THE OLD ENGLISH VERBS OF *SMELL PERCEPTION* AND *EMISSION*: ANALYSIS OF THE INTERFACE OF THEIR SEMANTIC AND SYNTACTIC REPRESENTATION[1]

1. INTRODUCTION

The aim of this paper is to provide the information necessary to establish the interaction of meaning and syntax in the set of verbs designating *smell perception* and *emission* in Old English. As a result of the analysis of these verbal predicates, a *lexical template* will be proposed for each lexical subclass. Following the Lexical Grammar Model, a *lexical template* encodes the semantic description of a lexical (sub-)class in a formal system of representation which will allow us to explain the syntactic and morphological phenomena within a given lexical (sub-)class. In consonance with this, this theory puts forward a procedure of lexical representation by means of an inventory of *lexical templates* and lexical mapping rules which will enable us to account for the syntactic configuration of a given predicate.

This analysis has been applied to the verbal predicates *bladesian*, *eðian, (ge)stincan, geswæccan, hrenian, recelsian, reocan, steran*, and (*to)stincan*, which according to *A Thesaurus of Old English* express the faculty of smell in Old English.[2] We posit that these lexemes will show basically the same morphological and syntactic behaviour, except for certain particularities which may arise in a detailed description of these lexical units, as this paper will point out. In order to exemplify this research, the Old English

[1] This paper is part of the research projects EX2003-0118 and BFF2002-00659, funded by the State University Office with Social European Funds, and the Spanish Ministry of Science and Technology, respectively. Besides, my thanks to Drs. Francisco Cortés and Ricardo Mairal for generous assistance.

[2] The predicate *æþmian*, though primarily included by Roberts and Kay within this group, has been excluded since in the lexicographic sources below this lexeme appears defined as *to raise vapour, boil,* or *to be heated*. Likewise, we have not obtained examples for the predicates *gewyrtian*, *besmocian*, and *drincan,* sharing the meaning *to perfume.*

dictionaries by Bosworth & Toller (B&T) and Toller & Campbell (T&C) and *The Helsinki Corpus of English Texts* (HSK) will supply us with the contexts in which these lexemes appear.

2. THE CONCEPT OF *LEXICAL TEMPLATE*: SEMANTIC DECOMPOSITIONS ENRICHING ROLE AND REFERENCE GRAMMAR LOGICAL STRUCTURES

Within the Lexical Grammar Model, *lexical templates* are conceived as lexical representations which include syntactic and semantic information within the same format, supplying Role and Reference Grammar logical structures with a semantic decomposition which will define different lexical classes (cf. Cortés & Mairal 2001; Mairal & Cortés forthcoming; Mairal & Faber 2002; Mairal & Van Valin 2001).

Van Valin & LaPolla (1997)'s logical structures are based on the classification of predicates attending to their *Aktionsart*, making reference to the inherent properties of the events that the predicates designate. This classification implies a way to capture syntactic and morphological phenomena, such as the combinatory possibilities of predicates and case assignment, characteristic of the different verbal classes. Thus, within Role and Reference Grammar four classes of verbal predicates are distinguished: *states* [+static, -telic, -punctual], *activities* [-static, -telic, -punctual], *achievements* [-static, +telic, +punctual], and *accomplishments* (or *active accomplishments*) [-static, +telic, -punctual], together with their causative counterparts.

These are the lexical representations corresponding to the verbal classes mentioned above (Van Valin & LaPolla 1997: 109):

Verb class	Logical structure
State	**predicate´** (x) or (x, y)
Activity	**do´** (x, [**predicate´** (x) or (x, y)])
Achievement	INGR **predicate´** (x) or (x, y), *or* INGR **do´** (x, [**predicate´** (x) or (x, y)])
Accomplishment	BECOME **predicate´** (x) or (x, y), *or* BECOME **do´** (x, [**predicate´** (x) or (x, y)])
Active accomplishment	**do´** (x, [**predicate$_1$´** (x, (y))]) & BECOME **predicate$_2$´** (z, x) or (y)
Causative	α CAUSES β where α, β are LS of any type

Table 1: Lexical representations for Aktionsart *classes*

As the chart above shows, logical structures follow the conventions of formal semantics. Constants, in boldface followed by a prime, are part of the semantic metalanguage and will be applied to any language. However, variables in normal typeface are filled by lexical items from the language under study. Finally, the elements in capitals, such as INGR, BECOME or CAUSE, will modify the predicate (cf. Van Valin & LaPolla 1997: 102).

However, more information is required for a detailed description of lexical units, since logical structures lack the semantic information characteristic of lexical classes. This is achieved by incorporating the semantic and syntactic features (internal variables and semantic primitives and external variables, respectively) which are common to the set of verbs which belong to the same lexical class into one unified representation.

Thus, in order to construct a *lexical template*, logical structures will be complemented by a semantic decomposition in terms of ontological constants or internal variables and semantic primitives corresponding to the different lexical classes. The result will be a procedure of lexical representation where meaning description is encapsulated and interacts with the syntactic behaviour of lexical units. Accordingly, Mairal & Faber (2002: 54) describe *lexical templates* in the following way:

> Lexical templates conflate both syntactic information (those aspects of the meaning of a word which are grammatically relevant) and semantic information (those aspects which act as distinctive parameters within a whole lexical class) into one unified representation.

3. THE LEXICAL CLASS OF *SMELL* VERBS IN OLD ENGLISH

Taking into account the information provided by the lexicographic sources mentioned in the introduction of this paper, one interesting feature of the architecture of the lexical class of *smell* verbs is that it appears divided into two major subclasses: a first one corresponding to the verbs that express the apprehension of things through the sense of smell, and a second one, integrated by those verbal predicates that do not denote any activity in terms of which a smell is perceived, but merely encode the emission of a smell.

Therefore, two general (or *canonical*) *lexical templates* must be posited:

a) *Smell perception*:

[[**do**´ (x, [**use**´ (x, **nose**´)])] CAUSE [**have.air.in.lungs**´ (x)]] CAUSE [INGR **feel**´ (x, z)]

This lexical representation involves two subevents where an effector (x) participates in the activity of breathing in, which has been further decomposed in the first subevent [[**do**´ (x, [**use**´ (x, **nose**´)])] *CAUSE* [**have.air.in.lungs**´ (x)]], causing the second subevent [INGR **feel**´ (x, z)], where the effector perceives (z). Besides, the operator INGR (*ingressive*) stands for a punctual state of affairs, as encoded in this terminal subevent.

This *template*, thus, contains the logical structure of a *causative active accomplishment* showing two external variables (x) and (z), or external argument positions, marked in Roman letters, which will have a syntactic representation. Moreover, the internal variable and instrument **nose**´ can have a syntactic realisation, as will be shown in the *instrument construction* below.

b) *Smell emission*:

[**have**.**smell**´, [**be**´ (smell**,** [**(un)pleasant**´])] (x)]

This second *template* codifies mainly the emission of a smell (pleasant or unpleasant, depending on the constructions), with no specification of the source of such smell or of any causing entity or activity.

4. FROM *LEXICAL TEMPLATES* TO MORPHO-SYNTACTIC STRUCTURES: THE LINKING ALGORITHM WITHIN THE LEXICAL GRAMMAR MODEL

The two general *lexical templates* proposed above not only include the semantic information corresponding to the set of verbs of *smell perception* and *emission* in Old English, respectively, but also will allow us to explain the morpho-syntactic structures and alternations shown by these verbal predicates. Then, the linking system entails two phases: the first phase of linking will depart from the general *lexical templates* in order to provide an adequate description of the semantics of the constructions where the lexical class of *smell* verbs participate. The second phase of linking, on the other hand, will make use of a set of morpho-syntactic rules in order to describe the morphological and syntactic structure of the constituents in the different constructions.

In consonance with this, the first phase of the linking algorithm attempts to apply the *Lexical Template Modeling Process,* which by means of an inventory of lexical mapping rules proposed by Mairal & Cortés (forthcoming) will enable us to account for the mapping between the general *lexical template* and the semantic constructions shown by the members of each lexical subclass, together with their corresponding construction-based *templates*, that is, *transitive construction*, *instrument construction*, and *unspecified object construction* within the lexical subclass of *smell perception*, and *stimulus subject construction* and *resultative stative construction* in the subclass of *smell emission*.

The *Lexical Template Modeling Process* has been summarised by Mairal & Faber (2002: 87) as follows:

> Lexical templates can be modeled by suppressing external variables, instantiating internal variables, eliminating operators (e.g. CAUSE), or else, by introducing elements resulting from the fusion with other templates iff there is a compatibility between the

features in the lexical template and the syntactic construction under scrutiny.

With regard to the second phase of linking, the *macrorole assignment principles* will motivate the syntactic and morphological behaviour of these verbal predicates from their semantic structure. They concern the assignment of the macroroles Actor and Undergoer, which are "generalizations across the argument-types found with particular verbs which have significant grammatical consequences" (cf. Van Valin & LaPolla 1997: 139).

Thus, the *Actor* macrorole comprises those arguments whose nature is closer to that of an Agent and the *Undergoer* subsumes those arguments closer to a Patient. Macroroles are only assigned to core arguments, that is, arguments with no morphological marking as in Present-day English or marked by a grammatical case as in Old English,[3] in opposition to oblique arguments, which are introduced by prepositions.

According to Van Valin & LaPolla's *macrorole assignment principles* (1997: 152-53), the first argument of verbs of *smell perception* designating an activity will take the macrorole Actor and the second argument Undergoer, whereas in the case of *smell emission* these predicates involve a state where the first argument becomes Undergoer.

Moreover, *case assignment* is also predicted by the assignment of macroroles: nominative will be assigned to the Actor and Undergoer in the events encoded in the subclasses of *smell perception* and *smell emission*, respectively, and accusative to the Undergoer in the subclass of *smell perception*, except when syntactically realised by a complex structure, as will be shown below.[4]

[3] For a detailed discussion of the Old English grammatical case, see Allen 1995, Denison 1993, Fischer *et al*. 2000, McLaughlin 1983, and Mitchell 1985.

[4] For an exhaustive treatment of Old English syntax from the RRG perspective, with special attention to the relationship between arguments, macroroles and grammatical cases, see Martín 2001, Martín & Caballero 2002, and Roberts 1995.

5. FROM THE *LEXICAL TEMPLATE* OF VERBS OF *SMELL PERCEPTION* TO THEIR SEMANTIC CONSTRUCTIONS

We will now turn our attention to the semantic constructions where the set of verbs of *smell perception* participate. The Old English predicates which express the perception of a smell are *eðian*, (*ge)stincan*, *geswæccan, hrenian*, and (*to)stincan.*

5.1. TRANSITIVE CONSTRUCTION

(1) *Ðonne ge ða swetan stencas* ***gestincaþ***, 'When you smell the sweet odours' (B&T: Blickl. Homl. 59, 3)

(2) *Æfæst næfre win* ***hrenige***, 'The religious never smells the wine' (T&C: Scint. 106, 5)

Properties

[[**do**´ (x, [**use**´ (x, **nose**´)])] *CAUSE* [**have.air.in.lungs**´ (x)]] CAUSE [INGR **feel**´ (x, z)]

x Nominative Actor

z Accusative Undergoer

Comments

The first construction under study is the *transitive construction*. As the *Lexical Template Modeling Process* stipulates, the corresponding construction-based *template* above which provides a semantic representation of this construction and the general *lexical template* codified by this lexical subclass meet the lexical mapping rule "full matching", introduced by Mairal & Cortés (forthcoming), according to which there exists an identification of variables, subevents and operators between both the general *lexical template* and the constructional *template*. Therefore, this constructional *template* coincides entirely with the general *template* above. Moreover, applying the *macrorole assignment principles*, the variable (x) takes the macrorole Actor and Nominative case and the variable (z) takes the Undergoer macrorole and Accusative.

5.2. INSTRUMENT CONSTRUCTION

(3) *We oft **gestincað** mid urum nosum ðæt we mid urum eagum gesion ne magon*, 'We usually smell with our noses what we cannot see with our eyes' (T&C: Past. 433, 20)

(4) *Hy mid nosan ne magon naht **geswæccan***, 'They cannot smell anything with the nose' (T&C: Dom. L. 207)

(5) *Ðurh ða nosu we **tostincaþ**, hwæt clæne biþ, hwæt ful*, 'Through the nose we smell what is clean and what is dirty' (B&T: Homl. Th. ii. 372, 30)

Properties

[[**do**´ (x, [**use**´ (x, **nose**´)])] *CAUSE* [**have.air.in.lungs**´ (x)]] CAUSE [INGR **feel**´ (x, z)]

x Nominative Actor

z Accusative / Clausal subordination Undergoer

nose´ *mid/ ðurh* + Dative/Accusative Argument-Adjunct

Comments

The second construction to be analysed is the *instrument construction*. The corresponding constructional *template* and the general *lexical template* also meet the lexical mapping rule "full matching". As observed in this constructional *template*, not only the two external variables (x) and (z) have a syntactic realisation, but also the internal variable and instrument **nose**´, as opposed to the previous semantic construction. Taking into account the first subevent in the constructional *template*, [**do**´ (x, [**use**´ (x, **nose**´)])], where according to Mairal & Cortés (forthcoming) "the potential instrument is part of a causal chain and the argument of an implement predicate like **use**´", if (x) is chosen as Actor, then the instrument **nose**´ will be introduced by the Old English prepositions *mid* or *ðurh*.

According to Jolly (1991)'s description of prepositional phrases, both *adjunct prepositions* and *argument-adjunct prepositions* are predicates "in their own right," but the difference between them is that the former "introduce an NP into the clause and head PPs which are peripheral (adjunct) modifiers of the core," whereas the latter "introduce an argument into the

clause and share it with the LS of the core, rather than taking the LS of the core as an argument" (Van Valin & LaPolla 1997: 159).

In order to account for the *argument-adjunct* prepositions combined with *smell* verbs, we must apply Van Valin (2004)'s lexical rule, which says:

> Assign *with* [Old English *mid, ðurh*] to a non-MR argument which is a possible actor […] but which is not selected as a MR.

Applying the *macrorole assignment principles*, the variable (x) takes the macrorole Actor and Nominative case, **nose**′ as an argument-adjunct will be assigned the prepositions *mid* or *ðurh*, and (z) takes the Undergoer macrorole and Accusative, except in the case of being syntactically realised by complex structures.

Within Role and Reference Grammar, complex structures are the result of combining the theory of juncture and the theory of nexus. The theory of juncture deals with the types of units involved in complex constructions derived from the layered structure of the clause, that is, nuclear, core, clausal, or sentential. The theory of nexus, on the other hand, takes into account the type of relationship among the units in complex constructions: coordination, cosubordination or subordination. The difference between subordinate and non-subordinate junctures lies in the fact that only the former function as arguments of the main verb, since they may be clefted and occur as privileged syntactic arguments in a passive construction (cf. Van Valin & LaPolla 1997: 461-62). Thus, as the properties in this construction illustrate, clausal subordinations will take the macrorole *Undergoer*.

5.3. UNSPECIFIED OBJECT CONSTRUCTION

(6) *Habbaþ opene nose, ne magon* ***eðian***, 'They have open noses, but they cannot smell' (B&T: Ps. 113)

(7) *Sume magon gehiran, sume* ***gestincan***, 'Some can hear, some can smell' (B&T: Bt. 41, 5; Fox 252, 24)

Properties

[[**do**′ (x, [**use**′ (x, **nose**′)])] *CAUSE* [**have.air.in.lungs**′ (x)]] CAUSE [INGR **feel**′ (x, Ø)]

x Nominative Actor

Comments

The last construction to be explained within this lexical subclass is the *unspecified object construction*. Levin (1993: 33) posits that this construction "is manifested with a wide range of activity verbs. […] The verb in this variant is understood to have as object something that qualifies as a typical object of the verb". The corresponding constructional *template* and the general *lexical template* meet the lexical mapping rule "suppression of variables", according to which "canonical LT variables can be suppressed iff the basic interpretation of the canonical LT is not violated" (cf. Mairal & Cortés forthcoming). Therefore, in this constructional *template* there will be only a macrorole Actor corresponding to the variable (x) and taking Nominative case, since the external variable (z) is not lexically filled.

As a conclusion from the above discussion, it should be pointed out that taking into account the *Lexical Iconicity Principle-Beta Reading* (cf. Cortés & Mairal 2002: 20), which says that the syntactic variability of a lexeme is connected with its higher position within the semantic hierarchy of a given (sub-)class, the predicate *stincan* (together with its variables *gestincan* and *tostincan*) seems to codify a generic meaning within the lexical subclass of *smell perception* since it participates in all the semantic constructions described above (cf. examples in (1), (3), (5), and (7)), whereas the predicates *eðian*, *geswæccan,* and *hrenian,* which only take part in a semantic construction, the *unspecified object construction*, the *instrument construction*, and the *transitive construction*, respectively (cf. (6), (4), and (2)), can be regarded as more specific.

6. FROM THE *LEXICAL TEMPLATE* OF VERBS OF *SMELL EMISSION* TO THEIR SEMANTIC CONSTRUCTIONS

The Old English predicates which express the emission of a smell are *bladesian*, *recelsian*, *reocan, steran,* and *stincan.* The semantic constructions under this lexical subclass are presented below:

6.1. STIMULUS SUBJECT CONSTRUCTION

a.1. (8) ***Bladesiað***, 'They smell (pleasantly)' (T&C: An. Ox. 554)

a.2. (9) *nu he **stingð***, 'Now he smells (unpleasantly)' (HSK: Cowsgosp <R 11.39>)

(10) *he **rycþ***, 'He smells (very strongly)' (B&T: Lchdm, i. 260, 8)

(11) *Ond se lichoma **stanc** ond þæt heafod swa swote swa rosan blostma ond lilian*, 'And the body and the head smelt as sweaty as roses and lilies' (HSK: Comartyr <R 2373>)

(12) *ond ic fulre eom þonne þis fen swearte þæt her yfle adelan **stinceð***, 'And I am more unclean than this dark dirt that here smells like evil dirt' (HSK: Coriddle <R 27>)

Properties

a.1. [**have**.**smell´**, [**be´** (smell**,** [**pleasant´**])] (x)]

x Nominative Undergoer

a.2. [**have**.**smell´**, [**be´** (smell**,** [**unpleasant´**])] (x)]

x Nominative Undergoer

Comments

The first construction under study within the lexical subclass of *smell emission* is the *stimulus subject construction*. As Levin (1993: 188) points out, these predicates "do not take the perceiver as their subject", as in the subclass of *smell perception*. "Rather, these verbs take the stimulus as their subject and express the perceiver in a *to* prepositional phrase. In addition, these verbs take an adjective phrase complement predicated of the stimulus", (cf. (11) and (12)). However, in opposition to Present-day English, the Old English predicates in the *stimulus subject construction* do not express lexically the perceiver.

Thus, in this constructional *template* there will be only a macrorole Undergoer corresponding to the emitter of a pleasant (in a.1) or unpleasant (in a.2) smell, that is, the variable (x), which takes Nominative case since the state of affairs in this constructional *template* denotes a stative logical structure.

6.2. RESULTATIVE STATIVE CONSTRUCTION

a.1. (13) ***Ster*** *hyne mid ðære wyrte*, 'Perfume him with the herb' (B&T: Lchdm. i. 98, 19: 206, 2)

a.2. (14) ***Recelsa*** *hine*, 'Perfume it (with incense)' (B&T: Lchdm. ii. 344, 18)

Properties

a.1. [**do**´ (w, [**use**´ (w, y)])] CAUSE [**have**.**smell**´, [**be**´ (smell**,** [**pleasant**´])] (x)]

w Nominative Actor

y *mid* + Dative Argument-Adjunct

x Accusative Undergoer

a.2. [**do**´ (w, [**use**´ (w, Ø)])] CAUSE [**have**.**smell**´, [**be**´ (smell**,** [**pleasant**´])] (x)]

w Nominative Actor

x Accusative Undergoer

Comments

The last construction to be explained is the *resultative stative construction*. This constructional *template* and the general *lexical template* above meet the lexical mapping rule "predicate integration condition", according to which "the constructional template may introduce a new predicate into the canonical lexical template if the semantics of the added predicate is compatible with the semantic content of the lexical template. A case in point is the middle, the caused motion and the resultative construction" (cf. Mairal & Cortés forthcoming).

That is the case of the constructional *templates* in (a.1) and (a.2), in which a new subevent is introduced, [**do**´ (w, [**use**´ (w, y)])] and [**do**´ (w, [**use**´ (w, Ø)])], respectively. In these constructional *templates* the external variable (w) acts as effector using the instrument (y) in order to cause the emission of a pleasant smell. Thus, (w) functions as Actor and takes Nominative case, the variable (y) when lexically filled, as already described in the *instrument*

construction, will be introduced by the preposition *mid*, and finally (x) will take the Undergoer macrorole and Accusative case.

Finally, it is important to note that, unlike the subclass of *smell perception*, the results obtained for the lexical subclass of *smell emission* have proved that it is quite impossible to distinguish a lexical unit showing a more generic or prototypical nature in terms of the *Lexical Iconicity Principle-Beta Reading*; in fact, as illustrated above (cf. examples in (8-14)), the predicates which participate in the *stimulus subject construction,* that is, *bladesian*, *reocan,* and *stincan,* do not take part in the *resultative stative construction* (in which *recelsian* and *steran* do), and vice versa.

7. CONCLUSION

The notion of *lexical template* has been integrated in the Lexical Grammar Model framework for lexical analysis as a way of representing the interaction between syntax and semantics within lexical classes. Thus, *lexical templates* enrich the logical structures as developed by Van Valin & LaPolla (1997) with a semantic decomposition which allows for the capture of generalisations within verbal classes, reducing the information to be included in the lexical entries.

Therefore, this paper has accounted for the interaction between the semantic structure of the set of verbs conforming the lexical subclasses of *smell perception* and *emission* in Old English and their syntactic behaviour, together with the morphological marking of the constituents in the sentences where they appear. Thus, our proposal of a general *lexical template* for these two verbal subclasses and a set of linking mechanisms between the constructional *templates* and the morphological and syntactic patterning exhibited by their members implies a way to capture the interrelation of the semantic and syntactic structure of *smell* verbs.

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