Information Categories in a Learner's Glossary Entry

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Abstract. Three types of information categories are proposed in a learner's glossary entry: conceptual, lexical and pragmatic. The glossary is envisaged as a knowledge-oriented terminological collection which provides quick access to the conceptual structure of a narrow domain, the head terms functioning in it, their definitions, collocations, translations and contextual use. The conceptual information is identified by analyzing the conceptual relations using a classification scheme of the general aspects of the basic concept (top term). The top-down procedure continues with establishing the system-structuring characteristics with possible graphic representation of types. The lexical information refers to terminological collocations identified by a lexico-semantic analysis. The pragmatic information is provided by corpus-extracted contexts and translation equivalents specified by a systematicity-based terminological contrastive analysis. A model is proposed for organizing the data obtained in a learner's glossary entry. It is concluded that the proposed model allows maximum concentration of terminological knowledge applicable in technical translation.

Keywords: learner's glossary; conceptual information categories; lexical information categories; pragmatic information categories; systematicity-based terminological contrastive analysis;

1 Introduction

Modern Terminology is an interdisciplinary field of study and practice closely related to the latest achievements in linguistics, information science and computing. Terminologists nowadays rely heavily on large machine-readable corpora and software tools which are capable of processing those corpora to extract terminological data used in terminology research and terminographic projects. The activity of gathering and ordering such data is getting more knowledge-oriented due to the increasing need of translators and other users of terminology services for knowledge-based mono- or multilingual information sources in a knowledge-based global economy. This tendency has resulted in developing large-scale terminology projects involving research teams of terminologists, ontologists and subject specialists for designing rich terminological knowledge bases. At the same time most universities in the world where languages for specific purposes are taught cannot afford to support the implementation of such projects. Moreover, when performing a specific translation assignment such as conference interpreting or translating a text in a narrow domain, technical translators actually need quick access to a small-scale bilingual terminographic source in printed or computerised form which can help them get some general knowledge of the subdomain in question and the special language used to express it in the respective target language.

The aim of this paper is to present a methodology for compiling a learner's glossary based on 30-40 narrow-domain head terms, which can be defined as a knowledge-based terminological collection providing quick access to the conceptual structure of that domain, the relationships between the terminological units in it as well as their combinatorial capacities and communicative use. The focus is on the microstructure of the proposed glossary realized through the information categories represented in the glossary entry which can be grouped in three major types: conceptual, lexical and pragmatic. A methodology is proposed for providing and organizing terminological data into those categories by making use of conceptual, lexico-semantic and systematicity-based contrastive analyses. A knowledge-oriented model of a learner's glossary entry is constructed based on the analytical data obtained.

2 Conceptual Analysis for Identifying Terminological Relations

One basic problem modern terminologists have to solve is how to search for information about terms for various terminographic purposes. Terminological data involve linguistic information about the terms, conceptual information referring to conceptual relations between terms and pragmatic information concerning the use of terms in contexts. Of particular interest are the terminological relations that have always been a major concern of modern terminologists and terminographers. Such relations also find

application in information retrieval and knowledge representation. Here I need to differentiate between the terms 'terminological relation/ships', 'conceptual relation/ships' and 'semantic relation/ships'. While agreeing with L'Homme and Marshman [1] that most authors use them as synonyms, in view of the terminographic project I present and the two types of analyses (conceptual and lexico-semantic) I deem necessary for capturing the broad variety of relations holding between terms, I assume that the term 'terminological relations' is superordinate to the terms 'conceptual relations' and 'lexico-semantic relations', the latter two being co-ordinate terms.

After extracting the terminological data from a textual corpus, the final list of terms to enter a learner's glossary can be specified by analysing the *conceptual relations* between the candidate terms using available reference materials and term definitions. These sources can also be used to identify some additional terms worth including in the glossary which are related hyponymically or meronymically to the head terms but for some reason do not occur among the automatically extracted terms. In this way a reliable set of narrower terms (types) can be provided as well as other terms expressing concepts that enter into partitive, functional, causal etc. relations to the key concepts.

The terms pertaining to a given subject field, subfield or even a topic within that subfield (cf. the *concrete* topic within the subfield of 'building materials' as part of the field of Civil Engineering) are characterized by both internal and external systematicity [2], the first type relating to the internal structuring of the terms in a terminological system and the second one to the communicative function of that system. A good terminographic project is necessarily based on a careful analysis of the internal (inherent) systematicity of the set of terms envisaged as entries in the respective terminological collection. Different terminologists propose different models for describing that systematicity. For example, the representatives of the traditional Vienna School of Terminology focus primarily on taxonomic and meronymic relationships [3] and are often criticized by proponents of alternative approaches for overlooking the multifaceted and multidimensional nature of terms whose relationships can also be described by using linguistic models, i.e. within lexico-semantic frameworks. However, I consider the conceptual analysis to be indispensable for structuring terminologies which can lay a solid foundation for identifying the proper entries for any type of terminological collection.

A conceptual analysis of terms for terminographic purposes should start with adopting a certain typology of conceptual relationships. This is not a very easy task since a large variety of typologies have already been proposed. For example, Felber [3] presents the following basic types of relationships (I do not present the subtypes):

1. Logical relationships
2. Ontological relationships
3. Relationships of effect

A similar typology is proposed by Cabré [4] but she distinguishes between only two main types of relationships, viz. logical and ontological. An interesting point in this typology is the further subdivision of the two types into subtypes according to logical criteria. The basis for a logical relationship between two concepts, for example, is the fact that they share one or more characteristics. When a concept has at least one more characteristic in addition to the characteristics of another concept, then the first concept is specific in relation to the second which, in turn, is generic in relation to the first one. In this case we have logical subordination. If two specific concepts are subordinated to the same generic concept, then we have logical coordination between two specific concepts. Coordination and subordination put together constitute the hierarchical structure of a subject field. On the other hand, ontological relations are not based on the similarity between concepts but on the proximity of objects to each other in the real world. These relations are further subdivided into coordination (whole-part) and chain (cause-effect) relationships.

Another interesting and consistent typology of systematic relations between terms is proposed by Popova [2]. She postulates two types of systematicity (scheme of relations) among terms: implicational and classificational. The former consists of two subtypes, viz. partitive/meronymic, i.e. whole-part relations and associative, i.e. relations of contiguity between entities participating in a real situation semantically represented as a predicative 'scene' (Fillmore's frames) where referents perform semantic 'roles' (agent, object, result, purpose, etc.) assigned by the predicate. A similar actantial structure, but based on a different theory, will be used in the lexico-semantic analysis described in the next section. For the purposes of the glossary envisaged I adopt Sager's classification of conceptual relations most frequently used in terminology involving generic, meronymic and complex relations [5]:

1. *Generic (hyperonymic and hyponymic) relationships* which establish a hierarchical order; a broader (generic) concept is superordinate to the narrower (specific) concept(s) and, conversely, the respective narrower concept is subordinate to the generic concept. It is important to note here that in certain cases it is necessary to indicate the criterion by which types have been declared. Such type indicators are known in information science as 'facets'. For example, *building materials* can be classified *by properties*: ceramics, composites, plasticizers, etc.; or *by function*: abrasives, adhesives, coatings, insulating materials, etc.

2. *Meronymic/partitive relationships* also referred to as 'whole-part' relationships which indicate the connection between concepts consisting of more than one part and their constituent parts. For example, *cement* is a fundamental ingredient in *concrete*.

3. *Complex relationships* such as: cause-effect; material-product; material-property; material-state; process-product; process-instrument; process-method; process-patient; phenomenon-measurement; object-counteragent; object-container; object-material; object-quality; object-operation; object-characteristic; object-form; activity-place. For example, *aggregate*, *cement* and *water* are mixed (process) to produce *concrete* (product).

As a matter of fact every system of terminological units is structured around a top term designating a 'seed concept' from which all other terms in the system stem through complex branching of its characteristics in a certain hierarchical order. Hence, a conceptual analysis of the top term can be expected to yield the basic candidate terms to enter a glossary or any other terminological collection envisaged to cover that topic. Since concepts consist of characteristics, the analysis of the conceptual structure of a term should involve specification of these characteristics. The latter are extracted by applying a simplified procedure for identifying concept characteristics in terminological definitions consisting of three steps:

Step 1: Developing a classification scheme of the general aspects of the basic concept. For example, with the help of subject experts these aspects for the building material *concrete* were reduced to *types, composition, properties, technology* and *use*.

Step 2: Presenting general aspects as deep predications: Concrete *is a type of* X (genus predication); Concrete *is characterized by* TYPES, COMPOSITION, PROPERTIES, TECHNOLOGY and USE (species predications).

Step 3: Matching deep predications to the linguistic structure of definitions. In other words, the species characteristics are identified by the five aspects specified above and presented as generalized (from all available definitions) characteristics arranged in a hierarchical order.

In fact, the generalized characteristics represent what can be termed 'system-structuring characteristics', namely, genus and species characteristics. For example, the genus characteristic for *concrete* is *composite building material*. Examples of generalized species characteristics are:

1. Types (hyponyms)
   - *aerated concrete*
   - *cast-in-place concrete*
   - *freshly mixed concrete*
   - *precast concrete*
   - *prestressed concrete*
   - *reinforced concrete*

2. Composition (meronyms):
   - *cement binder*
   - *aggregate*
   - *admixture*
   - *additive*

The other types of generalized species characteristics are exemplified in the learner's glossary entry model presented in section 5 below.

3 Lexico-Semantic Analysis for Term Collocation Identification

In section 2 above I tried to show how a conceptual analysis can be applied for identifying the candidate entry terms for a provisional English-Bulgarian Learner's Glossary of Concrete Terms and the narrower terms within these entries. It is a well-known fact that translators of technical texts very often encounter difficulties when translating not the terms themselves but the words they usually co-occur, i.e. their collocates. In fact, terminological collocations can justifiably be considered terminological knowledge items representing some kind of conceptual "scenes". In other words, terminological collocations could be interpreted as concept combinations, i.e. knowledge items which can be subjected to some categorization/classification (e.g. *concrete*: mixed, placed, compacted, finished, cured and protected – stages in *concrete manufacturing*).This is why I have decided to include term collocations as an information category in our knowledge-oriented glossary. An approach that is appropriate for capturing collocational information on the entries of the glossary in question is the *lexico-semantic approach to terminology structuring* whose theoretical and methodological premises I will present below.

The theoretical basis for the lexico-semantic approach to structuring terminological data for terminographic purposes is provided by the Explanatory and Combinatorial Lexicology (henceforth ECL) [6] which is the lexicological component of the Meaning-Text Theory. This theory proposes a formalized model of natural language, a Meaning Text Model representing a system of rules which simulate the linguistic behaviour of humans. That model is designed to perform the transition from meanings in general (any information/content a speaker transmits by using natural language) to texts (physical manifestation of speech) and vice versa. The ECL, in turn, proposes an apparatus, namely, lexical functions (henceforth LFs) for capturing semantic relations between lexical units. LFs are a means for a systematic description of the so-called "institutionalized" lexical relations. Some simple examples of institutionalized lexical relations are those between *attention* and *pay*, *wolves* and *pack*, etc. From our *concrete* terminological microsystem we can provide the following examples: *concrete* and *mix*, *concrete* and *set*, *concrete* and *harden*, *concrete* and *batch*, etc. LFs are based on de Saussure's dichotomy of paradigmatic vs. syntagmatic relations. Paradigmatic relations can be defined as all contrast and substitution relations holding between lexical units in specific contexts. Syntagmatic relations are relations holding between lexical units that can co-occur, i.e. appear together in the same phrase or clause. Mel'čuk [6] explains that the term 'function' in the theory is used in its mathematical sense $f(x) = y$ where f is the function, x is the argument and y is the value expressed by the function when applied to a given argument.

There is no doubt that this theoretical framework has had and will have important repercussions for a broad variety of lexicological endeavours. For the purposes of the particular project envisaged I am interested in the extent to which these theoretical assumptions can be used for analysing terminological data for terminographic purposes. A number of terminologists have already explored these possibilities and proposed various adaptations of the ECL to the specificity of terminological units. For example, L'Homme [7], comparing the two different approaches to terminology, viz. conceptual and the lexico-semantic, points out their advantages and shortcomings. She argues that truly conceptual approaches do not allow a flexible integration of terms and relationships between terms. In contrast, lexico-semantic approaches are more compatible with data gathered from corpora. For the lexico-semantic analysis of the computer term 'program' L'Homme applies lexical functions to formalize the following relationships 'program' enters in:

- synonym: **Syn** ($program_1$) = computer ~ ;
- agent of program: $\mathbf{S_1}$ ($program_1$) = programmer;
- create a program: $\mathbf{CauseFunc}_0$ ($program_1$) = create [DET ~], write [DET ~];
- cause a program to function: $\mathbf{CauseFact}_0$ ($program_1$) = execute [DET ~];
- the program stops functioning: $\mathbf{FinFact}_0$ ($program_1$) = [DET ~] ends, [DET ~] terminates;

In my opinion, this analytical procedure shows clearly two disadvantages of that approach. On the one hand, the LF notation is very complicated and will obviously have to be simplified in order to be conveniently applied to the analysis of terminological items. On the other hand, the specificity of the terminological system may require the postulation of new specific lexical functions that have not been considered in the ECL. For example, there is no LF and notation, respectively, for the so-called 'self-running natural processes' expressed by verbs such as 'set', 'harden', 'bleed' which collocate with our top term *concrete* (see below).

Therefore, for the lexico-semantic analysis of our corpus in view of extracting and consequently presenting useful collocations in the learner's glossary entries, I will use a methodology which is generally based on Frame Semantics and uses semantic/actantial roles. L'Homme and Bae [8] propose a lexico-semantic analysis of the actantial structures of predicative terms (verbs). The procedure is exemplified by representing the term *browse* in a tabular form (the original examples are in French):

Table 1

AGENT	LOCATION	INSTRUMENT
User	Internet	Browser

As can be seen in Table 1, the actantial structure gives the position of actants and explains them in terms of actantial roles.

I will follow a similar procedure to identify the verb collocations of the head terms *cement* and *concrete*, leaving aside adjectival (A+T) collocations that I have already identified by the conceptual analysis described in the previous section since most of these actually designate generic or partitive relations.

The special collocations with the head terms *concrete* and *cement* have been extracted from contexts provided by the term extractor TermoStat[1]. The specialised lexical combinations with these terms analysed below are selected because they have specialised meaning within the field of construction, e.g. the meaning of 'cure' (make a person or animal healthy again) is altered within the specific combination 'concrete is cured'. Two types of *activities* can be captured by the methodology described above, namely, *self-running natural processes* during *concrete* manufacturing and *actions* performed on *cement* and *concrete*. The results of the analysis are presented in Tables 2 and 3.

Table 2

Natural self-running process	**Object**
Bleeds Cures Sets Hardens	Concrete

Table 3

Agent	**Action (on)**	**Object**
Builder	places compacts levels/ screeds floats trowels cures sprays	Concrete
Builder	mixes	Cement, Water, Aggregate

The analytical results confirm L'Homme's conclusion [9] that "semantic classes in a given syntactic position could be used to discover typical 'frames" thus implying the usefulness of resorting to Frame Semantics [10] when classifying specialized lexical units "in a way that enables us to make generalizations about them" [9]. In other words, a terminographer doing a research into a terminological system or subsystem with the view to identifying collocations is very likely to be forced by circumstances to 'discover' (definitely with the help of specialists) new actantial structures typical of the particular specialised discourse.

[1] A tool for automatic acquisition of terms and their contextual use, designed by Patrick Drouin (OLST, UdeM) that exploits a method of opposition in specialized and non-specialized corpus for the identification of terms.

4 Systematicity-Based Terminological Contrastive Analysis

As already mentioned, the pragmatic data constitute a very important part of the overall learner's glossary entry structure. They can be expressed by contexts for head terms whose selection does not require special analysis. What should be subjected to contrastive analysis are pairs of translation equivalents in cases of inappropriate ones according to both semantic and structural criteria. Since the solutions to such translation problems almost always require expert advice, I subsume the results of that kind of procedure under the more general notion 'pragmatic data'. I propose a systematicity-based terminological contrastive analysis for term translation problems which is described below.

I assume that the terms and terminological collocations to be contrasted are translation pairs expressing the same concepts. Then the differences in the source language and target language should be sought in the particular language-specific choice of lexical items and structural patterns. In this sense I can propose the following two-step model for contrasting domain-specific terms and their target language equivalents, which consists of two levels of analysis, viz. the level of common conceptual structure and the level of interlingual asymmetry:

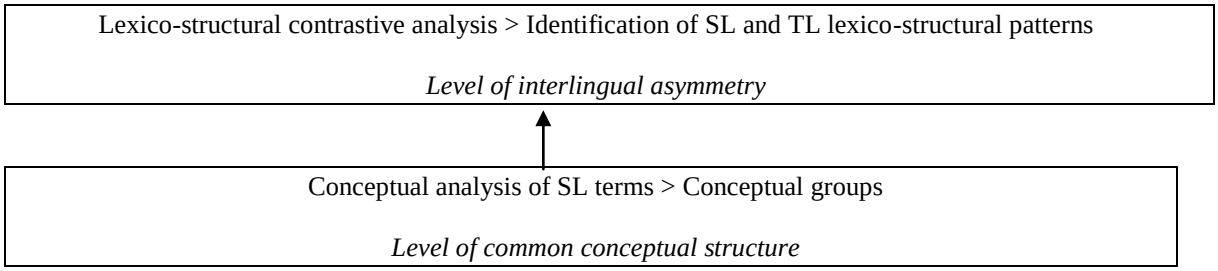

Fig. 1 Model for Terminological Contrastive Analysis

The procedural steps I suggest for contrasting source language and target language terminological items in a special subdomain are as follows:

Step 1 Grouping the glossary items into conceptual groups by analysing their definitions and/or consulting an expert.

Step 2 Identifying the conceptual groups with their corresponding term sets containing translation-problem SL-TL term/term collocation pairs (in our particular case English-Bulgarian term/term collocation pairs).

Step 3 Determining the lexico-structural patterns of the identified SL and TL term sets.

Step 4 Comparing the linguistic systematicity of the term/term collocation sets in the source and target language.

Step 5 Proposing solutions to term/term collocation translation problems based on systematicity and pragmatic criteria.

The lexico-structural terminological contrastive analysis is performed individually for each translation-problem term/term collocation pair. The analysis is not purely structural but lexico-structural because I make use of the so-called semantic roles (frames) in the lexico-structural patterns in order to explicate the semantic relations between the lexemes in the terminological collocations. The analytical procedure is exemplified in the following case study.

Case Study: **Float Concrete → Trowel Concrete**

Problem: nonexistent Bulgarian equivalent

Analysis: An interesting example of what I would call *cultural domain specificity* (a combination of cultural specificity and domain specificity) is the case with two *concrete* terminological verb collocations which according to the existing specialised English-Bulgarian dictionaries are to be translated as absolute

synonyms. When putting together similar term collocations to create a conceptual group with the respective term collocation sets and translation equivalents (see Steps 1 and 2 above), with the help of the expert I arrived at the following sequence of *stages of concrete manufacturing* performed as actions by the builder:

1. Concrete is placed – бетонът се[2] полага/betonat se polaga
2. Concrete is compacted – бетонът се уплътнява/betonat se uplatnyava
3. Concrete is levelled/screeded – бетонът се подравнява/betonat se podravnyava
4. Concrete is floated – *бетонът се заглажда (?)/betonat se zaglazhda*?
5. Concrete is trowelled – *бетонът се заглажда (?)/betonat se zaglazhda?*
6. Concrete is cured – бетонът се съхранява/betonat se sahranyava

To check whether the English verbs in the *concrete* context have the same semantics, I applied a pragmatic approach to solving the problem by first searching the Internet for a context where both terms are encountered and found the following text:

> *Floating* produces a relatively even, but slightly *rough*, texture that has good slip resistance and is frequently used as a final finish for exterior slabs. If a smooth, hard, dense surface is required, *floating is followed by steel trowelling*[3].

From the context it becomes clear that if we subsume the two actions, *floating* and *trowelling*, under the generic action *smoothing*, then the distinction between the two should be sought in the manner of action which in *floating* could be defined as *incomplete* compared with the *complete* action in *trowelling*. Hence, the lexico-structural patterns of the English term collocations could be represented in the following way:

4. Noun (patient) + Verb (event: incomplete action)

5. Noun (patient) + Verb (event: complete action)

I reported the results back to the expert who advised me to add an adverb after each verb thus distinguishing between the two actions, placing them in a sequence rather than equating them (see solution below). This is a good example of how even in a very narrow domain the knowledge continuum can be segmented differently by different language cultures.

Proposed solution to problem:

4. Concrete is floated – бетонът се заглажда *грубо* (*lit.* concrete is smoothed *roughly*)

5. Concrete is trowelled – бетонът се заглажда *фино* (*lit.* concrete is smoothed *finely*)

The lexico-structural patterns of the proposed Bulgarian term collocations correspond semantically, if not structurally, to their English counterparts:

4. Noun (patient) + Verb (action) + Adverb (manner of action: incomplete)

5. Noun (patient) + Verb (action) + Adverb (manner of action: complete)

The case study discussed above seems to support Sager's claim that terminological systematicity cannot be a fully reliable criterion for predicting term formation. However, the results I presented above prove that he is only partially right in stating the "limited usefulness" of "discovering regularities in term formation" [5]. As far as term translation strategies are concerned, that enterprise is definitely worth the effort.

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[2] The particle 'ce/se' here is used to denote a passive construction in Bulgarian.
[3] My emphasis

5 A Learner's Glossary Entry Model

It is generally assumed that the purpose of a dictionary or glossary will determine the entry layout designed to meet the needs of the specific type of potential users. Having that in mind, I propose the following *model of a learner's glossary entry*:

CONCRETE Target Language Equivalent/TLE

DEFINITION: A composite building material composed of coarse and fine aggregate[4] (sand, gravel, crushed rock, etc.) held together by a hardened paste of hydraulic cement and water with added admixtures, which is characterised by durability, high compressive strength and compaction, low water/cement ratio and workability and is used in building foundations, structural walls, columns, slabs, etc.

*E.g.: The composition of **concrete** is determined initially during mixing and finally during placing of fresh concrete. The type of structure being constructed as well as the method of construction determines how the concrete is placed and therefore also the composition of the concrete mix or mix design.*

CONCRETE TYPES

By strength:
Prestressed ~ TLE (pre-compressed using high-tensile wires)
Post-tensioned ~ TLE (steel tendons tensioned after the concrete has been cast)
By presence/absence of reinforcement:
Plain/ordinary ~ TLE
Reinforced ~ TLE
By weight:
Lightweight ~ TLE (density is less than normal concrete)
Heavyweight ~ TLE
By location of casting:
Precast ~ TLE (cast in a reusable form, cured and transported)
Cast/poured-in-place/situ ~ TLE (placed in a plastic state)
Other types:
Aerated ~ TLE (formed using gas-forming admixtures)
Air-entrained ~ TLE (contains air bubbles to resist freezing)
Cellular ~ TLE (low density, holds trapped air)

Note 1: The list of types is not exhaustive and at the discretion of the compiler and/or expert consultant, it can be expanded.

[4] Underlined terms will appear as head terms in the glossary

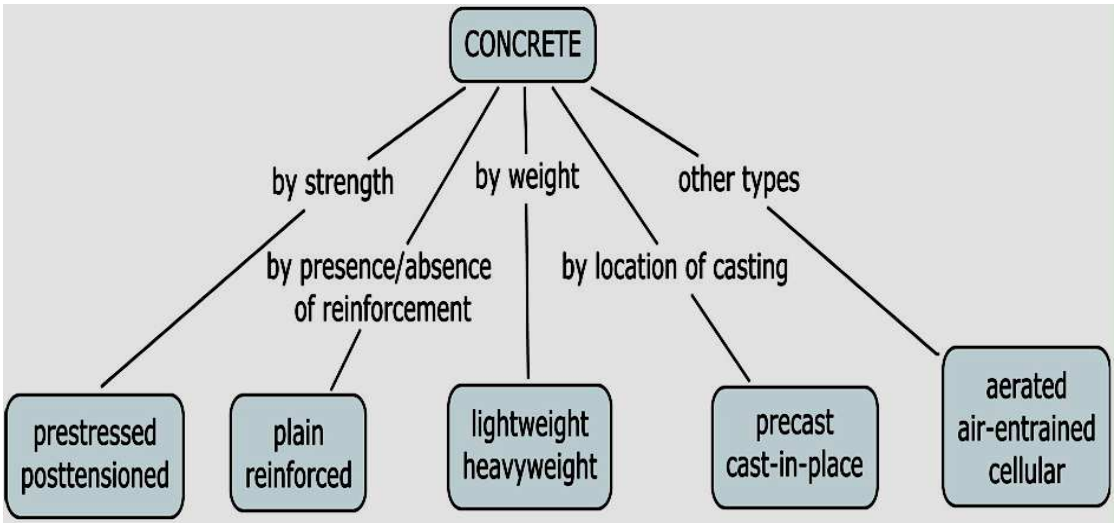

Fig. 3 Graphic representation of *concrete* types

CONCRETE TECHNOLOGY

Actions:

(1) **~ *is placed/poured/cast/laid*** TLE

Variants: ***placing/placement(s)/pouring*** – TLE

E.g. *(a) Place concrete as near to its final position as possible; (b) Prestressed concrete requires the application of a load to the steel before concrete placement.*

Note 2: The subsequent actions (2-compacted, 3-screeded, 4-floated, 5-trowelled and 6-cured) are represented in a similar way.

Processes:

(1) **~ bleeds** TLE

E.g.: *After it is placed, concrete bleeds, i.e. the solids settle down and the mix water rises up to the surface.*

Note 3: The subsequent processes (2-cures, 3-sets, 4-hardens) are represented in a similar way.

Note 4: The following cause-effect and other complex relations are represented as contexts or multiword terms which exemplify them:

Cause-effect relations:

~ curing *aids* hydration; ~ consolidation *eliminates* concrete voids; ~ compaction *eliminates* flaws; air-entraining admixture *increases* ~ durability; plasticizers *increase* ~ plasticity, etc.

Complex relations:

1. material – quantitative measure → *concrete batch* TLE
2. material – mold for pouring → *concrete formwork* TLE
3. material – preparation device *concrete mixer* TLE
4. material – pouring device *concrete pump* TLE

The Concrete Use terminological collocations do not need definitions but just TLE. They should be subdivided into concrete members (~ slab, ~beam, ~ column, etc) and concrete products (~ wall, ~ foundation; ~pavement, etc).

The single-word terms designating Constituents and Properties should be represented under the respective headings (aspects) and should be provided with definitions and contexts in their capacity as head terms. In case they have hyponyms (e.g. *strength → compressive ~, tensile ~, etc.)*, they should form a nest within the head term entry, each provided with a short definition, e.g.:

Strength TLE (the capacity of an object or substance to withstand great force or pressure)
- **compressive ~** TLE (the resistance of a material to breaking under compression)

When implementing the small-scale terminographic project (see step 4 above) which I have termed *a learner's glossary*, a compiler should bear in mind that the set of terminological knowledge items entering the glossary is to be considered an open system. In other words, the number of vocabulary items and terminological relations may vary according to the needs of the respective users but should not go beyond the boundaries of the conceptual structure of the special subdomain treated.

6 Conclusion

A methodology is proposed for a learner's glossary which provides quick access to the conceptual relations in a subdomain, the head terms with their collocations as well as pragmatic information including contexts and translation equivalents. The terminological data are specified and organized by performing conceptual, lexico-semantic and systematicity-based contrastive analyses. The analytical data obtained are used to construct a knowledge-oriented model of a learner's glossary entry. The model is created by representation and further subdivision of basic conceptual categories, addition of contexts exemplifying the usage of individual terms and explicating some terminological relations. It is emphasized that the learner's glossary entry model allows maximum concentration of terminological knowledge. And last but not least, some major relationships are graphically represented by using the knowledge organization semantic tool 'concept maps'.

Finally, the applicability of the methodology I propose for extracting and organizing terminological knowledge items in a subdomain should be emphasized. The methodology has been tested with translation and ESP students. The test results in the form of skilfully made course assignments in the form of *bilingual mini term banks* are quite encouraging and providing solid grounds for the introduction of that terminological practice in the LSP and technical translation classrooms.

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