The lexical representation of the English verbs of feeling within the Lexical Constructional Model

Rocío JIMÉNEZ BRIONES
Universidad Autónoma de Madrid (Spain)

1. INTRODUCTION

This paper looks at the way the English verbs of feeling, specifically the subdomain of *anger* verbs, are organized and represented within the Lexical Constructional Model (LCM; Ruiz de Mendoza & Mairal, 2006, 2007; Mairal & Ruiz de Mendoza, 2007).

The LCM stems from the paradigmatic and syntagmatic lexical organization of the English and Spanish lexicons developed within the Functional Lexematic Model (FLM; c.f. Martín Mingorance, 1998; Faber & Mairal, 1999), which has been partially integrated into the new model. The premises of the FLM, crucial for the organization of our verbal domain, are dealt with in section 2 of this paper.

In relation to the representation of the lexico-semantic and syntactic properties of verbs, the LCM employs lexical templates: formal meta-entries that in just one format unify all the relevant properties pertaining to a particular verbal class. Unlike Role and Reference Grammar (RRG) logical structures, LCM templates codify both grammatically salient features (i.e. external variables) and semantic and pragmatic parameters (i.e. internal variables). However, unlike Construction Grammar (CxG) semantic frames, templates employ a metalanguage based on semantic primitives (Wierzbicka, 1996), lexical functions (Mel'cuk, 1988), and the RRG *Aktionsart* distinctions. Section 3 of this paper illustrates such templates for the English subdomain of *anger* verbs. Some conclusions are finally presented in Section 4.

2. THE PARADIGMATIC ORGANIZATION OF *ANGER* VERBS

The LCM is a proposal for lexical representation and the relationship between syntax and all facets of meaning construction, including traditional implicature and illocutionary meaning. Despite being developed within the framework of RRG (Van Valin & LaPolla, 1997; Van Valin, 2005), the LCM shows full compatibility with other functional and/or cognitive approaches to language, such as CxG (Goldberg 1995, 2006).

The strong semantic concern of the LCM grows directly out of the organization of the English and Spanish lexicons put forward by the previous instantiation of the model: the FLM. By using the main tenets of Dik's Functional Grammar (1997a, 1997b) and Coseriu's Lexematic Theory (1981), the FLM organized both the English and the Spanish verbal lexicons paradigmatically and syntagmatically into a series of coherent semantic classes or lexical domains such as: EXISTENCE, CHANGE, POSSESSION, SPEECH, EMOTION, ACTION, COGNITION, MOVEMENT, PHYSICAL PERCEPTION and MANIPULATION.

Each of these lexical domains is arrived at by means of a process of exhaustive semantic factorization, working upwards from various dictionary entries of the possible predicates belonging in each class (Faber & Mairal, 1999: 83-101). Thus, the dictionary definitions are broken down into two meaning components for each verb:

(1)
(i)   the nuclear meaning (*genus*, *definiens* or structural component in other approaches)
(ii)   the adverbial modification (*differentia* or idiosyncratic component for other theories)

The nuclear meaning is the generic or superordinate item in terms of which all members of the lexical class are directly or indirectly defined, whereas the adverbial modification is indicative of the semantic and/or pragmatic parameters that help to distinguish the verbs from each other in the same class.

As far as EMOTION is concerned, semantic factorization has allowed us to arrange more than 250 verbs into a number of lexical subdomains that encode the ways emotions and feelings are conceptualized in English. Such subdomains vary in the feeling they focus on, as can be seen below (Jiménez Briones, 2004):

Focus	*Domain*	*Example*
Something bad	To feel sth bad; to cause sb to feel sth bad	*suffer, punish, avenge*
Something good	To feel sth good	*enjoy, like*
Sadness	To feel sadness; to cause sb to feel sadness	*grieve, sadden, distress*
Happiness	To feel happiness; to cause sb to feel happiness	*delight, thrill, gloat, please*
Aversion	To feel aversion; to cause sb to feel physical aversion; to cause sb to feel emotional aversion	*dislike, hate, detest, disgust, anger*
Attraction	To feel attraction; to cause sb to feel attraction; to feel a loss of attraction; to cause sb to feel a loss of attraction	*like, love, admire, attract, fascinate, interest, tire, weary*

Table 1. An extract of focus feelings in EMOTION verbs

As a way of illustration, notice the paradigmatic organization of the verbs under analysis after applying semantic factorization:

to cause somebody to feel emotional aversion *[anger]*
1. anger: to cause somebody to **feel** anger.
1.1. annoy: to **anger** somebody a little.
1.1.1 vex: to **annoy** somebody, causing them to feel puzzled. [Old-fashioned].
1.1.2 displease: to **annoy** somebody, causing them to feel displeasure/inconvenience [Fml.].
1.1.3 irk: to **annoy** somebody, causing them to feel disgust [Infml.]
1.1.4 nettle: to **annoy** somebody for only a short time.
1.1.5 gall: to **annoy** somebody by disappointing them.
1.1.6 bug: to **annoy** somebody so that they cannot stop thinking about it [Infml.].
1.1.7 irritate: to **annoy** somebody, causing them to feel irritated.
1.2. provoke: to **anger** somebody deliberately by trying to make them act aggressively.
1.2.1 needle: to **provoke** somebody deliberately by repeated criticism [Infml.].
1.3. antagonize: to **anger** somebody by making them feel hostile towards you.
1.4. rile: to **anger** somebody very much [Infml.].
1.5. exasperate: to **anger** somebody very much, causing them to become impatient or frustrated.
1.6. outrage: to **anger** somebody extremely, causing them too feel offended or shocked.
1.7. incense: to **anger** somebody extremely, causing them to feel indignation.
1.8. enrage: to **anger** somebody extremely, causing them to lose self-control.
1.9. infuriate: to **anger** somebody extremely, causing them to be furious.
1.10. madden: to **anger** somebody extremely, causing them to figuratively become mad.

Table 2. Paradigmatic organization of *anger*-verbs.

In this hierarchical organization, hyponymy is the semantic relationship that structures the verb class. The nuclear meaning of the subdomain is lexicalized in *anger*, since all the verbs are its direct or indirect hyponyms. On the other hand, parameters such as manner, instrument, purpose, time, register, and degree encode a different type of specification of the more generic term *anger*, resulting in the rest of hyponyms, e.g. *annoy* (degree: "little") or *bug* (purpose: "so that they cannot think about it"). It is precisely this idiosyncratic component that constitutes the basis for the external variables of the lexical templates codified within the LCM.

3. THE REPRESENTATION OF THE LEXICO-SEMANTIC AND SYNTACTIC PROPERTIES OF *ANGER* VERBS WITHIN THE LCM

3.1. The notion of lexical template

The term *lexical template* is used to refer to "a formal representation of a lexical unit and the world-knowledge elements which affect its syntactic representation" (Mairal & Faber, 2007)

The starting point of lexical templates is the logical structures used in RRG. Such structures represent the semantic and argument structure of predicates using a system that combines insights from Vendler's *Aktionsart* classes (1967) and Dowty's decompositional system (1979). However, the RRG structures only capture those features that have a direct role in the mapping into syntax, leaving out of the picture any type of semantic and pragmatic information which certainly defines a complete domain of verbs (cf. Table 2). The LCM thus incorporates an enriched semantic component by using all the paradigmatic information previously identified by the FLM.

Since this component includes relevant aspects of word meaning, lexical templates become methodologically closer to CxG semantic frames (Mairal & Faber, 2007). However, since templates are set out to be universally and typologically valid, they employ a metalanguage based on semantic primitives, lexical functions and *Aktionsart* distinctions. Therefore, LCM templates encode both a semantic and a syntactic component:

(2) [semantic representation] + [syntactic representation] = verbal predicate

The syntactic component is realized by means of RRG logical structures, which provide a description of the event structure and the set of grammatically salient properties in terms of a slightly modified version of Vendler's classes (states, activities, achievements, semelfactives, accomplishments, and active accomplishments) and Dowty's lexical decomposition system (Van Valin, 2005: 45).

The   semantic component is encoded by means of semantic primitives and lexical functions. The former correspond to the superordinate predicates previously identified by the FLM in each lexical domain (i.e. *become* for CHANGE, *have* for POSSESSION, *feel* for EMOTION, etc.), as well as to the Natural Semantics Metalanguage primitives (NSM). Lexical functions refer to the Meaning and Text Theory functions (MTT), which are used paradigmatically in the LCM to combine semantic primes and so differentiate one predicate from others within the same domain: INVOLV, SYMPT, CAUS, etc.

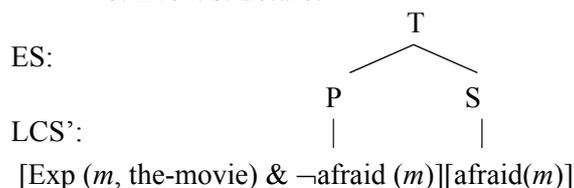### 3.2. Lexical templates for the English *anger* verbs

Both the semantic and the syntactic component of a LCM template turn out to be crucial for a fine-grained description of the semantic and syntactic subtleties of the domain of feeling predicates. However, to the best of our knowledge, no such representations have been provided in the most relevant linguistic frameworks.

Most of the literature on psychological verbs has been concerned with the inverse linking of the arguments of these predicates or their different aspectual structure (Belleti & Rizzi, 1987; Grimshaw, 1990; Pesetsky, 1990; Pustejovsky, 1992). Therefore, the lexical representations proposed by these studies only contain syntactically relevant information:

(3)   *Frighten* (Grimshaw, 1990)
        Experiencer   Theme   (Thematic Tier)

        CAUSE   STATE   (Aspectual Tier)

(4)   a. *The movie frightened Mary* (Pustejovsky, 1992)

b. Event structure:

ES:

$$
\begin{array}{c}
T \\
\diagup \quad \diagdown \\
P \qquad S
\end{array}
$$

LCS': | |

 [Exp (*m*, the-movie) & ¬afraid (*m*)][afraid(*m*)]

LCS: cause[Exp (*m*, the-movie), become ([afraid(*m*)])

In functional theories like RRG, the lexico-semantic representations for feeling predicates do not add much to the picture, since their logical structures, among other shortcomings, reveal an undesirable circularity in the use of their *alleged* primitives:

(5)   a. *surprise*:   INGR **surprised'** (x)   (Van Valin & LaPolla, 1997: 290)
         b. *love*:   **love'** (x,y)   (Van Valin, 2005: 55)
         c. *The dog scared the boy*:   [**do'**(dog, ∅)] CAUSE [**feel'** (boy, [**afraid'**]) (Van Valin, 2005: 47)

The LCM proposes instead the following templates for the English *anger* verbs:

to cause somebody to feel emotional aversion **[anger]**

	anger: [(**do'** (x, ∅)] CAUSE [**feel'** (y, [**anger'**])](x,y)] *The things which anger us are those which make us feel guilty* (BNC)
annoy	[MINUS[anger]] *The question annoyed me* (BNC)
vex	<old>[INVOLVCAUS$_1$ SYMPT(FEELING_TYPE: puzzlement)$_2$ & [annoy]] *It's a question that vexes many travelers* (BNC)
displease	<fml>[INVOLVCAUS$_1$ SYMPT(FEELING_TYPE: displeasure)$_2$ & [annoy]] *The risks involved in displeasing the company were deemed to be too great* (BNC)
irk	<infml>[INVOLVCAUS$_1$SYMPT(FEELING_TYPE: disgust)$_2$ & [annoy]] *That thought irked her* (BNC)
nettle	[MINUS CONT(time) & [annoy]] *A few things nettled her: she did not relish being a clearing house for family complaints* (BNC)
gall	[INSTR$_1$ CAUS SYMPT (FEELING_TYPE: disappointment) $_2$ & [annoy]] *But this man - this arrogant de Rochefort creature - galled her as no one had ever done before* (BNC)
bug	<infml> [PURP$_1$ CONT(think) $_{23}$ & [annoy]] where x = 1, y = 2, what's thought = 3 *If something bugs them, I want them to tell me before they walk on court* (BNC)
irritate	[INVOLV CAUS$_1$ SYMPT (FEELING_TYPE: irritation) $_2$ & [annoy] *The tone irritated Carey, and made him impatient* (BNC)
provoke	[INSTR$_1$ CAUS (do)$_2$ (MANNER_TYPE: aggressive) & (MANNER_TYPE: deliberate)& [anger]] *The guards in and around the prison deliberately provoke the political prisoners* (BNC)
needle	<infml> [INSTR$_1$ (saybad) $_{3}$ (MANNER_TYPE: repeated) & [provoke]], where x=1, y=2, what's said = 3 *Aunt Lyallie must have been needling my mother while I was away, because one day she suddenly asked me, with tremulous anxiety, Why don't you get married, Jim?* (BNC)
antagonize	[INSTR$_1$ CAUS SYMPT (FEELING_TYPE: hostility)$_2$ & [anger]] *Their government did not wish to foreclose other options, provoke the USSR, or antagonize its own left-wing* (BNC)

rile	<infml> [MAGN [anger]] *His patronizing manner really riles me* (LDCE)
exasperate	[INVOLV CAUS$_1$ SYMPT (FEELING_TYPE: impatience/frustration)$_2$ & MAGN[anger]] *This was a curious phenomenon that perplexed and exasperated those involved in running the scheme* (BNC)
outrage	[INVOLV CAUS$_1$ SYMPT (FEELING_TYPE: offence/shock)$_2$ & PLUSMAGN [anger]] *He outraged respectable Victorian society by his public championing of the poor* (BNC)
incense	[INVOLV CAUS$_1$ SYMPT (FEELING_TYPE: indignation)$_2$ & PLUSMAGN [anger]] *The proposed pay freeze has incensed the men* (CC)
enrage	[INVOLV CAUS$_1$ ANTI SYMPT (FEELING_TYPE: control)$_2$ & PLUSMAGN [anger]] *The JNA once again enraged Croats by ordering the arrest of Croatia's Defence Minister* (BNC)
infuriate	[INVOLV CAUS$_1$ SYMPT (FEELING_TYPE: fury)$_2$ & PLUSMAGN [anger]] *A truly free press is a press which irritates and infuriates along the way* (BNC)
madden	[INVOLV CAUS$_1$ FIGUR SYMPT (FEELING_TYPE: madness)$_2$ & PLUSMAGN [anger]] [(**do'** (x, $\varnothing$)] CAUSE [BECOME **feel'** (y, [**anger'**])](x,y)] *"You're maddening me aren't you Aggie?"* (BNC)

Table 3. Organization of the LCM templates in the subdomain of *anger*-verbs.

Lexical templates, unlike the representations of (3), (4), and (5), allow us to account for the semantic and syntactic patterns of all the verbs that make up the rich class under analysis. In order to differentiate the syntactic and the semantic components, two types of variables are employed: internal and external ones. The former are signaled with Arabic numerals and appear as subscripts of the lexical functions they are related to, while the latter are marked in Roman letters (x, y, z) and will always be mapped into syntax. The default linking is $x = 1$ and $y = 2$, although it may be specified if necessary. For example, in *bug* and *needle*, what is thought or said in order to anger somebody is bound to 3 in the semantic part of the template.

The syntactic component of the templates under analysis is a causative state logical structure, which codifies 2 subevents: the first subevent carried out by x ([**do'** $(x,\varnothing)$]) causes the second subevent or the state of anger of y (CAUSE [**feel'** $(y, [$**anger'**$])$]):

(6) [(**do'** $(x, \varnothing)$] CAUSE [**feel'** $(y, [$**anger'**$])](x,y)$]

This RRG logical structure is inherited by all the hyponyms of *anger*, unless specified differently (i.e. *madden*, which is a causative accomplishment). This syntactic component is in turn modified by the appropriate lexical functions in the semantic module, which capture the idiosyncratic semantic and pragmatic properties of each verb; in other words, the FLM adverbial modification.

In the case of the prototypical term *anger*, since the feeling of anger is considered a primitive within the domain of emotions by Wierzbicka (1999: 36), along with FEAR-LIKE, SHAME-LIKE, LOVE-LIKE, SMILE, CRY, HUNGER, THIRST, PAIN, its lexical template coincides with its RRG logical structure. It needs no extra semantic information, unlike its hyponyms. Other less prototypical predicates, however, do need to capture how this state of anger is brought about in the semantic part of the template, which is neatly done, for example in *needle*, with the MTT function INST (for instrument) and the LCM function MANNER:

(7) **1.2.1. needle:** to **provoke** somebody deliberately by repeated criticism [Infml.]<infml> [INSTR$_1$ (saybad) $_{3 \text{ (MANNER\_TYPE: repeated)}}$ & [provoke]], where x=1, y=2, what's said = 3

This example has a causative state logical structure, which does not appear because it is the default structure and so inherited from the hypernym. This representation indicates that the first participant provokes the second one by saying something bad ($INSTR_1$ (saybad) $_3$) repeatedly (MANNER_TYPE: repeated).

Notice also how, by changing the feeling type in the functions INVOLV $CAUS_1$ SYMPT (FEELING_TYPE:)$_2$, we can account for most of the causative verbs of emotion in a consistent and elegant fashion:

(8)   a. **1.1.1. vex**   <old>[INVOLVCAUS$_1$ SYMPT(FEELING_TYPE: puzzlement)$_2$ & [annoy]]
         b. **1.1.2. displease**   <fml>[INVOLVCAUS$_1$ SYMPT(FEELING_TYPE: displeasure)$_2$ & [annoy]]
         c. **1.1.3. irk**   <infml>[INVOLVCAUS$_1$SYMPT(FEELING_TYPE: disgust)$_2$ & [annoy]]

As a way of exemplification, in the templates of (8) the event of vexing, displeasing or irking someone implies annoying that person and, in turn, the causation of a new feeling: *puzzlement*, *displeasure* and *disgust*. Each of these specifications defines a new predicate in the class under study.

Finally, there is also room in LCM templates for pragmatic and/or register features like *formal*, *informal* or *old-fashioned*: between angled brackets at the beginning of the template (cf. *vex*, *displease*, *irk*, *bug*, *needle*, and *rile* in Table 3).

4. CONCLUSIONS

In order to fully understand the complex relationship between lexical and constructional meaning, one needs to find a type of lexical representation that accurately mirrors the interface between syntax and semantics. The LCM is developing such a representation in the shape of lexical templates.

This paper illustrates the viability of those templates as powerful syntax-semantics linking mechanisms. As exemplified in the lexical class of English *anger* verbs, lexical templates contain syntactic specifications (external variables) which are linked to semantic and pragmatic features (internal variables), providing thus the explicit connection between syntax and semantics.

Furthermore, both components of lexical templates enable us to systematically express the subtleties of each of the verbs that make up the *anger* subdomain. This is achieved by using a neat and precise metalanguage that consists of semantic primitives, lexical functions and *Aktionsart* distinctions.

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