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*Lexical specification and insertion.*

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"The semantic representation of denominal verbs"

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# THE SEMANTIC REPRESENTATION OF DENOMINAL VERBS.\*

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## 1. Introduction

This paper presents an analysis of a number of French denominal verbs in an attempt to account for the behavior of the two subclasses illustrated in (1):

(1) a Max a **entreposé** les marchandises dans un couloir.(GL)<sup>1</sup>

N = entrepot 'warehouse'

Max [[warehouse]-d] (=stored) the merchandise in a corridor

b Jean a **fleuri** la tombe de géraniums.(GL) N = fleur 'flower'

John [[flower]ed] the tomb with geraniums.

(=put flowers on the tomb)

In (1b) the noun on which the verb is built corresponds to a displaced entity; in (1a), it corresponds to the final location of some entity. I develop an analysis of these verbs which accounts for the relation between their conceptual structure,

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<sup>1</sup> A number of examples of this paper are borrowed from Guillet and Leclère (1981). They are identified by the notation (GL).

their morphological structure and their argument structure. In the course of the discussion, other subclasses will be introduced and discussed.

Denominal verbs, like [[pocket]<sub>N</sub>]<sub>V</sub> in (2)

(2) [[pocket]<sub>N</sub>]<sub>V</sub>

are characterized by the fact that a verb is created from a noun without an overt derivational morpheme. For ease of exposition, I will call the noun on which the verb is created the 'incorporated noun' without intending this term to mean that I adopt an analysis of incorporation *à la* Baker (1988) to explain the formation of these verbs. Denominal verbs present an interesting testing ground for theories of semantic representation since 1) they are based on a referential element whose meaning should be uncontroversial and 2) any added element of meaning which one is led to postulate in order to explain the meaning of such verbs is a good candidate for a semantic primitive of word meaning.

Consider the examples in (3), from Jackendoff (1990:164) :

- (3) a Max pocketed the money  
 b Max buttered the bread

Both verbs are interpreted as involving an entity which is located with respect to a location, more or less as in (4).

(4) x put y at z

In (3a) the money is put in a pocket; in (3b) butter is put on the bread. However, in the first case, the entity which is located is realised in direct object position and in the similar example (1a) the location is realized as a prepositional object; in the second case, it is the location which is realized in direct object position, and, in (1b) the entity located is realized as a prepositional object. The generalisation which is apparent in these examples is given in (5):

- (5) a. When the N on which the verb is formed is a descriptor for a displaced entity, the location where this entity ends up appears in direct object position. A prepositional complement may identify the displaced entity.
- b. When the N on which the verb is formed is a descriptor for a location, the entity which is located appears in direct object position. A prepositional complement may specify the location.

Previous formal treatments of these verbs are summarised in (6) and (9)<sup>2</sup>. Pinker (1989), borrowing an analysis of Rappaport and Levin (1988), proposes that verbs behaving like that in (3a) have a conceptual structure of the type in (6a), and those similar to (3b) have a conceptual structure as in (6b):

- (6) a x CAUSE [y GO TO z]
- b x CAUSE [z GO TO STATE] BY MEANS OF [x CAUSE [y GO TO z]]

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<sup>2</sup> Other treatments of the French verbs may be found in Bogacki (1988), Boons (1984), Fradin (1988), Karolak (1990). For English, treatments involving movement and incorporation may be found in Hale & Keyser (1990) and in Walinska de Hackbeil (1986, 1987).

This analysis does not take into account the morphological structure of the verbs. The verbs in (3) would have the conceptual structures in (7), where the incorporated noun is represented in bold. Incorporated elements are represented by constants which do not have to map to an argument structure position in the syntax.

- (7) a pocket: x CAUSE [y GO TO **POCKET**]  
 b butter: x CAUSE [z GO TO STATE] BY MEANS OF [x CAUSE [**BUTTER** GO TO z]]

This type of analysis raises the following questions. First, the incorporated noun is, in a denominal verb like *butter*, the only overt lexical information on the meaning of the verb. How is it that its contribution to the conceptual structure of the verb is relegated to the specification of an element of an adjunct clause in the conceptual structure? Also, such an analysis has problems explaining the non-availability of locative alternation for most verbs incorporating a noun describing a displaced entity, since a structure like (6b) incorporates (6a) which it implies.

- (8) \* John **inked** black ink on his pad

A different approach is taken by Jackendoff (1990) who, instead of postulating a fundamental difference in conceptual structure between verbs like *pocket* and verbs like *butter*, proposes that they share a common type of representation, which would be either that in (9a) or that in (9b), and assumes that the only difference between the two classes of verbs is that the first has an incorporated Goal and the second an incorporated Theme.

- (9) a [Event CAUSE ([Thing ]<sub>i</sub> [Event GO ([Thing ]<sub>j</sub> [Path TO ([Place IN/ON ([Thing ])]))]])]

(Jackendoff 1987, Carrier & Randall 1988, Jackendoff 1990)

- b [Event CAUSE ([Thing ]<sub>i</sub> [Event INCH(ative) [BE ([Thing ]<sub>j</sub> ([Place ON ([Thing ])]))]])]

(Jackendoff 1990 for *butter*)

Jackendoff does not chose between (9a) and (9b) for verbs like *pocket*, but, in his 1990 book, he adopts (9b) for verbs like *butter* which he claims are more appropriately paraphrased as 'cause N to come to be all over' (p. 164). The only difference between (3a) and (3b), according to this approach, is that the verb in (3a) has an incorporated Theme, while the verb in (3b) has an incorporated Goal.

The difficulty with this analysis lies in the prediction of the argument structure of the verbs. Let us assume, for the sake of the argument, that the verbs in (3) have a conceptual structure of the type in (9a). A verb like *pocket* in (3a) would have the conceptual structure in (10a) and one like *butter* in (3b) the conceptual structure in (10b). Except for the incorporated elements, these conceptual structures are identical to that for the verb *put* in (10c).

- (10) a Pocket:

[Event CAUSE ([Thing ]<sub>i</sub> [Event GO ([Thing ]<sub>j</sub> [Path TO ([Place IN ([Thing **POCKET**)])]])]])]

- b Butter:

[Event CAUSE ([Thing ]<sub>i</sub> [Event GO ([Thing **BUTTER** ]<sub>j</sub> [Path TO ([Place ON ([Thing ])]))]])]

$$[\text{Path TO} ([\text{Place ON} ([\text{Thing } ])))]$$

c Put:

$$[\text{Event CAUSE} ([\text{Thing } ]_i, [\text{Event GO} ([\text{Thing } ]_j, \\ [\text{Path TO} ([\text{Place } ([\text{Thing } ]))]])]$$

(10a) accounts straightforwardly for *pocket*, since the Theme, that is, the first argument of GO, is predicted to be the direct object in this case, as it is with the verb *put*. In (10b), however, one would predict that the Goal argument of a verb like *butter*, that is, the argument of TO ON would be realised as a prepositional object. The same problem is raised if the conceptual structure in (9b) is adopted.

In order to account for the irregular linking of the Goal argument, one may want to appeal to the fact that the path function is specified as part of the conceptual structure of the verb and need not be expressed in syntax. This is Jackendoff's analysis of the argument structure of the verb *enter* in (11).

(11) a John entered the room

b Enter:

$$[\text{Event GO} ([\text{Thing } ]_i, [\text{Path TO} ([\text{Place IN} ([\text{Thing } ]_j)])])]$$

(Jackendoff 1990:46)

(11b) shows that with this verb the Path- and Place-functions are incorporated into the meaning of the verb. As a result, the second argument of the verb is a Thing. This would explain why this argument must be expressed by an NP-complement. This line of argument however is not easily transferrable to French where the verbs *entrer* 'to enter' and *sortir* 'to go out' (illustrated in (12)

and (13)) incorporate a Path- and a Place-function, but take a prepositional complement rather than a direct object. Thus it is not the case, at least in French, that incorporated Path- and Place-functions are not projected in syntax.

(12) a Jean entre dans la pièce

'Jean enters into the room'

b \*Jean entre la pièce

c Entrer:

[Event GO ([Thing  $i_i$ , [Path TO ([Place IN ([Thing  $j$ )]))]]]

(13) a Jean sort de la cuisine

'Jean goes-out of the kitchen'

b \*Jean sort la cuisine.

c Sortir:

[Event GO ([Thing  $i_i$ , [Path TO ([Place EXTERIOR-OF ([Thing  $j$ )]))]]]

The appeal to some kind of blind rule linking the first internal argument of the verb to the direct object position would not do either since the Goal argument of the verbs in (14), for example, is realised as a prepositional object even if it is the first internal argument of the verb.<sup>3</sup>

(14) a Jean crache sur le trottoir.

'Jean spits on the sidewalk'.

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<sup>3</sup> Jackendoff (p.c.) suggests the following solution to the problem of *enter* vs *entrer*: for *entrer*, change the position of the linking index, to let it have scope over the Path constituent: [Event GO ([Thing  $i_i$ , [Path TO ([Place IN ([Thing  $j$ )]))]] $j$ )].

- b Jean regarde dans la chambre.  
'Jean looks into the room'.
- c Jean plonge dans la piscine.  
'Jean dives into the pool'.

Another way to account for the irregular linking of the Goal in examples like (3b) within Jackendoff's system is by resorting to the Action tier. Jackendoff proposes that the conceptual structure of a clause incorporates an action tier, independent from the thematic tier, which encodes the semantic primitive AFFECT and its arguments. This is illustrated in (15) with the verb *hit*.

- (15) The car hit the tree:  
 INCH(OACTIVE) [BE<sub>c</sub> ([CAR], [AT<sub>c</sub> [TREE]])] (Thematic tier)  
 Event AFF ([CAR], [TREE]) (Action tier)  
 (=Jackendoff 1990:127)

Jackendoff develops a theory of linking based on a thematic hierarchy whose basic principle, reproduced in (16), gives priority to the action tier.

- (16) Thematic hierarchy (Jackendoff 1990:258)  
 Order the A-marked arguments in the action tier from left to right, followed by the A-marked arguments in the main conceptual clause of the thematic tier, from least embedded to most deeply embedded.  
 (A-marked = marked as being an argument)

In order to account for (3b), it is therefore sufficient to indicate in the action tier that the Goal argument is affected:

(17) butter:

	CAUSE ([Thing $i_i$ [Event GO ([Thing BUTTER],	
	[Path TO ([Place ON ([Thing $j_j$ )])])])	(Thematic tier)
Event	AFF ([Thing $i_i$ [Thing $j_j$ ])	(Action tier)

However, the exact definition of the semantic predicate AFFECT remains vague and, in Jackendoff's system, it is not clear how, if at all, it relates to the thematic tier. The arguments of AFFECT are stipulated independently of the Thematic tier. This appears to miss a generalization since it seems to be a general fact that whenever the thematic tier is of the form X CAUSE Y COME TO BE IN STATE (or X CAUSE Y COME TO BE AT LOCATION), the subject of AFFECT in the action tier is x and its object is y. The only apparent counterexample to this generalisation is when the Theme argument is incorporated.

(18) Thematic tier:	x CAUSE [y COME TO BE IN STATE/LOCATION]	
Action tier:	x AFFECT y	

In the remainder of this paper, I develop an analysis which attempts to capture this generalisation and to account for this apparent counterexample. I first examine three subclasses of French denominal verbs and I develop an account of the conceptual structure of these verbs which integrates their morphological structure at the same time as allowing me to predict their argument structure. Then, I discuss a class of examples which appear to be counterexamples to the analysis which I develop and I propose a way to account

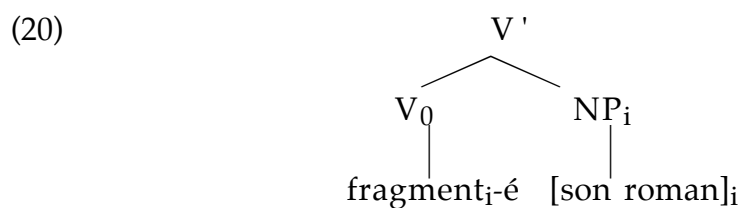
for them. Finally, I turn to the case of the verb *charger* 'load' and show how its behavior may be integrated in the framework which I adopt.

## 2. Lexically affected arguments

Instead of turning directly to verbs incorporating a Theme or a Goal, let us start by examining a class of verbs seldom discussed in this context: verbs which are formed on a noun describing the final state of an entity. A survey of these verbs shows that they take as a direct internal argument the entity on which the nominal root predicates a final state. Examples are given in (19).

- (19) a Eve a **fragmenté** son roman (en épisodes)                      N = fragment  
       Eve has [[fragment]-ed] her novel (in episodes)
- b Jean **amasse** des livres (dans un coin)                      N = amas 'heap'  
       Jean [[heap]-s] books (in a corner)
- c L'enfant **natte** ses cheveux                                      N = natte 'braid'  
       The child [[braid]-s] her hair
- d Lucie a **peloté** la laine    N = pelote 'ball (of yarn)'  
       Lucie has [[ball]-ed] the yarn (=wound the yarn into a ball)

The result is that the incorporated predicate in the verb is a syntactic sister of its subject of predication, as in (20).



The same generalization holds for derived verbs constructed with prefixes like *a-*, *é-*, and *en-* as shown in (21).

- (21) a Eve a **aligné** les pions sur la table N = ligne 'line'  
 'Eve [[a-[lign]]-ed] the pawns on the table'
- b Eve a **émietté** son pain en miettes minuscules (GL:85)  
 N = miette 'crumb'  
 Eve [[crumbl]-ed] her bread into minute crumbs
- c Max a **empilé** les boîtes sur la table (GL:35) N = pile 'pile'  
 Max [[pile]-d] the boxes on the table
- d Jean **entasse** les livres dans un coin N = tas 'heap'  
 John [[pile]-s] the books in a corner

All these verbs take as direct object the entity which ends up in the state described by the incorporated noun. Similarly when the incorporated element is an adjective, as in (22):

- (22) a Eve a **abrégé** son texte de dix lignes (GL:117) A = bref 'short'  
 Eve has [[[short]-en]-ed] her text of ten lines
- b Eve a **allégé** sa valise de trois kilos (GL:117) A = léger 'light'  
 Eve has [[[light]-en]-ed] her suitcase of three kilos

I link this generalisation to the notion of affectedness. Canonical transitive events, like those expressed by the verbs in (19), (21), and (22), in which an entity *x* affects an entity *y* by acting on it, project in syntax a VP where the 'affected' entity is the direct object (Tenny 1987, 1988, Voorst 1986, 1988).

The conceptual primitive *AFFECT* proposed by Jackendoff is used to describe situations. It is used for example with the verb *to hit* in (15). However it is not clear that the meaning of this verb lexically specifies that its object is affected. For example, if John hits the wall with his fist, we have no reason to suppose that the wall is particularly affected by the action (John's fist may be). I propose to define the notion *AFFECT<sub>L</sub>* which I restrict to lexically affected elements. The object argument of *hit* would not be *lexically affected*, although it may be *pragmatically affected*. I define the notion *lexically affected* as in (23):

(23) *AFFECT<sub>L</sub>*

If the LCS of a verb describes the (causation of a) modification of the status of an entity, that entity is *lexically affected*.

The status of an entity *x* in world *w* at time *t* is a set of propositions of type *P(x)* which are true in that world at that time, where *P* identifies a state characterizing the entity; thus *P(x)* is equivalent to *BE(x, STATE)*<sup>4</sup>.

(24) Status of *x* = {*P(x)* | *P(x)* is true in world *w* at time *t*}

*P(x)* = *BE(x, STATE)*.

That it may be useful to distinguish entities that are *lexically* specified as being affected from entities that are not is suggested by a remark of Tsunoda according to whom in some languages, verbs which lexically specify how their

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<sup>4</sup> The status of an entity should not, of course, be determined in a circular manner by relying on the passive of the transitive sentence. Thus, the fact that after being hit the wall is in a state of *having been hit* should not count as determining the status of the wall. The change of state must be independently ascertained.

object is affected, like *kill*, are constructed with an absolutive object, while verbs which don't, like *hit*, are constructed with a dative patient.

(25) Chechen (from Tsunoda 1985:389)

- a kill:     ERG - ABS
- b hit:     ERG - DAT

A closer look at the definition reveals that  $AFFECT_L$  is *not* a semantic primitive. Although it may be atomic at some level of representation, this concept is semantically a cover term for the conceptual structure  $CHANGE\ P(x)$ . Thus,  $[x\ AFFECT_L\ y]$  is equivalent to  $[x\ CAUSE\ [y\ CHANGE\ STATE]]$ . I take an inchoative change of state to be a subcase of  $[CHANGE\ P(x)]$  (cf. also Wunderlich 1991).

(26)      $AFFECT_L(x,y) = CAUSE(x, [event\ CHANGE\ P(y)])$

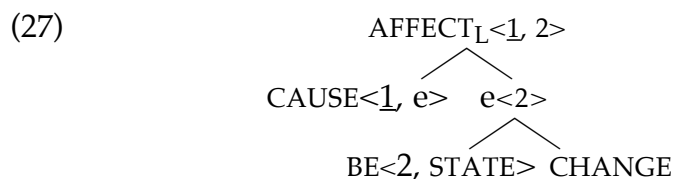
          of which one subcase is:  $CAUSE(x, [event\ INCH\ P(y)])$

          (where  $INCH(OATIVE) = BECOME / COME\ TO\ BE$ )

It is important to stress that the notion  $AFFECT_L$  is defined on the LCS of a verb and not on pragmatic information which one may infer from the type of action described. NOTE however that by defining a notion like  $AFFECT_L$ , I do not mean to imply that there doesn't exist a more extended conceptual notion of affectedness which covers both pragmatically affected entities and lexically affected entities. Note also that I have followed the general practice of using a primitive  $CAUSE$  whose internal argument is an 'event', but these terms should be interpreted with the usual *caveats*. The subject is less a *causer* than

an entity which is directly responsible for and controls the change of state in the object (cf. also Labelle 1990, 1992a, Voorst 1991), and the so-called 'event' argument of *cause* is not necessarily a potentially autonomous event, even if it describes a change of state.

The conceptual structure in (26) may be given a structured tree representation as in (27). (27) captures the direct relation that exists between the semantic predicate AFFECT of Jackendoff's 'action tier' and the thematic LCS 'CAUSE Y COME TO BE IN STATE'.



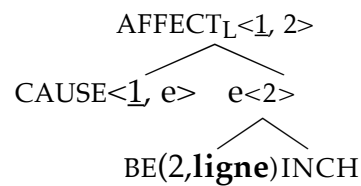
I take (27) to be one of possibly many different templates for transitive clauses. Whenever a verb has a conceptual structure of the type in (27), it projects a VP whose subject corresponds to the external argument of CAUSE and whose internal argument is the entity which undergoes a change of state.

Let us see how these assumptions allow us to account for the facts in (19) and (21). First, consider the verb *aligner* 'to align' in (21a). This verb means 'cause y to come to be in a line'. I assume that it has a LCS of the form in (28a) below. Let us try to specify more precisely the relation between this conceptual structure and the morphological structure of the verb. The incorporated noun identifies the resultant state of the process. It is reasonable to assume that the notion of change or inchoativity (INCH) is carried by the V node. As for the notion of CAUSATION, it is provided by the prefix *a-*. (28c) shows how this

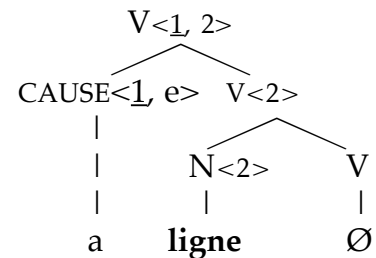
morphological structure is related to the conceptual structure of this verb. The infinitival suffix -r is a flexional suffix which is not part of the derivational morphology of the verb.

(28) a aligner = CAUSE (x, [INCH (**ligne** (y))])    ligne = 'line'

b Conceptual structure:



c Morphological structure

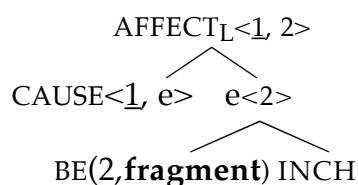


Notice that [CAUSE (x, [INCH [BE (y, IN-LINE)])]] in (28b) forms a constituent semantically interpreted as  $AFFECT_L(x,y)$ . The external argument of  $AFFECT_L$  is the external argument of CAUSE; its internal argument is the unsaturated argument of the event complement of CAUSE, it is projected from the stative predicate. I assume that this structured tree projects in syntax a VP whose external argument is the external argument of CAUSE and whose direct internal argument is the entity interpreted as *lexically affected*, that is, the argument of the stative predicate.

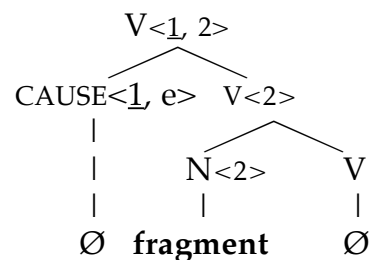
Consider now the verb *fragmenter* 'to fragment' in (19a) and (29). Given that it is interpreted as meaning 'cause y to come to be in fragments', it is reasonable to suppose that its conceptual and morphological structures are parallel to those in (28) except for the fact that there is no overt causative morpheme. This is illustrated in (29).

(29) a fragmenter: CAUSE (x, [INCH (fragment(s) (y))])

b Conceptual structure:



c Morphological structure



Given the assumptions that we have made, the lexical conceptual structures in (28b) and (29b) predict our initial observation that whenever a verb morphologically incorporates an element interpreted as a resultative predicate for an entity, the direct object of the verb is the argument of the resultative predicate.

Let us now turn to the first class of denominal verbs on which we want to focus our attention, those whose N is interpreted as a Goal, as in (1a).

3. The noun describes the final location of an entity.

These are verbs like *entreposer* in (1a) and repeated in (30a).

(30) a Max a **entreposé** des marchandises (dans un couloir) (GL:89)

Max stored the merchandise (in a corridor) N = entrepôt 'warehouse'

b On **remise** les échelles (dans cette salle) N = remise 'shed'

'One [[shed]-s] (=puts away) the ladders (in this room)'

c Eve **abrite** sa voiture (dans la grange) N = abri 'shelter'

Eve puts the car under cover (in the barn)

d La police a **coffré** Max (à Gap) (GL:184) N = coffre 'trunk, box,



Eva puts the plant in a pot

e Eva enrégimente ses amis dans son organisation (GL)

Eva enrolls her friends in her organisation N = régiment 'regiment'

For these verbs the N incorporated in the verb provides a functional description of the final location of the displaced entity. A prepositional complement, which is generally optional, may appear in the sentence. In this case, the prepositional object designates the objective location of the object, while the incorporated noun describes the functional properties of this location. For example, in (30b) this room functions as a shed; in (30c), the barn is a type of shelter, and so on.

Consider the two possible LCS's for these verbs, given in (32).

(32) a CAUSE (x, [GO (y, TO N)])

b CAUSE (x, [INCH (y, AT N)])

While these two LCSs are sometimes used interchangeably, they have different implications. The first one is false if y does not move; this is not so with the second one. For the second one to be true, it is sufficient that a locative relation obtain between y and N. It can be shown that the verbs in (30) and (31) have the LCS in (32b) rather than (32a). The critical examples are given in (33) and (34).

(33) a Max a emprisonné le chat dans la cave.

'Max imprisoned the cat in the cellar'

b Situation: Max closed the door of the cellar.

'Max caused the cat to go to a prison' = false

'Max caused that the cat is in prison' = true

As noted by Boons (1986), (33a) is compatible with a situation where the cat has not been displaced. If the cat was in the cellar in the first place, Max did not have to move it in order for (33a) to be true; he could simply have changed the properties of the initial location by closing the door. In this case, it is true that 'Max caused that the cat is in prison', but it is false that 'Max caused the cat to go to a prison'. Similarly for (34).

(34) a Max **abrite** la voiture dans une grotte (GL:134)

'Max shelters the car in a cave'

> The car goes into the cave

b Max **abrite** la voiture sous une bâche (GL:134)

'Max shelters the car under a sheet'

> The car doesn't move; a sheet is put on the car.

c Eve **abrite** ses yeux derrière des lunettes noires

'Eve protects (shelters) her eyes behind dark glasses'

d Luc a **abrité** son crâne dégarni sous un chapeau de paille

'Luc protected (sheltered) his balding head under a straw hat'

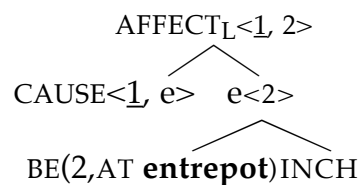
In (34a), we suppose that the car was moved, but in (34b), it is most probable that the car remained in place and that the sheet cover was put on it.

These examples illustrate the fact that some denominal verbs based on a noun designating a location are not verbs of displacement of the direct object. Rather, these verbs describe the causation of a locative relation between an entity in direct object position and a location having the properties identified by the incorporated N. Although in some cases the pragmatics of the situation strongly favors the interpretation of the direct object as displaced, as with the verb *empocher* 'to pocket' in (31a), we may hypothesize that the whole class of denominal verbs based on a locative noun has the meaning in (32b). The incorporated noun functions therefore as a resultative predicate for the final location of the direct object.

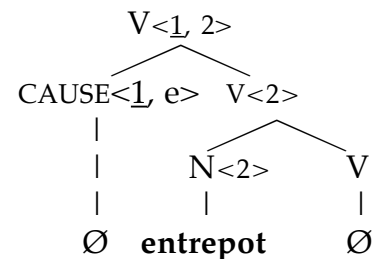
I account for this by proposing that a denominal verb based on a locative noun, like *entreposer* has an LCS of the type illustrated in (35b). The incorporated noun identifies the resultative state, this time a locative state (the semantic primitive AT indicates that *entrepot* is interpreted as being a location).

(35) a *entreposer*: CAUSE (x, [INCH (AT **entrepot** (y))])

b Conceptual structure:



c Morphological structure



Apart from the fact that the resultative predicate is locative rather than being attributive, this LCS is essentially identical to that in (29b). Pragmatics will play an essential role in determining whether the object is moved or not.

Let us now turn to the class of denominal verbs whose incorporated noun describes a displaced entity.

4. The noun describes a displaced entity

Examples of such verbs are given in (36)

- (36) a Max **fleurit** la tombe de géraniums (GL: 36)            N = fleur 'flower'  
       Max [[flower]-s] the grave with geraniums
- b Eva **cadénasse** les grilles.                                N = cadenas 'padlock'  
       Eva [[padlock]-s] the gate.
- c Max a **encre** le tampon. (GL:94)                        N = encre 'ink'  
       Max [[ink]-ed] the pad.
- d Le chœur des instruments **rythmait** la danse.        N = rythme 'rhythm'  
       The chorus of instruments [[rhythm]-ed] the dance
- e Eve a **bosselé** la plaque de cuivre (avec un maillet). (Boons 1984:123)  
       Eve has [[dent]-ed] the copper plate (with a mallet)    N = bosse 'dent'
- f Eva **huile** les gonds de la porte.                        N = huile 'oil'  
       Eva [[lubricate]-s] the hinges of the door

These verbs mean approximately 'to put a Theme somewhere', the Theme being identified by the incorporated noun.<sup>6</sup> They take as direct object the entity interpreted as the final location, or thematic Goal, of the incorporated N. A

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<sup>6</sup> Notice that example (36b) may not be paraphrased as 'cause N to come to be all over' contrary to Jackendoff's (1990, p. 164) proposed interpretation of the meaning of verbs incorporating a Theme. Similarly for (36e).

prepositional complement can in some cases identify more precisely the nature of the incorporated Theme.<sup>7</sup> Therefore, these verbs have an apparently irregular assignment of thematic roles: the Goal argument is realised in direct object position and the Theme argument, when it is expressed, is realised as prepositional object. The same generalisation holds for verbs prefixed with *a-*, *é-* or *en-*<sup>8</sup>:

- (37) a Dr. Andréae (...) aurait **annoté** de sa main le manuscrit. (Gide, *Journal*, 1933:1191) N = note 'note'  
 'Dr. Andreae would have annotated the manuscript himself'
- b Il **égrène** une grappe de muscat. N = graine 'grain, seed'  
 'He picks grapes off the bunch of muscat grape.'
- c Eva **empaille** des chaises. N = paille 'straw'  
 'Eva bottoms the chairs with straw'
- d On **empierra** le chemin. N = pierre 'stone'  
 'One metalled the road'

Remember that Pinker (1989), following Rappaport and Levin (1988), accounts for the non-canonical linking of the Goal to the direct object position

<sup>7</sup> I follow Jackendoff 1990:176 here in assuming that it is a thematic adjunct; similarly for the prepositional object identifying the incorporated location with verbs like *entreposer*.

<sup>8</sup> It also holds for verbs meaning intuitively 'to remove something from a location', the the incorporated N designating the Theme. In this case, the direct object describes the initial location of the Theme. The verb can be prefixed with *dé-* or unprefixes.

- (i) a Eva plume le faisan. N = plume 'feather'  
 Eva plucks the pheasant
- b Eva **dégivre** le congélateur. N = givre 'frost'  
 Eva defrosts the freezer

by assuming a complex LCS where a means-clause is adjoined to the main event as in (38).

(38) John loads the truck with hay

x CAUSE [y COME TO BE IN STATE] [BY MEANS OF x CAUSE z COME TO BE AT y]  
/LOAD

Rather than (38), I propose that the verbs incorporating a noun interpreted as a displaced entity mean approximately 'x cause y to come to have N' as in (39). This idea is also found in Veyrenc (1976):

(39) x CAUSE [INCH [y HAVE N]].

Notice that while the displacement of N may be inferred from (39), since if 'y comes to have N' we are led to assume a movement, real or abstract, of N towards y, verbs having an LCS of the type in (39) are not, despite our initial impression, verbs of displacement of N.

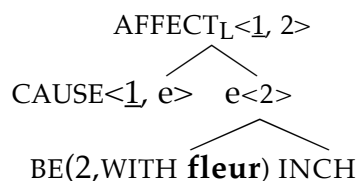
Adopting the LCS in (39) implies that we add HAVE to our list of semantic primitives. The number of semantic primitives can be kept to a minimum by reducing HAVE to a BE-type clause. This is possible if we assume that x HAVE y is equivalent to x BE WITH y (cf. Hale & Keyser, 1990), as in (40):

(40) x HAVE y ≡ x BE WITH y

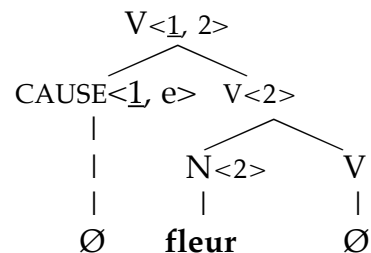
The LCS of verbs incorporating a Theme would be as in (41):

(41) a fleurir: CAUSE (x, [INCH (WITH **fleur(s)** (y))])

b Conceptual structure:



c Morphological structure



The advantages of (41) over (38) are the following: first, the incorporated noun semantically identifies the final state of the process, rather than a component of a means-clause embedded under a complex event without morphological correlate. Second, (41) provides a direct mapping between the conceptual structure of the verb and its argument structure without recourse to a process of lexical subordination or to some special rule of mapping of a Goal argument to the direct object position.

Compare now (35) and (41), summarised in (42). In both cases, the incorporated noun is a predicate on the direct object. The difference between [BE (y, AT-N)] in (35) and [BE (y, WITH-N)] in (41) is parallel to that between 'Flowers are on the tomb' and 'The tomb has flowers on it': the subject-predicate relations between the incorporated noun and the direct object are reversed.

(42) [BE (y, WITH-N)] => [BE (AT-y, N)]

[BE (AT-y, **flowers**)] is to [BE (y, WITH-**flowers**)] as

*Flowers are on the tomb* is to *The tomb has flowers on it*



Eve adds this name to the list

- b Max a **annexé** ces documents au dossier (GL:144)

Max annexed these documents to the file            N = annexe 'annex'

- c Max a **greffé** un sarment sur ce tronc (GL:145)

Max grafted a shoot to the vine                        N = greffe 'graft'

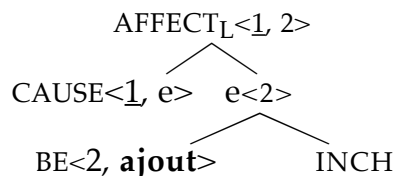
- d Max a **implanté** cette dent dans la gencive (GL:145)

Max implanted this tooth in the gum                N = implant 'implant'

One may think that, in (43), the N to which the verb is related describes a displaced entity. However, this is not correct. Contrary to the verbs examined so far, the nouns do not describe some type of concrete object. (43a) for example, does not mean ??'to put an addition on something'. The addition is the result of the process of adding. A name becomes an addition to a list once it is written on the list. Similarly, a piece of information becomes an annex as a result of the process of placing it at the end of a text. Therefore, the incorporated noun designates the result of the action, and, more specifically, the final state of the direct object.

Because the nouns to which these verbs are morphologically related describe the final state of the direct object, the verbs appear to conform to the generalisation of section 2, according to which when the noun on which the verb is formed describes the final state of an object, that object is realised in direct object position. One may want to assume that these verbs have a conceptual structure like that in (44), similar to the one proposed for the verb *fragmenter*.

(44) *ajouter*:



But proposing (44) as a source for *ajouter* faces the problem of circularity<sup>9</sup>: if the noun is deverbal, it cannot be the morphological source of the verb.

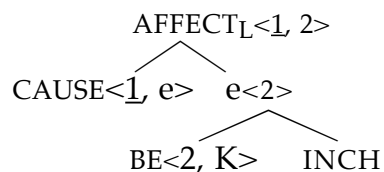
On the other hand, once there is, in a language, a systematic relation between two constructs, as there is here between nouns denoting some semantic constant, *K* in (45a), and verbal conceptual structures of the type (45b),

(45) a.

[*K*]<sub>N</sub>

←—→

b.



it is quite conceivable that the process of word formation can apply both ways. In principle, any noun which may denote an end state can lead to the creation of a verb with the conceptual structure in (45b). Conversely, any verb having the conceptual structure in (45b) may permit the lexicalization of *K* as a noun.

For example, let us suppose that the verb *ajouter* means something like 'to cause some entity to come to be an extra element at the end of some other entity' (simplifying for the sake of exposition). Its conceptual structure would look like that in (46a), and the concept of 'being an extra element at the end of

<sup>9</sup> I thank B. Levin (p.c.) and R. Jackendoff (p.c.) for pointing that out; and R. Jackendoff for discussing this issue with me.



## 5.2 Charger

Consider now the verb *charger* 'to load' which enters into a locative alternation, in French as well as in English.

(47) a Jean a chargé les briques dans le camion.

'Jean loaded bricks into the truck.'

b Jean a chargé le camion de briques.

'Jean loaded the truck with bricks.'

The noun *charge* 'load' may be thought of as a collection of objects that one places on a vehicle in order to carry them somewhere, as in (48).

(48) Le camion a pris sa charge à Montréal et l'a déposée à Québec.

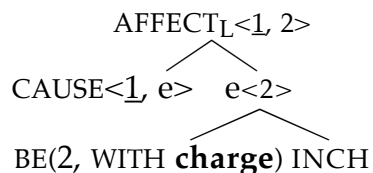
'The truck took on its load in Montreal et discharged it in Quebec.'

In that sense, *load* refers to a displaced entity and the generalisation in (5a) leads us to expect that the final location of this entity will be realised in direct object position. This corresponds to the construction in (47b). If this is correct, the LCS for this use of the verb is as in (49).

(49) Charger (b) = CAUSE (x, [INCH (WITH **charge** (y))])

(which implies: CAUSE (x, [INCH (AT Y, **charge**)])

Conceptual structure:



Now the noun *charge* 'load' may not refer to a location, and, therefore, one cannot turn to a representation like that in (35b), proposed for verbs incorporating a location, to explain the fact that in (47a) the displaced entity is in direct object position. However, this noun may be interpreted as a result state of an entity: an object may become a load as a result of being put on a container. This suggests that the verb *charger* in (47a) is to be analysed like the verbs discussed in section 5.1, where the noun refers to the result of the process.

This analysis accounts for the facts in (50):

- (50) a Eve charge le camion d'une charge exagérée  
       'Eve loads the truck with an excessive load'  
       b ??Eve charge une charge exagérée sur le camion  
       'Eve loads an excessive load on the truck'

The oddness of (50b) is accounted for by the fact that the *load* in this construction is the result of the process, the noun describing the final state of the direct object. The whole sentence would therefore mean something like 'Eve caused an excessive load to become a load', where the result is presupposed to the action.

The main points of this analysis are the following. First, although one generally thinks of the locative alternation with the verb 'load' as involving an

alternation between having a Theme or a Location as direct object, the present analysis focusses on the interpretation of the noun. In one case the incorporated noun is interpreted as an entity located at some place; in the other case, the noun denotes the resultative concept which is part of the meaning of the verb.

A second feature of this analysis is that it appeals to no derivational process between the two uses of this verb. On the contrary, it assumes that the fact that *charger* 'to load' enters two different constructions is due to the fact that it is compatible with two different conceptual structures. This approach follows the spirit of that found in Pinker (1989) according to whom the alternations in argument structures are due to what he calls 'gestalt shifts'.

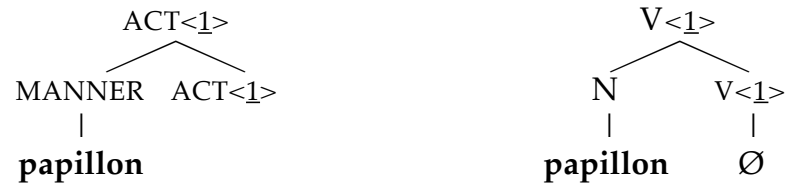
Now, one may wonder why the verb *charger* 'load' enters an alternation but not a verb like *fleurir*, 'to put flowers on', for example, although it has an LCS similar to (49). One potential answer to that question lies in the type of noun involved. Nouns like 'flower' denote a class of concrete objects. By contrast, the noun 'load' may designate an entity with respect to the fact that it has undergone a certain process. It is this resultative interpretation of the noun which is the source of the construction in (47a). If this is right, it confirms that it is not an operation on conceptual structure which accounts for the alternation in argument structure of the verb *charger* 'to load', but availability of two different ways of conceptualising the lexical structure of the verb.

This approach is supported by the fact that denominal verbs may take a variety of meanings according to the semantic role attributed to the noun on which the verb is formed (cf. Clark and Clark 1979, Duszak 1980). Aside from







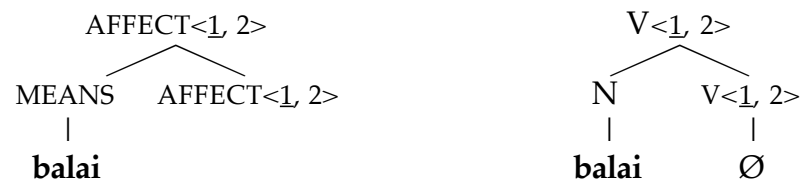


Similarly, a verb like *balayer* 'to sweep', deverbal from the noun *balai* 'broom' probably means something like 'USE A BROOM ON something', which we may translate as 'AFFECT something WITH A BROOM'. We may speculate that the conceptual structure of this verb is somewhat like in (55), where the incorporated noun identifies a Means function and where the V node contributes the atomic predicate AFFECT. AFFECT here is like AFFECT<sub>L</sub> except for the fact that the nature of the final state is not lexically specified, but must be inferred from the institutionalized role of the instrument. Pragmatic knowledge of what a broom is allows us to infer the meaning 'push dirt away by using a broom'.

(55) a *balayer* [balai]<sub>V</sub> : use a broom on y = AFFECT y WITH **BROOM**

b Conceptual structure:

b Morphological structure



This bit of speculation allows us to explain rather nicely the contrast in (56) noted by Watt (1973:466, 469).

(56) a Dognog wanted to NAIL the boards together, but Gripsnake made him do it with TAPE. (Watt 1973, ex. 21)

- b \*Dognog wanted to BOTTLE the home-brew, but Deadwood wanted to do it in pickle-barrels. (Watt 1973, ex. 25)

This contrast could show that *do it* in these examples is anaphoric of the basic predicate AFFECT. Suppose that 'nail' has the conceptual structure in (55a). We see that *do it* in (56a) is not anaphoric to *nail*. Its antecedent is something like *to fasten* which we may identify with the value of AFFECT, a value inferred from our pragmatic knowledge of the institutionalized use of nails. The means adjunct functions here like a syntactic adjunct phrase in not being obligatorily referred to by *do it*. In (56b), on the other hand, the noun *bottle* describes the final location of an entity. The conceptual structure we have proposed for this type of verbs is that in (35b). In this case, the incorporated noun is an internal argument of AFFECT<sub>L</sub>, and it functions like a syntactic internal argument in being necessarily referred to by *do it*.

To conclude, I have attempted to show that a careful examination of denominal verbs provides us with interesting hypotheses regarding potential primitives for word meaning. Moreover, by attempting to systematically relate the conceptual structure of denominal verbs, their morphological structure and their syntactic frame, I have shown that it is possible to predict the syntactic realisation of the arguments of these verbs. A conceptual analysis of these verbs may also allow us to understand the availability of aspects of meaning of the verbs in constructions where the verb is anaphorically referred to.

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