

Representing Nouns in the *Diccionario de aprendizaje del español como lengua extranjera* (DAELE)

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Abstract

This paper reports on the representation of nouns in the *Diccionario de aprendizaje del español como lengua extranjera*, an ongoing on-line dictionary prototype being developed at the Institut Universitari de Lingüística Aplicada. The DAELE is designed for upper-intermediate students of Spanish as a foreign language and is corpus-based. We discuss our decisions concerning the macrostructure and microstructure for noun entries, and the procedure we followed to obtain a representative sample of nouns in terms of grammatical structure and semantic field. In our project, given the expected characteristics of users, we have opted for full-sentence definitions, and we follow Lara (1998) in attempting to organize senses within entries according to semantic criteria. Issues discussed in this paper include the ordering of senses, the choice of examples, and the type of semantic label chosen to guide users.

Keywords: Spanish learner's dictionary; DAELE; nouns; lexicological issues of lexicographic importance

1. Introduction

Many decisions made by lexicographers in the past were conditioned by the space limitations imposed by printed books. It is obvious that for electronic dictionaries consulted on-line, space limitations, which *inter alia* conditioned decisions on the number of headwords defined, the defining style used, the number and length of examples provided, the presence of less frequent senses, and inclusion of illustrations and or pictures, are no longer valid. Nevertheless, it is not clear that simply providing more information is helpful to all dictionary users, many of whom turn to a dictionary to look up quite specific information. The electronic format requires lexicographers to reconsider the way they structure information because layers of information are progressively accessed. In this paper we report on some issues that have arisen in our work on the representation of nouns in the *Diccionario de aprendizaje del español como lengua extranjera* (DAELE) that are related to the relationship between dictionaries and grammar.

2. Overview of the DAELE project

The DAELE is an ongoing electronic dictionary project at the Institut Universitari de Lingüística Aplicada of Pompeu Fabra University in Barcelona, Spain. The DAELE project aims to develop a prototype for an on-line learner's dictionary for Spanish. The DAELE went online in January 2010 with 125 entries for verbs; work on verbs has proceeded faster than work on other lexical classes. We are working with a list of some 7000 high frequency nouns and adjectives covering a wide range of semantic fields as explained below (section 2.1), and use the TshwaneLex dictionary-writing system. Our work is based on data from several different corpora, and in the case of the Spanish web corpus, we use the Sketch Engine® to help us with the analysis of corpus data. We are attempting to organize senses of all lexical classes around one or more core senses for a given word, each of which may have more or more derived senses, along

the lines of the approach taken in the *New Oxford Dictionary of English* (1998) and advocated by Lara (1998).

An important feature for us to take into account is that the DAELE is not being funded by a publishing house or an official language academy; rather, our work on the dictionary is a part of research projects on Spanish, funded primarily by the Spanish Ministry of Science and Innovation, the Fundación Comillas, and to a lesser extent, the Generalitat de Catalunya through its programme to support doctoral students who, in turn, are working on the dictionary. This circumstance has several important consequences for the DAELE. First, the fact that our funding is limited and is directly tied to a research programme means that the human resources we have available are very limited. Work on the DAELE cannot be set up in the same way as it would be in a true business context, in which presumably there is a prior feasibility study to ensure conclusion and publication of a completely finished product. In an institutional setting like ours, the fact that doctoral students must write their dissertations in 3 years means that they work on the dictionary part-time for a relatively short period, and the faculty members involved do not have release time from their teaching assignments. With these constraints, it is important for us to work with a representative sample of headwords, so that we can show what should be done for a dictionary of this type for Spanish, even though we ourselves may not be able to produce a complete dictionary to compare with learner's dictionaries of other languages.

3. Obtaining a representative sample

The list of headwords that are nouns or adjectives needed to include both most semantic types known by the average native speaker with a high-school education as well as all common morphological patterns for gender and number.

3.1 List of headwords

Our list of 7069 nouns and adjectives was obtained in the following way. We initially considered using the frequency list found in Davies (2006), which includes the 5000 highest frequency words in the *Corpus del Español*. After a cursory analysis of the words on this list, however, we determined that the list did not contain nouns from several semantic fields that we thought should be included in our prototype. We therefore decided to cross the nouns and adjectives from this list with those from three other sources. The three other sources we used were: the *Corpus PAAU 1992*, which contains vocabulary used in 700 college entrance exams from 1992; the corpus study *Léxico Disponible de los Estudiantes Preuniversitarios de la Provincia de Jaén*, and the word list from the *Diccionario de Primaria de la Lengua Española Anaya-Vox* (2000), which covers the core vocabulary for Spanish. We included nouns and adjectives, and not only nouns, because in Spanish many adjectives frequently occur as nouns (e.g. *amigo/amiga* ‘friend’; *director/directora* ‘director’; *claro/clara* ‘clear’, ‘clearing’ (*claro*, noun), ‘egg white’ (*clara*, noun)) and nouns and adjectives share many morphological properties, such as gender markings, plural markings, and diminutive and augmentative formation.

We expected there would be considerable overlap across these four sources, i.e., crossing the lists obtained from these four sources would provide us with a large number of nouns that would constitute a representative inventory of nouns. Our results, however, were quite different from expected. As shown in Figure 1, only 836 lemmata of a total 16,176 were found in all four corpora, and 9107 lemmata were found in only one corpus.

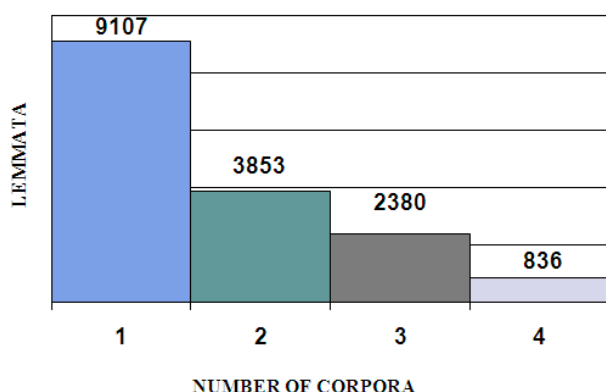


Figure 1: Total number of nouns coinciding across sources.

Clearly, 836 nouns were too few, so we decided to include lemmata that were present in at least two lists, yielding 7069 nouns and adjectives, which we believe is a large enough sample for our purposes. Of these lemmata, 5454 were classified as nouns; however, as mentioned above, this number is approximate because many lemmata classified as adjectives can also be used as nouns. It is also important to note that this headword

list is not entirely closed, as we can incorporate other nouns as work proceeds.

3.2 Semantic classification

In order to identify a classificatory system that would be appropriate for descriptors and definition patterns in the DAELE, we considered both existing ontologies such as EuroWordNet and lists of superordinates that we compiled from existing dictionaries. We also took the subject labels from the work on the available lexicon (Ahumada, 2006) into account. In the end, we are creating our own system as our work proceeds, because no single classificatory system seemed appropriate for our target users. The system we are using identifies a general semantic group and then allows a maximum of three successive subgroups. For example, the word *sala* ‘room’ is classified most generally as a place (*‘lugar’*), then as a building (*‘construcción’*), then as a housing unit (*‘vivienda’*) and finally, and most specifically, as a room (*‘habitación’*). We expect that our classification will allow us both to establish semantic relationships between lemmata and to develop a system of more precise semantic features that is useful for definitions.

4. Corpus analysis

4.1. Role of corpus analysis in the DAELE project

The DAELE is a learner’s dictionary that, as opposed to most dictionaries of Spanish, is corpus-driven. Although corpus-based lexicography is widespread in many language contexts, this is not the case for Spanish in general or for learner’s dictionaries of Spanish in particular. More traditional lexicographical methods are still commonplace, although corpora are consulted. We might note that a widely available learner’s dictionary of Spanish, the *Diccionario Salamanca de la lengua española* (1996), is not corpus-based. We can only agree with Atkins and Rundell (2008: 53) when they state that the advantage of using a corpus in lexicography is increased reliability of the information being included in the dictionary.

We are consulting three corpora, the CREA (*Corpus de Referencia del Español Actual*) of the *Real Academia Española*, the *Corpus del Español* compiled by Mark Davies and the Spanish Web Corpus that has been loaded into the Sketch Engine®. In practice, we study concordances from the corpora to identify the most frequent senses, the principal syntactic patterns associated with a particular sense, and any pragmatic information that might be included in the dictionary entry. In addition, the corpora provide us with examples, some of which we alter slightly to ensure they are maximally informative to non-native speakers of Spanish.

It is important to note that the extensive use of on-line sources allows the lexicographer to record large amounts of information for any specific headword, and that, obviously, not all the information recorded on

TshwaneLex platform needs to be made available to the end user.

4.2 Use of the TshwaneLex dictionary-writing system

We have loaded the 7069 nouns and adjectives into the TshwaneLex platform, in which we have defined fields for the various elements that will appear in the dictionary entry (e.g., headword, sense, subsense, example, usage

note, note on syntactic structure, etc.). As seen in Figure 2, this dictionary-writing system allows the lexicographer to see several fields at once. In Figure 2, you can see the headword list to the left, the hierarchical structure of senses for the word *telescopio* ‘telescope’, the plural form, syllable division, a note for revision purposes, as well as the word’s definition and some examples.

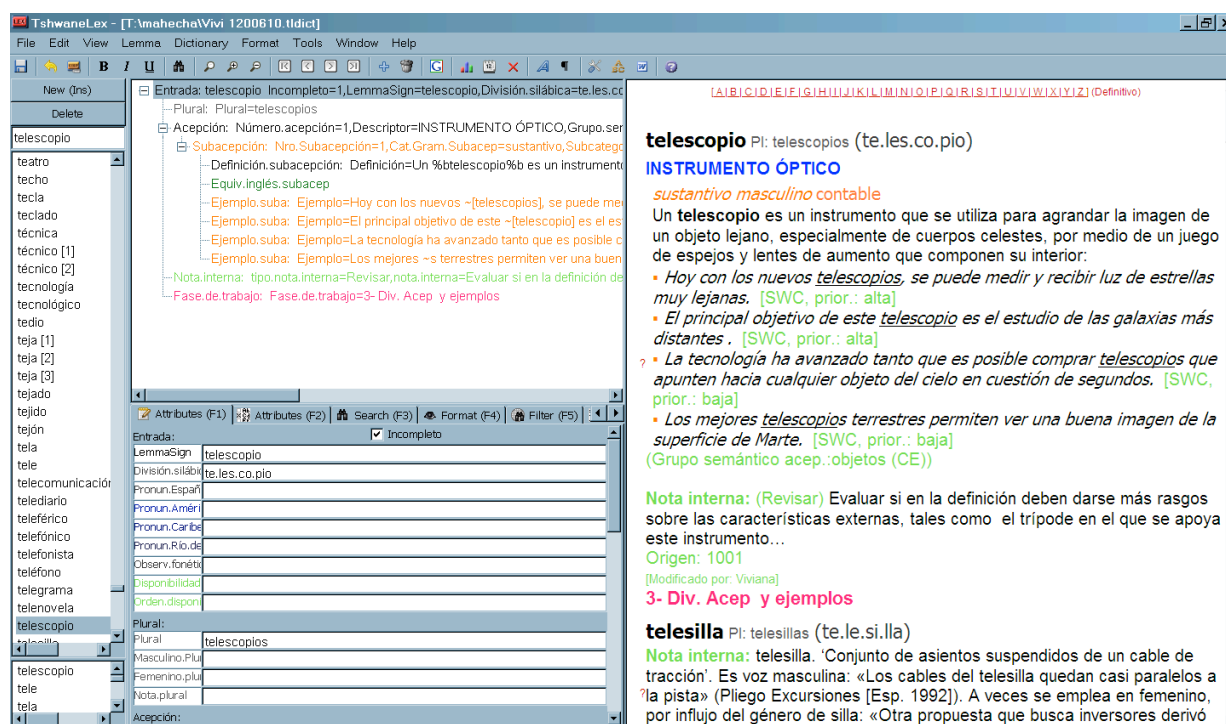


Figure 2: Screen in TshwaneLex for *telescopio*.

A nice feature of this platform is that it allows the lexicographer to see the headword list and the microstructure information corresponding to each entry at the same time. In our academic context, it is particularly helpful that this platform is easily adapted to a web-interface.

5. Microstructure of entries in the DAELE

Since we are in the initial stages of writing definitions for nouns, in this paper we will concentrate on the following characteristics of noun entries: semantic labels, order of senses, defining style and examples.

5.1 Semantic labels

The DAELE makes extensive use of semantic labels to guide users through the various senses of polysemous words. There are several types of semantic label: sometimes the label is a very brief definition, sometimes it is a superordinate, other times it is a synonym.¹ The

purpose of this element in the dictionary’s microstructure is twofold: on the one hand, it allows non-native speakers to quickly and easily identify various senses, and, on the other, it allows us to apply a hierarchical order to senses, progressing from the core sense to derived senses, as will be discussed in section 5.2.

Many other on-line dictionaries, such as the *Macmillan English Dictionary* (MEDO), the *Dictionnaire d’Apprentissage du Français Langue Étrangère ou Seconde* (DAFLES) or the *Cambridge Advanced Learner’s Dictionary* (CALD), include this sort of semantic label, which appears as part of a menu with hyperlinks to entries. Our project follows suit and in the DAELE, the semantic labels are highlighted in blue and, depending on the settings the user has identified while consulting the dictionary, may appear on the screen without any further information. Figure 3 shows an example, for the word *carpintería* ‘carpentry, carpenter’s workshop’, in which the labels may be translated as ‘technique/wood’, ‘place’, and ‘wooden object or structure’.

¹ For more information about the type of semantic labels being used in the DAELE, see Estremera (2008, for nouns and adjectives) and Battaner (2010, for verbs).

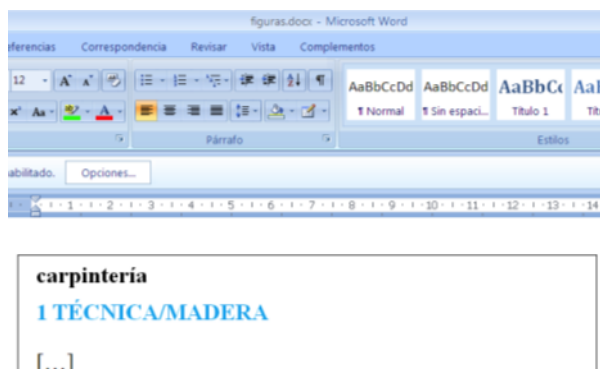


Figure 3: Labels for *carpintería*.

5.2 Order of senses

Establishing the criteria for the order of senses is one of the most important decisions in the DAELE, in that most of the lexical units in this project are polysemous. In preliminary work on the DAELE, DeCesaris & Bernal (2006) noted that although ordering senses of words occurring in several lexical categories according to grammatical criteria (i.e., all senses of one lexical category precede all senses of another lexical category, even though meanings might be clearly related) is a well-established practice in many lexicographic traditions, it often clashes with the notion of first defining the core meaning of a sense and subsequently derived senses. We have decided to organize senses according to semantic criteria, both in those cases in which the lemma is used in one lexical category (in our case, as either a noun or an adjective) and in those cases in which the lemma is used in two lexical categories (as both a noun and an adjective). We are convinced that this approach, in conjunction with the use of semantic labels, should help upper-intermediate students to grasp meanings better, since the information in the dictionary entry is ideally arranged in a hierarchy that establishes semantic relations between senses. As can be seen above in Figure 2 in relation to the word *carpintería*, senses are ordered in a hierarchical fashion: what we have analyzed as the core sense, that of a type of professional activity related to wood, is listed first, second comes the place where that professional activity takes place (*carpintería* in the sense of ‘carpenter’s workshop’), and the final sense is restricted to objects that are the result of that activity (*carpintería* in the sense of ‘woodwork’ or ‘set of window and door frames’). We note that increased visualization of the semantic relations that hold between senses is an important difference between e-dictionaries and print dictionaries; this difference needs to be exploited, particularly in a dictionary for learners.

5.3 Definitions

We are interested in presenting noun senses in such a way so as to add to the user’s ability to insert the noun into discourse. We have therefore decided to use full sentence definitions, in the spirit of Sinclair (1987). As Lew (2011) aptly notes, full sentence or ‘popular style’

definitions are generally more helpful to learners than the more traditional, formulaic definitions found in most print dictionaries, and the space limitations that argued against them are no longer applicable in the context of e-lexicography. This approach allows us, for example, to show the noun accompanied by an article in the definition, which identifies the noun sense as being either count or mass, in addition to reinforcing information about the noun’s gender.

As shown in Figure 4, the definition of the word *recipiente* ‘container’ includes use of the indefinite article *un* to show that this noun is a count noun, the superordinate *utensilio* ‘utensil’, and information concerning its physical characteristics (a *recipiente* must be able to hold something in its interior; the definition says it is *concave* ‘concave’) and its function (‘used to store solid, liquid or gaseous substances’). The noun being defined appears in boldface, and the definition is followed by four example sentences.

recipiente *m* Pl: recipientes (re.ci.pien.te)

UTENSILIO

sustantivo masculino contable

Un **recipiente** es un utensilio cóncavo que sirve para almacenar en su interior sustancias sólidas, líquidas o gaseosas:

- En el santuario se han encontrado estatuas, jeroglíficos y recipientes de diferente tipo como vajillas y ollas. [SWC, prior.: alta]
- Los recipientes de plástico para jugos y leche no son recomendables porque tienen tendencia a gotear. [SWC, prior.: alta]
- En este recipiente se puede poner vino. [Davies, prior.: baja]
- La vida es tan frágil como un recipiente de vidrio- anotaba el cronista policial en su libreta -. [Davies, prior.: baja]

Figure 4: Sample definition and examples for *recipiente*.

5.4 Examples

As stated in section 2, the information presented on nouns in the DAELE is based on data from several corpora, and the examples included are also taken from corpora.² Examples are chosen to complement the information provided by the definition, and show typical syntactic and pragmatic patterns associated with the sense.

In the DAELE we have decided to include a maximum of four examples per sense and subsense. Examples that have been chosen are classified by the lexicographer as being either ‘high priority’ or ‘low priority’ and this information is recorded in TshwaneLex (see the information in green typeface in Figure 2). On-line consultation of the DAELE allows the user to choose between full view and reduced view, although at the time of publication of this paper, the full/reduced view option for verbs does not respond to seeing more or

² In some cases, examples are slightly modified (e.g. spelling is adapted to conform to the current standard orthography, proper nouns are deleted, and abbreviations are avoided).

fewer examples but rather to seeing only the semantic label for each sense or the full entry for the sense.³ It is not clear to us that this approach is the best for nouns, for which it may be preferable to break down the (current) ‘full’ view into parts. We have not come to a decision on this point, as we have deferred our decision until we have a larger body of entries completed.

To illustrate the criteria we are using to choose examples, we again turn to the entry for *recipiente*, shown in Figure 4. Examples are differentiated from definitions by the use of italics, with the definiendum underlined. In the first example, *recipiente* is shown to be a superordinate of *vajillas* ‘set of dishes’ and *ollas* ‘pots’. The second and third examples include substances that are typically found in *recipientes* (*vino* ‘wine’, *jugo* ‘juice’, and *leche* ‘milk’). The second and fourth examples show types of material that *recipientes* are often made of (*plástico* ‘plastic’ and *vidrio* ‘glass’). The examples have been chosen to ensure that both singular and plural forms are included and to show the noun with different determiners (*los*, the plural definite article, *este*, a singular demonstrative adjective, and *un*, the singular indefinite article).

5.5 Other information in the entry

In addition to semantic information, noun and adjectives entries in the DAELE contain other types of information that are essential in terms of grammar and which make the dictionary different from existing dictionaries of Spanish. Entries contain information on syllabification, lexical category, pluralization and grammatical gender (if applicable), and a label indicating count noun, mass noun, or both⁴. We note that including plural forms is a departure from the practice of most Spanish dictionaries, in which plural forms are not included and in which usually only partial information about gender marking is included. Clearly, in an on-line dictionary, the space-saving representation of grammatical gender that only includes the final syllable of the word (e.g. *amigo*, *-ga*) is unwarranted, and we feel that providing users with the plural form reinforces their knowledge of the word.

In Figure 5, for example, the plural for *abrelatas* ‘can opener’ is given; we note that the plural form is identical to the singular form, which is common for verb-noun compounds of this structure in Spanish, although in the language as a whole, it is rare for nouns to have the same form in the singular and in the plural.

Following the practice of learner’s dictionaries such as the MEDO, CALD, *Oxford Advanced Learner’s Dictionary* (OALD) or *Longman Dictionary of Contemporary English* (LDCE), among others, the

lexical category is spelled out (note the word *sustantivo* ‘noun’ in Figures 2, 4, and 5), as opposed to including abbreviations. For words with more than one sense, lexical category, grammatical gender and count/noun are indicated for each sense.

abrelatas Pl: abrelatas (a.bre.la.tas)

UTENSILIO DE COCINA

sustantivo masculino contable

Un **abrelatas** es un utensilio metálico que sirve para abrir latas de conservas, formado por un mango y una cuchilla que se desliza sobre el borde de su superficie:

- *A cualquier tarro de lata desocupado que no haya sido abierto con un abrelatas puede dársele un segundo uso.* [CREA, prior.: alta]
- *Los abrelatas son innecesarios en las latas que tienen un anillo de metal en la tapa que sirve para abrirlas.* [Davies, prior.: alta]
- *Los abrelatas suelen diseñarse para ser usados generalmente por personas diestras.* [SWC, prior.: baja]
- *Es muy importante estar bien preparado con los utensilios necesarios (cuchillos, cucharas, tenedores, abrelatas, abrebotellas, etc.)* [SWC, prior.: baja]

Figure 5: Sample definition and examples for *abrelatas*.

Given that our work on nouns in the DAELE is still in progress, certain aspects of the microstructure may be revised in the future; specifically, decisions need to be taken on the role of phraseology and on what word relationships we wish to show via hyperlinks.

6. Conclusion

Work on representing nouns in the DAELE attempts to incorporate the advantages of e-dictionaries while providing learners with information that to-date has been absent from most dictionaries of Spanish. We believe that the microstructure of entries in the DAELE allows for quick, easy access to information, and provides learners with several examples of real use.

Several interesting questions have arisen in our work that need further attention. We will draw attention here to only one, namely the nature of the semantic labels. In Section 5.1, we noted that labels for nouns are of three types: superordinates, synonyms, or brief definitions. It is not clear to us at this point why one of these types is better suited to a particular set of circumstances than the others; in other words, we would like to be able to describe the conditions that should obtain for the label to be of a certain type. The study of the role of semantic labels, which are commonplace in e-dictionaries, is one of our research goals for the immediate future.

7. Acknowledgements

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³ Users can also choose between seeing the full verb conjugation or not.

⁴ For more information on representing the count/mass distinction in dictionaries of Spanish, see DeCesaris, Battaner & Bernal (2004) and Bernal (2010).

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