

Elements for a Theory of Terminology: towards an alternative paradigm*

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It seems self-evident that every scientific activity is based upon principles which are, ultimately, the elements that allow us to assess the coherence of a particular position or reasoning. These principles, however, are not always fully explicit, either, because they are taken for granted and thus their explicitation is considered redundant or, because their authors have not previously worked out the basis for their ideas. This is the reason why many scientific statements do not completely satisfy the expectations they have raised. In this sense, we might say that at present any reflection on the subject of terminology is torn between the defence of the principles underlying the General Theory of Terminology (GTT) — hereafter called "the traditional theory" — which have sufficed to achieve certain goals (namely, the conceptual and denominative standardisation of terms), and the search for new approaches that would help account for the complexity of terminological units within the framework of specialised communication.

In our view, the most important reasons for this apparent "crisis"² can be reduced to two: the *reductionism* with which the discipline and its applications were conceived, and the excessive *standardisation* undergone by the discipline in the name of the universality of its regulatory principles. The traditional theory is reductionist in various theoretical and practical aspects: the global conception of the terminological unit, its reduction to a denominative function, the neglect of the syntactic and communicative nature of terms, and the persistent denial of the formal and conceptual variation of terms. Secondly, it is based upon a presumed homogeneity which is not reflected in the empirical data from different subject fields, nor in its different applications, nor, indeed, in the illusory defence of a single methodology.

The purpose of this paper is two-fold. On the one hand, we intend to highlight elements which, while making the traditional theory appear to be coherent, have impeded the explanation of the complex and diverse nature of special subject units in their wider communicative aspect. On the other hand, we intend to identify elements that may help constitute the basis for a new theory of terminology which would account for both the representational and the communicative function of terminology, the occurrence of terminological units at different levels of formality and in fields with diverse contents and structures.

1. Premises

The view of terminology underlying our approach can be concentrated into in several claims, under two headings: the first asserting general principles, and the second focusing on the diversity of applications.

1.1 General principles

a) Terminology is an interdisciplinary subject constituted of fundamentals from linguistics, cognitive science and social sciences. These fundamentals inform the polyhedral nature of the

terminological unit, which therefore becomes linguistic, cognitive and sociocultural in nature³.

b) Due to this three-fold interdisciplinarity, and following A. Rey (1988, 279-289), terminological applications are also tridimensional.

c) The interdisciplinary character of a subject field can only be justified when, besides including elements from other disciplines in its premises, the field integrates them into its own specific domain which cannot be described by the simple addition of premises underlying the disciplines that constitute it, but which must demonstrate the conceptual restructuring of these premises.

d) Any interdisciplinary field, even if it is an integrated unit, can be analysed by focusing on one of the angles of its multidisciplinary. Thus, the linguistic viewpoint of terminology does not necessarily have to explain the same aspects of terms as the viewpoint of the theory of communication, even though they analyse the same object. Any interdisciplinary subject allows for different perspectives, and that is precisely what defines it.

e) As well as being interdisciplinary, terminology is multifunctional, which allows it to set itself several goals and enables it to update its polyhedral nature by adapting it to the goal it is intending to attain at any one time.

1.2 The Range of Applications

f) The collection of terms and the compilation of specialised dictionaries is the best known application of the theory of terminology, but that does not make it the only one, nor the most representative of all its manifestations.

g) Any terminological activity is socially justified by its usefulness for solving problems of information and communication.

h) The social role of terminology is determined by the nature of our society, which is characterised by the spread of special knowledge and by a necessary multilingualism.

i) The practical applications of terminology are not, nor should they be, the same in every country, subject field or user group, but need to be adapted to the contexts, goals, resources, and the fields to be covered; this specificity thus implies regular adjustments to prevailing conceptions.

2. The Inadequacies of the Traditional Theory

While the practice of terminology has always existed — after all, working in any special field requires special terminology — its existence as an organised activity and, moreover, regulated by a documented methodology, is of very recent date.

The compilation and study of the specialized lexical units of different professional fields has, since distant times, been carried out within the scope of lexicography and dialectology. However, it was not until the advent of unification and regulation of the vocabulary of various scientific disciplines, during the 17th and 18th centuries, that these endeavours began to be conceived consciously as an organised and coherent activity.

As a subject field with explicit premises, terminology emerges from the need of technicians and scientists to unify the concepts and terms of their subject fields in order to facilitate professional communication and the transfer of knowledge. The General Theory of Terminology (GTT), inspired by Wüster, is also the result of practical activity. It emerged from the experience he gained in the process of compiling *The Machine Tool*, a multilingual dictionary he published in 1968. In his PhD dissertation, in the nineteen-thirties, Wüster had explained the reasons for the desirability of systematising the working methods of terminology compilation. He had thus established the premises that governed his later work on terms and he had also outlined the main features of the methodology for dealing with terminological data. During the period of working on the dictionary, Wüster's concerns were mainly methodological and normative, not theoretical, since he saw terminology as a tool for effective communication and disambiguation of scientific and technological expressions.

Consequently, the first stage of the development of terminology as a separate subject (1930-60) was basically devoted to formulating terminological methods favouring the systematic character of terms. Theoretical concerns about the nature of terms appear later, at the time when terminological practice had been minimally organised around certain topics, and are the outcome of this practical experience⁴.

Although being the most prominent representative of the emerging traditional theory of terminology, Wüster was not the only scientist who contributed to the birth of the discipline, nor was the Vienna group the only one involved in terminological practice. Other schools of terminology were active in those years, such as the Czech and Russian Schools, although not a great deal has been written about their particular contributions⁵. During the opening session of the Infoterm Symposium in 1975, Wüster recognised the contribution made by other European scholars and scientists to this development: The German A. Schlomann, who was the first to reflect in his glossaries the systematic structure of the terms constituting a special field; F. de Saussure, the Swiss linguist, who was the first to highlight the systematicity of languages; E. Drezen, the Russian who first stressed the relevance of standardisation and who promoted the creation of the International Standardisation Association (ISA)⁶; and the Englishman J.E. Holmstrom who, from his position in UNESCO, fomented the international development of multilingual terminologies and who was the first to demand the creation of an international organisation to deal with the coordination of multilingual terminological practice⁷.

In this early period, the General Theory of Terminology (GTT) was the best-known outline of the subject and the one that inspired most research, spreading its influence beyond Europe (especially throughout Eastern Europe and Asia). It was developed by the School of Vienna of Wüster's successors who interpreted his ideas. Its relevance resides in the fact that it was for many years the only school to have developed a systematic body of governing principles and premises which allow the compilation of terminological data. The most distinctive characteristic of the GTT is that it focuses on concepts and concentrates its practical applications on the standardisation of terms and concepts. Wüster's principles are oriented towards concepts and conceptual relations which are considered as the units of analysis necessary for arriving at the denomination of established concepts. According to its supporters, the onomasiological approach distinguishes the working method of terminology from that of lexicography. In the application of this theory, terminography, understood as the application of terminology, ascribes denominations to concepts, thus working from concept to term. (Lexicography, an application of lexicology, starts from denominations, i.e. from the dictionary entry, and establishes their functional and semantic characteristics — it proceeds semasiologically from word to meaning.

It must, however, be noted, that in its search for universal conceptual units and its aim at uniformity of communication, the GTT cannot account for the complexity of actual terminological phenomena occurring in texts — identified by Gaudin (1991, 1996) as “social terminology”. Instead of subscribing to Wüster’s theoretical premises, and in the light of the examination of terms in context, and in order to satisfy the diversified communicative and informative needs of modern terminography, the socioterminological approach has begun to question the validity of the traditional theory and its principles of applications (Temmerman 1997). In order to complete this overview, we must acknowledge that the use of new technologies has also led to the reexamination of the methodology of terminology and the onomasiological strategy provided by the GTT as the only valid and distinctive working method for processing terminology⁸.

Simultaneously, some theorists of terminology, mainly those with a linguistic background, have started thinking about the theoretical nature of the model in which terminology would be represented if it is to be considered a true interdisciplinary subject, a claim which, until now, has not been sufficiently debated.

As suggested at the beginning of this article, we believe that the most unsatisfactory element of the traditional theory of terminology is not its lack of internal coherence — it is certainly coherent within its paradigm — but its reductionist character, which makes it unable to explain the complexities occurring in special communication. This inability leads it to wishful thinking and a constant confusion between *what it is* and *what the theory would want it to be*. It has led to the introduction of a methodology taken as universally valid for all special fields, for all applied goals, and for all languages and which, for this reason, reveals the dichotomy between real and ideal language. It has also led to the proposals for the standardisation of the organisational modalities of terminology, without regard for the specificity of the contexts in which it occurs. The logical consequence of this is that the programmes for training in terminology have hitherto paid the prize of this reductionism and have been formulated as excessively uniform and uniformist prescriptions. These teaching programmes are more guided by the notion of language as a logical system to be used in totally controlled situations than by a realistic view of natural language in situations of spontaneous communication, which is nevertheless specialised.

These inadequacies of the GTT, have been noted for several years and have become even more evident as terminology was being extracted from running text. Generally speaking, criticism has come from very specific viewpoints:

— From a social perspective the communicative role of terminology has been seen to have the same importance as the representational role and it has been demonstrated that the social acceptability of terms is more important than their standardisation. Moreover, it has exposed the multiple meanings of “standardisation”.

— From the linguistic perspective several critical approaches have been taken:

- It has been demonstrated that terminology does not belong to artificial language but that it shares the basic features of general language, with all the consequences this implies. Any attempt to overcome this conflict without contradicting the phenomena described by the traditional theory would require the previous definition of two objectives of terminology: terminology as a cohesive and systematic system of language

units, and terminology as a set of special communication units in general.

■ The fact that the traditional theory disregards the syntactic function of terminology and its relevance for discourse studies has been severely criticised. This reductionist vision is, however, a logical consequence of the traditional methodology which focuses on the search for denominations for established concepts with the intention of standardising them.

■ The claim of univocity and monosemy of terms has been refuted by the evidence of data extracted from specialised texts.

— From the cognitive perspective, the position of the traditional theory regarding the concept has been criticised as being profoundly idealistic, and far removed from the cognitive view of the socially conditioned concepts prevalent in contemporary science. The presumed universality of the concept and the belief that special subjects, independent of their domains and languages, are uniform, closed and static systems has also been attacked because these premises are very difficult to reconcile with empirical data. The view of special subjects as fossilised disciplines to be described by identical models, without internal dynamism, and the one-sided view of terms, or at least their representations, has undermined the neopositivist premises at the basis of the traditional perception of this discipline which seems to be more concerned with its disciplinary status than with establishing a body of conditions which can explain the data of specialised domains.

Besides, artificial intelligence has shown that the grammatically explicit and formal description of the content and form of terminological units, is still in its infancy, a fact which is delaying the automatic processing of specialised information. In this sense, it is to be noted that we have, as yet, few quantitative data on the frequency and types of terms used in specialised texts. In other words, empirical research in terminology is still taking its first steps.

3. Areas affected by the Reductionism of the Traditional Theory

Wüster conceived terminology as having highly restricted objectives of analysis and working methods. For him, terminology simply consisted of collecting concepts and terms for the purpose of standardising the terms of a special subject field by means of the fixation of standardised concepts with their respective linguistic forms. The general intention of this exercise in creating symbolic units through the association of scientific or technical concepts and their single denomination was to achieve univocity in professional communication, especially at the international level.

It is obvious that such a narrow delimitation of the purpose and functions of terminology would strongly condition the orientation of the theory and the rigid formulation of its procedures which can only be explained by reference to its limited practical objectives.

This restricted viewpoint can be easily observed in the way many theoretical and applied aspects of terminology have been approached and presented as ideas — in the most literal sense of the word — without any empirical justification, and without regard for the actual behaviour of terms in special communication. The following aspects exemplify the reductionist position of the GTT:

a) By limiting its objectives to the achievement of univocity in professional communication, the GTT ignores the complexity of the interdisciplinary approach implied in its own foundation and denies the communicative needs of professionals for adequate terminological support.

b) By aspiring to global terminological units, i.e. separating the concept — or the language-independent element that is presumably located within a universal language — from its meaning in a specific languages, it has oversimplified the concept of 'meaning' within a linguistic system with a social and political basis and with specific economic effects.

c) By restricting terminological units to a purely denominative function, their constituent linguistic elements and their inherent morphological structure are disregarded. Even though the use of Greek and Latin roots and affixes is recommended by an ISO standard, it is only prescribed for the formation of new terms.

d) By reducing terms to their denominative role, their syntactic functions have been disregarded. This omission has hindered research on the grammatical role and behaviour of terminology, in parallel to such studies for lexical units of the general language. Consequently there is a dearth of grammatical information in terminological databases.

e) By neglecting the communicative aspects of terminological units — another consequence of the concentration on the denominative function of terms — has prevented research into the contribution terminology can make to the differentiation of text types at various levels.

f) By ignoring the fact of formal and conceptual variation of specialised terminological units — a phenomenon inherent in both general and special communication — the GTT has been able to develop a prescriptive working method, claiming, moreover, that it is valid for all contexts, types of research, research objectives and situations. At the same time, the rigidity of presentation of the terminological unit has prevented an analysis of its multifunctional nature.

4. Demands for the Revision of the Traditional Theory

There is now a widespread demand for the revision of the traditional theory of terminology, not only in order to change its restrictive principles, but also to overcome the limitations imposed by its working methods.

While the School of Vienna has acknowledged the need for greater openness and flexibility of its theory, until now the proposals made by its representatives have not succeeded in addressing the concerns of its severest critics.

In his evaluation of the state of terminology, H. Picht admits that, despite all the efforts to show that the GTT is a systematic, explicit and coherent theory (and not only a systematic, explicit and coherent methodology), “the future progress of terminology is limited in several ways, and no right solution has been proposed yet. Something that must be considered is the formulation of a wider (sic) general theory of terminology that includes the aspects that have been considered throughout the last seventeen years, in such a way that they add up to a complete theoretical structure” (Picht 1996:278).

The demand that terminology *must* incorporate other disciplines is based on an assumption

unlikely to be shared as widely as suggested. Instead, we believe that terminology has to reformulate its objectives, reexamine its internal coherence in order to achieve these objectives and, finally, to locate its theory within knowledge-based disciplines or fields of study.

It seems to be generally accepted, both by the followers of the School of Vienna and the proponents of alternative positions, that the theory of terminology must be situated among the wide range of disciplines related to cognitive science. Only when it comes to drawing the borders of the subject and defining its purpose do we encounter a divergence of opinions.

5. The Bases of a Theory of Terminology

Having reviewed a number of critical opinions, the evidence seems to indicate that terminology requires an in-depth revision of its premises and that this revision can neither simply deny the validity of all premises of the General Theory of Terminology nor accept its appropriateness and suitability for communication, as has been done until now. Instead, our revision will need to examine the validity of the traditional premises in the light of empirical data in order to maintain, qualify or reject them.

By assembling the diverse elements relevant for a theory of terms, and by presenting the issues in need of clarification for the formulation of such a theory, this article is only intended as a beginning of this revision process which must determine the delimitation of the object of study, the perspectives of analysis, the functions of terminology in the field of special subject discourse and the disciplines within which it is located.

5.1 Preliminary remarks

When reviewing the theory of terminology, the first question that must be squarely addressed is what terminology is about. In other words, a new definition of the discipline of terminology is needed. To this end, we have to ask further: “what does terminology as a discipline or field of knowledge want to explain?”, and “what is its object of analysis?” The answers to these questions presents us with a potential choice between the study of either units of communication in special disciplines (i.e. functional units with form and content) or units of special knowledge in isolation.

In our view, this dilemma can only be resolved if we accept it as a matter of alternative options: if the study of terminology addresses specialised *knowledge in general*, terminology will have to be located within the field of cognitive science, and only indirectly and partially in the field of linguistics; if the study addresses the *units of specialised knowledge*, then terminology can be fully located within linguistics or semiotics. In both cases, however, the object of study are the units of knowledge which can be conceived as units of natural language, with the possible inclusion of relevant units of artificial language.

The second question that needs to be answered is how these units should be analysed and described. In other words, if the object of study of terminology is knowledge, what perspective does terminology adopt in order to analyse knowledge? What is the distinctive feature which would contrast terminology with other disciplines that also analyse knowledge? Does it, like philosophy of language, study the relationship between knowledge and reality? Do we have to

postulate different realities when talking about science and about the world in general? Or, would it be better to talk about different perceptions of the same reality? Should terminology study the process of acquiring, systematising and categorising knowledge, how this knowledge is turned into concepts and how it is converted into thought? Should terminology embrace all types of knowledge (i.e. relational and emotive, general and specialised)? Should terminology determine the relationship between knowledge and the units of knowledge? What kind of units of knowledge should be studied? And, if the object of study of terminology are knowledge units in general, what is their nature? Are they language? Are they natural language? If they are, we accept Wüster's view that terminology is basically linguistics. If they are not, terminology belongs to semiotics. We believe to have shown that there remain many unanswered questions.

In order to provide terminology with an adequate status, a third question has to be addressed, namely the possible functions of terminological units. There is general agreement on the fact that terms carry out two parallel functions: they represent and transmit specialised knowledge. Accepting this double function does not mean, however, that our understanding of 'representation' and 'transfer' is completely unambiguous. True, a set of terms intended to represent knowledge *in vitro* does not require the same conditions as a set of terms that needs to circulate *in vivo*. The difference between two such terminologies consists rather in the degree of verisimilitude they must have than in the distinction that has been established between planned terminology and social terminology⁹. Purely representational terminology may be artificial and arbitrary¹⁰, and may completely control variation, thus preserving the principle of univocity and monosemy proclaimed by the traditional theory. Terminology fit for communication has by necessity to be real, in the sense that it must be usable effectively, directly and appropriately, and, if it is real, it naturally implies variety of expression forms.

The distinction between terminology representing knowledge *in vitro* (i.e. approved by consensus, standardised) or knowledge *in vivo* (i.e. spontaneous and natural) has an unavoidable consequence for methodology: because terminology occurs in natural communication, its method of analysis has to be descriptive; only when the compilation of terms is completed, during the process of analysis and problem-solving, can the appropriateness of an intervention to reduce any existent variation be considered¹¹. Conversely, purely representational terminology of standardised knowledge can be completely prescriptive and, hence, totally control variation.

Both modalities of terminology have different goals. On the one hand, representational terminology serves: to standardise international communication¹² and documentation (information retrieval on the basis of terms collected in thesauri and classifications); to develop strict language policies and assist knowledge engineering, both of which are aimed at simplifying and controlling terminological variations. On the other hand, communicative terminology serves translation, specialised modes of expression and standardisation of language in sociolinguistic contexts regulated by policies that presuppose variation¹³.

A fourth issue relevant for establishing the status of terminology concerns the difference between being an interdisciplinary field, as opposed to being a discipline? There is no doubt that reality is so complex that no single discipline can account for knowledge in general. That is why we believe that the study of knowledge is by necessity interdisciplinary, i.e. it must be carried out through the concurrence of several disciplines. This does not mean that we must always talk about consolidated interdisciplinary, nor affirm that an object cannot also be analysed from the perspective of a different theoretical discipline, which can only account for one of its aspects. The example of linguistics clearly illustrates this point. Language, which is the object of study of

linguistics, consists of more than a grammar, and yet, linguistic theory has decided to study it firstly as a grammar, which does not prevent other aspects of language, e.g. its acquisition and use, to be studied later, nor the analysis of its cognitive, discursive or its neurobiological aspects, frequently attributed to other disciplines.

These reflections should have demonstrated that, only after having clarified these questions is it appropriate to consider whether terminology is an independent discipline or an interdisciplinary field of study, or, alternatively to consider what type of discipline it is and what its place is within the scientific horizon.

5.2 Proposals for a new Approach

The approach proposed here is intended as a first contribution to a new theory of terminology which accounts for both the representational and the communicative function of terms, their realisation in different domains, with different applications (experimental, theoretical, social and specialised activities) and at different levels of formality (types of special subject discourse).

5.2.1 The terminological object

A precise formulation of its object of study is essential for any discipline. It is also important that such an object be supported by a clear and well-defined theory. As we hope to show below, this initial reservation does not prevent the progressive incorporation of various aspects from other disciplines in the analysis of an object of study.

In this sense, we consider that the object of study of terminology as a discipline are the terminological units used in special subject fields, and that these units have to be analysed functionally, formally and semantically by a description of their dual systematic nature: i.e. their general systematic nature in relation to the system of the language to which they belong; and their specific systematic nature in relation to the terminology of the domain in which they are used. These descriptions will lead to generalisations that permit the development of a broader theory which, firstly, accounts for terms as units of natural language and, secondly, allows the progressive integration of the theory of terms into more general theories, the ultimate goal of which is to account for human knowledge.

This proposal allows us to focus the study of terms on natural language and to define the precise boundaries of its field of study. At the same time, it allows terminology to go beyond linguistics and to incorporate into the study of terms elements from other disciplines or areas of knowledge (such as communication science, where terminology would be among the set of communicative resources, including artificial and even non-verbal resources). Finally, the whole field of study of terminology would be included in a broader theory that would account for knowledge.

The field of study of terminology can thus be approached in concentric circles that encompass increasingly complex phenomena. In our proposal, the most immediate object of study are terminological units conceived as units of natural language, i.e. forming part of natural language. These units share with alternative or complementary systems (such as artificial systems) the space of analysis covered by communication theory, and make up such a theory, which is also a part of knowledge theory.

In this way, linguistic, cognitive and ontological aspects of terminology would be integrated into the basic theory of natural language as different aspects of the same object of study. In turn linguistics, communication, cognitive science and ontology — the theories which account for an increasingly wider object — would be organised concentrically in relation to the terminological object, present across a wide range of subject fields without occupying the whole of their space. We believe this was Wüster's idea when he used Kandler's words in his definition of terminology:

*L'appartenance à la linguistique appliquée c'est précisément ce qui caractérise dans une large mesure l'étude scientifique générale de la terminologie. Cela rend implicite le fait qu'elle est une branche de la linguistique appliquée. Voici en effet la description que l'on a donné de cette dernière et qui est empruntée à Günther Kandler: "**Elle va au-delà de la linguistique pour rassembler des connaissances linguistiques dans tous les domaines de la vie et les rendre utiles à tous les domaines de la vie**".*

(Wüster, 1974)

Stating, as has been proposed by the GTT, that special knowledge is the object of study of terminology means granting this field a nuclear role, which, despite its importance, we believe to be excessive. Our theory tries to reconcile the possibility of a linguistic approach to homogeneous units with the possibility of going beyond linguistics in the explanation of the complexity of terminological units, which, of course, could be claimed for all natural language units¹⁴.

5.2.2 The Viewpoint of Research

Any scientific object, perceived as a complex and polyhedral unit, can be studied from different viewpoints. Thus, taking as starting point the approach presented in 5.2.1, it seems plausible that terminological units can be analysed from different perspectives and that, in each one of these perspectives, terms become objects of analysis in their own right. The perspectives can be set according to different parameters, such as the dichotomies between general or specialised, lexical or grammatical, representation or communication, synchronic or diachronic, grammatical or social dimensions, etc.

Until now, we have stated that terminology is an integral part of any theoretical field of study. Also, that, being a complex object, it can be analysed from different viewpoints, each one concentrating on that part of the terminological unit which is the priority concern of the corresponding discipline.

Consequently, if linguistics, cognitive science and communication are the three essential dimensions of the study of terms — the dimensions that constitute its fundamentally polyhedral character — analysing the terminological unit either as a triangle (denomination-meaning-referent) or as a trapezoid (denomination-meaning-concept-referent) always implies the integration of the three or four sides of the polyhedron into a unit that serves special communication; and each one of these dimensions, which may constitute the object of study of a different discipline, will integrate that polyhedron in a specific way, accounting only for one of its aspects.

The following example may illustrate what we have just stated: the notion of *concept* can be studied in linguistics (since linguistic items are units with form and meaning), in cognitive science (since the concept is the result of the concentration of our knowledge about objects), in philosophy (which explains how we approach reality), in psychology (which analyses the intellectual processes that turn reality into thought), in neuropathology (which studies certain alterations, such as the confusion of concepts), in sociology (which analyses how social groups have different perceptions of reality), in ethnology (which is interested in the perception of reality as culture), and many other fields.

5.2.3 Basic Principles and Conditions

Next, we want to introduce a selection of elements that must be part of the basic principles of our theory, if it is to become acceptable. These elements, which support our theory, consist of fundamental *principles* (inherent features of terminological units) and *conditions* (alternative possibilities expressed as the existence or absence of a certain characteristic and which facilitate or hinder the attribution of certain characteristics or the performance of particular processes).

1. The Principle of the Polyhedral Nature of Terms

Terminological units are inherently polyhedral, i.e. they simultaneously integrate linguistic, cognitive and social aspects; which can be studied separately or together.

2. The Principle of the Communicative Nature of Terminology

All terminological units are used for communication, immediately or eventually. For immediate use, they are realised in the form of direct communication (communication among experts, didactic discourse or discourse of scientific popularisation by experts, etc.) or indirect communication (communication via translation, interpreting or specialised journalism). In all other cases, communication uses terminological units in their function of representing knowledge and labelling the nodes of knowledge corresponding to the concepts of special subjects. The ultimate aim of this type of representation is to favour univocity in communication among experts (international denominative standards) or between experts and expert systems (in documentation and computational linguistics applied to knowledge engineering), thus conceptualising a new reality.

3. The Principle of Variation

Any process of communication involves variation of lexical forms, which manifest themselves as alternative denominations for the same concept (synonymy) or in the semantic openness of one form (polisemy). This principle applies to all terminological units, although in different degrees, according to the type of communicative situation. The greatest degree of variation occurs in discourse destined to popularise science and technology; the smallest degree of variation is characteristic of terminology standardised by groups of experts; a middle position is characteristic of the terminology used among specialists in everyday communication.

4. The Natural Language Condition

Terminologies must be located within a specific area of knowledge where its object is defined. This statement implies the acceptance that an object of analysis is established only when it is

defined within a field of knowledge. In this sense, the field of study of terminology is defined in terms of its location within a field of knowledge. This is the only explanation for the wide range of interpretations of terms that have been offered until now. These interpretations can be summarised as follows:

- a) for linguistics, terms belong to the lexicon of a grammar, and are specialised according to topical, pragmatic and semantic criteria;
- b) for special subjects, terms are a means of professional expression and communication and part of a system for representing the structure of knowledge within special areas;
- c) for translation, interpreting and technical writing, terms are useful and practical units of communication which are evaluated by the criteria of equivalence, adequacy, precision and economy;
- d) for linguistic planning, terms are lexical units requiring intervention in order to support the existence, usefulness and survival of a language as a means of expression.

According to each of these interpretations, terms possess a three-fold nature: linguistic, cognitive and social.

A different view of terminology is held by those disciplines that are not interested in the communicative function of terms, but rather in terms as representing concepts. This view of terminology prevails in knowledge engineering, documentation and international standardisation.

In these cases, terms, like any other communicative sign, also conform to the three principles stated above, and are linguistic, cognitive and social in nature, but they may present idiosyncratic aspects. However, the notion of social nature cannot be interpreted in the literal sense of "being naturally used by speakers", but must be seen in a profoundly different sense, since the appropriateness of terms is more important than their verisimilitude or naturalness. The principle of variation only applies to a minimum degree in these cases.

The natural language condition described above has several consequences for terminology for the morphological, syntactic and semantic properties of the words of a language also occur in terms. These properties are both part of and structures of grammatical constituents; and they comply with certain formation conditions that are restricted by generalisations, follow combinatory patterns regulated by the argument restrictions of predicative items; they are described semantically as sets of more or less prototypical features that explain analogic or metaphorical senses, etc.

5. The Special Communication Condition

The second condition we want to define is that of special communication which is understood here as communication marked for topic or domain, produced in professional situations, using a formal register, and being derived from a pre-established structure¹⁵. In our view, this condition has important consequences for the theory.

General and special communication share such common elements as communicative schemes, processes of production, linguistic functions, conditions for exchange, but differ in the selection

of lexical units, modes of meaning, the frequency of certain linguistic functions, and discourse organisation, among others.

Scientific and technical communication realised by special languages differs from the texts used in general communication in three respects:

- a) semantically, they are concise (with little redundancy), precise (with little ambiguity) and are not personalised (not emotive);
- b) the lexicon has a predominant role, especially the quantitative and qualitative properties of nominalisations and noun phrases;
- c) formally, texts are highly elaborated and, in some disciplines, elements of other symbolic and semiotic systems are integrated into the text.

The idea that special languages are a subset of general language is also shared. In this sense, Rondeau (1985) affirms that only after having analysed the texts produced by these languages (scientific and technical communication), can one talk about the language of each special field as being a subset of the general language and as differing from it. The peculiarities of these specialised texts are found on three different levels: textual, lexical and pragmatic-functional.

From the textual point of view, specialised texts present a specific global configuration. From the lexical point of view, they differ in their use of terminologies, which may have different degrees of specialisation, meaning and peculiarities according to their topic and the level of abstraction they reach. From the pragmatic point of view, many special languages can be understood across cultures as they share many cognate forms¹⁶.

If we accept Rondeau's conclusion, we can say that on the textual level, general and special communication share the same space and use the same rules, linguistic and textual processes, and that the only difference between them is their selection of lexical units and the frequency with which each resource is updated within the discourse. This view is confirmed by Kocourek:

Pour nous la langue de spécialité sera une sous-langue de la langue dite naturelle, enrichie d'éléments brachygraphiques, à savoir, abrégatifs et idéographiques, qui s'intègrent à elle en se conformant à ses servitudes grammaticales. (Kocourek, 1982)

6. The Specialisation Condition

Specialisation is a condition that communication must comply with in order to be considered a special subject discourse. However, this condition admits a diversity of interpretations regarding the definition of *specialised*, and different degrees of specialisation. In effect, if we interpret the adjective 'specialised' as referring to discourse dealing with a highly structured scientific or technical subject matter, the notion of specialisation is stronger than if we also apply it to specialised activities. In each case, and within each special field, discourse is produced at different levels, thus implying a different *terminological density*.

The fact that humbler occupations like nursing, book-keeping and cooking and even hobbies also involve special areas of human interest and therefore also

require and indeed have their own special language is much less often acknowledged. Since practically every human activity can be attributed to one subject or another, all language could be split into so many subject languages and the word "special" would be superfluous. (Sager, 1980)

In our view, this condition is met in texts where conceptualisation has been conceived from the perspective of the special field and the specialist, instead of being seen from the perspective of the speaker of general language. Therefore, a text is specialised not according to what topic it deals with, but according to how that topic is dealt with¹⁷.

The degree of specialisation of communication is not only dependent on the terminological density of a text, but also on the amount of expressive variation used when referring to a unique concept. A highly specialised text tends to be precise, concise and systematic; and the terminology it uses tends toward monosemy and univocity. As the degree of specialisation decreases, the discourse exhibits characteristics more akin to general expression: semantically, there will be more conceptual variation, redundancy, ambiguity and lack of precision; formally, it will have greater variation of lexical synonymy, and, above all, a wider use of paraphrastic formulae containing analytical explanations of concepts which, on a more specialised level, would be explained synthetically.

5. Concluding Remarks

We can now summarise some of the points raised in this paper which could, in our opinion, be the first step towards establishing a linguistic theory that would conceive terms as sets of denominative and conceptual units belonging to natural language, representing special knowledge within a particular domain, and serving professional communication.

It must be clearly noted, however, that this list of elements has been conceived solely from the point of view of linguistics, and is thus insufficient for the articulation of a comprehensive theory. In any case, this was not our intention. We only intended to establish a few basic tenets upon which a linguistically-based theoretical approach to terminology can envisaged.

These tenets are presented here in the form of assumptions. They are not intended to be exhaustive, but should encourage further linguistic reflection on some of the criticisms formulated above.

1) We understand reality to be one and only one, and consider the modes of approaching, conceptualising and categorising it to be the basis for two types of knowledge: general and specialised.

2) We assume general and special knowledge, which share the field of study of cognitive science, to manifest themselves formally as natural language units or as units of any other symbolic system.

3) We consider that in natural language, world knowledge is presented through referential units which form the major part of the lexical component of a speaker's grammar.

4) We accept speakers' knowledge, if it is being realised by means of linguistic units, to be

included in their grammatical competence, and their knowledge of referential units to be included in the pragmatic module of their grammar.

5) We postulate that the referential language units included in a speaker's grammar are neither words nor terms, (neither in the first instance nor in the abstract). Rather, we believe them to be units of the lexicon of which, according to the characteristics of a particular communicative situation, only a specific set of features is selected from the totality which describe them. In this sense, any unit endowed with reference has the potential of being a term or a word. It seems plausible that some very specialised units in special subjects may become only terms, since they are always used to denominate special concepts. However, this does not mean that they cannot eventually become part of the general language due to the spread of special knowledge.

6) We maintain that the fact that all referential units may become both terms (when expressing special knowledge) or words (when expressing general knowledge) does not mean that they function as both in all cases. Consequently, the lexical component of the grammar would contain only the real information, and not the potential information for every unit.

7) In order to be acceptable, the model proposed here must be based upon a robust lexical theory of a grammar, the lexical component of which includes not only grammatical information, but also pragmatic and encyclopaedic information for every grammatical unit; this grammar would then also contain a mechanism capable of accounting for the selection of features (marked/unmarked) that speakers make in any particular situation. This selection process could be conceived as a mechanism that would activate the marked thematic features when required by the characteristics of communication.

Notes

* This research has been carried out within the PB-96-0293: "*La terminología científico-técnica: reconocimiento, análisis y extracción de información formal y semántica*", supported by the DGES (Dirección General de Enseñanza Superior) of Spain.

An earlier version of this paper, written in Spanish, has appeared, in: *El Lenguaraz, Revista Académica del Colegio de Traductores Públicos de la Ciudad de Buenos Aires*, 1 (1998) 1, pp.59-78.

1. I would like to thank Cristina Corcoll, Judit Feliu, and Carlos Rodriguez, IULA colleagues, for translating this text. I really appreciate from Mr. Juan-Carlos Sager its revision.
2. The word "crisis" is understood here as questioning the presumed universal validity of some principles of the theory.
3. Besides being interdisciplinary, terminology is also transdisciplinary, since there is no structured discipline without a terminology, and no way of expressing and transferring scientific knowledge without terminology.
4. Some 30 years later Wüster developed his theory in greater depth. In "Die vier Dimensionen der Terminologiearbeit" he presented, for the first time, the four dimensions of applied terminology. His *Einführung in die allgemeine Terminologielehre und terminologische Lexikographie* was only published in 1979.
5. Eastern European scientists and linguists contributed to the theories developed by the schools of Prague and Moscow. See: Rondeau G & Felber H. eds. (1881), and TERMNET (1993)
6. ISA (International Standardization Association) founded in 1926, was the first international institution for standardisation and the forerunner of ISO (International Organisation for Standardisation).
7. This interest was behind the creation in 1971 by UNESCO of Infoterm an international centre for documentation on terminology.
8. For more information on the inadequacies of the GTT, see Tebé (1996).
9. Verosimilitude is understood here as the correspondence between a linguistic form and its social use in real communicative situations.
10. Please note that we use "may be arbitrary" and not "must be arbitrary".
11. Intervention in the form of terms is common in certain national and international institutions (e.g. Standardisation Commissions, language planning agencies)
12. Extreme forms of representational terminology are to be found in international scientific and technical nomenclatures, normally created as artificial languages, though based on linguistic or etymological criteria.
13. "Linguistic Standardisation" is here used to refer to interventions destined to provide a language with appropriate resources for all areas of communication. Documentation languages admit a certain amount of variation in users' searches, but not for documentalists. (See also: Cabré 1998b)
14. It is now generally recognised that a linguistic theory that concentrates on competence to the exclusion of acquisition and performance is unsatisfactory. The polyhedral nature (linguistic-cognitive-social) is not exclusive to terms but is characteristic of all lexical items.
15. See also: Cabré 1998.
16. Following Beaugrande, 1987: "LSPs tend to share much of their resources not merely with LGPs, but also often have common cognate resources. LSP thus tends to be more international, or indeed, universal, than does LGP.
17. See also: Cabré 1998.

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