Classifying domain-specific intraterm relations

A schema-based approach

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This paper proposes a tool for the classification of domain-specific intraterm relations. It thus aims to present both the process and the product of classifying these relations. First, a description is given of how semantic relations and — more specifically — intraterm relations are understood and represented. Then, a structured set of relational schemas is presented, based mainly on insights from cognitive semantics and functional linguistics. Finally, the general model is applied to the semantic classification of complex terms. This step is specific in several ways: in the type of relation (internal semantic relations of complex terms), in the subject field (ceramic tile manufacturing) and in the languages analysed (German and Spanish). The advantage of this procedure is that, if applied to different subject fields, the resulting classifications can reach a high degree of specificity, but they are nonetheless comparable due to the fact that they will be based on a common theoretical background and methodology of classification.

Keywords: semantic relations, complex terms, technical languages

1. Introduction[1]

Semantic relations are of crucial importance for several areas of terminological research, be it in the form of relations between concepts in a terminological system, relations between terminological units in a text, or the relations between the constituents of complex terms (intraterm relations). In the case of the latter, a wealth of classifications has been developed for different languages and domains (for example, Pelka 1971; Sager et al. 1980; Zhu 1987; Zhang 1990; Weissenhofer 1995; Kageura 2002). These classifications present

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considerable differences that can be attributed to several reasons. On one hand, they are based on the analysis of terms pertaining to diverse and more or less particular special languages and usually contain relations that are rather domain-specific. On the other hand, they also include relations that seem to belong to a more general level, but the way they are expressed varies depending on the linguistic approach that is taken in each case. From the point of view of inter- or intralingual comparison, however, it would be desirable to classify semantic relations in such a way that the terminologies of different fields or languages could be described and contrasted independently of differences in the conventions of word formation (for example compounding vs. the creation of syntagmatic terms).

2. Fundamental questions

2.1 How do we understand and represent semantic relations?

Semantic relations are fundamental not only to terminology but also to many areas of linguistics, to the extent that the definitions of lexical field, semantic network or conceptual system are based on them. However, the notion of "semantic relation" or "conceptual relation" itself is not easily defined and, in fact, is used without a definition in most cases (Feliu i Cortés 2004). One of the few exceptions is the formulaic definition proposed by Otman (1996), which resembles a mathematical function. According to Otman, a relation can be represented as ***R(a, b)***. In this function, ***R*** represents the kind of relationship and bears its own semantic content, while ***a*** and ***b*** are the related concepts. ***R*** imposes restrictions on the conceptual classes to which ***a*** and ***b*** might belong. In order to describe a conceptual relation, we therefore need two types of information: the kind of relation (***R***) and the types of entities that can be represented by concepts ***a*** and ***b***.

A different way of describing semantic relations can be found in many classifications of complex terms or technical compounds (Sager et al. 1980; Zhu 1987; Weissenhofer 1995; Kageura 2002). These often make use of designations that name the relation after the role that one of the elements plays with respect to the other. Kageura (2002: 59), for example, defines intraterm relations as "[…] the status or role of the determinant with respect to the nucleus […]." This definition reflects the fact that the role of the *determinant* is usually the most important factor in an intraterm relation. However, there are cases in which the role of the nucleus (or *determinatum*) does seem to make a difference. Consider, for example, the following German terms from the field of ceramic tile manufacturing, whose determinant can be characterised as PATIENT in both cases (Figure 1):

Feuerführung ('fire / regulation')[2]	*Tonschneider* ('clay / cutter')
determinant – determinatum	determinant – determinatum
PATIENT – ?	PATIENT – ?

Figure 1. Examples of German terms containing a PATIENT as determinant

In spite of this similarity, the terms do not seem to include the same kind of relationship. If we analyse the role of the nucleus we find that one is combined with an action that is performed on it and the other with an agent:

- *Feuerführung*: 'the fire (PATIENT) is regulated (ACTION)'
- *Tonschneider*: 'clay (PATIENT) cutter (AGENT)'

In order to account for these differences in our description of semantic relations, we will combine both approaches. We will adopt Otman's view that both concepts (***a*** and ***b***) are relevant for characterising a relationship, except that we are not so much interested in the conceptual category they belong to as in the function or role they play with respect to each other. However, we have seen that naming relations according to roles or functions has proved useful for the semantic analysis of complex terms. For our understanding of semantic relations, we will take into account both components, as has been done for general language compounds (for example, Ortner et al. 1991), and we will name them in the following way:

> The semantic relation ***R*** between two concepts ***a*** and ***b*** is expressed through the combination of the functions carried out by ***a*** and ***b*** with respect to each other.

This can be reduced to the formula: ***Relation (a, b)*** = ***A*** – ***B***, where ***A*** is the function of ***a*** with respect to ***b***, and B is the function of ***b*** with respect to ***a***. By *function* we mean the semantic role that a concept takes on with regard to another concept, like PATIENT, AGENT, ATTRIBUTE, etc. If we apply this procedure to the examples above, *Feuerführung* will be understood as an instance of the PATIENT – ACTION relation and *Tonschneider* as one of the PATIENT – AGENT relation.

2.2 The analysis of internal semantic relations of complex terms

Understanding semantic relations as Function of concept A – Function of concept B can be useful for the description of different types of relations, for example those between terminological units in a text or between concepts in a terminological system (Figure 2).

	Magerton – *Ton*	(‘short clay’ – ‘clay’)
	| |	
Relation:	Hyponym – Hyperonym	

Figure 2. Example of relation described by function

However, we must differentiate the general case of semantic relation from the specific type of relation we are concerned with here, namely the semantic relation between the constituents of complex terms. By complex term, we mean any term consisting of more than one lexeme (also called *polylexematic terms*). These can be compound words (*Rollenofen* — ‘roller / kiln’) or syntagmatic terms (*statische Ermüdung* — ‘static / fatigue’). Even if there are more than two lexemes, these complex terms can be reduced to a binary structure,[3] as seen in Figure 3 below.

Nasstrommelmühle	→ *nass / Trommelmühle*
‘wet drum mill’	‘wet / drum mill’

Figure 3. Binary structure of complex terms

The second point that needs some explanation is the notion of “internal semantic relation” (or “intraterm relation”). What distinguishes this kind of relation from the general case of semantic relations is the fact that one of the terms determines the other.[4] If we want to classify intraterm relations, there is a substantial difference between a part that is determined by the whole it belongs to (as in *rodillo de molino*, ‘mill cylinder’) and a whole that is characterised by one of its parts (*molino de rodillo*, ‘cylinder mill’). If we take into account this determination structure of complex terms, we need to specify the general procedure for naming semantic relations in the following way:

function of the determinant – function of the determinatum

The first step of analysis is therefore necessarily syntactic, in order to establish which of the constituents determines the other. For most German complex terms, this is a straightforward decision: as in the example above, the first constituent is usually the determinant (and the same would apply in English). As a consequence, for most German complex terms, the name of the relation will seemingly reflect the term's syntactic structure because it parallels the determination structure (Figure 4).

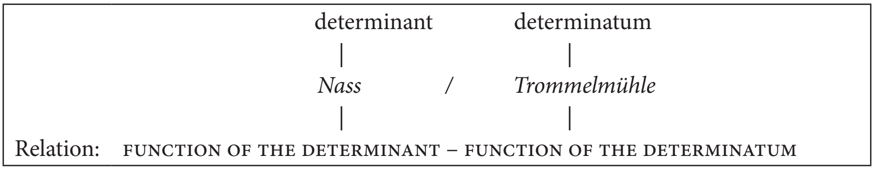

Figure 4. Name of relation for German term with typical determination structure

Nevertheless, there are compounds in which the second constituent determines the first one (called *inverted compounds*, Ortner and Ortner 1984: 61–62) — although these are very rare in technical languages — and terms of the type 'noun + preposition + noun' (e.g. *Trommelmühle für Glasur* → 'drum mill for glaze'). In these cases, the determination structure is the following (Figure 5):

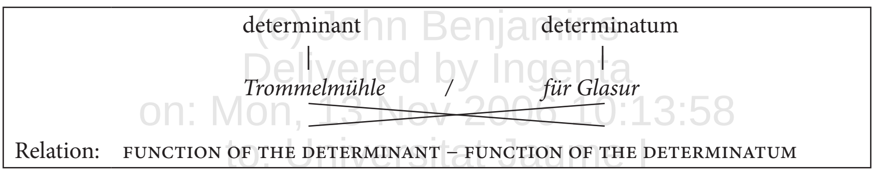

Figure 5. Name of relation for German term with atypical determination structure

This may be of minor statistical importance if we concentrate only on a language like German, but it becomes crucial as soon as we want to compare our results with languages that exhibit a preference for different term formation procedures, like Spanish or other Romance languages. In order to illustrate these differences and to show how the two steps of the analysis account for them, let us consider, for example, the German term *Rollenmühle* ('cylinder / mill') and its Spanish equivalent *molino de rodillos* ('mill / cylinders') (Figure 6).

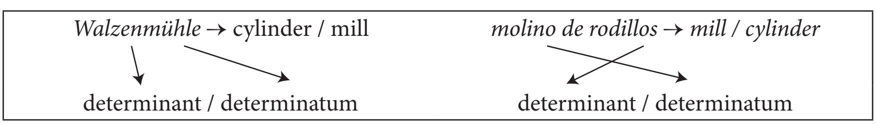

Figure 6. Syntactic analysis: The determinant/determinatum relation

In spite of their formal difference, both terms are based on the same semantic relation: a WHOLE is determined by one of its PARTS (Figure 7).

Figure 7. Semantic analysis: The constituents' functions

The specification of the definition for intraterm relations as FUNCTION OF THE DETERMINANT – FUNCTION OF THE DETERMINATUM thus makes it possible to compare classifications from different languages and to account for inverted compounds in exactly the same way as for other complex terms.

3. Relational schemas

After having defined the object of our analysis (intraterm relations), we now come to the first step of the classification. It consists in determining a basic set of relations, which aims to represent the possibilities of relating two or more concepts in the broadest possible way. For this purpose we will make use of the notion of "relational schema," based on "schemas" as used by Anderson and Pearson (1988) and on Ryder's (1994) application of this concept to the mechanisms of compound comprehension. We understand relational schemas as abstract knowledge structures that serve as devices for recognising and identifying the types of relationship that link one or more concepts (Oster 2004). If we take the complex technical term *horno cerámico* ('kiln which produces ceramics'), for example, and interpret it through an action schema (Figure 8), the node AGENT[5] is instantiated by the concept 'horno' ('kiln'), and the node GOAL or PRODUCT by the concept 'cerámica' ('ceramics'). The ACTION ('cocer' / 'firing') is not expressed in the complex term, but it belongs to the schema that guides the comprehension of the term.

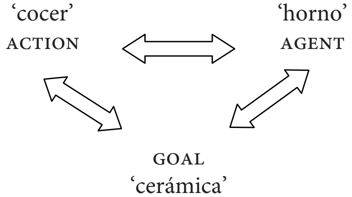

Figure 8. Understanding the term *horno cerámico* through the action schema

In this section, a classification of relational schemas is presented which draws upon ideas from cognitive semantics and functional linguistics. Following Lakoff (1987), a first distinction is made between propositional models, image-schematic models and metaphorical models.[6] Our account is based on a review of a considerable number of classifications of semantic relations from different points of view and on different levels (Oster 2005: 23–96). It owes much to Ruiz de Mendoza's (1996) relational arcs in conceptual schemas and Dirven and Verspoor's (1998) account of event schemas. The names and definitions adopted for the functions that make up each schema (ACTION, AGENT, etc.) are mainly based on Dik's (1989) states of affairs and functions. An account of the theoretical background of the notion of "relational schema" along with a detailed exposition of each of the schemas and the functions they include can be found in Oster (2004).

A. Propositional models

– Action schema (1)

ACTION ⟺ AGENT
GOAL

Example:
A *doctor* (AGENT) *operates on* (ACTION) a *patient* (GOAL).

Extensions of the action schema

– Instrument schema (2)

ACTION ⟺ GOAL
INSTRUMENT

Example: A *doctor* (AGENT) *operates on* (ACTION) a *patient* (GOAL) using a *scalpel* (INSTRUMENT).

– Purpose schema (3)

ACTION ⟺ PURPOSE
INSTRUMENT

Example: In the previous example, the PURPOSE might be that of removing a tumour.

– Process schema (4) PROCESS ⟺ PROCESSED
Example:
In the PROCESS of *combustion*, the PROCESSED entity is the material being burnt.

Extensions of the action or process schema

– Cause–effect schema (5) CAUSE ⟺ EFFECT
 Example: The *construction of a large dam* (CAUSE) leads to the *flooding of a valley* (EFFECT).

Schemas relating to states

– Attributive schema (6) ZERO ⟺ ATTRIBUTE
 Example: A *black* (ATTRIBUTE) *cat* (ZERO).

– Identification schema (7) ZERO ⟺ SPECIFYING ENTITY
 Example: "This *plan* (ZERO) is *madness* (SPECIFYING ENTITY)."

– Opposition schema (8) ZERO ⟺ OPPOSING ENTITY
 Example: *long* – *short*

– Spatial localisation schema (9) ZERO ⟺ PLACE
 Example: The *boat* (ZERO) crosses the *river* (PLACE).

– Temporal schema (10) ZERO ⟺ TIME
 Example: The *concert* (ZERO) will be on *Friday* (TIME).

Schemas relating to a position

– Position schema (11) POSITIONER ⟺ GOAL
 Example: This schema includes relations of possession like the one between a *dog* (GOAL) and its *owner* (POSITIONER).

B. Image-schematic models

– Part–whole schema (12) PART ⟺ WHOLE
 Example: *car* (WHOLE) – *wheel* (PART)

– Container schema (13) CONTAINER ⟺ CONTENT
 Example: *wine* (CONTENT) – *bottle* (CONTAINER)

C. Metaphorical models

– Analogy schema (14) SOURCE DOMAIN ⟺ TARGET DOMAIN

 Example: Expressions like *electric current* are based on the analogy between the SOURCE DOMAIN of fluids and the TARGET DOMAIN of electricity.

These relational schemas constitute a first, abstract level of classification, in which every element is labelled according to a closed-set typology of semantic functions (AGENT, PURPOSE, etc.). When this general model is used to classify the actual complex terms of a specific field, each constituent takes on one of the functions of the schema, filling them with domain-specific roles. For example, in a technical field such as tile manufacturing, the general *function* of GOAL can take on the *specific roles* of PATIENT, PRODUCT or RAW MATERIAL in relations like ACTION – PATIENT, ACTION – PRODUCT, RAW MATERIAL – PRODUCT, etc. This is what will make classifications from individual fields differ from each other.

4. Application of relational schemas to the classification of complex terms

The classification we will illustrate in the following is based on two parallel corpora of technical texts (from the area of ceramic tile manufacturing) in German and in Spanish.[7] For each corpus, approximately ten documents (mainly technical manuals and research papers) had been selected according to pre-established criteria. The first step of the study consisted in extracting all technical terms and feeding them into a terminological database. Then, the 1,176 German and 1,035 Spanish complex nouns or verbs were analysed in terms of the semantic relation between their constituents.

We will now present the intraterm relations found in our corpora. For lack of space, we cannot explain the application in detail for each schema, but will concentrate on two that are especially relevant for the field analysed: the spatial localisation schema and the part–whole schema.

4.1 The spatial localisation schema

In our proposal, the localisation of a concept in space is understood as a state. Consequently, the schema that accounts for relations between an entity and a spatial concept is one of the state-related schemas, together with the temporal, the attributive, the identification and the opposition schema (see Section 3). Spatial — as well as temporal — localisation might also be taken as an extension of the action or the process schema: an action or a process takes place within a certain place or time. Talmy (2000), in his account of event frames, however, does not take this view and excludes time and space from this type of frame, along with other more accidental factors:

> "Typically **not** included within an event frame, however, are, for example, the day of the week on which an event occurred, the geographic locale in which the event occurred, the ambient temperature of the space in which the event occurred […] — even though such factors can be fully or even necessarily as much involved in an event as the factors that do get treated as part of the event." (Talmy 2000: 259) [emphasis in original]

The most important reason for treating spatial and temporal relations with respect to a state schema and not as an extension of the action or process schema, though, is the fact that not only actions and processes but also other conceptual classes can be situated in space or time. We therefore adopt a more general conception of spatial localisation, which enables us to account for the relation between a space-related concept and any type of entity. Accordingly, in the typology of conceptual classes that we use for the purpose of defining intraterm relations (Oster 2005: 251), the category of *entity* includes material or abstract entities as well as activities (i.e. actions or processes).

As explained in Section 2.2, we have to distinguish two possibilities when analysing the contribution of the spatial localisation schema to the formation of complex terms: the concept that carries the function of PLACE can either be the determining or the determined entity. In order to take into account the determination structure, we represent intraterm relations in such a way that the arrow points from the determining entity to the determined entity (Figure 9).

PLACE ⇒ DETERMINED ENTITY

DETERMINING ENTITY ⇒ PLACE

Figure 9. Representation of intraterm relations

We will first consider the case of an entity being determined by a spatial indication (PLACE – DETERMINED ENTITY, see Table 1). More specifically, for the PLACE we will differentiate between location, relative situation and origin. In the LOCATION – DETERMINED ENTITY relation (a), an entity is determined by the place where it is located or where it takes place. In terms like *decoración bajo barniz* or *Aufglasurmalerei* ('on glaze painting'), which contain a preposition other than the partitive *de*, the immediate constituents are 'decoración / bajo barniz' and 'Aufglasur / Malerei'. The place is therefore 'under the glaze' in the first case and 'on glaze' in the second. In contrast to the LOCATION – DETERMINED ENTITY relation, in the RELATIVE SITUATION – DETERMINED ENTITY relation, the determined element is situated by the determinant with reference to a third entity, which remains unnamed in the complex term. In our examples *cristalización superficicial* and *Oberstempel* (Table 1), the unnamed elements are 'glaze' and 'press.' In terms corresponding to the ORIGIN – DETERMINED ENTITY relation, an entity is determined by the place it comes from. The tables below give an overview of all the relations found for the different schemas, with examples of complex terms in Spanish and German along with explanatory paraphrases. The English translations of the terms' constituents and the explanatory paraphrases are based on the *Glossario europeo della ceramica* (1992).

Table 1. The PLACE – DETERMINED ENTITY relations

RELATIONS		Spanish and German terms	Literal translation of constituents → Paraphrase	
PLACE – DETERMINED ENTITY	a) LOCATION – DETERMINED ENTITY	*decoración bajo barniz*	decoration / under glaze	→ 'decoration (DETERMINED ENTITY) applied to the tile before glazing which will thus remain under the glaze (LOCATION)'
		Unterglasurmalerei	under glaze / decoration	
	b) RELATIVE SITUATION – DETERMINED ENTITY	*cristalización superficial*	crystallisation / superficial → 'crystallisation (DETERMINED ENTITY) that takes place on the surface (RELATIVE SITUATION) (of the glaze)'	
		Oberstempel	'the upper (RELATIVE SITUATION) tool (DETERMINED ENTITY) of the two tools that a press consists of'	
	c) ORIGIN – DETERMINED ENTITY	*vidriado de Bristol*	glaze / Bristol → 'type of glaze (DETERMINED ENTITY) that originally comes from Bristol (ORIGIN)'	
		Waidhaus-Feldspat	'feldspath (DETERMINED ENTITY) that comes from the area of Waidhaus (ORIGIN)'	

In the second case (DETERMINING ENTITY – PLACE, Table 2), we find terms designating a place that is determined by something that happens or exists there.

Table 2. The DETERMINING ENTITY – PLACE relation

DETERMINING ENTITY – PLACE	*zona de precalentamiento*	zone / pre-heating → 'zone where the tiles are heated up before firing'
	Prallfläche	collide / surface → 'a surface that particles collide with'

4.2 The part–whole schema

In our view of relational schemas, the part–whole schema belongs, together with the container schema, to the image-schematic models (see Section 3). The part–whole or meronymy relation has been dealt with extensively in lexical semantics (for example, Cruse 1986, 2000; Iris et al. 1988; Chaffin 1992; Saeed 1997; Moltmann 1997). Our classification of intraterm relations derived from the part–whole schema is largely based on these accounts.

As has been mentioned above, in the first place we have to establish a distinction between the relation WHOLE – PART, in which an entity is determined by the whole it belongs to, and the relation PART – WHOLE, which characterises an entity by naming one of its components.

WHOLE ⟺ PART

PART ⟺ WHOLE

Figure 10. WHOLE – PART and PART – WHOLE relations

Within these two types, we find more specific relations depending on the role of the PART with respect to the WHOLE. In the first place, let us consider the case of a PART determined by the WHOLE it belongs to (Table 3). The relation WHOLE – FUNCTIONAL COMPONENT (Iris et al. 1988: 272) is the prototypical meronymy relation based on the idea of a whole made up of distinct parts, each of which is essential for the functioning of the whole (for example *car – wheel*, *body – arm*, etc.). A slightly different relation is that of WHOLE – SYSTEMIC COMPONENT, considered a subtype of the first by Cruse (2000: 155). Here, the part is not located in a definite point of the whole but more or less spreads

Table 3. The WHOLE – PART relations

WHOLE – PART	a) WHOLE – FUNCTIONAL COMPONENT	*aleta de turbina*	blade / turbine → 'blade (FUNCTIONAL COMPONENT) that belongs to the turbine (WHOLE)'
		Mühlenfutter	mill / lining → 'lining (FUNCTIONAL COMPONENT) of the mill (WHOLE)'
	b) WHOLE – SYSTEMIC COMPONENT	*Kristallgitter*	crystal / lattice → 'lattice (SYSTEMIC COMPONENT) that constitutes the inner structure of a crystal (WHOLE)'
		matriz vítrea	matrix / vitreous → 'matrix (SYSTEMIC COMPONENT) that makes up the microstructure of a vitreous body (WHOLE)'

across it, as in Cruse's example of a *body* (WHOLE) and its *bones* or *nerves* (SYSTEMIC COMPONENTS).

In the second case, where a WHOLE is determined by one of its PARTS, the various subtypes of the relation again depend on the role that the part plays with respect to the whole (Table 4). The first relation, FUNCTIONAL COMPONENT – WHOLE, is the inverse of the relation WHOLE – FUNCTIONAL COMPONENT. Secondly, if the whole is made up of discernible parts which are functionally the same, we can speak of the relation between a MEMBER and the WHOLE. There are no Spanish examples of this relation in our corpus, however. In the relation MATERIAL – WHOLE, an entity is determined by the material it is composed of. This is the only homeomeronymic PART – WHOLE relationship. These are characterised by the fact that the part is "[…] the same kind of thing as the whole" (Chaffin 1992: 264). A similar relation is that of ESSENTIAL COMPONENT – WHOLE, in which the determining element is not the only material the whole is composed of but an important component that characterises it.

Table 4. The PART – WHOLE relations

12.2 PART – WHOLE	a) FUNCTIONAL COMPONENT – WHOLE	*horno de rodillos*	kiln / roller → 'kiln (WHOLE) that includes rollers for transporting the tiles (FUNCTIONAL COMPONENT)'
		Förderbandofen	conveyor belt / kiln → 'kiln (WHOLE) that includes a conveyor belt (FUNCTIONAL COMPONENT)'
	b) MEMBER – WHOLE	*Plattenband*	slab / line → 'conveyor belt (WHOLE) consisting of individual, articulated slabs (MEMBERS)'
	c) MATERIAL – WHOLE	*bola de acero*	ball / steel → 'ball (WHOLE) consisting of steel (MATERIAL)'
		Steinzeugfliese	stoneware / tile → 'tile (WHOLE) consisting of stoneware (MATERIAL)'
	d) ESSENTIAL COMPONENT – WHOLE	*arcilla ferruginosa*	clay / ferrogenous → 'clay (WHOLE) which is characterised by the presence of iron (ESSENTIAL COMPONENT)'
		Feldspatmineral	feldspath / mineral → 'a mineral (WHOLE) which is characterised by its content of feldspath (ESSENTIAL COMPONENT)'

5. Conclusions

In this paper, we have presented a tool for representing and classifying the semantic relations that can hold between the constituents of complex terms. The reason for developing this methodology — and not just an ad-hoc classification for the subject-field under analysis — was the desire to provide a flexible tool to be used for the classification of semantic relations in various contexts, which, in turn, will make it easier to compare classifications from different fields or languages. If we are to classify terms from other special languages according to the same methodology, this will most certainly lead to different subdivisions for each schema with different specific relations. Additionally, these classifications might include relations in those schemas for which no specific relations have been found in this field, such as the position schema. In the fields of Law or Medicine, for example, the existence of terms combining an OWNER and a POSSESSED ENTITY seems at least plausible.

Qualitative and quantitative studies of complex terms based on this proposal will yield valuable information on the semantic make-up of the terminology of a given field and language. Knowing which schemas or relations are the most productive — and which are not — can be useful for terminographers, especially in a contrastive context. However, the main application of analyses of this kind is probably to be seen in the area of specialised translation, where translators frequently have to resort to creating new terms in the target language. In such a situation, the translator's confidence in her terminological decisions will be increased if these decisions are based on the knowledge of subject matter and of linguistic conventions in the field — including the semantic patterns of complex terms.

Notes

1. I would like to thank two anonymous reviewers for their valuable comments on an earlier version of this paper.

2. We provide a literal English translation of the elements combined in the German or Spanish complex terms. The slash is used to mark the binary structure (separating the term's immediate constituents). This is important for terms consisting of more than two elements.

3. The existence of nominal compounds with more than two constituents that are not reducible to a binary structure has been controversially discussed for German (Neuß 1981; Ortner and Ortner 1984; Sternkopf 1987; Meinecke 1991). There seems to be a consensus, however, in that this phenomenon is not relevant for technical terms, which is also confirmed by our data.

4. For general language, a type of compound has been described in which both constituents have the same status (coordinating compounds or *dvandva*). We have not encountered this type of compound in analyses of technical terms. Also, some authors explicitly refuse the interpretation of some verb-verb compounds as coordinating (Schütze 1976; Spiegel 1979).

5. Following Dik (1989), the agent is defined as "the entity controlling an action." In the field of industrial manufacturing, most actions are not performed by human beings but by inanimate entities (machines) that carry out the actions for the person who has programmed them.

6. According to Lakoff (1987), there is a fourth type of model, the metonymic model. We do not include a metonymic relational schema because metonymy consists of the substitution of one concept for another in discourse, for example naming a PART instead of the WHOLE. A metonymic projection is based on a semantic relation between two concepts, but it does not constitute a relation itself.

7. The results presented here are based on a contrastive analysis of the semantic relations of complex ceramics terms in German and Spanish, which was carried out as part of a larger research project (Alcina Caudet 2001; Civera García 2002), financed by Caixa Castelló/Bancaixa (P1A98–12) and Generalitat Valenciana (GV00-143-9). A detailed description of the corpus and a complete account of the types and frequencies of relations in both languages can be found in Oster (2005: 115–121, 197–209).

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