

# LA RICERCA NELLA COMUNICAZIONE INTERLINGUISTICA

*Modelli teorici e metodologici*

*a cura di*

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Gli Autori

# *Terminology as a system of knowledge representation: an overview*

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## **Abstract**

*Terminology has an important role in the framework of specialised knowledge, especially as regards its elaboration, representation and transmission through verbal language. This study focuses on the nature of knowledge that is organised in terminological collections. Terms are interpreted as the units where the mental, linguistic, communicative, and referential facets of specialised knowledge coalesce. Terminology schools belonging to different traditions have attributed distinct values to the notion of term and to its content, as a consequence of the underlying terminological and linguistic theories used as reference. Accordingly, terminology theories and applications display the prevalence of either a prescriptive or descriptive approach; the former characterises the General Theory of Terminology, the latter is typical of contemporary schools related to socioterminology, textual terminology, the sociocognitive approach, and the communicative theory of terminology. An analysis of the nature of knowledge as represented in terminology works makes it possible to recognise the importance of representing the system of knowledge through a relational scheme of concepts and terms which allows the user to delineate the definition of the single units of knowledge. This model, which has been outlined since Wüster's theory as a hierarchical frame of relations and dependences, can be described in terms of an ontology, also as a result of the recent integration of terminology with information science. Even though ontology offers a model of representation of specialised knowledge which is relatively neutral from the linguistic and cultural point of view, this structure can be integrated with the cognitive, sociological and pragmatic facets of terms, which have acquired a growing importance in contemporary terminology. In this way ontology remains a basic component of a satisfactory representation of concept systems, even when the analytical perspective is interlinguistic and intercultural, as is the case with the applications that follow the termontology method.*

## **1. Introduction**

The relation between specialised knowledge and terminology has been a crucial issue since the origin of the debate on the elaboration, representation,

and transmission of knowledge. Over the last century, significant changes have characterised the panorama of terminological studies and applications. This paper analyses the development of the interpretations of terminology as related to the merging of the mental, linguistic, and pragmatic facets of specialised knowledge. Hence, the focus is on aspects inherent in the representation of the lexicon of Languages for Special Purposes (LSPs). Even though the lexicon is not an all-encompassing feature of specialised discourse, it represents an important component and has a focal relevance for the consideration of the way in which specialised notions are related to the semiotic – and particularly the linguistic – code<sup>1</sup>. The type of knowledge on which the present paper hinges is the structured knowledge which characterises a particular field or discipline, is possessed by specialists, can be communicated – mainly through verbal language –, and is represented in terminologies.

An analysis of the representation of knowledge implies a preliminary consideration of the object of study, namely the identification of what is intended by *items of knowledge* as they are represented in specialised reference works in the form of terms<sup>2</sup>. The stances that have characterised the theory of terminology since its foundation display different views of its object of analysis, and of the methods that should be used to describe and represent it. A particularly problematic feature regards the nature of the ‘term’, and especially of that aspect that here will be provisionally called its ‘content’. The somehow neutral term ‘content’ is preferred to ‘meaning’ or ‘concept’, as it is better suited to an entity that can be analysed according to different perspectives and, as a consequence, can acquire different – and also combined – values. In fact, the notion of ‘meaning’ might limit the interpretation of ‘term’ to an entity which belongs to the domain of Languages for General Purposes (LGPs) because it shares all the features of lexemes. Here we do not exclude the relations between LSP and LGP, nor the communicative side of the term; instead we are trying to delineate a view of the ‘content’ of terms which takes account of its complexity.

In the framework of an analysis of the knowledge structure of a specific field, the ‘content’ can be interpreted from a mentalistic perspective as a ‘concept’, a ‘mental item’ that represents the concrete and/or abstract entities which are part of a knowledge system, and consequently, has a relational nature. Different definitions of the notion of ‘concept’ are provided in the

1. As Arntz *et al.* (2002: 37) point out, “[...] die Terminologien für die Fachsprachen von entscheidender Bedeutung sind, [...] die Fachsprachen aber darüber hinaus über weitere charakteristische Merkmale verfügen”. Cf. also Arntz *et al.* (2002: 10-36) for an account of Languages for Special Purposes and terminology as related to Languages for General Purposes. The articulate features of LSPs are described also by Cabré (1999: 65 ff.).

2. The generic designation ‘reference work’ here indicates different types of terminological collections. These can be categorised according to various criteria and characterised by different formats and media used for their construction.

literature. For instance, it can be considered as “[a]n abstract unit which consists of the characteristics of a number of concrete or abstract objects which are selected according to specific scientific or conventional criteria appropriate for a domain”<sup>3</sup>. Following Sager’s provisional definition, concepts are “constructs of human cognition processes which assist in the classification of objects by way of systematic or arbitrary abstractions” (Sager 1990: 22)<sup>4</sup>. A further interpretation limits the notion of ‘concept’ to part of the possible mental items, and complements it with the notion of ‘category’ (Temmerman 2000; cf. below).

This preliminary clarification of the notion of ‘content’ will be further elaborated in the present study, where the articulate nature of terms is delineated in its relation with terminological theories and applications. Indeed, the history of terminological studies shows a lack of uniformity in the interpretation of the ‘term’ also due to the different views on what is to be intended as the ‘value’ of terms. As a consequence, different outlines of a theory of terminology emerge, and their applications in the production of reference works reflect corresponding variations, from the so-called “General Theory of Terminology” to its later revisions, including the more recent “sociocognitive approach” to terminological studies<sup>5</sup>. The former originated from Wüster’s theorisation and represents a fundamental point of reference in this discipline; the latter characterises Temmerman’s position and brings this theory towards a new vision of terminology defined “termontography”. Our focus is directed to an analysis of the basic features which characterise these views. The changes in the theory of terminology from Wüster to Temmerman seem to be considerable. Here they will be analysed in the light of their respective linguistic, cultural, and scientific background: this perspective favours the emergence of a different facet of the issue here at stake. In fact, the more recent theories can be seen as a ‘natural’ development of the traditional view in terminological studies rather than as positions strongly contrasting with it.

## 2. The ‘term’ over time and changing paradigms

Different interpretations of the notion of ‘term’ have been given by terminology schools and organisations. If its designating function is

3. *Glossary of terms*, s.v. CONCEPT.

4. Sager (1990: 23) summarises different definitions of ‘concept’ given over the years by committees involved in the standardisation of terminology. In this way he highlights the difficulty of identifying a shared view on this point, that is a basic one in terminological theory and practice. In fact, he concludes that for the goal of his work the notion ‘concept’ can be considered an undefined “axiomatic primitive” (Sager 1990: 23).

5. The “General Theory of Terminology” (Wüster 1991) is now interpreted as the “Traditional Theory of Terminology” (Cabré 2000; Temmerman 2000).

highlighted, a term can be defined as a “lexical unit consisting of one or more than one word which represents a concept inside a domain”<sup>6</sup>. Still, this view implies a separation and a mutual independence of the designation, the content, and the language system (including its communicative component).

A three-dimensional view of terms has been proposed by Sager (1990) who distinguishes in his analysis the cognitive, the linguistic, and the communicative dimension of terms. In Sager’s study – centred on terminography – the cognitive dimension includes also the referential features of terms, the linguistic aspect is identified in terms recorded in specialised reference works, and the communicative factor emerges when terms are considered in their linguistic context. Cabré (1996: 19) provides an analogous interpretation of terms as “three-way units of meaning (thing-name-meaning) which refer to the specialized reality”. In her theoretical analysis, Cabré highlights the complexity of the notion of ‘term’, especially regarding its content, and puts it into relation with an external referent, while stressing its linguistic and communicative aspect pinpointed by the use of ‘meaning’ to indicate the content of designations<sup>7</sup>.

From a position partly similar to that of Cabré, Temmerman takes into consideration “the intricate relationship between the three perspectives of understanding” that should be described by terminology:

[...] the nominalistic perspective (the unit of understanding is the sense of the word), the mentalistic perspective (the unit of understanding is an idea which exists in people’s minds) and the realistic perspective (the unit of understanding is an external form which exists in the universe) (Temmerman 2000: 224).

This stance, which follows a cognitivistic viewpoint of analysis, stresses the integration of three content dimensions (i.e. “units of understanding”) of terms.

Though displaying minor differences these positions identify the multifaceted nature of terms and the necessity of taking account of the overall structure in their identification and description. In the present study, terms are conceived as integrated and relational units that can undergo variations and modifications (in time, space, cultures, paradigms, etc.): their representation in a terminology should take account of all these aspects. Terms are integrated units because in them linguistic, mental, and referential matter coalesce in a close interplay. They are relational units as they are organised to shape a knowledge domain whose (internal) constitution and (external) outline are delineated by the correlation of the components of terms. The linguistic dimension of terms – with its communicative counterpart – cannot be

6. *Glossary of terms*, s.v. TERM. This interpretation, which also conforms with the ISO definition of ‘term’, is introduced also in Sager (1990: 57; 22).

7. In her later works Cabré presents both her conception of terms and a revised theory of terminology more thoroughly (cf. § 2.).



separated from the cognitive and the referential factors, in their overall relation to the elaboration of the items of experiential knowledge. Here ‘experiential’ is intended in a broad sense as related to – and partly dependent on – human background knowledge, both general and specialised<sup>8</sup>.

The features of terms highlighted so far are analogous to those that characterise LGP lexemes, but the specialised dimension of terms cannot be neglected. The structured knowledge embodied by terms is shared and transmitted within the community of specialists, and needs to be outlined as clearly as possible in reference works. The knowledge represented in terminologies includes information concerning linguistic, communicative, referential, and cognitive data. Definitions provide information that is essential for delineating terms, i.e. integrated units where the different aspects mentioned above are structured. Hence in terminologies the features and relations of terms should be made explicit, also in accordance with the type of each term, and the scope and aim of the terminology. If, on the one hand, terminologies should give an account of the *in vivo* dimension of terms, on the other, they also have a representative and reference function. Indeed, the boundaries of terms are not always clear-cut, nor are those of whole knowledge domains. Furthermore, the specific features of terms which originate from their use in the process of knowledge transmission need to be considered – this includes the diachronic modification and synchronic variation of terms. But on the plane of the representation of knowledge, a reference work also needs to function as a benchmark for its users, in order to enhance the acquisition and communication of specialised knowledge; this feature does not imply a prescriptivist assessment of terminologies.

While the conceptual nature of the ‘content’ of terms was dominant in the theory elaborated by Wüster, in contemporary revisions of the Traditional Theory the centrality of the concept is questioned. Several terminologists – among them Sager (1990) and Cabré (2000) – share this position. In this respect Temmerman clearly states:

In traditional Terminology the *concept* and not the *term* or the *word* [emphases in original] is taken as the starting point for meaning description. The concept is considered the meaning of the term [...]. Traditional terminologists believe one can know the concept, which exists objectively, define it, and name it with a term. It is on that basis that the meaning of a term can be said to be the concept (Temmerman 2000: 40)<sup>9</sup>.

8. This view is close to the interpretation given by Lakoff: “‘Experience’ is thus not taken in the narrow sense of the things that have ‘happened to happen’ to a single individual. Experience is instead constructed in the broad sense: the totality of human experience and everything that plays a role in it – the nature of our bodies, our genetically inherited capacities, our models of physical functioning in the world, our social organization, etc.” (Lakoff 1987: 266).

9. A sharp criticism of this point of Wüster’s theory is expressed by Smith *et al.* (2005), who attribute to Wüster a psychological view of concepts; these would be interpreted by Wüster as

Temmerman ascribes this view of Wüster's to an objectivist position that he would have shared with structuralist linguists<sup>10</sup>. In fact, Temmerman's sociocognitive approach to terminology is proposed as a "re-evaluation" of, and a shift from the Traditional Theory (Temmerman 2000: 2); the new stance is grounded on cognitive semantics that was developed "in reaction to and following the structuralist era" (Temmerman 2000: 3). Hence, her criticism of the traditional terminological analysis first of all hits the centrality of the concept which is to the detriment of its communicative side, and then, the fact that in the Traditional Theory concepts can be analysed principally in a logical and ontological perspective, i.e. by defining them on the basis of the criteria that are central in logic and ontology<sup>11</sup>.

Indeed the terminographic principles outlined by Wüster show that his interest in concepts and their relations is prior to the linguistic or communicative dimension of terms – which involves their use in discourse:

Die Terminologearbeit geht vom Begriff aus. Es bleibt ihr daher nichts anderes übrig, als sich hinsichtlich der begrifflichen Seite an diejenigen Wissenschaften anzulehnen, die für die Beziehungen zwischen Begriffen und zwischen Individuen zuständig sind, d.h. an die Logik und an die Ontologie (Wüster 1974: 85).

Still, it is important to highlight that what is identified as an objectivist view in Wüster's theory is not only the result of a 'referentially oriented' notion of the conceptual system, but also the outcome of an interpretation of this system as a structure which is (or should be) 'shared by the community'.

entities that basically depend on human discretion. Smith *et al.* (2005) do not consider the plane of convention in concept delineation (cf. below).

10. Temmerman states that "[l]ike Saussurian structuralist linguistics, the theoretical framework behind the methods and principles of traditional Terminology was strongly rooted in objectivism" (Temmerman 2000: 1). Her notion of "objectivism" can be traced back to the interpretation that Lakoff (1987) gives of this concept. Yet, Saussure's linguistic theory is not compatible with what she defines as "objectivism": "The Saussurian structuralist principles of language description are in line with objectivism, i.e. that there is an objective world independent of and regardless of human observation and experience" (Temmerman 2000: 3). Indeed, Saussure's ideas on linguistic signs and their *valeurs* are focused on the linguistic dimension, and he does not explicitly give account of the relation between reality and human cognition. From an analysis of Saussure's thought it is possible to conclude that even if his view does not coincide with cognitivist 'experientialism', the social dimension of the *langue* nevertheless implies a vision of the external reality as being determined by *langue* itself, and not objectively given. In fact, Saussure stresses the specificity of different systems of *valeurs* for different languages (Saussure 1922: 159-161); furthermore he clearly states that "la langue court entre les hommes, elle est sociale" (Saussure 2002: 94; cf. also Saussure 1922: 104-113), and in Saussure's view the *langue* contributes to shaping the relation between thought and sound, i.e. between the sign (*signifiant* and *signifié*) and its factual execution (Saussure 1922: 104-113; 155-157).

11. "Whereas in the traditional approach the emphasis was on intercategory relationships of a concept within a logical or partitive concept structure, in the sociocognitive approach categories are structured in an intra- and intercategory way relative to a cognitive model or categorial framework" (Temmerman & Kerremans 2003: 2).

Hence ‘objective’ can also be read as ‘shared’ – opposed to ‘subjective, idiosyncratic’ – and not only as ‘factual’.

This point is clear if we consider the notion of ‘concept’ as traced by Wüster; in the theoretical (linguistic) consideration quoted below the communicative component of terms is not excluded:

The concepts which exist in the heads of individual human beings – associated with designations or other signs – are called ‘subjective concepts’. The subjective concepts of two or more people remain different because of the differences between human talents and destinies, even if they belong to the same language community. Nevertheless, subjective concepts have a common core which constitutes the basis for mutual communication and comprehension; these are the ‘objective concepts’ of the shared language (Wüster [1959/1960] 2003: 286).

Wüster specifies that “[t]he objective concepts of the language community are some sort of balanced medium of the subjective concepts of its members [...]” (Wüster [1959/1960] 2003: 287).

The linguistic theories linked to European structuralism – together with other factors –<sup>12</sup> influenced Wüster’s belief in the possibility of identifying a common conceptual framework which has a socially and culturally cohesive power acting on a linguistic community. Such power can somehow ‘regulate’ the activity of individual systems of ideas (and of language use)<sup>13</sup>. When Wüster’s linguistic views are applied to technical terminology they are driven by normalising intentions, and the “objective concepts” – defined on relational principles – become the basis of a planned specialised lexicon. Wüster conceives the delineation of LSP, and especially its lexicon, as a process of language planning. Hence, in his theory of terminology, the centrality of concepts can be interpreted as the outcome of two concurring factors. He is aware of variation in linguistic use, due to the differences originated in conceptual systems by cultural and idiosyncratic issues. As a consequence, he intends to overcome irregularity and ambiguity in order to improve international specialised communication<sup>14</sup>. Wüster’s standpoint contrasts with the

12. Among the relevant features that formed Wüster’s technical and linguistic background and coalesced in his terminological theory can be considered his education as an engineer, his lexicographic (Wüster 1923-1929) and terminographic (Wüster 1967-1968) endeavours, together with his activity as an esperantist (cf. Cabré 2003: 165; cf. also Sager 1994: 11-12).

13. Wüster’s position as regards linguistic concepts is in line with Saussure’s idea of *parole* in its relation with the *langue* (cf. for example Saussure 1922: 25-27, 29-30, etc.): “Un mot n’existe véritablement, et à quelque point de vue qu’on se place, que par la sanction qu’il reçoit de moment en moment de ceux qui l’emploient. C’est ce qui fait qu’il diffère d’une succession de sons, et qu’il diffère d’un autre mot, fût-il composé de la même succession de sons” (Saussure 2002: 83).

14. In a section of his doctoral thesis devoted to “Sprachgüte” Wüster highlights the importance of “Bequemlichkeit” and “Genauigkeit” of a specialised language (Wüster 1931: 85), and of a one-to-one correspondence of word form and word content, independent of language use (Wüster 1931: 86).

contemporary prevalence of a descriptivist approach in linguistic and terminological research: the modern evolutions in the fields of linguistics, terminology, and related disciplines have generally determined a shift in the attitude towards the study of language (both general and specialised)<sup>15</sup>. Hence, also contemporary terminological studies are characterised by a perspective which favours a text-based approach for the extraction of relevant information rather than one grounded on a system-based view of LSP, that is to say a stance, like the traditional one, in which priority was given to the analysis of the conceptual system, since it was seen as a primary piece of data for identifying the terms (and contents) belonging to a specific field, and for scrutinising their features and relations. As a consequence, the conception of the ‘content’ of terms has also changed, at least in part.

### **3. The communicative theory of terminology and the sociocognitive approach**

In contemporary approaches the starting point for terminological analysis, rather than being the set of related concepts in a specialised field, is represented by terms as they are used in specialised texts, terms in context, that is to say items intended as vital linguistic units endowed with cognitive and referential implications<sup>16</sup>. And the object of definition, the ‘content’ closely related to linguistic form, is conceived as determined also by linguistic and pragmatic issues. Hence terminology – whose representational function aims at being descriptive rather than prescriptive – hinges primarily on the textual and communicative dimension of terms and then proceeds to take into account the conceptual aspect. This consideration applies to several modern theories, in spite of their specific differences. We consider here the outline of the new trends in terminological studies made by L’Homme (2005: 1115-1116), where four different theoretical directions are highlighted: socioterminology, textual terminology, the sociocognitive approach, and the communicative theory of terminology<sup>17</sup>.

15. The reference here is in particular to the theories relating to Functional linguistics and to their applications in the field of Corpus linguistics.

16. This theoretical change is summarised by Temmerman who highlights the innovative perspective of her own theory: “Instead of clearly delineated concepts [...], terms (linguistic expressions) in texts became the starting point in terminological analysis. The switch from concepts to units of understanding and categories [...] (which may have prototype structure) put the earlier belief in the need to study language-independent conceptualisation in perspective” (Temmerman & Kerremans 2003: § 1.2; cf. Temmerman 2000: 4-8). The importance of the textual dimension of terms is stressed by Temmerman (2000: 40): “Texts provide data on how particular authors understand elements of the world, how they understand the existing lexical items which serve to communicate about these elements of the world and how they may be brought to the creation of new lexical elements”.

17. L’Homme’s own approach to the analysis of the ‘term’ is characterised by a lexico-semantic stance which matches the approach of textual terminology: “Nous avons opté pour

In socioterminology and textual terminology, the term is intended as a linguistic unit, identified in texts (discourse and corpora respectively) and defined on the basis of the role it plays there (L’Homme 2005: 1123; cf. Bourigault & Slodzian 1999, Gaudin 2003). The analysis of terms in a textual dimension implies that stress is placed on the lexical nature of terms. This corresponds to a view focused on ‘meanings’ rather than on ‘concepts’, in which a representation of their properties and relations is based on the principles of relational semantics.

The communicative theory of terminology (Cabré 2003) and the sociocognitive approach (Temmerman 2000) apply a corpus-based method to the analysis of terms which is not incompatible with the principles of the Traditional Theory. The conceptual dimension of terms maintains an important role also in these theories, though it is necessary to take into account that the notion of ‘concept’ has been revised in the more recent theories; and this is particularly evident in Temmerman’s stance<sup>18</sup>. This revision has an influence on the interpretation of what type of entity – or entities – should be the object of study of terminology, and which method should be used for their description and representation.

The multidimensional character of terms is recognised in the communicative theory of terminology proposed by Cabré (2003), where the cognitive, linguistic, and pragmatic aspects merge in the delineation of the “terminological unit” – Cabré defines in this way the primary object of terminological research. Since the “terminological unit” is endowed with a structured nature, it can be analysed from different (and eventually integrated) viewpoints as a unit of knowledge, a unit of language, and a unit of communication<sup>19</sup>. Such a conception of the term entails that “[a]t the core of the knowledge field of terminology we [...] find the terminological unit seen as a polyhedron with three viewpoints: the cognitive (the concept), the linguistic (the term) and the communicative (the situation)” (Cabré 2003: 187).

The accent placed by Cabré on the communicative dimension is part of a view of specialised language as a subset of general language (Cabré 2000: 47), which takes shape in specific linguistic productions characterised by the situation, the domain, the register, and the users (Cabré 2000: 46).

une optique dans laquelle le terme est envisagé comme une unité lexicale [...]” (L’Homme 2005: 1123). Other overviews of contemporary theories of terminology that keep their distance from Wüster’s Traditional Theory are available e.g. in Temmerman (2000: 22-34), Cabré (2003), etc.

18. Temmerman points out that “[a]s terminology can only be studied in discourse [...] it is better to accept that it is the **term** which is the starting point in terminological description rather than what was traditionally called the *concept* [emphases in original]” (Temmerman 2000: 224).

19. As Cabré clarifies: “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 socio-communicative component” (Cabré 2003: 183).

In this framework, the communicative and social dimension of terms are complementary to the conceptual one (cf. Cabré, 2000)<sup>20</sup>. Indeed, in this theory the communicative function of terminology does not contrast with the representational one as they bring to light two coexistent aspects of terms which, on the one hand, “represent knowledge *in vitro*” – but also “circulate *in vivo*” (cf. Cabré, 2000: 42). For this reason, her theory takes into account both functions (cf. Cabré, 2000: 35). So terminology should be analysed in a descriptive way and only afterwards can normalising interventions be made (cf. Cabré, 2000: 42).

The sociocognitive approach stems from the application to terminology of the principles of prototype theories and cognitive linguistics. From cognitivism it draws, in particular, the vision of semantic analysis, that is grounded on *experientialism*; the latter is intended as a parameter for interpreting the functioning of human thought and its relation with linguistic meaning (Lakoff 1987: xiv-xv). Temmerman’s approach to terminology relies on the application of experientialism to LSP. Hence the interaction of thought, language, and reality takes place in the social dimension of specialised contexts (Temmerman 1997: 55). In her perspective (specialised) language favours the mental elaboration of categories because it has cognitive, textual, communicative, and categorising functions (Temmerman 1997: 55).

As highlighted above, this new insight gained through the sociocognitive approach favours a different interpretation of the ‘content’ of terms – defined by Temmerman as “units of understanding” – that partly differs from the traditional notion of ‘concept’. In these units is to be found the joint and/or separate action of encyclopaedic, logical, and ontological knowledge, used in (specialised) discourse (Temmerman 2000: 74). In fact, the “units of understanding” include both what might be called ‘proper concepts’, and ‘categories’ (Temmerman 2000: 73; cf. also Temmerman 2000: 43, 65). The former are definable according to logical and ontological principles, while the latter are characterised by a prototypical structure that acts both within and between them and undergoes continuing reformulation (Temmerman 2000: 73, 224; Temmerman 1997: 55). Hence, terminological analysis needs to take into consideration the “units of understanding” used in specialised communication, considering that they can be elaborated by the human mind in different ways (i.e. either as concepts or categories). The distinction between concepts and categories is fundamental in Temmerman’s view, as it is also at the basis of a new method for the definition and representation of terms in reference works.

20. As regards the inadequacies of the Traditional Theory Cabré states: “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 standardization” (Cabré 2000: 38).

#### 4. Terms and the representation of specialised knowledge

The theories of terminology outlined here are characterised by different conceptions of terms and/or their content. As a consequence, diverse systems of knowledge representation have been elaborated. The specialised knowledge embodied in terms (or driven by them) has undergone different interpretations, conceived alternatively as consisting in concepts, specialised meanings, or in units of knowledge, of language, of communication, or else in units of understanding. The new perspectives in terminological theory and practice are characterised by a stance in the identification, analysis, and representation of terms, which is more ‘relativistic’ if compared with the Traditional Theory. This implies a consequent variation in the conception of the nature of the content of terms, of their definitions and (graphic) representation.

In terminological theory and practice Wüster attributes a central role to concepts, conceptual relationships, and their representation in schemes. The logical and ontological relations between concepts coalesce in the structure of the definition, and in that of the representation of the knowledge domain (Wüster 1974: 72-73). The relational system of concepts has a twofold practical function as, on the one hand, it allows the terminographer to develop a framework of knowledge representation, on which definitions are outlined. On the other hand, it makes it possible for specialists to achieve a direct and unequivocal communication in the international community, as the language adopted is based on a set of unambiguously defined concepts associated with a set of fixed designations (Wüster 1974: 73-74).

The importance that the concept system has in Wüster’s theory is evident in his conception of specialised dictionaries. He maintains that these should be based on a systematic (i.e. onomasiological) arrangement of the macro-structure complemented by a “linear presentation” of the materials that retains “a reflection of the concept system” (Wüster [1959] 2004: 299). The model of knowledge organisation proposed by Wüster is a concept system, which can be represented graphically as a scheme of hierarchical dependencies and relations, or a “pyramid” as he calls it. In the presentation of the guidelines for the realisation of systematic dictionaries – both general and specialised – Wüster highlights that the consideration of a structured concept architecture requires a systematic representation of its components. In this discussion he also traces a connection between the theory of terminology and linguistics in the analysis of concepts:

[...] the knowledge of the structure of meanings inevitably leads to the demand for systematic dictionaries. And this applies to the general language as well. Ferdinand de Saussure was indefatigable in pointing out that a concept can be delimited only by both saying what it is and what it is not. In no other way can this partial similarity of concepts be presented so clearly as by placing similar concepts side by side in a dictionary (Wüster ([1959] 2004: 297).

When Wüster elaborated his theory of terminology (as a discipline and as a reference product) the European panorama of linguistic studies was dominated by the structuralist theory, field theory in semantics<sup>21</sup>, and proposals of systematic dictionaries in lexicography<sup>22</sup>. These issues influence the guidelines of his theory of terminology, concisely pointed out in an article whose title reads: “Die allgemeine Terminologielehre. Ein Grenzgebiet zwischen Sprachwissenschaft, Logik, Ontologie, Informatik und den Sachwissenschaften” (Wüster 1974).

The organisation scheme proposed by Wüster tallies with a vision of knowledge which is centred on concepts. Later theories propose a partly different interpretation of knowledge, which is seen as consisting also (or mainly) of the linguistic and pragmatic facets of understanding. In Cabré’s theory, the cognitive, linguistic, and communicative sides of terminology are complementary (Cabré 2003: 183): the former is related to the acquisition and organisation of specialised knowledge, the other facets are connected with its use and transmission. So in her view the practice of definition is based on the consideration of the properties and relations of concepts in a specific field of knowledge. Therefore, the defining procedures endorsed are similar to the traditional ones, but they also take account of the characteristics of terms in specialised use (Cabré 2003: 184). The linguistic and communicative aspects of terms play a role mainly in the process of term identification in texts, in the description of their linguistic and usage properties, and in the consideration of their formal variants. The three complementary and inseparable aspects of terminological units require a complex representation, as Cabré clarifies:

The conceptual strand of a unit (the concept and its relations) may be the door to the description and explanation of terminological units, without thereby rejecting their multidimensionality. Equally, its linguistic strand is another door to description. Logically, keeping in mind that, even though we analyse them as linguistic units, they do not lose their cognitive and social nature. Finally, if we approach terminology via the door of communication we are faced with different communicative situations in which linguistic units share the expressive space with those of other systems of communication (Cabré 2003: 187)<sup>23</sup>.

Temmerman’s sociocognitive stance, while keeping the validity of traditional concept definition and representation – based on necessary and

21. Cf. Jost Trier, *Der deutsche Wortschatz im Sinnbezirk des Verstandes. Die Geschichte eines sprachlichen Feldes* (Heidelberg, 1931).

22. Wüster mentions the systematic dictionaries available at his time, also underlying the absence of definitions in these works: “Unfortunately, the few systematic dictionaries of the general language in existence, e.g., those of Roget, Wehrle, Dornseiff, Casares, and Hallig-Wartburg, do not contain definitions, i.e. no delimitations between the synonyms. In essence they are only collections of material yet to be processed” (Wüster [1959] 2004: 305).

23. In this passage Cabré uses the metaphor of *doors* as interpretive perspectives for approaching term analysis.



sufficient properties –, introduces also the idea of templates for the description of categories. Templates can account for the degree of relevance of the units of information considered in the definition (Temmerman 2000: 226), and can represent both the intra- and inter-categorical relations of the “units of understanding” being defined. Temmerman sketches the properties of templates as follows:

It is possible to imagine a **template of understanding** [emphasis in original] composed of different modules of information which can hold more or less essential information depending on the type of unit of understanding and on other factors such as the perspective from where the unit of understanding is understood (Temmerman 2000: 226).

The starting point for terminological work in this theoretical framework is the “unit of understanding”. The ‘sociocognitive definition’ is based on principles which are more articulate than those governing the traditional one, as it takes into account “the type of category being defined (entity, activity, characteristic, etc.), the level of specialisation of the sender and the receiver of the message and the profile of the user of the terminological database” (Temmerman & Kerremans 2003: 2). This approach to terminological analysis is based on the methods used in cognitive semantics, i.e. “prototype structure analysis, cognitive model analysis and diachronic analysis” (Geentjens *et al.* 2006: 10), as these can account for the way in which people acquire and organise their knowledge, i.e. “via cognitive frames [...] or models [...] in which prototype structured units of understanding are related” (Geentjens *et al.* 2006: 6). Hence, in this theoretical and applicative layout the knowledge being represented consists in the cognitive structures of the categories which allow humans to understand the world.

An interesting evolution of the sociocognitive theory that is particularly relevant for the present study consists in its merger with ontology engineering, which gave rise to “termontography”. Termontography is defined as “a method for compiling multilingual terminological databases in which theories and methods of sociocognitive terminological analysis are combined with methods in ontology engineering [...]” (Geentjens *et al.* 2006: 10-11)<sup>24</sup>.

The skeleton of a multilingual termontological knowledge base like the one conceived by Temmerman and her collaborators is the ontology (roughly speaking a conceptual graph). Such a knowledge base makes it possible to have a basic culture-independent framework built on information acquired from corpora and experts. This basic structure is delineated by following

24. A satisfactory overview of the notion of ‘ontology’ would require a separate study, hence it will not be treated here; Smith (s.d.) offers a thorough study of the facets of ontology. Ontology is acquiring an increasingly important position also in lexicology and more generally in linguistics, where a new branch recently emerged, i.e. Ontolinguistics (cf. Schalley & Zaefferer 2007).

initially a top-down direction for the arrangement of related internationally shared categories and of inter-categorical relationships. The following step is the enhancement of the basic structure with additional culture-specific information articulated in a network of semantic relations, and this process follows the bottom-up direction (cf. Temmerman & Kerremans 2003: 4).

The interesting aspect of this methodology as regards the present analysis consists in the fact that, in the first place it gives an account of the entry of ontology into contemporary terminology. In this framework, the conception of ontology is analogous to that which characterises information science and artificial intelligence, and is explicitly designed to join terminography with these disciplines<sup>25</sup>. Using Cabré's metaphor of *doors*, this might represent a new interpretive door for approaching term analysis and its representation in termontological knowledge bases. Yet, when the theory of sociocognitive terminology is applied to termontography and plunged into a multicultural dimension, it has to come to terms with "[a] common domain-specific and task-oriented reference framework of language-independent categories or units of understanding [...]" (Kerremans & Temmerman 2004: 6). This framework (the ontology) recalls Wüster's systematic arrangement of internationally shared concepts on which a standardised multilingual terminology can be based.

The production of a knowledge base founded on termontological principles is not at all prescriptive, as it aims at making available (to human and non-human users) a multilingual terminological description. Still, the necessity of finding a frame of related nodes of internationally shared knowledge remains.

## 5. Conclusions

The changes that have characterised the scenery of terminological theory in the last century mainly concern the approach to the analysis of terms and their definitions; these are now oriented to description rather than to prescription.

Nevertheless, especially when the terminographic work is directed towards multilingual products, and when it is related to automatic information processing, there emerges a constant need to establish a shared underlying system of knowledge representation and definition. This is as independent as possible from culture- and language-specific factors, which necessarily map onto different systems of categorisation. Yet, the innovative features introduced in contemporary theories – mainly related to cognitive, sociological and pragmatic facets of terms – are introduced to complement the 'culturally neuter' relational graph – or ontology.

25. Temmerman & Kerremans (2003: 3) clarify this point by stating: "We define an ontology as a knowledge repository in which categories (terms) are defined as well as relationships between these categories. Implicit knowledge (for humans) needs to be made explicit for computers".

In conclusion, we can see that in contemporary terminology the traditional concept-centred view has joined with the sociologically and cognitively driven perspective of terms as textual and cognitive items. And the interdisciplinary nature of terminology, highlighted by Wüster, is realised nowadays through the interplay of this discipline with the contemporary developments in ontology (i.e. ontology engineering), linguistics (cognitive, computational, sociological, anthropological linguistics), and information technology.

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