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MULTIPLE MOTIVATIONS IN THE DENOMINATION OF CONCEPTS: THE CASE OF “PRODUCTION AREA” IN THE TERMINOLOGY OF AQUACULTURE IN FRENCH AND GALICIAN1

Abstract

Terms are par excellence the most prototypical units of the representation of concepts, through which special knowledge is commonly represented, transferred and understood. Although terms are linguistic signs, which have been said to be arbitrary as far as the relationship between form and meaning is concerned, their relationship with the concept can be seen as a motivated one, since part of the content of the concept may be displayed in the term. When the concept-term relationship is examined in real communication contexts, concepts are often expressed via several motivated terms, some of which exhibit different facets of the concept and show a particular vision of it. This phenomenon of denominative variation present in specialised texts reveals that the motivation underlying term formation is not unique but may, on the contrary, be multiple. In this paper the set of denominative variants referring to the concept PRODUCTION AREA found in a bilingual (French and Galician) corpus of texts from the field of aquaculture are analysed to shed light on the natural mechanisms of term formation that are used out of regulated contexts of standardisation. The influence of three factors in lexical choice will be explored: the salience of a particular pattern or facet according to the concept class, the role of the language system in naming and the role of the author's perspective.

INTRODUCTION

Terminological units are the most prototypical units of representation of specialised concepts. Amongst the various types of representation used by experts to convey special knowledge, such as images, formulas or other non-linguistic symbols, terms are linguistic signs, i.e. intrinsically arbitrary entities made of two components: form (signifier) and meaning (signified). Although the arbitrariness of the linguistic sign is commonly accepted as far as the signifier / signified relation is concerned (Saussure 1916), terminological units have been characterised as motivated (Kocourek 1991; Sager 1990, 1997) since term formation is often described as a conscious and deliberate process aimed at establishing a quick and straightforward reference to the concept being named. Therefore, motivated terms such as morphologically complex terms appear to be the most adequate type of units in terms of their communicative effectiveness because they not only represent the concept globally but also display part of the content of the concept in their form.

When the behaviour of terms is examined in real communication contexts, we observe that the same concept is often expressed by more than one (motivated) term in texts produced by experts. In some cases, these denominative variants are not only formally different, but also semantically different: they display a different facet of the concept, each of them showing a particular vision of it (Freixa 2002). The choice of these terms has a significant cognitive consequence, because it affects the way the recipient accesses the concept. We believe that this phenomenon of denominative variation, which was characterised as a perturbation of the terminological unit that hampered communication among experts (Wüster 1979), is not a “random act of defiance or carelessness, but one which is well motivated and useful in expert discourse” (Bowker 1998: 487).

The aim of this paper is to explore some factors that have been studied in the literature in relation to term formation to explain the conceptually-motivated behaviour of denominative variation. First, we wish to examine the relationship between denominative variation and the internal structure of a concept by determining whether there are some facets that are more salient than others for a given concept class (Geeraerts et al. 1994; Geeraerts 2000). Second, the role of the cultural system will be assessed by exploring the different motivations in French and Galician (Diki-Kidiri 2008). Finally, the role of the

context will be explored by examining the effect of the author's perspective on term choice (Fernández-Silva, Freixa & Cabré 2008). In order to do so, we will analyse the set of denominative variants referring to the concept of PRODUCTION AREA from a corpus of texts on aquaculture in Galician and French.

The paper is structured into three main sections. In section 1 we develop our ideas about the motivational processes of denominative variation and we expose some theoretical considerations about the concept and the terms which allow us to explain the flexibility of the concept-term assignment. In section 2 we describe the corpus and the methodology of analysis. Finally, in section 3 we observe the effect of the onomasiological salience, the cultural system and the sender's perspective in the denominative choice by looking at the occurrences of the concept of PRODUCTION AREA in context.

1. DENOMINATIVE VARIATION WITH COGNITIVE CONSEQUENCES

The study of variation in Terminology has experienced a great shift since the beginning of the discipline. The prescriptive perspective adopted in the General Theory of Terminology (Wüster 1968, 1979; Felber 1984), aimed at standardizing concepts and terms in an international context, led to the belief that all kinds of variation affecting the terminological unit hampered specialised communication. They violated the principle of univocity which established that a concept should be designated by only one term and a term should be assigned to a single concept. Therefore, terminological variation was disregarded at the theoretical level and banned in the standardising terminological practice.

Depuis quelque temps, nous assistons aux progrès continus d'un mal pernicieux qu'on pourrait appeler la 'désintégration linguistique'. Dans tous les pays industrialisés, le langage technique change, et cette évolution n'est pas seulement fonction du cours du temps, mais dépend aussi bien de la région géographique ou du milieu social auxquels appartient celui qui parle ou écrit (savant, ingénieur, ouvrier, par ex.), quand ce n'est pas tout bonnement de ses connaissances ou de ses goûts personnels. Il est évident que ce phénomène empêche les techniciens et les gens de métier de se bien comprendre, déjà, même, lorsqu'une seule langue est en cause. C'est pourquoi, depuis plusieurs années, des associations officielles ou semi-officielles, dans nombre de pays, se préoccupent de rationaliser les notions techniques et leurs appellations (...) des experts qualifiés d'une technique donnée mènent des travaux en vue de déterminer quelle définition et quelle appellation doivent être attribuées à toute notion appartenant au domaine technique considéré. On obtient ainsi, pour chaque notion, une définition normalisée et un terme normalisé dans chaque langue. (Wüster 1968: 2.9-2.11)

However, in the past two decades, Terminology has widened up its scope of research and has turned towards the description of special language in different communicative contexts. Several theoretical proposals have appeared from different branches of knowledge –the social sciences, the communication sciences and the linguistic sciences –in response to the necessity of overcoming the universal application of the prescriptive paradigm (Cabré 2003). A general claim in all these proposals is that variation is a typical feature of special language and that it can be functional in expert communication (Cabré 1999; Temmerman 2000; Gaudin 2003; Diki-Kidiri 2008).

Variation is inherently paramount in every communication process. It may be realised through alternative denominative forms for the same meaning (synonymy) or through the multiplication of meanings for a single word-form (polysemy). This principle is universal for terminological units, although it admits different degrees depending on the circumstances of every communicative situation (Cabré 1999: 85) ²

The use of alternative denominations to refer to the same concept is known in the Terminology literature as denominative variation. We understand denominative variation as a phenomenon of lexical variation, since in our approach denominative variants are only terms, i.e. "lexicalised forms, with a minimum of stability and consensus among the users of units in a specialised domain" (Freixa 2006: 51). Despite being generally considered a phenomenon of formal variation (affecting the formal side of the terminological unit), the use of different variants can also entail a meaning modification that has a consequence in the way the concept is perceived by the recipient. Therefore, we think it is important to distinguish between two kinds of denominative variation, as illustrated in table 1. ³

	conceptual realm	linguistic realm		examples
denominative variation without cognitive consequences	one concept	several terms	different form	<i>marine product / sea product</i>
			same meaning	
denominative variation with cognitive consequences	one concept	several terms	different form	<i>marine product / fishing product</i>
			different meaning	

Table 1: Two subtypes of denominative variation according to the cognitive consequences

In the first situation, a concept is expressed linguistically by several terms that are formally different but have the same lexical meaning. As we can see in the examples from our corpus (see section 2), marine product and sea product are strict synonyms, since the characteristic selected in the modifier to distinguish this product from others is in both cases the origin, i.e. the sea. The choice between these two terms has no cognitive consequences whatsoever because both variants convey the same information about the concept. However, there is also the situation whereby the denominative variants are not only formally different but also semantically different. Sea product and fishing product do not have the same meaning despite referring to the same concept because each variant highlights a different characteristic of the concept, namely, the origin of the product and the activity performed to obtain it. In this case, denominative variation has cognitive consequences, because the use of a particular variant has an effect on the way the recipient understands the concept. Furthermore, it seems logical that the choice of one term or the other by the sender could also be motivated, consciously or unconsciously, depending on the characteristic the sender wishes to emphasise in a specific situation.

1.1. Flexibility of concept-term assignment

The acceptance of the existence of denominative variation with cognitive consequences is possible today thanks to the theoretical contributions of current descriptive approaches to Terminology. A flexible conception of the concept-term assignment, which can vary according to contextual factors, is necessary in order to accept that a special concept can be expressed by several terms conveying different meanings. The insights about the flexibility of concept formation and structuring formulated in cognitive linguistics (Lakoff 1987) had an impact on the conceptual theory of Terminology (Zawada & Swanepoel 1994; Temmerman 2000; Faber et al. 2005) and consequently concepts are no longer described as objective and clear-cut entities. Similarly, the linguistic nature of terminological units is now unquestionable (Cabr e 1999) and this translates into variability both on the semantic and formal level.

The characteristics of specialised concepts in the light of current approaches can be summarized as follows:

- Scientific categories are culturally, bodily and perceptually based, as is true of general categories. Scientific thought is the result of human experience and our instrument of perception, the body, imposes a meaningful structure upon experience (Zawada & Swanepoel 1994).
- Special knowledge is produced by a scientific community that is situated in a cultural, temporal and socio-professional context. Depending on the subject field or the school of thought, the same reality can be perceived and structured differently, giving rise to different concepts (Zawada & Swanepoel 1994; Gaudin 2003; Diki-Kidiri 2008).
- Categories are not understood independently but in their interrelation with other concepts within frames or Idealised Cognitive Models. Conceptual structuring can vary according to the frame or ICM within which a concept is categorised (Temmerman 2000; Faber et al. 2005).
- The content of the concept is not just the definition made in terms of necessary and sufficient conditions. Indicating the position within a logical or ontological structure plus the distinctive features is not always enough to understand a category, and depending on the type of category other information might be essential (Temmerman 2000).
- The knowledge structure of a subject field is dynamic and changes through time; the relations among concepts are multidimensional and its complexity can vary according to the needs in a particular situation (Cabr e 2003; Rogers 2004).

Concerning the terminological units, we support the principles of the Communicative Theory of Terminology (Cabr  1999; 2003; 2008), which describes the term as a three-component unit:

The multifaceted terminological units are at one and the same time units of knowledge, units of language and units of communication. Based on this approach, the description of a terminological unit must necessarily cover these three components: a cognitive component, a linguistic component and a sociocommunicative component. But this triple composition of terminological units does not show them to be different from other units of language such as words or lexical units in general usage. (Cabr  2003: 183)

- Terms are units of thought because they are the linguistic representation of a concept, the counterpart in the linguistic realm of a concept belonging to the conceptual realm. Their content is primarily determined by the position of the concept within the conceptual structure of the field, and it is codified by the expert community.
- Terms are units of language, i.e. linguistic signs with lexical meaning. They occur naturally in special texts and they bear syntactic and semantic relations with other linguistic elements.
- Terms are units of communication because they appear in specific communicative contexts. Their form and content accommodates to the situation within which the discourse is produced.

Concerning the concept-term assignment, we support the idea that terminological units are motivated by the concept, and we agree with Guiraud who says that "la pr dominance du motiv  est si prononc e qu'elle est un caract re essentiel de la formation terminologique" (Guiraud 1978: 98). This assumption in the field of Terminology is supported for two primary reasons. The first reason, of a cognitive nature, is related to the specific function of term formation in special language, which is aimed at ensuring and increasing the effectiveness of specialized communication (Bowker 1998). In situations where new knowledge is created in a natural environment, as opposed to the artificial environment of standardising organisations, "designation is carried out by individuals who in their work need to name new concepts, to represent as precisely, appropriately and economically as possible the results of their observation and conceptualisation so that others can understand them" (Sager 1990: 287). Therefore, motivated terms are an access door to the understanding of concepts, since they permit the concept to be quickly and efficiently identified.

The second reason that explains the motivated nature of terminological units is related to the specific methods of term formation, in which the proportion of multiword terms is higher than in general language (Collet 2004: 105). Multiword terms are motivated because, in Kocourek's words (1991: 172), they not only designate the concept globally but also display some of its specific characteristics in their form. Most term formation processes lead to motivated terms, as can be seen in the following table: ⁴

motivation	term	Definition
morphological	�levage	1. Action de prendre soin d'un animal et de l'�lever jusqu'� ce qu'il atteigne la maturit�. [FAO aquac. glossary]
syntagmatic	Public Maritime Domain	1. Seas or ocean areas owned by the state as opposed to individuals or corporations.
semantic	sea water	1. The water of the sea, or water taken from the sea. [Oxford English Dictionary] 2. Coastal and offshore waters in which the salinity is maximal (around 35 ppt) and not subject to significant daily and seasonal variation. [FAO aquac. glossary]

Table 2: Motivational processes of term formation

Terms like  levage and Public Maritime Domain are motivated because each component stands for a part of the concept's content, as can be seen in the definition. Another common method of term formation leads to semantically motivated terms, like sea water, which designates a specific concept of aquaculture that, however, results from a specification of its meaning in general language.

1.2. Motivation of denominative variation

If we accept the motivation of term formation, the fact that a term is a linguistic crystallisation of the concept's most relevant characteristics, why should the behaviour of denominative variation be arbitrary? We believe that denominative variation in texts can in some cases be explained as the result of a multiple motivation that takes place in the naming process (Freixa, Fernández-Silva & Cabré 2008).

The flexibility of concept structuring, as we pointed out before, lies at the root of this phenomenon. For this reason, on some occasions, univocity might not be the desired situation. If the concept is a flexible entity within a multidimensional concept system that can vary in respect of functional and contextual factors, it may occur in texts through different terms with different lexical meanings depending on the parts of the concept that are desired to be emphasised in a specific situation. A concept can be expressed by a single term, or by several terms that convey the same meaning, but in the cases when a concept is expressed by variants differing on their lexical content—the denominative variation with cognitive consequences mentioned above—each variant showing a different point of view, expressing different facets or dimensions of the concept, it is logical to presume that there is a cognitive motivation behind it, a slight variation in the understanding of the concept that motivates the user of the terminology to choose a specific denominative variant:

When writing a specialized text, a subject field expert who wants to express ideas using pre-existing terms and concepts may face a number of difficulties. For instance, on the one hand, the notion that the expert wants to express may be slightly different from the concepts denoted by the terms that he or she knows. On the other hand, the expert may know the correct terminological expression for a precise concept, but he or she may intentionally wish to express a slight shift in the meaning of this concept. (Bowker 1997: 277)

Although some studies have shown that denominative variation is in many cases unconscious (Freixa 2005), we support the idea that not all variation can be attributed to carelessness or arbitrariness on the part of the subject field experts. Furthermore, we believe that if we examine the behaviour of terms in real discourse, in relation to the context-related factors that could motivate term choice, we will be able to find out the patterns and regularities hidden behind such apparent randomness and provide a satisfactory explanation of the behaviour of denominative variation.

Our hypothesis is that the choice of a term to express a specialized concept is determined by factors that are situated at the level of the system of terminology, but also by factors at the level of use. The characteristics of the concept being named within the concept system and the particularities of the language that is employed are factors belonging to the system; but concept naming is also affected by contextual factors that are specific to the situation from which a concept is approached at a particular moment. The effect of some of these factors will be explored in section 3. We wish to reproduce the words of Kageura (2002) in which this idea of terminology standing between two forces is also expressed:

The fact that terms are located within the tension between the need for efficient communication and the requirement of representing the concepts of a domain makes terminology somewhat unique as a linguistic phenomenon. To the extent that the functional requirement of terminology is to gain the precision necessary for expressing restricted meaning, terminology tends towards stronger systematization of its internal structure [...]. At the same time, to the extent that terminology shares its linguistic form with the general vocabulary, it tends towards using the full flexibility of natural language, not only in its lexical-formal dynamics but also in its capacity of establishing dynamic relations between lexical items and meaning. This dynamic force, inherited from natural language, is strengthened by intersecting with general-language words in real discourse. (Kageura 2002: 15)

2. METHODOLOGY: CORPUS-BASED ANALYSIS

For this study we have analysed the different denominative variants of "PRODUCTION AREA" extracted from a corpus of texts on aquaculture in Galician and French. The corpus of 323,208 words consists of 40

texts of different types and levels of specialisation – 21 in French and 19 in Galician—treating different aspects of the aquaculture activity from different perspectives.

A production area is defined in the European Legislation 5 as “any sea, estuarine or lagoon area containing natural deposits of bivalve molluscs or sites used for cultivation of bivalve molluscs from which live bivalve molluscs are taken” (Council Directive 91/492/EEC: 3). It is a concept restricted to shellfish aquaculture, which is a very important maritime activity in Galicia (NW Spain), as well as in some regions of France (mainly on the Atlantic coast). Spain and France are the two biggest shellfish producers in Europe. 6

After comprehensive reading and text exploration with the help of concordance software (TextSTAT), a total of 26 denominative variants—14 in French and 12 in Galician—and 218 occurrences for this concept were detected. The conceptual equivalence was validated by subject field experts 7 and the information was stored in a database.

language	denominative variants	freq occurrence	number of texts
French	bassin conchylicole	13	7
French	bassin de production	7	3
French	espace conchylicole	2	1
French	espace de culture	1	1
French	secteur d'élevage	2	1
French	site d'élevage	3	2
French	site de production	2	2
French	zone conchylicole	10	5
French	zone d'élevage de mollusques	1	1
French	zone de culture	1	1
French	zone de production	64	8
French	zone de production conchylicole	6	4
French	zone de production de coquillage	1	1
French	zone de récolte	7	1
Galician	área administrativa de produción	1	1
Galician	área de explotación	2	1
Galician	área de produción	17	2
Galician	zona administrativa de produción	2	1
Galician	zona de cultivo	3	3
Galician	zona de cultivo e marisqueo	1	1
Galician	zona de marisqueo	1	1
Galician	zona de produción	57	6
Galician	zona de produción de bivalvos	1	1
Galician	zona de produción de moluscos bivalvos e outros invertebrados mariños	7	2
Galician	zona marisqueira	4	3
Galician	zona productiva	2	2
TOTAL FREQUENCY OF OCCURRENCE		218	

Table 3: Denominative variants, frequency of occurrence and distribution in the corpus

After storing all the terms, occurrences and information about the texts in the database, we proceeded to the semantic analysis of the denominative variants. For that purpose, we adopted the methodology used in Kageura (2002) to describe the conceptually motivated patterns of term formation in Documentation Sciences. The purpose of Kageura’s analysis is to detect the regularities in the construction of the totality of terms of a given subject field, but we think it can as well be useful to grasp the systematicity in the behaviour of term variation. The aspects under observation are the relationships between terms and their constituent elements and the relationships among the constituent elements interpreted as combinations of concepts within the overall conceptual system of the domain. The methodology consists of the following steps:

1. The concept is analysed within the specific concept system of aquaculture in order to determine on one hand its position within the conceptual structure and on the other the concept class it belongs to (the four main concept classes being entities, activities, properties or relations).
2. Each denominative variant is decomposed into head and modifier, and the constituent elements of each element are identified.
3. The conceptual class of each constituent element within the conceptual system is identified –as we had previously done for the concept itself.
4. The dependency relation existing between the concept at the head and the concept at the modifier is established, so as to determine the intraconceptual relation expressed in the term.

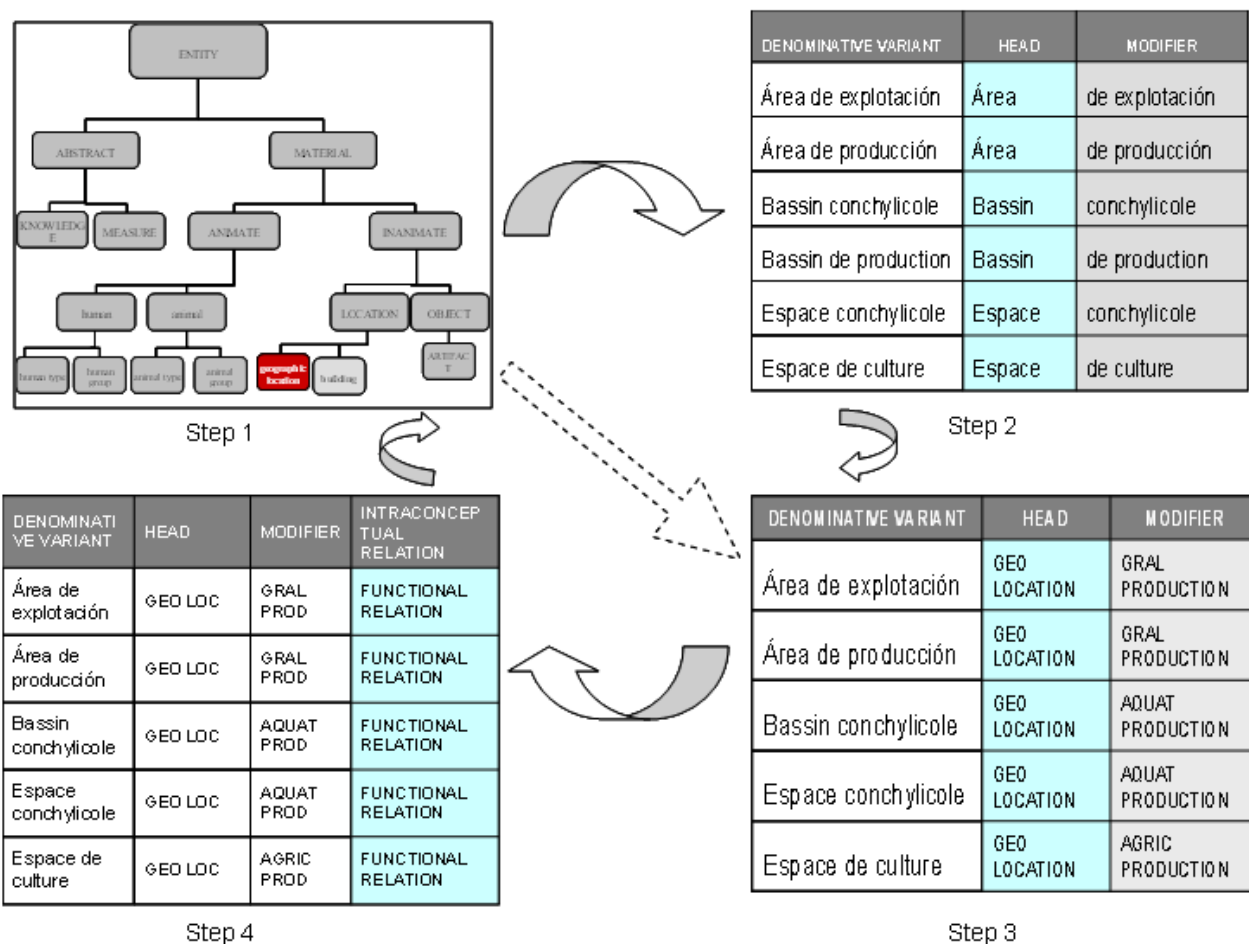


Figure 1: Methodology of analysis of conceptually motivated patterns of term variation

3. ANALYSIS: DENOMINATIONS OF "PRODUCTION AREA" IN AQUACULTURE

According to the methodology described in the previous section, PRODUCTION AREA can be classified within the conceptual system of aquaculture as a concept of geographical location which is one of the concepts of general location, which is in turn classified within the broader concept class of inanimate material entities.

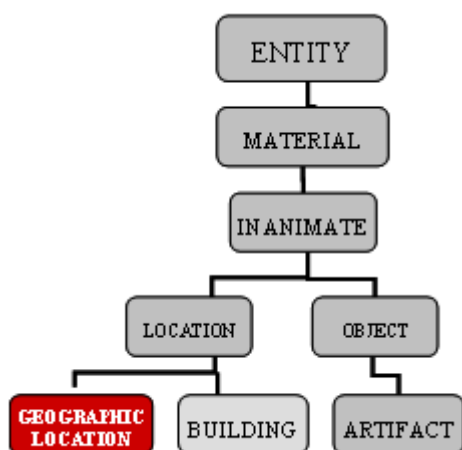


Figure 2: Concept classification of PRODUCTION AREA

Structurally, all denominative variants are compound terms with the structure N + PP (e.g. zona de producción), N + Adj. (e.g. zone productive) or N + Adj. + PP (e.g. zona administrativa de producción). More variability is found within the structure of the prepositional phrases, as can be seen in table 4, where the whole list of morphological patterns along with their frequencies is shown:

structure	example	n° variants	%
N + A	bassin conchylicole	5	19,23
N + A + PP[P + N]	área administrativa de producción	2	7,69
N + A + PP[P N C N]	zona de cultivo e marisqueo	1	3,85
N + PP[P N P N]	zona de producción de bivalvos	3	11,54
N + PP[P + N]	área de producción	13	50
N + PP[P N A]	zone de production conchylicole	1	3,85
N + PP[P N P N A C D N A]	zona de producción de moluscos bivalvos e outros invertebrados mariños	1	3,85
TOTAL NUMBER		26	100

Table 4: Morphological structures of denominative variants and frequencies

With regard to the constituent elements in the head position of the term, we have documented 6 lexical items 8 –zona and área in Galician and zone, secteur, espace, bassin and site in French – all of them designating concepts of general geographical location. In two cases, only in Galician though, they are complemented by the specification of the agent, i.e. the administrative body that is responsible for the demarcation of that area: zona administrativa and área administrativa:

conceptual pattern		
main conceptual class	subspecification	lexical categories
GEOGRAPHIC LOCATION		zone / zona; área; secteur; espace; site; bassin
	+ BODY	área administrativa zona administrativa

Table 5: Conceptual patterns of constituent elements in head position

The constituent elements in the modifier exhibit more variability. This is not surprising, because the head often indicates the concept class to which the concept belongs, and no high degree of variation is expected among the lexical items used to designate the same concept, as some authors have pointed out (Freixa 2002). We observe that all elements in the modifier select concepts of productive activity, the difference being in the degree of specification of that activity: general production concepts like production or exploitation, agriculture production concepts –culture, élevage –or aquaculture production concepts like marisqueo or conchylicole. Besides, in some denominations, the general production and agriculture production concepts add a subspecification that restricts the scope of the productive activity to the domain of aquaculture, either by means of a concept of aquaculture production – production conchylicole, cultivo e marisqueo – or by mentioning the object of the productive activity, i.e. the shellfish. The denomination of the animal being cultivated yields important lexical variability, because it is named according to different biological classifications: coquillage, mollusques, bivalvos, moluscos bivalvos e outros invertebrados mariños.

conceptual pattern		
main conceptual class	subspecification	lexical categories
GENERAL PRODUCTION		de producción / productiva / de production de explotación
	+ ANIMAL	de producción de bivalvos de producción de moluscos bivalvos e outros invertebrados mariños de production de coquillage
	+ AQUACULTURE PRODUCTION	de production conchylicole
AGRICULTURE PRODUCTION		de culture / de cultivo d'élevage de récolte
	+ ANIMAL	d'élevage de mollusques
	+ AQUACULTURE PRODUCTION	de cultivo e marisqueo
AQUACULTURE PRODUCTION		de marisqueo / marisqueira Conchylicole

Table 6: Conceptual patterns of constituent elements in modifier position

As a final step, we determine the dependency relation existing between the concept in the head and the concept in the modifier, so as to identify the intraconceptual relation present in the term. In this case, all modifiers being concepts of activity, and all heads being geographical location concepts, the relation linking them is the functional relation, because the modifier specifies the function of the head, or more specifically, the functional activity that is performed in that place. In the following table, the list of conceptually motivated patterns of term variation for the concept of PRODUCTION AREA is shown:

conceptual pattern		
head	modifier	intraconceptual relation
GEO LOCATION	AGRIC PROD+AQUAT PROD	FUNCTIONAL REL
GEO LOCATION	AGRIC PROD+ANIMAL	FUNCTIONAL REL
GEO LOC+BODY	GRAL PRODUCTION	FUNCTIONAL REL
GEO LOCATION	GRAL PROD+AQUAT PROD	FUNCTIONAL REL
GEO LOCATION	GRAL PROD+ANIMAL	FUNCTIONAL REL
GEO LOCATION	AGRIC PRODUCTION	FUNCTIONAL REL
GEO LOCATION	AQUAT PROD	FUNCTIONAL REL
GEO LOCATION	GRAL PRODUCTION	FUNCTIONAL REL

Table 7: Conceptual patterns of term variation for the concept of PRODUCTION AREA

The analysis shows that the naming alternatives of PRODUCTION AREA, despite exhibiting a surface variability, exhibit a certain amount of regularity. The next step is to examine the actual behaviour of these conceptually motivated patterns of term formation in texts in order to find some systematicity in their distribution in texts. As we suggested in section 1.2., our hypothesis is that term choice is determined on the one hand by factors belonging to the level of the system or structure, and on the other hand by contextual or usage-based factors, related to the situation of text production.

We will now explore the different motivations in the denomination of the concept of PRODUCTION AREA in relation to three factors: First, the conceptual motivation or the salience of a particular pattern or facet according to the concept class; secondly, the cultural motivation or the role of the language system, and finally, the contextual motivation or the role of the author's perspective in naming.

3.1. Conceptual motivation: role of concept class in naming

Terms are the linguistic expressions of concepts, and following the motivation principle that we developed in section 2.1., the term displays a selection of the most salient characteristics of the concept. When a concept is expressed through different terms showing different characteristics, the exclusive relevance of a single conceptual pattern is no longer maintained, but the question remains whether there are still some patterns that are more salient than others for the denomination of a particular concept class. This idea is suggested by some authors in the literature about term formation and term variation. Boisson (1996) refers to it as *saillance conceptuelle*, whereas Constantin de Chanay (2001) employs the term *saillance perceptuelle*. Kageura bases his theory of term formation on the assumption of "the existence of regularity at the level of concept and its correspondence with linguistic representation patterns" (Kageura 2002: 36) and shows that this regularity is present at the level of the conceptual class.

But it is in cognitive semantics that the largest amount of attention has been devoted to the study of salience phenomena, and it is at the core of proposals like prototype theory (Rosch 1978; Lakoff 1987). Geeraerts explores different salience phenomena in relation to lexical variation (Geeraerts et al. 1994; Geeraerts 2000). The relevance of a particular lexical item among all the possibilities of naming a given concept is referred to as *onomasiological salience*, and this theoretical concept is turned into a fully-operational and measurable variable according to the following definition:

The onomasiological salience of a lexical category is the frequency of the lexical element naming the category divided by the cumulative [...] frequency [...] of the semantic values

expressed by that lexical item. [...] Then, a lexical category is onomasiologically salient if it is a likely choice for the semantic values it expresses, that is, if it is stronger than the alternatives. Thus, given a corpus of language use, the onomasiological salience of an item like "skirt" can be calculated by counting how many times skirts are named in the corpus, and then checking how many times these are actually referred to with the lexeme skirt rather than alternative ones. (Geeraerts 2000: 90)

We are going to use this concept to explore the salience of some patterns over the alternatives for the concept of PRODUCTION AREA, by looking at their occurrence in the corpus. The question that we wish to answer is the following: Are there some patterns that are more salient than others, in the sense that they occur more frequently in the denomination of a given concept? In the description of the data in section 2, we pointed out a significant regularity in this denominative variability (26 terms). At the head, the concept of geographic location is chosen in the totality of the patterns, the only difference being that in one case it is combined with the agent, i.e. institution or administrative body that has carried out the division of the sea into administrative parts. In all cases, the modifier selects concepts of productive activity arranged on different levels of specificity – general, agriculture or aquaculture production— additionally subspecified by the object of the activity. The intraconceptual relation between the geographical location and the productive activity is the functional relation, because the place is designed for its functional activity.

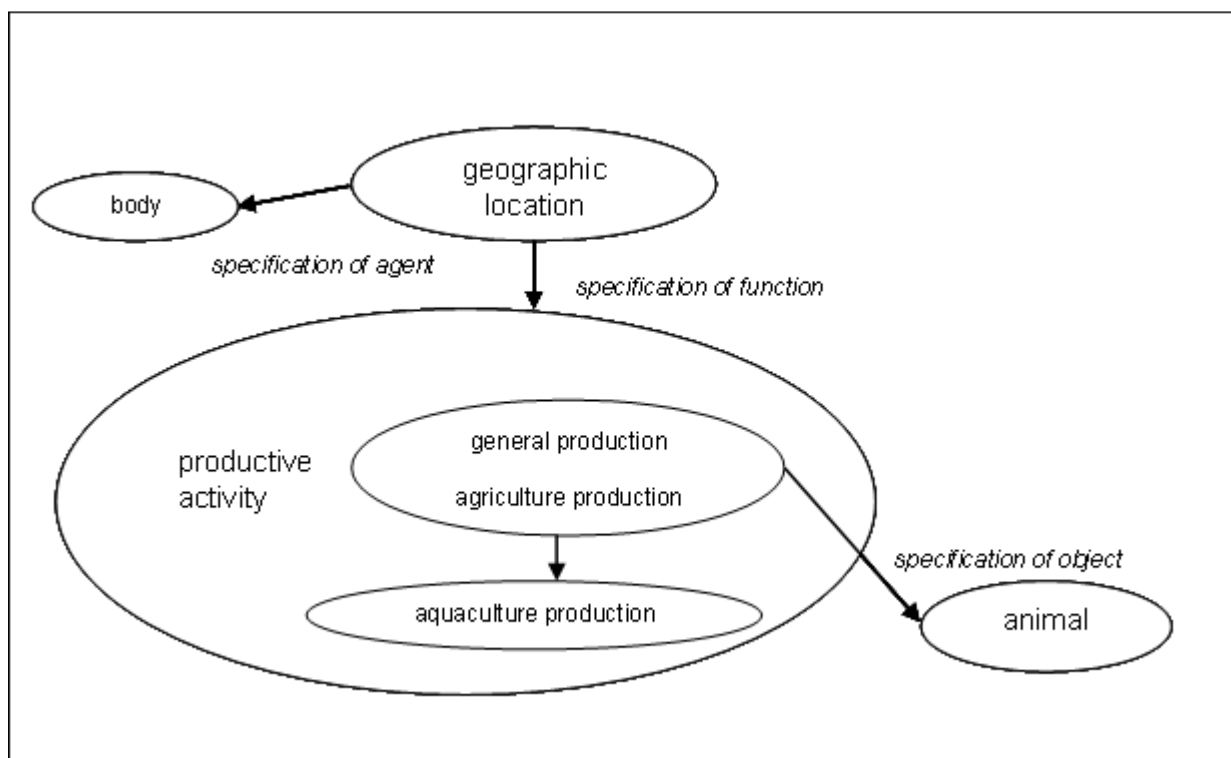


Figure 3: Denominative scheme of production area

If we look at the frequencies of the different subpatterns in the corpus, we observe that the pattern [GEOGRAPHICAL LOCATION + GENERAL PRODUCTION] <-- FUNCTIONAL RELATION is by far the most frequent, since it occurs 151 times through 7 denominative variants – área de explotación, área de producción, zona de producción, zona productiva, bassin de production, site de production, zone de production – representing almost 70% of the occurrences of the concept. Consequently, we conclude that it is the most salient pattern for the naming of PRODUCTION AREA:

conceptual pattern				
head	modifier	intraconceptual relation	freq pattern	%
GEO LOCATION	AGRIC PROD+AQUAT PROD	FUNCTIONAL REL	1	0,46
GEO LOCATION	AGRIC PROD+ANIMAL	FUNCTIONAL REL	1	0,46
GEO LOC+BODY	GRAL PRODUCTION	FUNCTIONAL REL	3	1,38
GEO LOCATION	GRAL PROD+AQUAT PROD	FUNCTIONAL REL	6	2,75
GEO LOCATION	GRAL PROD+ANIMAL	FUNCTIONAL REL	9	4,13
GEO LOCATION	AGRIC PRODUCTION	FUNCTIONAL REL	17	7,80
GEO LOCATION	AQUAT PROD	FUNCTIONAL REL	30	13,76
GEO LOCATION	GRAL PRODUCTION	FUNCTIONAL REL	151	69,27
TOTAL			218	100

Table 8: Onomasiological salience of conceptual patterns according to their occurrence in corpus

3.2. Cultural motivation: role of language system in naming

The affirmation of the cultural relativity of scientific and technical knowledge is one of the breakthroughs of contemporary theories of Terminology (Gaudin 2003; Diki-Kidiri 2008). Special concepts are rooted in the cultural system in which they are created, and the linguistic expression of specialised knowledge is also dependent on the natural language in which it is employed. As Lara maintains, "technical terms are not a verbal elaboration strange to the signification processes of ordinary languages, and to that extent, it cannot be alienated from culture" (Lara 1999: 52).⁹

We wish to explore the role of language in the naming of PRODUCTION AREA, by asking ourselves the following question: Do we find the same motivations in concept naming in French and Galician? If we look at the presence of the conceptually motivated patterns in each language, we immediately observe that the distribution is not the same, since four out of eight patterns are present in only one language:

conceptual pattern				
head	modifier	intraconceptual relation	Galician	French
GEO LOCATION	AGRIC PROD+AQUAT PROD	FUNCTIONAL REL	✓	x
GEO LOCATION	AGRIC PROD+ANIMAL	FUNCTIONAL REL	x	✓
GEO LOC+BODY	GRAL PRODUCTION	FUNCTIONAL REL	✓	x
GEO LOCATION	GRAL PROD+AQUAT PROD	FUNCTIONAL REL	x	✓
GEO LOCATION	GRAL PROD+ANIMAL	FUNCTIONAL REL	✓	✓
GEO LOCATION	AGRIC PRODUCTION	FUNCTIONAL REL	✓	✓
GEO LOCATION	AQUAT PROD	FUNCTIONAL REL	✓	✓
GEO LOCATION	GRAL PRODUCTION	FUNCTIONAL REL	✓	✓

Table 9: Presence or absence of patterns in French and Galician

Furthermore, if we look more closely into the data, we observe that in two of the patterns there is a motivated lexicalisation exclusive to the French language and thus does not appear in Galician, viz. naming the object of the activity of shellfishing by the characteristic of having a shell. This is present in the concept class of aquaculture production –*conchylicole*– and in the denomination of the animal kind –*coquillage*. In Galician, these two patterns are realised by selecting a bunch of other characteristics, such as the origin of the product –the sea in *marisqueo* / *marisqueira* – or morphological characteristics, like having two valves –*bivalvo* – or having a soft body – *molusco*.

conceptual pattern		denominative variant	
head	modifier	French	Galician
		“having a shell”	“from the sea / two valves”
GEO LOC	AQUAT PROD	bassin conchylicole espace conchylicole zone conchylicole	zona de marisqueo zona marisqueira
GEO LOC	GRAL PROD +ANIMAL	zone de production de coquillage	zona de produción de bivalvos zona de produción de moluscos bivalvos e outros invertebrados mariños

Table 10: Different motivations in the naming of shellfish in French and Galician

3.3. Contextual motivation: role of subject field in naming

The subject field is an essential notion in Terminology, because it is the element that organizes specialized knowledge. Ideally, each area of specialisation has a concept system made up of concepts that inherently belong to a subject field. Nevertheless, the division of knowledge among disciplines is a hermeneutic operation carried out for functional purposes; and special knowledge as we conceive it today is multidisciplinary and cannot be attributed to a single specific subject field. Therefore, it is possible to find the presence of different subject fields in texts belonging to the same topic. This implies a different perspective upon the same concept that may modify the perception of the most salient characteristics, and this may have an effect on the lexical choice. Some authors have reflected on this issue: Tebé (2005: 23) points out that the subject field is a value that can be reflected in the denomination of a given concept. Zawada and Swanepoel (1994: 254) affirm that to the sender, different characteristics might be considered essential, and Cabré & Estopà (2002: 151) submit that the same concept can be considered from different perspectives within the same text:

Mistreatment of women can be approached within the same text from the perspective of Medicine, Law, Psychology, Social care, citizens' Security, Sociology, Economics or Politics. (Cabré & Estopà 2002: 151) ¹⁰

In this section, we want to explore the effect of the sender's perspective in term choice, determined by his or her affiliation to a specific subject field. We have worded the question as follows: Do experts belonging to different subject fields make the same lexical choices? In our corpus of texts on aquaculture, we have identified the presence of three main subject fields: economics, biology and law. This information has been obtained by looking at the affiliation of the author(s) of the texts and the text types in the case of legal texts:

subject field	topic	n° texts French	n° texts Galician	total n° words
biology	environmental aspects of aquaculture	3	2	49.066
biology	production technologies	3	6	16.859
economics	harvesting, processing and marketing	7	6	156.435
economics	management of aquaculture ressources	4	2	32.316
law	legal aspects of aquaculture	4	3	33.378
TOTAL		21	19	323.208

Table 11: Subject fields covered in the corpus of aquaculture texts

We have looked at the frequency of distribution of the three main conceptual patterns, which differs in the subclasses of productive activity selected in the modifiers – general production, agriculture production and aquaculture production—in our corpus with a view to finding a correlation between the lexical choice and the presence of a certain subject field. The results are shown in figure 4.

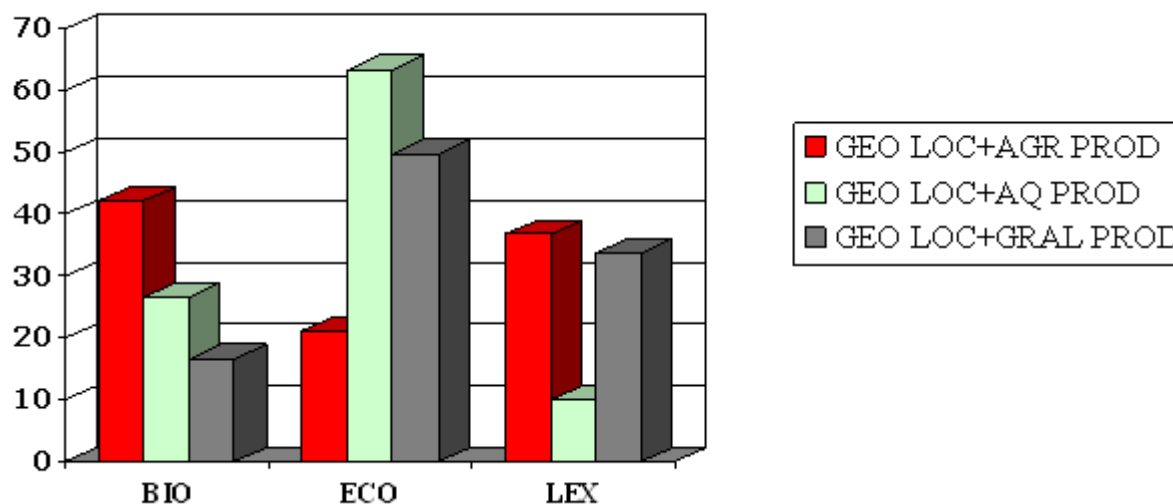


Figure 4: Distribution of conceptual patterns according to subject fields

As we see from the graphic, the distribution of the conceptual patterns varies according to the subject field. In our opinion, the reason for this might be the different viewpoints that are given preference depending on the understanding of the concept. As a matter of fact, the pattern of GEO LOC+AGR PROD appears more frequently in texts written by biologists, with 42.11% of the total number of occurrences. This is due to the fact that the concept class of agriculture production – which is realised through the denominations *espace de culture*; *secteur d'élevage*; *site d'élevage*; *zone de culture*, *zone d'élevage de mollusques*, *zona de cultivo*, *zona de cultivo e marisqueo* – puts emphasis on the manner in which shellfish is produced. In contrast, the pattern GEO LOC+GRAL PROD occurs in 49.7% of the texts on economics. If we observe the lexicalisations of that pattern 11, the lexical categories that are employed –

producción/production and explotación — highlight the economic output of the activity. However, in economic texts the most frequent pattern remains GEO LOC+AQ PRODUCTION, which is the unmarked pattern in the field of aquaculture because it selects the basic level category within this particular subject field: bassin conchylicole, espace conchylicole, zone conchylicole, zona marisqueira, zona de marisqueo. Therefore, in contrast to the other two patterns its realisation cannot be linked to the choice of a specific point of view.

4. CONCLUDING REMARKS

In this article we have explored the effect of some systemic and contextual factors in term choice by looking at the different denominative variants of the concept of PRODUCTION AREA in a corpus of texts on aquaculture. We have shown that the choice of a denominative variant is not always arbitrary, but influenced by the structure of the concept (section 3.1.), by the cultural system in which the language is rooted (section 3.2.), and by the subject field in which the author works (section 3.3.). Therefore, based on the evidence of this corpus-based study, we hope to have shown the motivated nature of some forms of denominative variation.

This small case study may be useful as an indication of a general trend; however, the results are not intended to be fully conclusive. Our purpose was to test the methodology of analysis which has proved to be successful in discovering the regularities of term variation. We are currently applying this methodology to a larger amount of data in order to compare denominative trends among different concept classes, as well as to explore the influence of other contextual-related factors, which have not been described in this article, such as the text type, the level of specialisation and the author's purpose. ¹² We hope that although of limited scope this study has contributed to the understanding of term formation and term variation in real communication contexts.

¹This work is part of the research project TEXTERM 3, funded by Ministerio de Educación y Ciencia (HUM2006-09458).

²The quotation is originally in Spanish: "Todo proceso de comunicación comporta inherentemente variación, explicitada en formas alternativas de denominación del mismo significado (sinonimia) o en apertura significativa de una misma forma (polisemia). Este principio es universal para las unidades terminológicas, si bien admite diferentes grados según las condiciones de cada tipo de situación comunicativa." (Cabré 1999: 85).

³The table is taken from Fernández-Silva, Freixa & Cabré (2008).

⁴The table is a simplification of the typology proposed by Kocourek (1991: 175), which includes phonic / graphic motivation, loanword motivation and motivation by reduction.

⁵Council Directive 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs. Official Journal L 268, 24/09/1991 P. 0001 – 0014. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31991L0492:EN:HTML>.

⁶For statistics concerning European aquaculture:
http://ec.europa.eu/fisheries/cfp/aquaculture_processing/aquaculture/figures_en.htm

⁷The equivalence in Galician was validated by Lino Lema Bouzas, Director-General of Fisheries Research and Development at the Galician Government Department of Fisheries and Maritime Affairs. For the terms in French, we counted on Daniel Priour, engineer on marine technologies for fishing and aquaculture at the IFREMER (Institut de Recherche pour le Développement de la Mer). The equivalence between the two languages was validated by Antonio Gutiérrez González, member of the General Direction of Fisheries at the European Commission. We wish to express our gratefulness to all of them for their valuable collaboration.

⁸We have computed zone in French and zona in Galician as the same lexical category.

⁹The quotation is originally in Spanish: "El término técnico no es una elaboración verbal ajena a los procesos de significación de las lenguas ordinarias y, en esa medida, resulta imposible enajenárselo a la cultura". The translation is ours.

¹⁰The quotation is originally in Spanish: "Los maltratos a mujeres pueden ser abordados en un mismo texto dentro de la óptica de la medicina, el derecho, la psicología, la educación social, la seguridad ciudadana, la sociología, la economía o incluso la política" (Cabré y Estopà 2002: 151). The translation is ours.

¹¹área administrativa de producción, área de explotación, área de producción, zona administrativa de producción, zona de producción , zona de producción de bivalvos, zona de producción de moluscos bivalvos e outros invertebrados mariños, zona productiva, bassin de production, site de production, zone de production, zone de production conchylicole, zone de production de coquillage.

¹²Fernández-Silva, Sabela (forthcoming). Denominative variation with cognitive consequences: motivation, structure and behaviour in context. Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra. This PhD thesis, under the supervision of Prof. Judit Freixa and Prof. Teresa Cabré has financial support from the Spanish Ministry of Education and Science within the framework of the FPU – Training of University Teaching Staff—program.

REFERENCES

- BOISSON, C., (2001). Dénomination et « vision ». *Linguistique de la dénomination. Cahiers de praxématique*, 36, 141-168.
- BOWKER, L., (1997). You say "flatbed colour scanner", I say "colour flatbed scanner": A descriptive study of the influence of multidimensionality on term formation and use with special reference to the subject field of optical scanning technology. *Terminology*, 4 (2), 275-302.
- BOWKER, L., (1998). Variant terminology: frivolity or necessity? In 8th EURALEX International Congress. Liège: University of Liège, 487-495.
- CABRÉ, M.T., (1999). La terminología: representación y comunicación: elementos para una teoría de base comunicativa y otros artículos. Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.
- CABRÉ, M.T., (2003). Theories of Terminology. Their description, prescription and explanation. *Terminology*, 9 (2), 163-199.
- CABRÉ, M.T., (2008). El principio de poliedricidad: la articulación de lo discursivo, lo cognitivo y lo lingüístico en Terminología (I). *IBÉRICA*, 16, 9-36.
- CABRÉ, M.T. & ESTOPÀ, R., (2002). El conocimiento especializado y sus unidades de representación: diversidad cognitiva. *Sendebarr*, 13, 141-154.
- De CHANAY, C., (2001). La dénomination: perspective discursive et interactive. *Linguistique de la dénomination. Cahiers de praxématique*, 36, 169-188.
- COLLET, T., (2004). What's a term? An attempt to define the term within the theoretical framework of text linguistics. *Linguistica Antverpiensia*, 3, 99-111.
- DIKI-KIDIRI, M., (2008). *Le vocabulaire scientifique dans les langues africaines : pour une approche culturelle de la terminologie*, Paris: Karthala.
- FABER, P., MÁRQUEZ, C. & VEGA, M., (2005). Framing Terminology: A Process-Oriented Approach. *Meta*, 50(4).
- FELBER, H., (1984). *Terminology Manual*, Paris: Unesco & Infoterm.
- FERNÁNDEZ-SILVA, S., FREIXA, J. & CABRÉ, M.T., (2008). [forthcoming] A cognitive approach to synonymy in terminology. In *Cognitive Linguistics between Universality and Variation*. Dubrovnik, 30 September – 1 October 2008.
- FREIXA, J., (2002). La variació terminològica: anàlisi de la variació denominativa en textos de diferent grau d'especialització de l'àrea de medi ambient. Institut Universitari de Lingüística Aplicada. Universitat Pompeu Fabra.
- FREIXA, J., (2005). Variación terminológica: ¿por qué y para qué? *Meta*, 50 (4).
- FREIXA, J., (2006). Causes of denominative variation in terminology: A typology proposal. *Terminology*, 12(1), 51-77.
- FREIXA, J., FERNÁNDEZ-SILVA, S. & CABRÉ, M.T., (2008). La multiplicité des chemins dénominatifs. *Meta*, 53(4), 731-747.
- GAUDIN, F., (2003). *Socioterminologie: une approche sociolinguistique de la terminologie*, Bruxelles: De Boek Duculot.
- GEERAERTS, D., (2000). Saliency phenomena in the lexicon. A typology. In ALBERTAZZI, L. (ed.) *Meaning and Cognition*. Amsterdam/Philadelphia: John Benjamins Publishing Company, 79-102.

GEERAERTS, D., GRONDELAERS, S. & BAKEMA, P., (1994). *The Structure of Lexical Variation: Meaning, Naming, and Context*. Berlin: Mouton De Gruyter.

GUIRAUD, P., (1978). *Les mots savants*, Paris: Presses Universitaires de France.

KAGEURA, K., (2002). *The Dynamics of Terminology: A Descriptive Theory of Term Formation and Terminological Growth*. Amsterdam/Philadelphia: John Benjamins Publishing Co.

KOCOUREK, R., (1991). *La langue française de la technique et de la science: vers une linguistique de la langue savante* [2^o ed.], Weisbaden: Oscar Brandstetter.

LAKOFF, G., (1987). *Women, Fire, and Dangerous Things: What Categories Reveal About the Mind*, Chicago/London: University of Chicago Press.

LARA, L. F., (1999). *Término y cultura: hacia una teoría del término*. In *Terminología y modelos culturales*. Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra, 39-60.

ROGERS, M., (2004). *Multidimensionality in concepts systems: A bilingual textual perspective*. *Terminology*, 10(2), 215-240.

ROSCH, E., (1978). *Principles of categorization*. In E. ROSCH & B. LLOYD, (eds.) *Cognition and categorization*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

SAGER, J.C., (1990). *A practical course in terminology processing*, Amsterdam/Philadelphia: John Benjamins.

SAGER, J., (1997). *Term Formation*. In *Handbook of Terminology Management*. Vienna: University of Vienna, 25-41.

SAUSSURE, F., (1916). *Cours de linguistique générale*, Paris: Payot.

TEBÉ, C., (2005). *La representació conceptual en terminologia: l'atribució temàtica en els bancs de dades terminològiques*, Barcelona: Institut Universitari de Lingüística Aplicada, Universitat Pompeu Fabra.

TEMMERMAN, R., (2000). *Towards new ways of terminology description: The sociocognitive-approach*, Amsterdam/Philadelphia: John Benjamins.

WÜSTER, E. (1968) *The Machine Tool: An Interlingual Dictionary of Basic Concepts*. London: Technical Press.

WÜSTER, E., (1979). *Einführung in die Allgemeine Terminologielehre und Terminologische Lexikographie*. Viena: Springer.

ZAWADA, B.E. & SWANEPOEL, P.H., (1994). *On the empirical inadequacy of terminological concept theories: A case for prototype theory*. *Terminology*, 1(2), 253-276.