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**OLD ENGLISH SEMANTIC PRIMES:
EVENTS, MOVEMENT, CONTACT**

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PhD Dissertation supervised by Prof. Javier Martín Arista

2016

Department of Modern Languages

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To my mother

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CONTENTS

Index of figures	i
1. Introduction	1
2. Summary of results	8
3. Journal articles	12
3.1. Mateo Mendaza, R. 2013. The Old English exponent for the semantic prime TOUCH. Descriptive and methodological questions. <i>Australian Journal of Linguistics</i> 33(4): 449-466.	12
3.2. Mateo Mendaza, R. 2016a. The search for Old English semantic primes: the case of HAPPEN. <i>Nordic Journal of English Studies</i> 15 (1): 71-99.	32
3.3. Mateo Mendaza, R. 2016b. The Old English exponent for the semantic prime MOVE. <i>Australian Journal of Linguistics</i> . DOI: 10.1080/07268602.2016.1169976	57
4. Conclusions	79
5. Discussion: lines of future research	82
References	84

INDEX OF FIGURES

Figure 1: The inventory of semantic primes by category.

Figure 2: Explication for *sad*.

Figure 3: The minimal frame and valency options for SAY.

1. INTRODUCTION

This section reviews the theoretical foundations of this work, states the aims of the research and describes the methodology of the study in the Old English exponents for the semantic primes TOUCH, HAPPEN and MOVE conducted by Mateo Mendaza (2013, 2016a, 2016b).

Beginning with the theoretical basis of the research, semantics has been studied on the grounds on different theoretical approaches. On the last forty years, a new semantic approach has gained importance within this field and, especially, in the province of semantic analysis. This approach, the Natural Semantic Metalanguage (hereafter NSM), is a method of lexical semantic analysis based on the principle of reductive paraphrase. This principle aims at expressing semantically complex concepts with exact paraphrases comprising maximally simple, intelligible and translatable words, thus avoiding the circularity and terminological obscurity of other frameworks (Goddard and Wierzbicka 2002: 5).

The NSM theory holds the idea that every natural language contains an irreducible semantic core by means of which any concept can be decomposed. This semantic core consists of *semantic primes*, this is to say, simple, indefinable meanings which can be identified in all the languages of the world. Semantic primes combine with each other to create a metalanguage on the basis of the principle of reductive paraphrase. In this way, semantic primes can be used to express complex concepts with the same expressive power as a full natural language. The current list of semantic primes is displayed in figure 1.

I~ME, YOU, SOMEONE, SOMETHING~THING, PEOPLE, BODY	Substantives
KIND, PARTS	Relational substantives
THIS, THE SAME, OTHER~ELSE	Determiners
ONE, TWO, SOME, ALL, MUCH~MANY, LITTLE~FEW	Quantifiers
GOOD, BAD	Evaluators
BIG, SMALL	Descriptors
KNOW, THINK, WANT, DON'T WANT, FEEL, SEE, HEAR	Mental predicates
SAY, WORDS, TRUE	Speech
DO, HAPPEN, MOVE, TOUCH	Actions, events, movement, contact
BE (SOMEWHERE), THERE IS, BE (SOMEONE)'S, BE (SOMEONE/SOMETHING)	Location, existence, possession, specification
LIVE, DIE	Life and death
WHEN~TIME, NOW, BEFORE, AFTER, A LONG TIME, A SHORT TIME, FOR SOME TIME, MOMENT	Time
WHERE~PLACE, HERE, ABOVE, BELOW, FAR, NEAR, SIDE, INSIDE	Space

NOT, MAYBE, CAN, BECAUSE, IF
VERY, MORE
LIKE~AS~WAY

Logical concepts
Intensifier, augmentor
Similarity

Figure 1. The inventory of semantic primes by category (based on Goddard and Wierzbicka 2014: 12).

Apart from their canonical form, some of these semantic primes can undergo contextual variations and others can express combined meanings. This is the case with *allolexes* and *portmanteaus*. Allolexes are defined by Goddard and Wierzbicka (2002: 20) as words emerged from *situations in which several different words or word-forms (allolexes) express a single meaning in complementary contexts*. In figure 1, allolexes are presented with the symbol ~. Regarding portmanteaus, they are words that express the combined meaning of two or more different semantic primes in a single form in a given language. The combination of the primes CAN and NOT expressed in English with the word *can't* is an illustrative example of portmanteaus (Goddard and Wierzbicka 2002: 23).

The identification of semantic primes leads to the semantic decomposition of complex terms by mean of reductive paraphrase. This semantic analysis is described in terms of *explications*. Explications combine, under the given grammatical rules, different semantic primes to express complex meanings in an exhaustive way. The representation of explications must be done in the appropriate way, since the linear order of the components, the way in which clauses and sentences are separated in lines and the indenting, is essential to describe the meaning of complex terms, as is shown in figure 2:

X feels *sad* =
X feels something
Sometimes a person thinks like this:
 I know something bad happened
 I don't want things like this to happen
 I can't think now: I will do something because of this
 I know I can't do anything
Because of this, this person feels something bad
X feels something like this

Figure 2. Explication for *sad* (Goddard and Wierzbicka 2002: 80).

The way in which semantic primes combine within explanations contributes to the morphosyntactic description of the language at stake, including word-order, inflection, morphological case, agreement, etc.

Although some primes share a core of properties, each semantic prime has some combinatorial properties manifested in all languages. Within this universal syntax, some primes present basic combinatorial properties, as in instances involving specifiers and substantives such as THIS THING. Furthermore, predicates –KNOW, HEAR, HAPPEN, DO, SAY, etc.- can occur with a substantive phrase to create a simple NSM clause such as SOMETHING HAPPENS. Clauses in which predicates appear only with their obligatory complement substantive phrases are said to display its basic or *minimal frame*. Apart from its minimal frame, most predicates also open a slot for other substantive phrases that are regarded as extended frames in which additional arguments fill out the aspects of the situation implied by the nature of the predicate (Goddard 2008: 13). These extended frames are called *valency options*. Figure 3 represents the minimal frame and valency options for SAY.

someone DOES something	
someone DOES something to someone/something	[patient]
someone DOES something to someone/something with something	[instrument]
someone DOES something with someone	[comitative]

Figure 3. The minimal frame and valency options for SAY.

The aspects of the NSM framework raised in this brief review, including meaning explanation by means of reductive paraphrase, the language-dependent grammar structure of explications and, above all, the universality of the semantic primes, make this theory a suitable conceptual model for semantic analysis.

Within this general framework, the main aim of NSM researchers has been to prove the universal validity of semantic primes, which entails the identification of the exponents for primes in the natural languages. This has been accomplished not only in the most widely used languages such as Polish, Spanish, French, Arabic, Russian, Danish, Japanese or Chinese but also in languages spoken by small communities such as East Cree (Canada), Arrernte and Kayardild (Australia), Karuk (California) or Maori (New Zealand) (Goddard and Wierzbicka 2002, 2014; Goddard 2008). These studies, carried out by native speakers of the given language, include not only the word selected

as prime exponent, but also a description of their grammatical and combinatorial properties within the language.

Along with the search for the exponents of semantic primes, the NSM has pursued other lines of research. Firstly, in order to enhance the systematicity of the analysis, the notions of *semantic molecules* and *semantic templates* have been introduced. A semantic molecule is described as a *complex lexical meaning which functions as a semantic unit (or “chunk”) in the structure of other, more complex concepts* (Goddard 2008: 19). These terms appear within the explanations of some words of the concrete lexicon which are not possible to explain in a successful way by using semantic primes alone. Semantic molecules in English include physical activities (‘eat’, ‘sit’, ‘hold’), parts of the body (‘hands’, ‘feet’), life-forms (‘animal’, ‘fish’, ‘tree’), social and family concepts (‘women’, ‘children’, ‘father’), among others. Secondly, semantic templates emerge from the improvement of explications by incorporating new material to make an in-depth description of complex concepts. Goddard (2012: 725) describes a semantic template as a *structured set of component types shared by words of a particular semantic class*. NSM researchers have proposed template structure for artefact and natural kind terms, adjectives and for physical activity verbs. Semantic templates are divided into sections that express different aspects of the concept under analysis in terms of complex explications which also include semantic molecules. These sections convey description of the Lexico-Syntactic Frame, the Prototypical Motivational Scenario, Manner, Instrument and the Potential Outcome.

Finally, the NSM researchers have investigated the application of the NSM theory to other disciplines. Thus, we find NSM studies on language acquisition and how primes are attested in child speech, sociolinguistic studies focused on cultural scripts and the application of primes to non-verbal communication (Goddard 2011).

In spite of these advances, just a few studies have been conducted on the identification of primes in historical languages. Such identification can also contribute to testing the universal validity of the NSM, given that historical languages constitute earlier stages of spoken languages and, ultimately, older varieties of natural languages. The first historical language searched for the exponents of semantic primes was Old English, spoken in Britain between the 5th and the 11th centuries and characterised, as the other old Germanic languages, by the Germanic lexical stock, generalised nominal, adjectival and verbal inflection as well as relatively free word-order. The works on Old English semantic primes by Martín Arista and Martín de la Rosa (2006), de la Cruz

Cabanillas (2007) and Guardddon Anelo (2009) identify the exponents for the semantic primes included from the categories *Substantives*, *Determiners* and *Quantifiers* (Martín Arista and Martín de la Rosa 2006) and descriptors BIG and SMALL (de la Cruz Cabanillas 2007), while Guardddon Anelo (2009) finds the exponents of some compound adpositions. These authors carry out their analysis of exponent identification in terms of textual frequency and syntactic complementation.

Against this background, this thesis follows the research line in the Old English language and semantic primes and aims at establishing the criteria for exponent identification in a historical language and applying such criteria to Old English. The definition of the criteria of exponent selection in a historical language as well as the application of such criteria to Old English represent a contribution to the development of the NSM research programme and, on the descriptive side, a step towards a more principled semantic analysis of Old English.

With these aims, the steps of analysis to carry out this study include the application of an array of criteria to different candidates for prime exponent to select the proper Old English exponent for the semantic primes as to a given category and to refine the methodology progressively should any issues or inconsistencies arise.

The NSM category selected for analysis is *Actions, events, movement, contact*, from which the Old English exponents for TOUCH, HAPPEN and MOVE have been identified. The reason that motivated this choice was the fact that previous work on Old English semantic primes has not included verbs within its scope of analysis. Indeed, verbs are the most complex grammatical category and if the methodology proposed holds good for this category it is likely to be applicable to other lexical classes.

Turning to the methodology of analysis, it has already been mentioned above that the identification of exponents for different languages has been conducted by native speakers of the language at stake. Given that Old English is a historical language, it is necessary to establish a methodology that determines the steps of analysis required to identify the semantic prime exponents on the basis of the available data. The nature of the linguistic data indicates that the search for the exponents of primes should be performed by means of indirect methods. This research relies on an array of criteria that examine the candidates for primes from different grammatical and semantic perspectives in order to achieve a degree of accuracy in prime selection comparable to the analysis carried out by native speakers of natural languages.

The selection of the criteria used for the analysis is based on the concept of *markedness* (Croft 1991; Givón 1995; Martín Arista and Ortigosa Pastor 2000) and its points of convergence with the principle of reductive paraphrase adopted within the NSM theory. In this sense, marked concepts can be explained by means of unmarked concepts given that unmarked concepts are less complex, more frequent and more iconic than marked ones. With this reasoning, this study takes different criteria into account in order to assess the candidates for prime exponent. Such criteria are the textual, the morphological, the semantic and the syntactic ones. Although all four criteria are considered of the same rank in Mateo Mendaza (2013), subsequent work (Mateo Mendaza 2016a, 2016b) applies these criteria in a more hierarchical way, given that some criteria have proved more conclusive than others as different inconsistencies and difficulties have emerged.

Once the criteria have been established, the next step of analysis is to focus on the sources in order to retrieve the data. So as to obtain accurate results, it is necessary to examine all available data and the reference sources of the Old English language. With this purpose, the *Historical Thesaurus of the Oxford English Dictionary* (henceforth HTOED, Kay et al. 2009) edited by Christian Kay at the University of Oxford has been consulted to select the proper candidates for prime exponent as well as for checking the semantics of the words selected as prime exponent. Furthermore, *The Dictionary of Old English* (hereafter DOE) and *The Dictionary of Old English Corpus* (henceforth DOEC, Healey et al. 2012) both compiled at the University of Toronto, have been accessed online in order to gather the relevant information on the semantics, syntax and textual occurrences of the candidates. Apart from these key sources, the lexical database of Old English *Nerthus* (www.nerthusproject.com; Martín Arista et al. 2009) has also played a central role on the various analyses. The *Nerthus* database contains, approximately, 33,000 entries which unify lexical and grammatical information retrieved from the dictionaries by Bosworth-Toller (1973), Clark Hall (1996) and Sweet (1976). From this source, semantic information and morphological information on, above all, the lexical paradigm, have been obtained for each prime candidate.

Furthermore, the state of the art on the topic of this research has also been considered. Among the most important ones, the works by Cortés and Mairal (2002) and Díaz Vera (2000, 2001) have shed light on the discussion on hyponymy that emerges from the analysis of TOUCH. Möhlig-Falke's (2012) book on impersonal constructions has played a central role in the identification of the Old English exponent

for HAPPEN. In the case of MOVE, the work by Goddard (1997) has been of utmost importance for the identification of the prime exponent, as it engages in the semantics of motion and the neutrality of the prime MOVE as expressing translational and internal motion.

2. SUMMARY OF RESULTS

The journal article by Mateo Mendaza (2013) aims at establishing the basis for exponent selection in Old English by focusing on the semantic prime TOUCH. The reason that motivates the election of TOUCH as the first candidate for analysis is that its meaning is semantically simpler and narrower than that of the rest of the candidates.

With the purpose of identifying the Old English exponent for the semantic prime TOUCH, an appropriate methodology must be applied to the different candidates conveying the meaning of 'touch'. This methodology comprises a set of criteria that make reference to morphological, textual, semantic and syntactic aspects. These criteria, as has been pointed out above, have been selected on the basis of markedness, as markedness resembles the principle of reductive paraphrase. Thus, the morphological criterion requires that the exponent for the semantic prime constitutes a source rather than a target of lexical derivation. The textual criterion requires that the most frequent candidate for prime exponent is selected. The syntactic criterion gives priority for prime exponent to the verb with direct rather than oblique complementation patterns, or to the prime exponent with the widest choice of complementation patterns. Finally, the semantic criterion stipulates that the exponent for the semantic prime should conform as much as possible to the prototype of the semantic prime.

The search for candidates for prime exponent has been conducted by retrieving information from the HTOED on those Old English verbs conveying the sense of 'contact with the hand'. From the initial list, those verbs expressing figurative meaning of 'touch' as well as one verb displaying an only occurrence in the DOEC have been disregarded. All things considered, eight different verbs have been selected for analysis. Relevant information on lexical paradigms, textual occurrences, semantics and syntax has been retrieved from different sources such as the *Nerthus* database, the DOE and the DOEC. The analysis carried out for each criterion allows us to draw the conclusion that *gehrīnan* should be considered the Old English exponent for the semantic prime TOUCH as the four criteria converge on this verb. This is to say, *gehrīnan* is the primitive that presents the largest lexical paradigm and its derivatives, resulting from compounding, affixation, suffixation and zero-derivation, belong to all major lexical categories. This verb also displays the largest number of occurrences within the corpus. It conforms to the prototypical meaning of physical contact and presents the widest choice of complementation patterns.

Furthermore, given that the results of the search for semantic primes might overlap partially with the semantic relation of hyponymy, this article provides a discussion of the descriptive and methodological differences that have been found between these two concepts. The conclusion is reached that, although some of the criteria for the identification of the hyponym and the semantic prime exponent converge at some points -as both are based on semantic-syntactic grounds-, semantic relations are language dependent whereas semantic primes are characterised for being universal and coincide cross-linguistically. Indeed the relation holding between the elements in each semantic construct is completely different, as, for instance, hyponyms can be included into other semantic paradigms whereas semantic primes are indefinable concepts whose meaning cannot be defined in simpler terms.

The aim of the work reported in Mateo Mendaza (2016a) is to continue the study conducted in the category *Actions, events, movement, contact* by identifying the Old English exponent for the semantic prime HAPPEN.

The methodology applied in this analysis is the one defined in Mateo Mendaza (2013). However, in this case the list of candidates retrieved from the HTOED is too long to be analysed, so it is necessary to narrow the scope of analysis. For this reason, different sources dealing with the Old English verbs conveying the meaning of ‘happen’ have been consulted. The work in Old English impersonal constructions by Möhlig-Falke (2012), which elaborates on Elmer (1981), is selected to reduce the list of candidates for prime exponent. Therefore, only those verbs appearing both in the HTOED and Möhlig-Falke’s (2012) study are taken into account in this research. Then, the work by Möhlig-Falke (2012) is also used for retrieving relevant information on the semantics and syntax of each verb, as well as on the textual occurrences presented by each candidate.

After candidate selection, six Old English verbs are analysed on morphological, textual, semantic and syntactic grounds. On the methodological side, the semantic-syntactic criterion is further specified by including the *valency options* for the prime HAPPEN. Valency options, frequently used in NSM analysis, show the syntactic configuration of each prime. Thus, the validity of our exponent can also be checked with textual fragments containing the verbs under analysis that display the different syntactic frames proposed for the prime HAPPEN.

After applying the morphological, semantic and syntactic criteria, *(ge)limpan* stands out as the best candidate for prime exponent. Indeed, *(ge)limpan* is a primitive of

lexical derivation with twenty derived words from all major lexical categories resulting from the most important word formation processes. Besides, in semantic-syntactic terms, it conforms to the prototype as it conveys the central meaning of ‘to happen, befall’ and can be described as an impersonal verb that adopts the different syntactic configurations associated with the valency options of HAPPEN, as proved by the examples retrieved from the DOEC. Interestingly, these results do not coincide with those derived from the textual criterion, according to which *(ge)limpan* should be considered less primitive than *geweorðan*. This raises the question of the influence of polysemy on the criteria of prime selection as they have been defined and, moreover, of the relative importance of such criteria. Ultimately, this question underlines the difficulty of searching historical languages for the exponents of semantic primes. The conclusion is drawn that, whereas the textual criterion presents some inconsistencies within the analysis -for example, most of the occurrences presented by *geweorðan* do not conform to the prototypical meaning of ‘to happen, befall’-, the semantic and syntactic criteria are central for prime identification, since they are the basis of the NSM model and their results are more accurate and reliable. However, given the nature of the language under analysis, morphological and textual information is also needed to refine the search of exponents. For this reason, these criteria should not be disregarded. After discussing these questions, the article comes to the conclusion that the strong verb *(ge)limpan* is the Old English exponent for the semantic prime HAPPEN.

The third article selected for this PhD dissertation is the study by Mateo Mendaza (2016b) in the Old English exponent for the semantic prime MOVE, which also deals with the steps of analysis and selecting criteria required for prime identification in historical languages.

In contrast to previous research in the semantic primes of Old English, this article has to solve some problems related to the complex semantics of the verbs of motion. The semantic prime MOVE is described as a neutral term that expresses the meaning of both ‘internal’ and ‘translational’ motion (Goddard 1997). For this reason, it is of paramount importance to focus on the main differences existing between motion - translational motion- and movement -internal motion- in terms of their semantic features such as the affected parts, volition and the semantic roles involved in each action. On this question, the article makes a preliminary proposal as to how internal motion might be expressed within the NSM model, as NSM studies have paid more attention to translational motion than to internal motion.

With this background, it is necessary to make a change in methodology and adapt the candidate selection both to the semantics and syntax of the semantic prime. With this purpose, it has been necessary first of all to identify the parameters of motion in Old English. After analysing some aspects of Old English verbs such as transitivity, location, telicity and reflexivity, the parameters of motion in Old English can be narrowed down to internal motion and translational motion (forward, back, up and down). A semantic study in the Old English verbs that express different kinds of movement indicates that only the verb *(ge)styrian* can entail both meanings. Therefore, this verb is considered an optimal Old English candidate for the exponent of the semantic prime MOVE.

After this initial selection of a candidate, it is necessary to analyse this verb in terms of the different criteria determined for this kind of studies, namely, the textual, morphological, semantic and syntactic ones. The results for *(ge)styrian* are compared to those obtained from other Old English verbs of movement in order to draw both quantitative and qualitative conclusions. The textual criterion makes use of the type-token frequency ratio to analyse the results found for *(ge)styrian* and *(ge)stīgan* in terms of frequency. The application of this ratio shows that *(ge)styrian* is by far more productive than *(ge)stīgan*, and, consequently, it is selected for prime exponent. Something similar happens to the morphological criterion. Although *(ge)styrian* is not a primitive of lexical derivation, its lexical paradigm provides a larger amount of derived nouns, adjectives and verbs than the other candidates for prime exponent. Although the semantics and syntax of this verb is analysed at the beginning of the article, its semantics is checked against the HTOED and the definitions provided by some reference dictionaries. These sources confirm that only *(ge)styrian* can convey both the meaning of internal motion and translational motion. As regards syntax, several instances of the valency options corresponding to the prime MOVE can be found within the DOEC expressed by the intransitive variant of *(ge)styrian*. All in all, the analysis confirms that *(ge)styrian* is the best candidate for prime exponent on the grounds of all the criteria applied and the requirements of MOVE within the NSM.

4. CONCLUSION

This PhD dissertation, which reports the method, results and conclusions of the analysis carried out by Mateo Mendaza (2013, 2016a, 2016b), has pursued the research line in the semantic primes of Old English started by Martín Arista and Martín de la Rosa (2006). It has aimed at the definition of the criteria for exponent identification in a historical language and the application to Old English of a set of criteria that make reference to morphological, textual, semantic and syntactic aspects and are ultimately based on markedness theory. The NSM category selected for analysis is *Actions, events, movement, contact*, which has not been studied in Old English in previous work. For this category, the exponents for TOUCH, HAPPEN and MOVE have been identified.

On the descriptive side, the Old English exponents for the semantic primes TOUCH, HAPPEN and MOVE have been identified. These exponents correspond, respectively, to the verbs *(ge)hrīnan*, *(ge)limpan* and *(ge)styrian*. The decision made on these verbs is based on the fact that, except for some particular cases, they are the candidates that best satisfy the different morphological, textual, semantic and syntactic requirements imposed by the nature of each semantic prime.

Along with the descriptive results, significant advances have been made on the methodological side because the studies in the Old English exponents for these semantic primes contribute to the whole NSM by designing and implementing a method for searching historical languages for prime exponents indirectly. This indirect methodology proposed for the historical languages is in contrast with the direct method preferred in natural languages, which is based on the linguistic analysis carried out by the native speaker of the language and, moreover, on the availability of potentially infinite data.

The analysis of each verb has been continually refined and improved with respect to previous studies by taking into account the issues raised by the primes analysed before. The study conducted in the Old English exponent for TOUCH opts for the verb *(ge)hrīnan* after the analysis of eight different candidates in terms of their morphology, textual frequency and semantic and syntactic adequacy to the prototype. The same methodology is applied in the search for the exponent for HAPPEN, in which the study of six verbs results in the selection of *(ge)limpan* as prime exponent. However, in the case of HAPPEN, the criteria of prime identification turn out some contradictory results. Although the morphological criterion should be analysed in detail to avoid

second generation derivation, the textual criterion is the most sensitive to polysemy and homonymy, in such a way that the results obtained from the application of this criterion may be significantly altered. This discussion stresses the necessity of ranking the different criteria. In line with the semantic (and, more recently, also syntactic) orientation of the NSM, the semantic and syntactic criteria are given priority over the criteria based on considerations of derivational morphology and textual frequency.

Another aspect that contributes to improving the methodology is the introduction of valency options into the analysis of the semantic prime HAPPEN in Old English. As already explained, valency options display the different syntactic configurations that a given semantic prime can adopt. Valency options provide an additional perspective on syntactic analysis as they shed light on the prototypical syntactic patterns of a semantic prime. By taking into account the different complements and arguments that can be added to a certain prime, the DOEC can be searched for instances of the verb at stake with meaning and behaviour compatible with the requirements of the exponent. Instead of relying only on the information on complementation available from secondary sources, the use of valency options constitutes a point of convergence with the direct method of prime searching used in natural languages because a greater emphasis is made on linguistic data if a corpus is used which shows the real use of language in context.

Finally, the order chosen for the study of these semantic primes has also favoured the progressive improvement and refinement of the methodology proposed for the identification of exponents in historical languages. This order was motivated by the semantic complexity of the prime at stake. For this reason, TOUCH was first analysed, since its prototypical meaning is restricted to 'contact with the hand' and its figurative meanings are easily recognisable. Furthermore, the number of verbs displaying this meaning -nine- is quite manageable. Something similar occurred to HAPPEN. Even though its meaning presented 26 candidates in the HTOED, this number was reduced by taking into account the syntactic configuration of the exponent, which advises to focus on an impersonal construction. With these data, and after considering the results of previous research on these verbs, the list of candidates was restricted to six. On the other hand, the semantic prime MOVE presents specific semantic-syntactic requirements within the NSM theory due to its complexity. For this reason, it was first necessary to analyse how motion is expressed in Old English and then to search for a verb that can satisfy the semantic and syntactic requirements of the semantic prime.

Once this candidate is obtained, it can be checked against the different criteria proposed for this analysis. This change in methodology helps to adapt the selection of candidates to the requirements of each semantic prime and, furthermore, restricts the scope of study and provides a more insightful analysis of each candidate, with which conclusions should also be more accurate and reliable.

5. DISCUSSION: LINES OF FUTURE RESEARCH

This PhD thesis, as well as the three articles that it comprises, has focused on the NSM category *Actions, events, movement, contact* and identified the Old English exponents for the semantic primes TOUCH, HAPPEN and MOVE. Thus conducted, this work contributes to the improvement of the semantic analysis of Old English, which can be carried out in a more principled way; and to the development of the NSM research programme because it engages in the design of an indirect method for finding semantic primes in historical languages.

This work leaves some pending tasks for future research. First of all, in order to complete the category *Actions, events, movement, contact*, the Old English exponent associated with Actions, to wit, the semantic prime DO, should be identified. This study is currently in progress and shall be submitted to a journal soon. The main conclusion reached so far is that the verb *(ge)dōn* is the optimal candidate for prime exponent. Descriptively speaking, the selection of the candidate has been made in a direct way, according to the semantic and syntactic requirements of the prime under analysis, as in the study of the prime MOVE. Some reference sources of historical linguistics and etymology concur on the relation of *(ge)dōn* with the Present-Day English form ‘do’ both on theoretical (Visser 1984; Mitchell 1985; Denison 1993) and etymological grounds (Seebold 1970; Orel 2003; *Oxford English Dictionary* 2009). Indeed, a thorough explanation of the different uses with the verb ‘do’ during the Old English period (full verb ‘do’, preverbal ‘do’ and causative ‘do’) as well as the meanings expressed by the verb in different contexts (‘to do’, ‘to put, place’, ‘to act’, etc.) is required to select the prototypical use and meaning compatible with the semantic prime DO. The starting point of the analysis is the transitive use of the full verb *(ge)dōn* ‘to do, perform’, because this meaning is in accordance with the semantic prime DO. The analysis indicates that, in terms of morphology, *(ge)dōn* is the primitive form of a lexical paradigm of 45 members which belong to all major grammatical categories. As in the case of HAPPEN, the textual criterion is the least conclusive one because the different uses and meanings of *(ge)dōn* could mislead the results. Regarding the semantic-syntactic criterion, the core meaning of *(ge)dōn* corresponds to the prototypical meaning of DO. The syntactic complementation associated with this meaning also coincides with the requirements of the prime and, focusing on the valency options displayed by this prime, instances of all of them can be found in the DOEC with

the verb *(ge)dōn*. If the reasoning is correct, *(ge)dōn* could be considered the Old English exponent for the semantic prime DO.

This research also opens new perspectives and lines of research. In the first place, the identification of semantic prime exponents in Old English could be concluded by identifying the exponents for the rest of the elements included within the inventory of primes proposed by Goddard and Wierzbicka (2014). After the exponent identification of the categories *Substantives*, *Determiners* and *Quantifiers* (Martín Arista and Martín de la Rosa 2006), *Descriptors* (de la Cruz Cabanillas 2007) and the current and further study on *Actions*, *events*, *movement*, *contact*, further work should be conducted on the remaining categories, namely, *Relational substantives*; *Evaluators*; *Mental predicates*; *Speech*; *Location*, *existence*, *possession*, *specification*; *Life and death*; *Time*; *Space*; *Logical concepts*; *Intensifier*, *augmentor* and *Similarity*.

The establishment of a whole inventory of primes in Old English would lead to the study of how primes combine with each other within the language. Given the historical nature of Old English, it is not possible to create an Old English metalanguage to define complex terms into simple ones but we can address the question of prime combinability by checking their uses against the evidence provided by the *DOEC*. This would also draw some further conclusions on the semantic and lexical organization of the Old English language.

Finally, the research line pursued in Old English is applicable to the identification of semantic prime exponents in other historical languages. Any historical language from which a significant amount of written records has survived and whose grammar has been reasonably studied, would be an appropriate candidate for this kind of research. For example, the identification of semantic primes could be carried out in other stages of the English language, such as Middle or Modern English, or in different historical languages such as Old French, Old Norse or Latin, among others. These studies would contribute not only to the reinforcement of this methodology but also to the assessment of the universal validity of the semantic primes and the theory of the NSM.

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