Specialised Discourse and the Linguistic System of Basque[1]

Igone Zabala & Agurtzane Elordui

University of the Basque Country (UPV/EHU)

Abstract

This paper seeks to enhance knowledge of the linguistic system of Basque through an analysis of specialised discourse in this language. It is of particular interest to include data from this type of discourse in descriptions of the system when dealing with languages which, like Basque, are in a phase of rapid lexical and discourse development in specialised areas. The use of language in new fields of study opens up novel speech situations requiring new values in the parameters of enunciation, and therefore new types of utterance. These new uses provide abundant empirical data that can be used to confirm or falsify different hypotheses on how works the linguistic system of Basque, and linguistic systems in general. The approach adopted in this study considers specialised discourses as part of natural languages, and it also includes in the study of specialised knowledge units a linguistic-communicative perspective. We analyse in this paper various examples from this perspective, examples that we think show that the use of specialised discourse in Basque has activated new values in the linguistic system and (has) given rise to a reorganisation of certain elements in the system in order to adapt them to these new language functions. We apply to our analysis a methodology that takes into account not only speakers' general competence, but also the discourse conditions influencing specialised texts. The paper concludes with a number of reflections drawn from this type of analysis which we feel should be borne in mind in applied linguistics activities aimed at lexical-discourse development in Basque.

0. INTRODUCTION

Specialised discourse is not restricted to marginal language uses by or for a small number of experts in specific fields of study. Viewed from a linguistic-communicative point of view, the term denotes all specialised texts produced by

experts or specialists, including teaching materials and textbooks, divulgative texts, lexicographic and academic or scientific works. Thus, specialised discourse involves speakers belonging to different discourse communities, some of which are formed exclusively by experts or specialists, and others which are made up of language users having different levels of expertise in the field in question. With today's mass access to the new technologies and media, specialised language and (particularly) technical terminology have become crucial to our so-called information society —think, for example, of the importance of technical terminology in automatic information retrieval. Indeed, today it appears that if a language is to survive, it must be capable of participating in the new technologies and data transfer.

In order to meet this challenge, Basque still needs to enrich the language resources available to speakers from the ground up —i.e., from primary and secondary schoolchildren on up to university students, professors and experts. Textbooks form the nexus between general reading materials and publications for highly specialised readers. That is, they make it possible for a large part of the speech community to share the language resources that will form the basis of further lexical and discourse development at higher levels of expertise. Divulgative texts complement the function of textbooks by conveying some aspects of specialised knowledge to the public at large, and with it, some of the language used in different fields of study.

The function of both types of text is particularly important in a language that was, until recently, excluded from academic environments, with the result that a large number of Basque speakers have a total lack of experience with their language even in contexts requiring little specialised knowledge. Consequently, textbooks divulgative texts both make it possible for the speech community at large to share and use the linguistic resources being created, thus furthering the growth and development of vocabulary and discourse. The linguistic innovations that appear in such texts reflect the linguistic competence not only of a small community of experts and specialists, but of the entire speech community as well, and, as we will attempt to show, of the linguistic system itself.

Accordingly, the first section of this article briefly presents some of the characteristics of ongoing lexical and discourse development in specialised fields in Basque, and proposes a combined methodology for studying this development, in particular innovations introduced by technical and scientific experts. In the second section, we discuss why we have chosen a linguistic-communicative approach to technical terminology for this study, and how this perspective provides us with the theoretical basis for considering specialised language as a part of natural human language. Section three provides a number of examples to show how specialised uses in Basque have activated new values within the linguistic system and resulted in the reorganisation of some elements in the system to adapt them to emerging language functions. This section focuses primarily on verbs and nouns, and on nominalisation strategies. Finally, some of the conclusions drawn from this study are presented in section four.

1. LEXICAL AND DISCOURSE DEVELOPMENT IN BASQUE

When speakers use language, they choose, from among all the combinatory options generated by the grammar, those that are most appropriate to the particular communicative situation in which they find themselves. This choice is largely conditioned by the speakers' linguistic background and by the communicative situation in question. Thus, appropriate language use requires that speakers have not only adequate grammatical competence, but also a socio-pragmatic competence acquired by means of experience with language in different use contexts. Through such experience, speakers learn the discourse routines and lexicon associated with different fields and areas of language use.

This happens to a greater extent in normalised languages, which have fluid networks and a variety of use registers. Such languages have discourse routines and lexicons for different areas of use that are easy for people to learn in context thanks to the fluid networks. However, when a language is still becoming normalised,[2] such as the case of Basque which until recently was used mostly in private settings, speakers generally lack the vocabulary and discourse routines appropriate for writing outside these contexts. This is particularly so when it comes to specialised discourse, where the necessary routines and vocabulary either have not yet been generated, or are not sufficiently well-known and fixed due to the lack of fluid networks. In these situations, writers often find that they must create the needed lexical or discourse items themselves, sometimes even on a large scale. In attempting to do so, they face the further difficulty of making sure that their text is appropriate for the intended readership, level and function of the publication in question (textbook, divulgative, lexicographic, academic-scientific) and meets stylistic conditions for specific aspects within the publication (titles and headings, lists, figure legends and labels, different sections of scientific papers, etc.).

The task of writing specialised texts falls mainly to experts in different fields, and therefore these are the language users that find themselves generating most of the language items that need to be created. To meet this responsibility, these experts have a combination of necessary competences for discourse and lexical development: they have mastered the cognitive skills required in their area of specialisation, they have semantic and pragmatic knowledge of their field of study in other languages, and finally, like all other speakers in the speech community, they have general linguistic competence in Basque.

The new lexical and discourse items created by experts provide evidence on the way in which linguistic systems go about filling functional gaps as new

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[2] After a period of codification and standardisation —essential phases in linguistic planning with a view to language normalisation— Basque is now at a stage which in *revival or normalization language planning* is known as the *modernisation or elaboration phase*. This stage is characterised by development of the lexicon and of different types of discourse at all levels of use, particularly lexical and discourse development in areas which until this point had been mostly avoided by the language undergoing planning (Fishman 1988).

needs arise.[3] They are, therefore, a fertile field for linguists interested in how linguistic systems work. However, to properly analyse linguistic innovations in specialised texts, linguists must have, in addition to their knowledge of the linguistic system, a thorough understanding of the specific characteristics of this type of writing and of the functions to be met by the innovations under study. Occasionally, for example, some of the neologisms used by experts or specialists in a given field may at first sight appear to be aberrational, whereas further examination of the functions they fulfil will show that these items can be analysed as new natural output of the linguistic system, output that fills particular usage needs in particular types of text. Thus, to properly analyse such new uses of the language, experts or specialists in the field in question and linguists well-versed in language for specific purposes must work hand in hand. Descriptive work on language for special purposes in other fully developed languages, provides models for assessing the discourse behaviour of specialist users who find themselves contributing to the lexical and discourse development of the language.

2. SPECIALISED DISCOURSE FROM THE LINGUISTIC-COMMUNICATIVE PERSPECTIVE

Linguists first became interested in specialised language and, in particular, in technical terminology in the second half of the twentieth century, when the study of language in different communicative situations began to gain importance. The contribution of linguists to the study of specialised language shows the reductionism of the theory developed by Wüster and his followers —a theory that focuses solely on the representative function of terminological units. Terminological development based on this theory, which has come to be known as the General Theory of Terminology (GTT), was considered by linguists to be a prescriptive activity not amenable to description, and terminological units were dismissed as jargon, artificial items imposed by normalisation and not belonging to the natural language. They could not conceivably be thought of as part of the lexical and grammatical competence of speakers and were therefore irrelevant to descriptions of the speakers' linguistic competence.

Linguists have recently become interested in technical terminology understood as specialised lexical units —i.e. units created in natural communication within speech communities made up of specialists in a given field. These units are seen as forming part of the lexical component of the grammar of certain individuals in the linguistic community who, in addition to being speakers of the language, are

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[3] As we will show through a few examples, both for the production and interpretation of these texts, speakers not only make use of their competence in the language found in the text, but also resort to compensatory production and interpretation strategies based on their linguistic and semantic-pragmatic competence in other languages.

also professionals or specialists in particular fields (Cabré 2001). By taking into account not only the representative aspect of terminology, but also its communicative dimension (Cabré 1999 2001), linguists have developed a linguistics- and discourse-oriented theory of terminology known as the Communicative Theory of Terminology (CTT).

CTT is based on two pillars: the idea that terminological units are language signs, and the participation of these units in texts produced by (direct or intermediary) speakers of the natural language (Cabré 2001). Terminology is not made up of autonomous units forming a distinct specialised lexicon, but should be described as modules of features associated with lexical units. The specialised nature of lexical units is activated depending on their use in appropriate contexts and situations. This pragmatic activation consists of choosing from among a number of modules having morphosyntactic, semantic and pragmatic features. Therefore, to study how the specialised nature of lexical items is activated in a language, researchers must adopt a discourse approach.

Notice that the CTT gives even greater importance to the lexicon of a language than the strong lexicalist approaches in General Linguistics. Strong lexicalist approaches consider that lexical items contain such a large amount of semantic and morphosyntactic information, that syntax is merely a computational system that project and check the information contained in the lexical items. If specialised lexicons did not form part of lexical knowledge relevant to the grammatical competence of speakers, terminology had no interest for the study of the grammatical system of a language. However, if we assume that specialised lexicons do form part of the lexical component of natural languages, we are assuming that innovations in specialised lexicons can affect the grammatical system of those languages.

When combined with the idea of linguistic community, this strong lexicalist approach entails another consequence —i.e., that the lexicon of a language is the sum of the lexical knowledge of the different members of the speech community using the natural language in question, from speakers without any kind of specialised knowledge to experts in different fields of study (Wichter 1994; Ciapuscio 2003). This means that speakers have access to only part of the information contained in a given lexical item, depending on the language experience that each speaker has had with that particular lexical item.[4] Therefore, a speaker's lexical knowledge grows as her/his linguistic experience is enriched. Moreover, the lexical component of a language is enriched with the creation of new lexical items and with new information concerning lexical items already in existence, made possible through shared knowledge within a given discourse community. This development of lexical knowledge through discourse necessarily entails enrichment of speakers' grammar and, therefore, of the linguistic system.

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[4] Concerning the different experience of speakers with the lexical items of a language, see Zabala & Elordui (2005).

3. LINGUISTIC SYSTEM AND SPECIALISED TEXTS IN A DEVELOPING LANGUAGE

Different enunciation contexts give rise to different types of utterances and texts, where the grammar of a given language is realised in different ways. The greater the diversity of texts and enunciative situations taken into account, the richer the data that a linguist will have for describing the grammar of a language. A language with development gaps in certain discourse areas and enunciative contexts has not yet fully exploited the possibilities of its linguistic system, and therefore the empirical data available to the linguist attempting to describe the grammar of that language will be more limited than in a «fully» developed language. However, we consider that there are interlinguistic categories, rules and tendencies that enable us to predict and discern, based on conclusions drawn from studying other languages, what types of new realisations can be expected from the linguistic system during a given type of lexical and discourse development and which, therefore, should be incorporated with full legitimacy into the grammatical description of that language, and what type of new realisations are the result of lack of experience or expertise on the part of speakers when using the linguistic system in new contexts. In this section, we will give a number of examples meant to show how specialised uses have activated new values in the Basque linguistic system, thereby giving rise to a reorganisation of certain elements in the system to adapt them to the new communicative requirements of the language.

We will base this study mainly on the verb and noun categories, since most of the utterances that we produce are constructed round these two basic categories. The maximal syntactic projection of lexical items in the verb category (i.e. the verb phrase) is always an open category with a variable that must be saturated by means of a predicative relation, whereas the lexical meaning of nouns is completely saturated in its maximal syntactic projection, or noun phrase. Accordingly, NPs can participate as arguments of verbs or of pre/postpositions, and may also give rise to utterances without the mediation of verbal elements, as for example in contexts such as signs on buildings, titles, figure legends or labels, lists etc.[5] This characteristic of nominal elements (N and NP) makes them ideal candidates for encapsulating specialised knowledge, and therefore they are the most prevalent items in specialised lexicography, such as terminological dictionaries (Lorente 2002).

Abstraction, which is consubstantial with specialised knowledge, involves dissociating utterances from the time of enunciation and of predication, as well as from the subjects of predication. This distinctive feature of specialised texts makes it necessary to resort to nominalisation strategies much more frequently than in general use of the language. The tendency of a certain language to express dif-

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[5] In the case of Basque, any syntactic realisation of the noun requires a determiner, both when the noun is acting as the argument of a verb and when it establishes an utterance without the mediation of a verb.

ferent notions more or less nominally depends to a great extent on the discourse conditions in which the language is used (Azpiazu 2004).[6] Specialised uses of languages require a larger number of nominal items, which means that as the language comes to be used in these discourse contexts, there will necessarily be a greater use of nominalisation strategies.[7]

3.1. Verbs and specialised discourse

Most verbs have a meaning-dependent argument structure which largely determines the types of utterance in which they can appear. Studies on the semantics of verbs are based on the idea that speakers of a language know a number of alternations in the expression of argument, sometimes accompanied by changes in meaning (*diathesis alternations*) in which different verbs may participate.[8] Such diathesis alternations constitute a metalinguistic activity by means of which we try to apprehend speakers' lexical knowledge. A lexical knowledge that relates semantic information on verbs and their arguments to the way in which these elements are combined. Thus, Levin (1993), for example, assumes that «the behavior of a verb, particularly with respect to the expression and interpretation of its arguments, is to a large extent determined by its meaning.»

A property of verbs that seems relevant to their semantic-syntactic classification is their subcategorization as taking a subject that is [+human]. Minkoff (1997) claims that the requirement of animacy called «animacy entailment» represents part of the AGENT thematic relation. According to Minkoff animacy entailment is optional for some verbs such as *ireki* 'to open' in (1a), while it is obligatory for other verbs such as *margotu* 'to paint' in (1b). When this requirement is obligatory, a CAUSE subject is not possible, nor is an unaccusative variant possible (1c).

(1)　a.　Jonek/Haizeak　　atea　　　ireki du.
　　　　　Jon-E/ Wind.the-E　door.the-A　open AUX-3sGA-3sGE
　　　　　'Jon/The wind opened the door.'

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[6] Azpiazu (2004) distinguishes between the concepts «nominal language» and «nominalising language». In the former type, nominalisation is a feature of the system such that the basic weight of predication falls on elements in the nominal category. However, in the latter type, nominalisation is an expressive tendency with consequences for style. In nominalising languages, the phenomenon of nominalisation occurs at structural levels of the language, such as word formation and phrase formation. Nominalisation in non nominalising languages takes place by accumulation of nominal lexical units. Azpiazu sees nominalisation as a stylistic phenomenon and refers to this as «nominalisation strategies».

[7] Azpiazu puts forth the case of Sanskrit as an example of a highly nominal language, and states that one of the reasons for the peculiar behaviour of this language is undoubtedly the fact that it is a language marked for expression of certain specific, highly abstract contents.

[8] Levin (1993), on the basis of 8 general types of syntactic alternations and specifying up to a total of 80 specific alternations, distinguishes 191 semantic types of verbs for English, classified under 49 major types. Aldezabal (2004) has applied this classification to Basque verbs, adapting alternation types to the syntax of this language.

b. {Jonek/*Haizeak}   atea   margotu du.
    Jon-E/*wind.the-E door.the-A paint   AUX-3sGA-3sGE
    '*Jon/*The wind painted the door.*

c. Atea   ireki /*margotu da.
    door.the-A open/ * paint   AUX-3sGA
    '*The door opened.' / lit. 'The door painted.*'

However, this type of methodology ignores discourse information and identifies the way in which lexical items behave in unmarked uses of the language as a basic semantic feature of these items. Note, however, that judgements concerning the utterances in (1b) would easily change if we found ourselves describing a snowy landscape in a literary vein: *Elurra ari zuen mara-mara. Herria lasai zegoen, lokarturik bezala. Bat-batean haizea bortizki jotzen hasi zen. Haize bortitzak etxeak zuriz margotu zituen bost minuturen buruan.* 'It snowed on and on. The village lay quiet, as though asleep. Suddenly a strong wind came up. The strong wind painted the houses white in five minutes'. Readers will interpret that the verb *margotu* 'paint' was used in a literary sense. Because they know the semantics of this verb, they know that the subject must be some kind of AGENT (i.e. a human being) and that, nevertheless, in this case the subject is a CAUSE. They see therefore that the writer has personalised an inanimate argument for stylistic reasons. The sentence will not be interpreted as ungrammatical. On the contrary, the choice of a certain topic within a text triggers accommodation of the semantics of the verb to the new discourse conditions, and readers are immediately able to adapt their knowledge of the lexicon to interpret the literary figure.

A large portion of the verbs used in specialised texts coincide with those used in writing intended for the general public. In many cases the semantic and syntactic features of these verbs are exactly the same as those that appear in general texts, and therefore we cannot speak of specialised verbs or verb uses. Sometimes, however, a change in the semantic features of the participants due to the subject of the discourse will cause the semantics of the verb and even the syntax itself to be different than in general uses. For example, the verb *adierazi* 'express' is a transitive verb that normally does not allow an unaccusative realisation. However, one of the prime actors in genetics texts are genes, which are the biological units containing the necessary information for protein synthesis. In example (2c) the argument *geneak* 'genes' has an internal causality such that when it is combined with the verb *adierazi* 'express', unaccusative uses become possible (Zabala 2003). This same verb, which with a [+human] subject subcategorises a completive (2a), is incompatible with this type of subordinate clauses when the subject is *geneak* 'genes': to issue or express utterances is a human characteristic only.

(2) a. Jonek adierazi digu   ez   dagoela   konforme.
         Jon-E notify   AUX-3sGA-1pLD-3sGE non is-COMP agree
         '*Jon notified us that he doesn't agree.*'

     b. * Jon adierazi da.
         Jon-A express AUX-3sGA
         'Jon expressed.'

c. Geneak   adierazten direnean,   proteinak
    Gene.the-APL express   AUX-3PLA.when protein.the-APL
    ekoizten dira.
    produce AUX-3PLA
    'When genes express proteins are produced.'
d. *Geneek   adierazi dute   proteina akastuna dela.
    gene.the-EPL express AUX-3SGA-3PLE proteine incorrect is.that
    'Genes notified/stated that the protein is incorrect.'

Note that the semantic features of the argument are what oblige us to accommodate the semantics and, therefore, the syntax of the verb itself, so it is not just the semantics of the verb that determines the nature of arguments, as claimed by Levin. Generally speaking, technical and scientific writing deals with inanimate objects, natural phenomena, abstract concepts, etc. When these kinds of arguments are combined with verbs which in general uses are normally accompanied by [+human] arguments and therefore require AGENT or EXPERIENCER subjects, the arguments are interpreted as CAUSE or as affected THEME. If the verbs are compatible with a completive in general uses, they lose this compatibility when combining with subjects having the feature [-human].

Pragmatic classifications of the verbs of specialised discourse, such as the one made by Lorente (2002), enable us, broadly speaking, to predict what types of verbs are susceptible to changes at the semantic and syntactic levels under pragmatic conditions in specialised texts. Lorente distinguishes four types of verbs in specialised discourse: a) Discourse verbs b) Connector verbs c) Phraseological verbs and d) Term verbs. Let us briefly examine Lorente's characterisation of each of these general verb classes and relate them to the difficulties and challenges posed by each for a language undergoing lexical and discourse development.

Discourse verbs (DVs) are not directly related to the content of a given area of knowledge, but instead refer above all to speech acts (*esan* 'say/tell', *aipatu* 'mention', *azaldu* 'explain', *nabarmendu* 'remark'), to the structure of discourse (*hasi* 'begin', *bukatu* 'end/finish', *bereizi* 'distinguish', *laburbildu* 'resume', *ondorioztatu* 'conclude'), or to the aims of discourse (*aritu* 'concern with', *aurkeztu* 'present/show', *frogatu* 'demonstrate', *erakutsi* 'show')[9]. The actions expressed by these verbs refer to the action of conveying the information in informative texts and do not present divergences of meaning, of function or of use from those found in non-specialised contexts. The subject is always [+human], since it is identified with the author, and in many cases is hidden behind impersonal forms. DVs often subcategorise completive clauses. When writers of specialised texts use such verbs in Basque, the usage difficulties encountered normally stem from lack of expertise and general pragmatic competence in writing, particularly in writing informative

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[9] Psychological verbs would also be included in this group, although they are not very frequent in specialised texts (*uste izan* 'believe', *zalantza egin* 'doubt', *kezkatu* 'worry').

texts. Above all, writers find it especially difficult to find appropriate syntactic so-
lutions for impersonal subjects.

Connector verbs (CVs) are mostly copulative or pseudocopulative verbs ex-
pressing relations of equivalence, equality, similarity or dependence, or that attri-
bute qualities or values (*izan* 'be', *iruditu* 'seem/appear', *egokitu* 'correspond to',
egotzi 'attribute', *iritzi* 'denominate', *esan* 'call', *eragin* 'induce', *etorri* 'come/
stem from', *ekarri* 'imply/involve', *osatu* 'form'). By themselves, these verbs have
no specialised value, but they often form part of units of specialised knowledge
(USK) by joining terms and definitions, specialised concepts with their related
properties, and different types of logical relations, such as cause and effect, time
relations, ontological relations, etc. With CVs, there is no divergence of meaning
or of function compared to non-specialised contexts, but some of them are used
more frequently in specialised contexts. Consequently, speakers not familiar with
specialised writing may lack experience in using such verbs. In the case of verbs
expressing metalinguistic relations like *iritzi* 'denominate' or *esan* 'call', the sub-
ject is an agent that is usually found in impersonal form (*Teknika hauei landare-
hobekuntza deritze* 'These techniques are denominated plant improvement'). When
they express logical relations of another type, the arguments are usually objects or
abstractions to which we can attribute thematic roles such as theme, cause, source,
locative etc. Choice of the appropriate verb for each context has to do with the
semantic features of the arguments, such as *self-initiator*, *controller*, *controlled*
and *affected* (Zabala 2003). When writing specialised texts, authors must select the
semantic features of such verbs at a finer level than when writing for the general
public. Expertise in the choice of fine semantic features is acquired by specialist
language users through experience in these use areas.[10]

Phraseological verbs (PV) appear in context next to a subject or object termi-
nological unit (TU). The resulting lexical combination (TU+verb) is a specialised
phraseological unit (SPU). SPUs containing this type of verb convey information
concerning the thematic content of the scientific or professional field in question
and refer to actions, processes and states pertaining to that field: *beroa xurgatu*
'absorb heat', *soinua ekoitzi* 'produce sound', *hormonak jariatu* 'secrete hor-
mones', *izpiek eraso* 'lit. rays incise', *argia igorri* 'emit light', *terminoak erauzi*
'extract terms'. It is usually assumed that the nucleus of these SPUs is the nominal
terminological unit, and that the recurrent lexical combination with the verb in
question is conventionally established through use by a particular discourse com-
munity. Writers of specialised texts have to be familiar with these lexical solidari-
ties or combinations, which are often idiosyncratically restricted (lexical-pragmatic

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[10] Readers decoding such texts will have no problem in interpreting an appropriately selected verb
since the necessary tools for making the interpretation are contained in the linguistic system. If the pro-
ducer of the text fails to choose the most appropriate verb, the reader (or listener) will have to use com-
pensation strategies: context, semantic features of the participants in the action, semantic representa-
tion of this verb in another language shared by the writer and reader, etc. Such compensation strategies
sometimes ensure the transmission of specialised knowledge even when certain utterances are not quite
right from the semantic-pragmatic point of view.

restrictions), since an apparently synonymous verb will not be appropriate unless it is the one utilised by the discourse community (*hormonak jariatu* / *#hormonak isuri/ #hormonak askatu...* 'secrete hormones' / #'ooze hormones' / #'liberate hormones'). When discourse is not yet fully developed in a given area, there are fewer such established lexical combinations and writers make up their own combinations more freely than in normalised languages. Therefore, there is greater variation in the verbs utilised in particular specialised fields. The level of variation is even higher if it is combined with variation in technical terms in the noun category[11]. In some cases what determines the phraseological unit is the combination of a given verb with a particular grammatical item, such as a post-position in Basque (*-ren pean egon/ jarri/ aritu* 'be subjected to, subject to, act subjected to') (grammatical collocations).

Also included under the heading of phraseological verbs are light verbs (*egin* 'do', *eman* 'give', *hartu* 'take'...). These verbs are often found in combination with terms which themselves are deverbal nouns. The discourse function of these phraseological units is to establish the specialised nature of the eventuality they describe. For example, the technical term *esekidura* 'suspension' is derived from the verb *eseki* 'suspend', but when a Basque writer wants to describe the state in which particles floating in a liquid are found, she/he does not resort to the complex predicate *esekita egon* 'be suspended', but to the SPU *esekiduran egon* 'be in suspension', as this expresses more exactly the state of small particles spread throughout a liquid as seen by chemists and physicists. Other examples of SPUs are *azterketa egin* 'make analysis', *hasiera eman* lit. 'give commencement, i.e. 'initiate', *laginketa egin* 'make sample'/'take specimen', *neurketa egin* lit. 'make measure', *hazkuntza egin* 'make culture'. Thus, these SPUs make it possible to exploit stylistically the greater facility of nominal elements for acquiring terminological value, compared to verbs which are also used in general discourse.

Term verbs (TVs) are verbal units whose lexemes and meanings are linked exclusively, or repeatedly, to some specialised area. They are characterised by their frequent relation to nominal or adjectival lexical units. Many of these verbs have been borrowed from other languages (*ionizatu* 'ionise', *klonatu* 'clone', *eutrofizatu* 'eutrophize', *sintetizatu* 'synthesise', *baporizatu* 'vaporise'). In Basque, term verbs are frequently those ending in *—izatu*.[12] In some cases the verb has been formed by a derivational process where the suffix *—tu* is used, or else it is a borrowed term that has undergone some type of phonological adaptation (*kristaldu* 'crystallise', *lurrundu* 'evaporate', *drainatu* 'drain', *liseritu* 'digest', *higatu* 'erode').[13]

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[11] For more on terminological variation in languages undergoing normalisation, see Elordui & Zabala (2005).

[12] The nominal category unit associated with actions or results related to these verbs is also normally a borrowed word. (*ionizazio* 'ionization', *klonazio* 'cloning' (from Spanish *clonación*), *eutrofizazio* 'eutrophyzation', *sintesi* 'synthesis', *baporizazio* 'vaporization'). Moreover, in many cases the borrowed nominal item entered the language prior to acquisition of the borrowed verbal term.

[13] This makes it possible to derive deverbal nouns using Basque suffixes (*kristaltze* 'crystallization', *lurrunketa* 'evaporation', *drainatze* 'drainage', *liseriketa* 'digestion', *higadura* 'erosion').

Due to their less generic semantic content and the frequency with which they are assigned specialised value, TVs can be considered, along with technical terms in the nominal category, nuclei of specialised knowledge transmission. The semantic content of TVs refers to items pertaining to the specialised area where they are used: actions typically performed in the course of the specialised activity, internal or mediated processes undergone by the materials used or transformed in the course of the activity.[14]

The logical subjects of TVs are as varied as the eventualities to which they refer. This is reflected in the syntactic realisation of utterances and in the auxiliary verb chosen for this realisation. The argument structure is a reflection of the Lexical Conceptual Structure (LCS) of the verb and the syntactic realisation is a consequence of the argument structure and of the syntactic mapping pertaining to each type of argument structure in a given language, in our case Basque. As for borrowed verbs and the intuition that they tend to be conjugated with the auxiliary *edun* 'have', Alberdi (2003) has shown that is not in fact true. In answer to the linguists making this claim, Alberdi shows that transitive borrowed verbs are conjugated with the verb *edun* 'have' just as native transitive verbs are, but that in the case of intransitives, the only ones conjugated with the auxiliary *edun* 'have' are those whose subject is interpreted as AGENT or INTERNAL CAUSE, and that verbs of existence or change of state (and those which in Spanish take the clitic *se*), are conjugated with the verb *izan* 'be'.

We conclude therefore that the discourse operations needed to produce specialised texts are similar to those required for general texts. Accordingly, there are few differences between the DVs and most of the CVs used in the two types of text, except for their frequency of use and the greater tendency to use impersonal forms in specialised texts.

Moreover, the eventualities expressed in specialised texts are in some cases similar and in others different from those expressed in general texts. When dealing with the kind of events discussed in general texts, specialised authors tend to use verbal items already available in the general language. However, a change in the semantic nature of the participants in those events directly affects semantic interpretation and, occasionally, the syntactic realisation of the verb and the sentence. Furthermore, in specialised texts new lexical solidarities are created between a given nominal term and a particular verb, giving rise to SPUs. When the events expressed in specialised texts have no close equivalents in general texts, TVs are created whose syntactic realisation is the result of syntactic mapping rules applied in other use contexts —i.e., rules that already exist in the linguistic system. In many cases, instead of creating a TV, what is created is a SPU composed of a nominal technical term and a light verb.

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[14] The lexemes participating in these TVs normally take part as well in nominal or adjectival derived terms of different semantic types (*ionizatzaile* 'ionizing', *lurrunkor* 'volatile', *drainagailu* 'drainage', *liserigarri* 'digestible', *liserigaitz* 'indigestible', *liserigailu* 'digester'). The most morphologically and phonologically adapted lexemes are also the most productive as far as derivation is concerned.

3.2. Nouns, nominalisation strategies and specialised discourse

Specialised texts are characteristically more precise, systematic, abstract and concise than general texts,[15] thanks in large part to nominalisation strategies (creation of nominal units and complex NPs). Example (3) shows some of the linguistic consequences of the effort to be concise and systematic.

(3) **SOKEN PROPIETATE MEKANIKOAK**

Propietate mekanikoek erabakitzen dute tentsio mekanikoen eraginpean dauden materialen erantzuna nolakoa den: zurruna, malgua, erresistiko-rra, deformakorra, hauskorra, etab. Sokek, ohiko erabilpenetan trakzio-pean lan egiten dutenez, trakziopeko propietate mekanikoak aztertuko ditugu atal honetan. [*Ekaia*, 15 (2002): 24]

'MECHANICAL PROPERTIES OF ROPES

Mechanical properties determine what the response of materials subject-ed to mechanical stress will be like: rigid, flexible, durable, formable, fragile, etc. Since under normal conditions ropes work under traction, in this section we will study the mechanical properties of traction.'

The need to denominate and classify different phenomena perceived in real-ity leads us to reformulate different items in a single semantic field or in different semantic fields, in order to list them within a particular area of specialised knowl-edge (*zurrun* 'rigid', *malgu* 'flexible', *hauskor* 'fragile'). Secondly, it creates lexi-cal solidarities that do not exist in general texts (*erantzun zurrun /malgu/ hauskor* 'rigid/flexible/fragile response'). Third, it takes a larger number of lexical items to refer to notions that have not been denominated in the general language. Speakers tend to resort to analogy with other items in the same field: complex forms make it possible to use this resource. So in example (3) *erresistikor* 'resistent/durable', *de-formakor* '(de)formable' were created on analogy with *hauskor* 'fragile', but also taking as a reference the Spanish items *resistente* and *deformable*.

Finally, recourse to nouns and, more precisely, to NPs helps to achieve ab-straction and concision. Example (3) shows a concise, abstract SPU in Basque: *trakziopeko propietate mekanikoak* 'mechanical properties of traction' based on *propietate mekanikoek...* 'mechanical properties' and *...trakziopean lan egiten dutenez* 'work under traction'. The level of abstraction essential to titles and headings also requires the use of NPs (*Soken propietate mekanikoak* 'mechanical properties of ropes'). TUs are constructed and deconstructed in specialised texts, and therefore specialists need more analytic or more synthetic linguistic units to be able to develop their discourse.

A language that has been used in contexts of different degrees of specialisation is bound to have the necessary lexical resources to express notions with different

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[15] These attributes are present in different degrees depending on the level of specialisation of the text in question, and depending on the field and subject under discussion. For example, texts having to do with mathematics are obviously much more abstract than natural science texts.

degrees of abstraction and conciseness. The stylistic aims of different types of text are achieved by resorting as necessary to nominal or verbal categories. A language that has been used less frequently in specialised and abstract areas is bound to have a certain lack of abstract nominal items. Users striving for abstraction and conciseness in their writing must therefore create such items to achieve their stylistic aims. In any case, the use of abstraction is not always a matter of stylistic choice for authors of texts, since in some contexts a certain level of abstraction is absolutely required. Let us see how the level of abstraction is related to the syntactic realisation of utterances projected by verbs and nouns.

The two predicative categories *par excellence* are verbs and adjectives, although exceptionally certain nouns may also project predicates. The lexical items that project predicates express *eventualities*[16]. In syntax, predicate is understood as the maximal projection of a predicative nucleus and is characterised by the fact that it has a variable that must be saturated in the syntax by means of a subject[17]. When a subject-predicate relation is established, a clause is obtained. In syntax, dependence has been largely proved between tense and subject licensing in different types of sentences. Tense helps to anchor the eventuality expressed by a predicate over a line of time (Demirdache & Uribe-Etxebarria 2002).

All utterances are the result of an enunciation act. Some utterances entail a predication relationship, while in others this type of relation is not involved. All utterances containing a predication can be characterised by a set of parameters which, following Culioli (1973), we shall call subject of predication S_p (*Gurdon* in (4)), subject of the enunciation (enunciator) S_E, and the interlocutor I_E. Other key parameters are time of predication T_p, and time of enunciation T_E. When $T_p = T_E$ the utterance appears in present tense, and when $T_p \neq T_E$ the utterance will be in past (4) or future tense[18]. When $S_p = S_E$ the subject of the utterance appears in first person. When $S_p = I_E$ the subject of the utterance appears in second person, and when $S_p \neq S_E \neq I_E$ the subject of the utterance appears in third person (4).

(4)   Gurdon-ek igelak   klonatu zituen.
       Gurdon-E   frog.the-APL clone   AUX-3PL-3SG
       '*Gurdon cloned frogs.*'

The sentences in (5) can be considered more abstract than those in (4), since the subject of the predication is either generalised as the community of scientists (5a) or is missing, giving rise to an impersonal form (5b).

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[16] The lexical categories that can project predicates belong to the semantic category *eventualities*, which includes *events* (*accomplishments* and *achievements*), *activities* and *states*.

[17] In semantics and in logic, the term predicate is used with a different meaning. Here we are speaking of the relation of predication within utterances that are the product of linguistic activity, and not in the more abstract sense utilised in those fields.

[18] This point of view is a simplification, since in addition to tense, aspect plays an important role too in locating the time of an eventuality: aspect serves to present a viewpoint on the situation described by a clause. It gives a temporal perspective that focalizes either part of the situation or the entire situation as a whole. See Demirdache & Uribe-Etxebarria (2002).

(5) a. Zientzialariek bizidunak   klonatzen dituzte.
         scientist-EPL   organism.the.APL clone   AUX-3PLA-3PLE
         'Scientists clone organisms.'
     b. Honela klonatzen dira   bizidunak.
         like this clone   AUX-3plA organism.the.APL
         'This is how organisms are cloned.'

The utterances in (5) constitute simple clauses which are also assertions. However, not all clauses contain assertions. The utterance in (6a) is made up of two clauses and contains a single assertion. The time of the clause *bizidunak klonatzea* must be located with respect to the time of the main clause, and the time of the main clause is what is located with respect to the time of the enuntiation. Infinitival clauses are characterised by a dependent tense[19] which has to be located with respect to the tense of another predication, and cannot be located with respect to the time of the enunciation. This means that infinitives cannot give rise to simple sentences.[20]

(6) a. (Zientzialariek) bizidunak   klonatzea pentsezina   zen
         (scientist-EPL) organism.the-APL clone.the unthinkable was
         duela hogei urte.
         twenty years ago
         'Twenty years ago it was unthinkable for scientists to clone organisms'
     b. *Zientzialariek bizidunak   klonatzea
         scientist-EPL   organism.the-APL clone-the
         'Scientists to clone organisms.'

However, there exist enunciation contexts in which no kind of assertion is being made. These contexts are characterised by a generic enunciation time. Dilution of enunciation time represents the final step towards abstraction and occurs in contexts such as: titles and headings, signs, outlines, particularly in textbooks for different subject areas. However, infinitives always project predicates. In the case of (7a) the predication is characterised by a generic tense that licenses a subject with arbitrary reference (Zabala & Odriozola 1996). Thus, in (7a) there is a predicative relation

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[19] On the presence of the Tense category in infinitival clauses in Basque, see Zabala & Odriozola (1996). These linguists distinguish three types of tense in infinitival clauses: T (with no type of qualification) which we claim here to be a dependent tense, anaphoric T which is found in clauses with controlled subjects (*Ahaztu du liburua ekartzea* 'I forgot to bring the book') and generic T which is found in clauses with generic subjects (*Erretzea kaltegarria da* 'Smoking is harmful.').

[20] Today this appears to be changing among young people in informal speech situations, where one can frequently hear utterances of the type *Ba, Jonek egitea* 'lit. Jon to do it' where the infinitive is used instead of the subjunctive (*Ba, Jonek egin dezan* 'Well, let Jon do it'). Since this is a volitive predicate it is presupposed that the utterance expresses a desire on the part of the enunciator that coincides with the time of the enunciation. With subjunctive personal form of the verb, time can be located with respect to the enunciation time. If we want to dissociate the desire from the time of the enunciation and from the enunciator, the subjunctive would have to be realized in a subordinate clause: *Jonek egin zezan nahi nuen/ zuen / zenuen.* *'I/He/You would like John to do it'*. For more on subjunctive clauses, see Laka (1995).

between *bizidunak klonatzea* and an empty subject with arbitrary reference which is interpreted as a human being. However, we will assume that deverbal nouns in Basque do not project predicates but instead express eventualities: the derivative suffix saturates the event of the verb acting as base and no subject is necessary.

(7) a. Bizidunak   klonatzea   b. (Bizidunen)   klonazioa
         organism.the-APL clone.the   (organism-GENPL) cloning.the
         'Cloning organisms'   *' The cloning of organisms'*

The presence of an empty subject in (7a) and the absence of a subject in (7b) are made evident by the capacity/ incapacity to control the subject of a final clause[21]:

(8) a. Bizidunak   klonatzea, organoak   lortzeko
         organism.the-APL clone.the   organ.the-APL achieve.in order to
         'Clone organisms, to achieve organs.'
     b. #Bizidunen   klonazioa, organoak   lortzeko
         organism-GENPL cloning.the organ.the-APL achieve.in order to
         'Cloning organisms to achieve organs.'
     c. #Klonazioa, organoak   lortzeko[22]
         cloning.the   organ.the-APL achieve.in order to
         'Cloning to achieve organs.'

It is clear, therefore, that (8a) and (8b, c) cannot be interpreted in the same way. The first example expresses a proposition that presupposes a human subject, while the other two focalise an eventuality that does not presuppose any kind of subject and may be interpreted as a phenomenon without a triggering cause. Nouns that express eventualities are often the only ones capable of referring to natural phenomena with the level of abstraction required for technical writing. However, in contexts where a list of aims or achievements is presented for example, the list must be made up of infinitives (9a) and not of deverbal nouns (9b) :

(9) a. Lan honen helburuak bi dira: a) kutsadura maila neurtzea eta b) maila
         hori jeisteko konponbideak proposatzea.
         *'This study has two objectives: a) to measure the level of pollution
         and b) to propose measures to reduce this level'*
     b. ?? This study has two objectives: a) kutsadura mailaren neurketa eta
         b) maila hori jeisteko konponbideen proposamena
         *'This study has two objectives: a) measurement of the level of pollu-
         tion and b) proposal of measures to reduce this level.'*

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[21] In English this control is possible with what Grimshaw (1990) calls complex event nominals (*The examination of the patient in order to determine whether…*). In contrast, result nominals never allow control (* *The exam in order to determine whether…*).

[22] Note that these judgements would be different if we changed enunciation parameters. That is, (8a) would be acceptable as a newspaper headline. We would understand that someone is calling for cloning in order to obtain organs, or for example that a bill is being introduced to allow cloning, but only to obtain organs.

Deverbal nouns make it possible to focalise different aspects of the eventualities expressed by verbs, and they therefore are an essential instrument for the scientific analysis of natural phenomena and the techniques utilised in studying them. They enable us to break down those eventualities, distinguishing actors, instruments, places, outcomes etc. Action and result nominals focalise the event (*erorketa* 'fall') or a subevent of the whole event,[23] such as the resulting subevent. In the first case we obtain an action nominal as in *Zelula hauen hazkuntza egin behar dugu* 'We must make a culture of these cells' and, in the second case, a result nominal as in *Milimetro bateko dimetrodun zirkulu berdeak ikus daitezke hazkuntzan*. 'One millimetre-in-diameter green circles can be seen in the culture.' Sometimes an item's interpretation as an action or as a result nominal will depend on the context. We can focalise the actor (*hartzaile* 'receptor', *ekoizle* 'producer'), the result (*ekoizkin* 'product', *higakin* 'debris'), the instrument utilised for a given action (*neurgailu* 'measurer', *berogailu* 'heater'), the place where the action takes place (*ibilgu* 'channel', *bilgu* 'storage'), the time or period in which the action occurred (*izozte* 'glaciation', *idorte* 'drought'), etc.

As specialised discourse is being developed in Basque, a considerable increase is to be expected in the productivity of morphological rules of deverbal noun formation. In normalised languages, when there already exists a derived term to fill a certain function, derivation rules are normally blocked and no new derived forms arise (*clonación/*clonamiento*; *cloning/ *clonation*). In the case of Basque, sometimes there is an overproduction of derivation rules due to the lack of fluid networks which would help to establish a variant within the discourse community. In these cases we find synonymous terms in free variation (*klonazio, klonaketa, klonatze*). Occasionally, within a given area of study, preference for a particular variant is detected. When this happens, it must be interpreted as a symptom of discourse development. For example, in the field of economics, there is a tendency to use the variant *hazkunde* 'growth', while in the field of biology, the variant *haziera* 'growth' is preferred. The variant *hazkuntza* is now reserved for conveying the specialised concept 'culture', thanks to the influence of the normative dictionary for unified Basque *Hiztegi Batua*, although it is sometimes still found in texts with the meaning of 'growth'. That is, it is in free variation with *haziera* and *hazkunde*.

Also observed is a reorganisation and specialisation of certain suffixes, to provide specialised terms for certain functions. For example, the suffix —*gailu*, which used to be considered synonymous with —*garri* in its instrumental reading (*lokailu* = *lokarri* 'string'), has become specialised to express instruments and devices, while the suffix —*garri* is no longer utilised for this function. So *gailu* has even gone from being a dependent morpheme to functioning as an independent lexeme in the field of technology, with the meaning 'device'. As for the causative use of —*garri*, this suffix is now being replaced by the suffix —*tzaile*, which is

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[23] Pustejovsky (1995:67-72) subclassifies events into *processes, states* and *transitions*, and assumes a subeventual structure to event sorts which represents the relation between an event and its proper subevents.

invariably identified with the subject of an eventuality. This is how terms such as *disolbatzaile* 'solvent' were created, instead of *disolbagarri*.

Generally speaking, compared to texts intended for the general public, there is a far greater tendency in specialised texts to use nominal composition and complex noun phrases to form monolexic TUs (*zelula-mintz* 'cell membrane') and polylexic TUs (*ardatz kartesiar* 'Cartesian axis', *karbonatozko belakiak* 'calcareous sponges', *testuinguruaren menpeko lengoaia* 'context sensitive language'), as well as SPUs meeting the requirements of different stylistic contexts (titles and headings, lists, items of higher or lesser abstraction and conciseness within texts).[24]

In short, the distinctive features of specialised texts (precision, systematicity, abstraction and conciseness) require the use of numerous nominal items. Discourse development of the language in these fields necessarily involves the mass creation of items in the nominal category, particularly deverbal nouns, and the redistribution of some items already in existence. Moreover, specialised texts give rise to more complex noun phrases than those found in texts intended for general readers, meaning that the producers of this kind of writing must acquire linguistic experience in the construction and deconstruction of such noun phrases.

4. SOME CONCLUSIONS FOR APPLIED LINGUISTICS

We conclude this study with a number of reflections drawn from our analysis and which we feel should be borne in mind in applied linguistics activities designed to contribute to the lexical and discourse development of specialised language in Basque:

a) Studies of specialised discourse, especially in a language undergoing lexical and discourse development, provide linguistic data that is invaluable for understanding the linguistic systems in general and Basque in particular.

b) Linguistic system studies that include the characteristics of different types of discourse, and in particular specialised discourse, can contribute essential data for applied linguists seeking to help in the lexical and discourse development of a language.

c) In the case of Basque linguistics, many applied studies aimed at the translation and correction of specialised texts are based on principles derived from general descriptions of Basque. Descriptions that fail to take into account the linguistic particularities of specialised discourse, or the incipient discourse development that is occurring in the communities responsible for this development, should be used with great caution. If the conclusions of studies based exclusively on general texts are blindly extrapolated to

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[24] For more on the way in which complex nominal phrases are organised, see Eguzkitza (1993) Zabala (1999) and García (2001, 2003)

specialised texts, lexical and discourse development could be irremediably hindered, rather than stimulated, in these fields.

d) However, a methodology based on descriptions of Basque in general contexts, but which also takes into account the prototypical textual features of specialised languages in different areas, enables us to recognise forms that could be considered aberrations of the system from a general perspective, but which from a discourse perspective can be explained as new realisations of the system meeting new discourse functions. A methodology of this type would enable us to analyse specialised texts and describe ongoing lexical and discourse development, thus contributing to the consolidation and propagation of the achievements attained in this development.

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