionally equivalent expressions, it is because they are after a marked meaning. In the case of locative prepositions, the marked meaning seems to be (at least in some cases) a contrastive emphasis between the asserted spatial configuration and other possible spatial configurations. For instance, (13b) is rather odd in French, because via the choice of the more complex preposition, the speaker implicates that Tom could be above the shower rather than under it.

- (13) a. *Tom est sous la douche.*
Tom is under the shower
'Tom is in [under] the shower.'
- b. #*Tom est en dessous de la douche.*
Tom is in from.under of the shower
'Tom is underneath the shower.'

See Vandeloise 1986a for a proposal along the same lines on *sur* 'on' vs. *au-dessus de* 'on top of' when the latter expresses situations of contact between the Figure and the object of reference, like *Le chat est au dessus de l'armoire* 'The cat is above the cupboard'.

To the above structure we add ProjP, and split what Svenonius (2006) calls the axial part (AxPart) projection in two different projections AxP and SideP, for reasons made clear below. The resulting hierarchy of projections is given in (15), illustrated with *en dessous de* ‘underneath’. We assume the same structure for morphologically simple and complex locative prepositions.

(15)



The axial morpheme (e.g., *sous* in (15)) is the core element in locative prepositions. While Svenonius argues that axial parts are functional elements, Matushansky & Zwarts (2019) offer arguments in favor of an analysis in terms of weak nouns (gender agreement, number, case, and the intimate relation with nominalizations referring to parts of an object, such as *le dessous* ‘the bottom/underside’ in French). Axial nominals like *sous* ‘under’ are interpreted with respect to an axis, which determines the meaning of both the derived axial nominalization, which denotes a *part of an object* (e.g., *l’avant de la table* ‘the front of the table’) as well as the derived locative preposition (e.g., *au devant de la table* ‘at the front part/region of the table’), which denotes a *spatial region*.

Following Zwarts & Winter (2000), Matushansky & Zwarts (2019) model axes as sets of vectors pointing from the center of an entity towards a specific direction. For instance, the axial nominal front is defined as in (16) below, that is, as a function that takes as its input an entity x and returns the set of vectors u starting at the middle

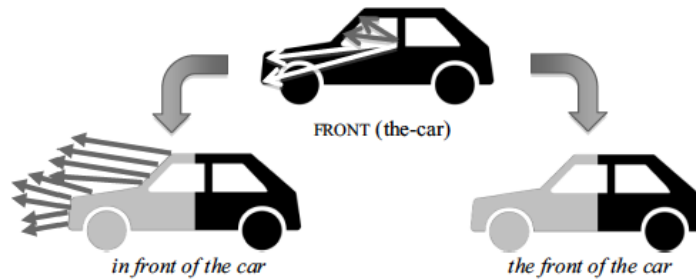


Figure 1 Axial derivatives (Figure taken from Matushansky & Zwarts 2019)

point of x and ending at the boundary of x with a forward direction (with respect to a certain frame of reference). The vectors returned by *front* are graphically represented by the middle picture in Figure 1 (taken from Matushansky & Zwarts 2019).

$$(16) \quad \llbracket \text{front} \rrbracket = \lambda x \lambda u. \text{start}(u) = \text{center}(x) \wedge \text{END}(u) \in \text{boundary}(x) \wedge \text{forward}(u)$$

(Matushansky & Zwarts 2019: 274)

From the axial nominal, Matushansky & Zwarts (2019) derive both the *object part* meaning, always active in the derived nominalization (e.g., *the front of the car*, see the right-side picture on Figure 1), as well as the *projection* meaning, active in the preposition (e.g., *in front of the car*, see the left-side picture on Figure 1).

The object part meaning involves the reifying function *object*. This function maps an axis to the unique object occupying it, as in (17). This allows Matushansky & Zwarts (2019) to account straightforwardly for the use of the definite with axial nominalizations.

$$(17) \quad \llbracket \text{front}_{\text{part}} \rrbracket = \lambda x. \text{object}(\text{front}(x))$$

(the front part of x)
(Matushansky & Zwarts 2019: 275)

The projection meaning involves the function *project*. The job of *project* is to define the region outward the axial part of the object, e.g. the region defined by *devant la voiture* ‘in front of the car’ (as graphically represented by the vectors in the left picture on Figure 1). It does so by projecting the relevant internal axis, that is, the set of vectors *internal* to the object (defined by the axial nominal *front*) to the set of vectors *external* to the object that point in the same direction as the axis, as in (18)-(19). Note that following the definition in (19), the ‘project’-vectors start where the ‘axis’-vectors end (as also graphically represented in Figure 1).

(18) $\llbracket \text{front}_{proj} \rrbracket = \lambda x. \text{project}(\text{front}(x))$ (a region projected from the front of x)
(Matushansky & Zwarts 2019: 275)

(19) $\llbracket \text{project} \rrbracket = \lambda f \lambda u. \exists w [f(w) \wedge \text{start}(u) = \text{end}(w) \wedge \text{dir}(u) = (\text{dir}(w))]$
(Matushansky & Zwarts 2019: 275)

ProjP is not part of Svenonius' inventory of projections but naturally derives from the semantics of locative prepositions just summarized. In the specifier of ProjP, we find the morpheme spelling out the function *project*. Matushansky & Zwarts (2019: 278) suggest that the ablative morpheme regularly found in locative prepositions across languages lexicalizes *project*. This echoes a previous proposal by Nikitina (2017), which proposes to account for the presence of Source Ps in locative Ps by the fact that the Figure is located *from* the object of reference: one starts from the object of reference and points towards a direction from this departure point. We explore this idea further in the next sections.

Following up on a suggestion by Svenonius (2010: 131), we propose to decompose prepositions like English *inside* in two different elements *in-* and *-side*.⁶ While the axial morpheme must be spelled-out overtly both in simple and complex prepositions, the abstract SIDE noun can remain silent; for instance, English has both *inside* and *in* (but not *side* for obvious reasons). Abstract SIDE-nouns are regularly found cross-linguistically in the morphosyntactic make-up of locative prepositions or affixes. While their presence is particularly transparent in English *inside*, *along-side*, or *outside*, such morphemes also present in a more opaque way in locative prepositions of Romance languages. For instance, the *-tr-* and *-pr-* morphemes found in the Italian prepositions *dietro* 'behind', *dentro* 'inside', *sopra* 'above' or French prefix *intra-* are etymologically related to Latin *parte*. *Dentro* 'inside' is derived from ablative *de-* and *intra*, itself derived from *intera parte* 'internal part', i.e. the ablative singular feminine of adjectives, modifying the noun *parte*; *sopra* derives Latin *supera parte* 'upper part', etc (Mackenzie 1978: 142).

Interestingly, some of the meaning effects conveyed by the use of the SIDE noun when it is optional is similar across languages. For instance, it can signal both in Italian and English that the target use of the Ground is the 'container' interpretation; in (20), for example, the tree understood as the trunk rather than its crown, since the trunk, but not the crown, has sides (see Svenonius 2010: 156 for remarks along the same lines).⁷

⁶ We choose to call the corresponding projection Side rather than Part because the latter comes with a reifying flavour; this should be avoided since axial 'parts' are in fact not object parts.

⁷ We thank XX for this example.

- (20) a. I'm in the tree, but I'm not inside the tree. (English)
b. *Sono nell'albero, ma non dentro l'albero.* (Italian)
am in the tree but not inside the tree
'I'm in the tree, not inside the tree.'

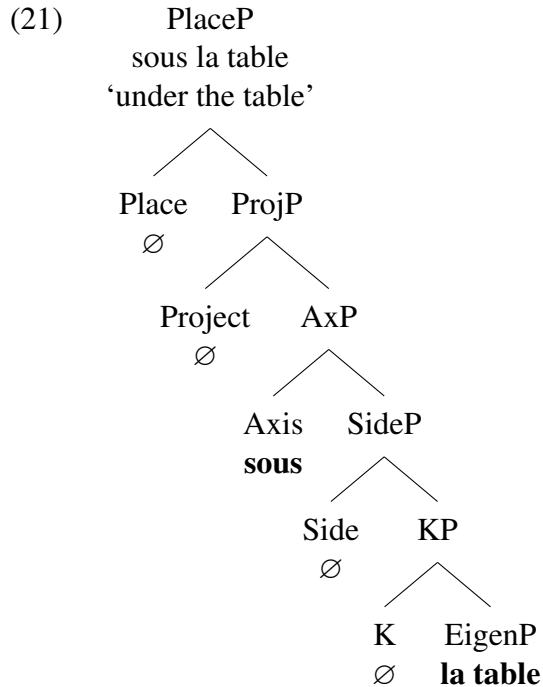
At the bottom of the tree in (15), we find the Eigen Projection (EigenP), which gives the *Eigenspace* of an entity, that is, the spatial region occupied by the referent. The function Eigen is never spelled out overtly across languages (Wunderlich 1991: 598).⁸ K encodes the part/whole relation between the Eigenspace of the entity and the axis or axial side. It is either spelled out by *de*, which is the dedicated genitive case marker in French, or left zero (in simple P) (see also Franco 2019 on Italian locative prepositions).

In the specifier of PlaceP, we find the 'outer' preposition. We assume that in the morphological makeup of complex prepositions, the outer preposition roughly has the meaning it has in other uses, that is, contiguity or overlap for *à* 'at', containment for *en* 'en', etc. (see Matushansky & Zwarts 2019: section 6 for an alternative analysis of the outer preposition).

Finally, most of multi-word Ps in French involves the definite article, as previously shown in Table 1. We assume that in that case, the complex preposition embeds what we call the axial nominalization, that is, nominalizations such as *le dessous de* 'the from-under of', addressed in the next section.

For morphologically simple Ps, we assume the same structure as for complex ones; all projections except AxP remain silent, as in (21).

⁸ Svenonius (2006) (see also Svenonius 2010: 156, fn 6) speculates that genitive case (his K) is an overt expression of Eigenplace across languages. This rather seems implausible from a semantic perspective, and we therefore keep EigenP and K distinct.



Equipped with this analysis, we can now turn to our research questions. We first address the role of *de-* in axial nominalizations, as they are sometimes embedded in complex Ps (cf. *au dessous de* [at the from.under of] ‘at the bottom of’). We then look at *de-* in spatial prepositions (in section 4). We focus on French in comparison with other languages with ablative-locative transfer.

3 The prefix *de-* in axial nominalizations

Recall the intriguing difference between French and other languages with ablative-locative transfer such as Hebrew in the morphological makeup of axial nominalizations: while the ablative morpheme obligatorily makes part of many of the nominalizations derived from simple Ps in French, it cannot appear in the same noun in Hebrew. Examples in (22) and (23) provide more examples of the relevant cross-linguistic contrast (Hebrew data from XX, p.c.).

(22) French axial nominalizations

- a. *Le *(de)ssous de la table*
 the from.under of the table
 ‘The bottom part/region of the table’

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- b. *Le *(de)ssus de la chaise*
the from.on of the chair
'The upper part/region of the chair'
- c. *Le *(de)dans de la boîte*
the from.inside of the box
'The inside part/region of the box'

(23) Hebrew axial nominalizations

- a. *ha-(*mi)-taxtit Sel ha-Sulxan*
the from bottom of the table
'The bottom (part) of the table'
- b. *ha-xelek ha-(*mi)-elyon Sel ha-kise*
the part the from top of the chair
'The top (part) of the chair'

A key question is whether this morphosyntactic difference correlates with a semantic difference. We claim that it does: while Hebrew axial nominalizations can only refer to a specific part of an object (its bottom, top, etc.), French ones can *also* be used to describe the (reified) region projected from the axis spelled-out by the axial morpheme, and only if they are prefixed with *de-*. We propose that this is because in those derived DPs, *de-* lexicalizes project (as in we argue it is the case in the preposition; see more discussion on this point in the next section).⁹

On this view, we expect a semantic difference, in French, between axial nominalizations prefixed with *de-* or not (e.g., between *le devant* 'the from-front' and *l'avant* 'the front'): only the former should be able to describe an entity external

⁹ There is a substandard way to form axial nominalizations in Hebrew, illustrated in (i) below. The adverbs *lemala* and *axora*, which in the basic use are Path morpheme meaning 'upwards/backwards' (and are morphologically complex), can be used in axial nominalizations to mean 'the top/back part of':

- (i) a. *%ha-(mi)-lemala Sel ha-kise*
the from upwards of the-chair
'the top of the chair'
- b. *%ha-(mi)-axora Sel ha-masait*
the from backwards of the truck
'The back of the truck'

In these substandard formations, the ablative is actually acceptable. The expectation is therefore that these variants can also denote a region projected from the axial part of the object of reference, as in French.

to the object. Furthermore, we expect the same kind of semantic difference to arise between French *de*-prefixed nominalizations and axial nominalizations in languages like Hebrew, which do not involve the ablative morpheme lexicalizing project in their morphological make-up.

These two predictions seem to be borne out. The standard Hebrew example in (25), without a Source P, can *only* denote an object part of the reference's object, while its French counterpart in (24), with a Source P, can additionally describe the region *projected* from the bottom of the reference's object. Examples (24)-(25) are chosen such that they can only make sense if the axial nominalization in subject position describes a region below the table (and not the bottom part of the table).

(24) French

Le dessous de la table est totalement utilisable pour le stockage.
 the from-under of the table is totally usable for the storage
 'The region under the table can totally be used as storage space.' (Internet)

(25) Hebrew

#ha-taxtit Sel ha-Sulxan yaxol leSameS ke-mekom ixsun.
 the-bottom of the-table can be.used as-place storage
 '#The bottom (part) of the table can be used as a storage space.'

Interestingly, in informal registers, Hebrew has a felicitous counterpart of the French example (24), and it involves the ablative morpheme *-mi-* (furthermore, *taxtit* 'bottom', which has nominal properties, is replaced with *taxat* 'under', which is a preposition).

(26) Hebrew

%ha-mi-taxat Sel ha-Sulxan yaxol leSameS ke-mekom ixsun.
 the-from-under of the-table can be.used as-place storage
 'The region/part under the table can be used as a storage place.'

Furthermore, in French, if *le dessous* 'the from.under' is replaced by *le fond* 'the bottom', (24) becomes infelicitous, because given that *de-* is not part of the nominalization anymore, the projective meaning it conveys in axial formations is missing:

(27) French

#Le fond de la table est totalement utilisable pour le stockage.
 the bottom of the table is totally usable for the storage
 '#The bottom (part) of the table can totally be used as storage space.'

French has pairs of axial nominalizations prefixed either with *de-* or another preposition (namely *a-*) that can be used to test the hypothesis further. One of these pairs is *le devant* ‘the from-front’ and *l’avant* ‘the front’. Thus for instance, while (28) is felicitous as a description of Pierre being located in the region projected from the front of the house, this is not the case in (29).¹⁰

(28) *Pierre se trouve sur le devant de la maison.*
Pierre REFL finds on the from-front of the house
‘Pierre is on the front/within the region in front of the house.’

(29) *Une fissure/ #Pierre se trouve sur l’avant de la maison.*
A crack/ Pierre REFL finds on the front of the house
‘A crack/Pierre can be found on the front of the house.’

Similarly, while (30) suggests that the police are in the procession, in (31) the police are not part of the procession but in the region ahead of it.

(30) *La police se trouve à l’avant du cortège.*
the police REFL finds at the front of.the procession
‘The police are at the front of the procession.’

(31) *La police se trouve au devant du cortège.*
the police REFL finds at.the from.front of.the procession
‘The police are in front of the procession.’

Based on these data, we argue that *de-* lexicalize project in axial nominalizations. However, this cannot be the single function active in these formations, since they do not literally refer to spatial regions like prepositions. Rather, they refer to what we called above ‘reified regions’, namely, portions of the world occupying the spatial regions returned by the *de-*prefixed formation. The following contrast helps to make this point clear:

¹⁰ According to Vandeloise 1986b: 286–287, axial nominalizations can never refer to outward regions in French, independently of their morphosyntactic makeup. For him, the possibility to refer to a region external to the house in examples such as (28) is due to the polysemy of nouns like *maison* ‘house’, which can also be used to refer to parts adjacent to houses, like gardens. The problem of this hypothesis, however, is that it predicts that examples like (29) (not discussed by Vandeloise 1986b) should be possible, too, while they are not.

- (32) a. *Je lave/ #suis le dessous de la table.*
 I wash am the from-under of the table
 ‘I’m washing/ am the region under the table.’
- b. *Je lave/ suis dessous la table.*
 I wash am from-under the table
 ‘I’m washing/ am under the table.’

While both examples can describe situations where the speaker is situated under the table washing the portion of the world (e.g., ground, anything between the ground and the bottom of the table) situated below it, only (32b) can be used as a description of my location. In (32a), the variant with the verb *être* ‘be’ is strange because it literally states an identity between me and the (reified) region under the table (that is, the portion of the world occupying this region). We propose that this is because the function *object* always applies in axial nominalizations (Matushansky & Zwarts 2019), and returns the unique entity occupying the region projected from the axial part of the entity via *project*, see (33). Departing on this point from Matushansky & Zwarts (2019), we therefore assume that *project* and *object* can be both active in the same formation.

$$(33) \llbracket \text{dessous}_N \rrbracket = \lambda x. \text{object}(\text{project}(\text{bottom}(x)))$$

Another point of clarification concerns the object part use of axial nominalizations. While we have seen that French *de*-prefixed axial nominalizations can refer to the region returned by the *de*-form (as it is reified by *object*), they can obviously also be used to refer to specific parts of an object. For instance, *le dessous de la table* ‘the from.under of the table’ can not only refer to the portion of the world projected from the bottom of the table, but also to the bottom of the table itself.

We can derive the latter object part meaning of axial nominalizations in different ways. One option, as (34a), is to stipulate that in axial nominalizations, *de*- is polysemous and can either spell out *project* or *object*, the latter meaning being selected in the object part use of axial nominalization. A second option, as in (34b), consists in assuming that *de*- invariably has ablative semantics, while *object* remains covert in the nominalization, in line with what we proposed above to account for (32). This requires to redefine *project* so that it does not necessarily return outward vectors with respect to the object. We can do this with a second version of *project* — let us call it *project'* — as in (35) below. (35) returns a set of vectors whose starting point is equal to the starting point of vectors in the axial nominal. Differently from the vectors expressed by the axis, these ‘*project'*’-vectors do not necessarily end at the boundary of *x*. But in the object part meaning, they do end there, so that *object*

ends up reifying the same region as it does in the absence of *project'*. In the other, 'region'-meaning, though, the *project'*-vectors end outside of *x*.

- (34) a. $\llbracket \text{dessous}_N \rrbracket = \lambda x.\text{object}(\text{bottom}(x))$
 b. $\llbracket \text{dessous}_N \rrbracket = \lambda x.\text{object}(\text{project}'(\text{bottom}(x)))$

- (35) $\llbracket \text{project}' \rrbracket = \lambda f \lambda u. \exists w [f(w) \wedge \text{start}(u) = \text{start}(w) \wedge \text{dir}(u) = (\text{dir}(w))]$

We prefer the second option: combining it with (33), we can account for the two 'object part' and 'region' readings of *le dessous* 'the from-on' via the ambiguity of *de-*, which can lexicalize either *project*, or *project'*. Furthermore, *object* is presumably unexpressed in other axial nominalizations that do not contain the prefix *de-*, like *l'avant de* 'the front of'. We therefore need to assume that *object* is silent in other formations anyway.

The next section addresses the syntactic and morphosemantic properties of the prefix *de-* in prepositional formations in French.

4 The prefix *de-* in locative prepositions

While the difference in the argument structure of simple locative Ps and complex Ps has been amply debated, there is surprisingly little discussion about the different morphological pieces in French complex prepositions, and *de-* specifically. Although [Ruwet \(1982\)](#) proposed early on that simple locative Ps are 'compressed' versions of more complex ones, he does not offer arguments for a decompositional analysis of *de-*-prefixed Ps.¹¹

[Zribi-Hertz \(1986\)](#) does not comment much on the presence of *de-* in intransitive *de-*-prefixed Ps. According to her analysis, developed further by [Authier \(2016\)](#) among others, these superficially intransitive Ps are in fact underlyingly transitive. [Zribi-Hertz](#) calls them 'orphan' Ps to convey the idea they have lost their overt complement, which is compulsorily replaced in standard French by a silent anaphorical resumptive pro-form (with definite and non-human features). This distinguishes orphan Ps from stranded Ps in languages such as English, for which the empty position has the property of a trace. For [Zribi-Hertz \(1986\)](#), all prepositions except those serving as case markers (e.g., *à* 'at', *de* 'of/from', etc.) can be orphan Ps, including *avec* 'with', *pour* 'for', etc. The *de-*-prefixed ones in (5) are special only in that the superficial absence of the complement goes along with a change in the

11 'Peut-être [...] serait-il possible de décomposer *dessus*, *dedans*, etc. en deux morphèmes *de* + *sur*, *de* + *dans* [...] et une règle supprimerait *de* devant *sur*, *dans*, etc. dans certains contextes. Toutefois, je n'ai pas d'argument convaincant en faveur de cette idée.' ([Ruwet 1982: 339](#))

morphology, namely prefixation with *de-*. It is unclear, though, why this prefix is added to some of them when they are used as orphan Ps.

In a footnote, Rizzi (1986: 519) proposes a reformulation of Zribi's generalization about which Ps allow *pro* and which do not in terms of mono- vs. polysyllabicity: monosyllabic Ps like *à* 'at', *de* 'de', etc. do not allow it, while polysyllabic do. Prefixation in *de-* is in this perspective needed for monosyllabic Ps like *dans*, *sur*, *sous* to license *pro*. Rizzi speculates that the impossibility for monosyllabic Ps to allow *pro* might be due a general constraint according to which monosyllabic Ps must cliticize into their complement in French. When the complement is not realized, cliticization is not possible. An obvious problem for this suggestion, however, is that some monosyllabic Ps *do* allow intransitive uses in French (*pour* 'for', *sans* 'without').¹²

A competing analysis for intransitive Ps, including those prefixed in *de-*, is that they are truly intransitive, either because they are fully grammaticalized into adverbs, or because they semantically behave like relational definite descriptions linked to an overt or covert antecedent (like in *I have a new car. The handlebar is in leather*); see Olivier (2007). But again, such analyses do not make clear why *de-* appears on some of these intransitive Ps.

Rainsford (2019) also briefly discusses *de-*prefixation in spatial Ps in French. Rejecting the analysis of locative Ps in terms of axial parts, Rainsford considers that *de-* has no distinct syntactic role in the structure and proposes that the base together with *de-* modifies a null PLACE-noun (which should account for noun-like properties of Ps that are not etymologically nominal). However, this approach undermines the foundations of the compositional sublexical semantic analysis of Svenonius (2006) and Matushansky & Zwarts (2019) presented in the previous section, and does not offer a compositional semantics for spatial Ps, nor an explanation for the *de-/∅* alternation in spatial Ps in French.

Troberg (2021) offers an interesting take on the *de-/∅* alternation in French spatial Ps. Her starting observation is that in medieval French, the main difference between the members of doublets with and without *de* was that without the prefix *de-*, these Ps were always transitive (see also Amiot et al. 2020). The prefixed ones were used both in transitive and intransitive frames. At a later stage, *de-*prefixed Ps naturally get specialized in intransitive contexts and become rare in transitive ones. Troberg speculates that what started as a case of pragmatic competition gets at a subsequent stage lexicalized, ending up in what looks like a very unusual selectional

¹² As Zribi-Hertz (1986) observes, the divide rather seems to be between case-marking Ps (what Cinque 2010 calls functional Ps) and the others (Cinque's (2010) lexical Ps). Since *dans*, *sur*, *sous* are lexical Ps, this generalization does not account for why these prepositions need to be prefixed by *de-* to license the intransitive use.

restriction of these *de*-prefixed Ps in standard French, namely, only silent *pro* (or a necessarily intransitive use).

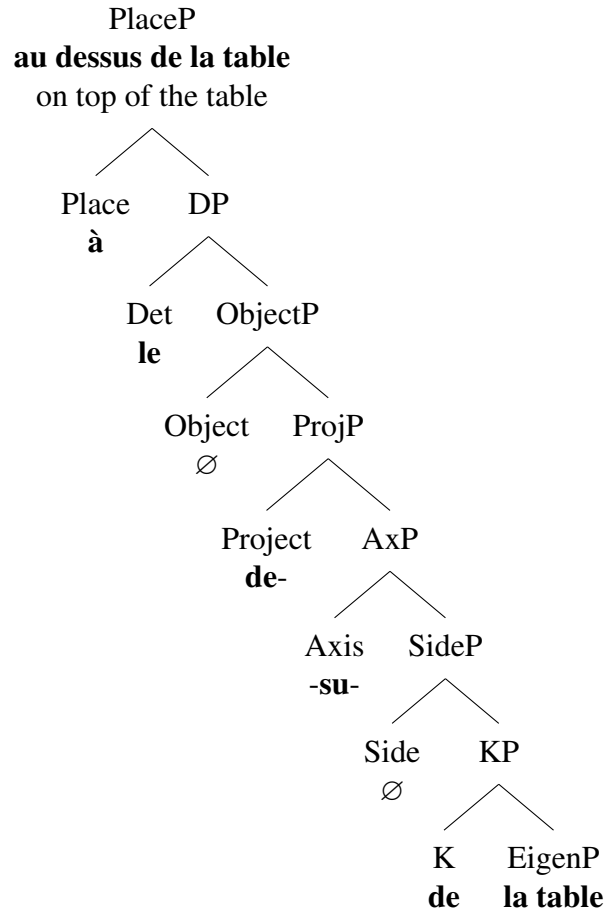
A strong argument in favor of such a view is that *de*-prefixed Ps are strictly intransitive in standard French only when they have a non-prefixed competitor (like *dans/dedans*, *sur/dessus*, *sous/dessous*). As shown in Table 1, *de*-prefixed Ps like *devant* and *derrière* are in fact both transitive and intransitive. This seems to directly correlate with the absence of a morphologically simple counterpart (see the empty cells in the Simple P column of Table 1). Such a picture makes it unlikely that *de* is a morphosyntactic element responsible for the intransitivity of P. Rather, what Troberg's reflections suggest is that the prefixed form in fact alternates between transitive and intransitive uses in the grammar (which accounts for the alternation in non-standard variants), but that in standard French, the transitive use is blocked when a non-prefixed counterpart is specialized in the transitive use. This, in turn, can be accounted for by a higher ranking of pragmatic constraints such as the Manner *Be Brief* submaxim in standard variants of natural languages. By contrast, non-standard variants such as colloquial or child French would be more lenient with such principles and rank higher competing principles such as *Be Expressive* (see [Martin 2022](#), [Martin et al. 2023](#)).

Another advantage of Troberg's (2021) proposal is that it is compatible with the hypothesis that *de*- is an ablative marker which lexicalizes project (or project'), and thereby does justice to the fact that the *de*-prefix in locative prepositions is originally an ablative morpheme.

In line with Svenonius's (2010) and others' idea that simple and complex locative Ps have the same conceptual structure, we therefore propose that the main differences in the morphosyntax between forms prefixed with *de* or not is that project is lexicalized in the former case (e.g., *dessous* 'from-under'), and remains zero in the latter (e.g., *sous* 'under').

As for multi-word Ps such as *au dessous de*, we assume that their structure embeds the structure assumed for axial nominalizations, adding a preposition (typically *à*) on top, in the specifier of PlaceP, returning a region located with respect to the entity referred by the axial nominalization, see (36).

(36)



One potential counter-argument against the view that the structure of simple spatial Ps involves a silent ProjP concerns the preposition *sur* ‘on’. It has been repeatedly noticed across languages that among simple locative Ps, superessive Ps are special in that they seem to require contact with the object of reference (see e.g., [Svenonius 2010](#) and [Gärdenfors \(2020\)](#) on English *on*). The contrast (37) below illustrates the point well: (37a) is strange because of a conflict between the information that the frame hangs on the wall and the requirement that the frame is in contact with the shelf and receives support from it ([Gärdenfors 2020](#)). By contrast, (37b) is completely acceptable, as is its English translation with *above*.

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- (37) a. ?# *Le cadre pend sur l'étagère.*
the frame hangs on the shelf
'The frame hangs on the shelf.'
b. *Le cadre pend au dessus de l'étagère.*
the frame hangs at.the from.on of the shelf
'The frame hangs above the shelf.'

As the contact requirement of *sur* 'on' would be explained if project (or project') is not part of its underlying conceptual structure, it might be tempting to assume that only *au dessus de* involves ProjP.

We see several arguments in favor of the idea that *sur* does involve a silent ProjP. Firstly, *sur* allows absence of contact in a few cases, as in (38) (see Vandeloise 1986a, [Dendale & De Mulder 1997](#) for other attested examples).

- (38) a. *Rachida a le nez sur son livre.*
Rachida has the nose on her book
'Rachida has her nose in her book.'
b. *Les nuages sont sur nos têtes, l'orage est pour bientôt.*
the clouds are on our head, the storm is for soon
'The clouds are above our heads; the storm is coming soon.' (Internet)

The same is true of *dessus* 'from on':

- (39) *Ton livre, j'ai le nez dessus.*
your book I have the nose from-on
'Your book, I've my nose in it.'

Second, contact is also typically required by intransitive *dessus* 'from on'. For instance, (40) is as strange as (37a), despite the presence of *de*-.

- (40)?# *L'étagère, le cadre pend dessus.*
the shelf the frame hangs from.on
'The shelf, the frame hangs on it.'

Thirdly, the transitive uses of *dessus* we found in modern French in the literary Frantext database are not different: they also typically require contact, as shown in (41).

- (41) *si jé té connaissais pas comme jé té connais, tu aurais*
 if I you knew NEG like I you know you would.have
déjà ma main dessus la gueule.
 already my hand from.on the face

If I didn't know you like I know you, I'd have already slapped you.'

André Malraux, *Les Conquérants*

By contrast, *au dessus de* 'at from.on of', headed with the spatial preposition *à* 'at', often implicates the absence of a contact with the object of reference, without entailing it though.

Based on these data, we argue that at least in French and perhaps in other languages, superessive spatial Ps always involve ProjP, and, as a result, can always describe outwards regions projected from the top of an object, accounting for examples such as (38)-(39). That is, in the semantics, superessive Ps such as *sur*, *dessus* and *au dessus* can all express situations with or without contact, because they involve project or project' in their conceptual structure. Simply, superessive Ps are more felicitous in situations of absence of contact with *à* as a high element, because *à*, like English *at*, easily conveys contactless proximity, as it indicates that the Figure is 'more closely related to a reference object than to any other in the [contrast] set' (Vasardani et al. 2017).

How can French superessive Ps express contact between the Figure and the object of reference if, as we propose, *de-* always has a projective meaning? We propose that in these formations, *de* encodes project (rather than project'), and returns vectors whose length is close to zero. As a result, P ends up describing the surface of the top part of the object. By contrast, when superessive Ps express absence of contact, project returns vectors whose endpoint is situated outside the object of reference. If *à* is present, it indicates proximity with the object of reference, and thereby absence of contact with the object of reference is easily accounted for. That being said, *à* is not *required* to express the absence of contact, in line with the data reviewed above. It is rather a matter of pragmatic division of labor which explains why *sur/Ødessus* are preferred when the Figure and the object of reference are in contact and *au dessus de* 'at.the bottom of' when they are not.¹³

In favor of this pragmatic account of the competition between *sur/au-dessus de* and *sous/en dessous de*, Piérart's (1978) comprehension study of these Ps in child French is particularly interesting. Piérart asks adults and children to draw figures following verbal instructions that contained simple and complex Ps. What she observes is that children do not seem to compute the inference of absence of

13 The reason why superessive Ps are special in that they typically require contact in the absence of a higher P element can be seen as a mere consequence of the law of gravity: objects which are in the region projected from the top of an object typically have contact with this object.

contact triggered by the use of *au-dessus de* and *en dessous de*. That is, children draw the *au-dessus de* and *en dessous de* relations with connected figures, unlike adults, and this until the age of 6. If the absence-of-contact inference indeed is an implicature obtained via the competition with the simpler form, we can account for this developmental path, since implicatures, including manner implicatures, are known to be challenging for young children (Guasti et al. 2005, Wilson 2017, Wilson & Katsos 2020).

5 *de*-prefixed Ps and transitivity in child French

We have seen that in standard French, *de*-prefixed prepositions competing with un-prefixed ones cannot appear with an overt complement DP. The competing P without *de*- must appear with an overt complement; recall (5) in section 1. As discussed in the same section, transitive uses of *de*-prefixed Ps have been reported non-standard adult varieties of French. The same use has also been observed anecdotally in child French Pallaud & Savelli (2001). We conducted a corpus study on the use of simple vs. complex prepositions in child French, which confirmed that young French learners do indeed overuse the *de*-prefixed locative prepositions in transitive contexts compared to adults (the data is available at tinyurl.com/de-PinchildFrench).

5.1 Child French corpus study

Our corpus study investigates the use of complex Ps in French CHILDES (MacWhinney 2000). Using the CLAN program (MacWhinney 1991), we extracted all of occurrences of *dedans*, *dessous* and *dessus* and their conversational contexts in 9 French CHILDES corpora. This yielded $N=1855$ utterances from 209 typically developing children aged 1 to 11, as shown as shown in Table 2.

We annotated for whether the *de*-prefixed preposition was used transitively (with an overt direct complement) or intransitively (without a complement). The overall results summarized in Table 3 show that children used the three *de*-prefixed complex prepositions with a complement on average 7% of the time.

While we did not examine child-directed speech within the same corpora, we gathered data from adult French from several sources as a baseline of comparison for our child data. Firstly, we computed the proportion of occurrences of *dessous/dedans* preceded by a verb and followed by a definite determiner in the set of occurrences of *(de)ssous/(de)dans* in the same syntactic context in the FrTenTen17 web corpus via Sketchengine (Kilgarriff et al. 2014). While this is a written corpus, it contains informal genres such as blogs or forums. As shown in Table 4, locative prepositions are used much less frequently with the preposition *de* in such transitive frames than in our child data (less than 0.01% of the time). The number is actually lower in view

Corpus	Children	
Goad-Rose	2	(Rose 2000)
Leveillé	1	(Suppes et al. 1973)
Lyon	5	(Demuth & Tremblay 2008)
MTLN	56	(Le Normand 1986)
Palasis-1	12	(Palasis 2009)
Palasis-2	16	(Palasis 2009)
Paris	6	(Morgenstern & Parisse 2007)
Vion-Colas	105	(Vion & Colas 1998)
York	3	(De Cat & Plunkett 2002)
Total	209	

Table 2 French CHILDES corpora with *dedans/dessous/dessus* utterances

	INTRANS	TRANS	TOTAL	% TRANS
dedans	1187	75	1262	5.9%
dessus	343	33	376	15.2%
dessous	195	22	217	8.0%
TOTAL	1725	130	1855	7.0%

Table 3 Corpus study on the use of *dedans/ dessus/ dessous* in child French in CHILDES corpora: results

String	Number of hits	% in the total (with and without <i>de</i>)
V+dans le/la/les	8.828.830	
V+dedans le/la/les	1616	0,01%
V+sous le/la/les	787.025	
V+dessous le/la/les	443	0,05%

Table 4 Use of *(de)dans/(de)sous* preceded by a verb and followed by a definite overt complement in adult French on Frtnten17 (Kilgarriff et al. 2014)

of the fact that many tokens are false positive, where the *de*-P is not a complement of the preceding verb.

We also checked all occurrences of *dedans* ($N=93$), *dessus* ($N=109$), and *dessous* ($N=39$) in the *Corpus du Français Parlé de nos Régions* (Delafontaine 2021), and found only 1 occurrence built with an overt complement, involving *dedans* (42).

- (42) *quand on en a après quelqu'un on prend un caillou on*
 when one PART.PRN has after someone one takes a pebble one
va le lui mettre dedans la tronche là oui
 goes it them put from.in the mug there yes
 ‘When you’re mad at someone, you just grab a rock and go smash it right in their face, yeah.’

We conducted the same search in the *Corpus de Français Parlé à Bruxelles* (Labeau & Dister 2016). Across all hits (*dedans*: $N=36$, *dessus*: $N=40$, *dessous*: $N=11$), we did not find a single occurrence with an overt complement.

From these data, we conclude that *dedans*, *dessous* and *dessus* are found with an overt complement significantly more often in child French than in adult French, confirming previous observations.

5.2 Analysis

One can explain the overuse of *de*- in transitive frames in child French in two different ways. Adopting Zribi-Hertz’s (1986) perspective, overuse of *de*- can be seen as a tendency to realize an overt form where one expects silent *pro*. In this view, the overuse of *de*- in spatial Ps results from children’s tendency to realize *pro* overtly. A prediction of such an account seems to be that children should also prefer to overtly realize the complement of other orphan prepositions, including those which are not prefixed with *de*-, like *avec*, etc. While testing this prediction

would require additional corpus studies, a potential problem we see for it is that French children are in fact occasionally reported to *overuse* orphan Ps; for instance, they use it in context where *pro* has a human feature (e.g., *Papa vient avec* ‘Papa comes with us’).

A second explanation is compatible with the view developed in previous sections that complex and simple prepositions have the same morphosemantic structure. Thus both the *de*-prefixed and non-*de*-prefixed Ps are grammatically available as transitive Ps. Standard adult French, however, bans the *de*-P when it competes with a simple P because of a general preference for more economical forms. According to this second view, what French children are doing when including *de*- is overtly realizing a conceptual piece which is zero in the adult language, disregarding economy constraints. In morphologically simple Ps, there is a mismatch between morphology and conceptual structure, as they express the same complex conceptual structure expounded by morphologically complex Ps. Such mismatches are challenging for children, who are known to acquire more easily forms mapped in a one-to-one fashion with concepts (Slobin 1973, van Hout 2008, Martin et al. 2020, Guasti et al. 2023).

In line with Martin et al. (2023) and Alexiadou (2024), we hypothesize that while adult speakers tend *ceteris paribus* to choose the most economical P (following Siddiqi’s 2006 *Minimize Exponence* general economy principle), children tend to obey the opposite *Maximize Exponence* transparency principle (‘Use one morpheme for each concept’), and realize more complex prepositional forms:

- (43) a. Adults follow:
 Minimize Exponence: Realize a set of concepts using the fewest exponents.
 b. Children (also) follow:
 Maximize Exponence: Realize each concept using exactly one exponent.

That is, while in adult language, parts of the conceptual structure in Ps are often omitted because the carried information is completely predictable (from the syntax/semantics of the complex preposition), children do not always omit predictable information in the same way, because they do not have an optimal tradeoff between minimizing production effort (aka *Minimize Exponence*) and maximizing understandability (Tal & Arnon 2019, 2022). This explanation accords well with the general assumptions of the Meaning First Approach to the mapping between conceptual structure and morphology (Sauerland & Alexiadou 2020)

In favor of an account along these lines, we note that there are other examples in child languages of addition by children of morphemes overtly expressing a piece of conceptual structure which is left unexpressed in the target language. For instance, German children occasionally overtly spell out the concept WITH typically silent in

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the caritive preposition *ohne* (Sauerland et al. 2024; see however van Kampen 2024 for an alternative account of this pattern).

- (44) % *Die Katze mit ohne Mütze* (child German)
the cat with without hat
'The cat without a hat.' (target: *Die Katze ohne Mütze*)

Furthermore, children acquiring L1 Italian tend to overuse multiword Ps and in particular the genitive case marker *a* present in complex and multiword-Ps in Italian (Dal Farra et al. 2022), see their example (45):

- (45) % *Dentro a quel buco c'era un gufo.* (Giorga, 8)
inside at that hole there.was an owl
'Inside that hole there was an owl.' (target: *In quel buco c'era un gufo*)

In French, children tend to use overt genitive or dative semantics via a dedicated case marking (functional) preposition than via possessives or clitics, see e.g. (46)-(47):

- (46) a. *dans mon cou* (adult French)
in my neck
b. % *dans le cou de moi* (child French)
in the neck of me
- (47) a. *Tu me l'as donné.* (adult French)
you CL-DAT.1SG CL-ACC.3SG has given
b. % *Tu l'as donné à moi.* (child French)
you CL-ACC.3SG has given to me

In child Romanian and child Spanish, Ticio & Avram (2015) 2015 note overextensions of DOM marking in child Romanian and child Spanish.

We thus observe a more general tendency of children to overtly express case information in a one-to-one fashion with functional Ps. In this perspective, French children's non-target-like overt exponence of *de-* instantiates a more general cross-linguistic pattern in acquisition of case morphology of the prepositional type: by doing so, they overtly express the ablative semantics, a core ingredient of locative Ps in French as well as other languages.

6 Conclusion

In this paper, we argued that in *de*-prefixed spatial PPs or axial nominalizations, *de*- is an ablative (Source) marker lexicalizing the project function (Matushansky & Zwarts 2019). This elucidates its surprising presence in locative prepositions. As language change happens during the process of language acquisition (Kroch 2005, Lightfoot 2010, Cournane 2017), the overuse of *de*- by L1 French learners may be seen as a return to the initial stage of a locative prepositional cycle. If children do indeed go back to the beginning of the cycle, this has an interesting consequence for processes of language change in general, namely that conceptual structure never truly disappears with the natural processes of morphological erosion.

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