

RESEARCH ARTICLE

Methodological Foundations of Studying Terminological Metaphor

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Abstract

The article sets out the methodological foundations for the study of terminological metaphors. Classical terminology treated metaphor as a defect that threatened the univocity of the term, while cognitive linguistics and sociocognitive terminology have shown that metaphor participates directly in the formation of specialised concepts. The article describes five components of a research procedure, namely the theoretical premises, the unit of analysis, the identification of metaphorical use, the reconstruction of conceptual mappings and the criteria of classification. Particular attention is given to the adaptation of general metaphor identification procedures to the material of special languages and to the requirements of verification.

KEY WORDS

Terminological metaphor, terminology, conceptual metaphor theory, sociocognitive terminology, metaphor identification, source domain, corpus analysis, language for special purposes.

INTRODUCTION

Special vocabularies are commonly regarded as the most rational part of language. A term is expected to name one concept precisely and to remain free from imagery and evaluation. The actual material of terminologies does not support this expectation. Computer science speaks of a virus, a bug, a mouse and a memory leak, economics speaks of a bubble, a bottleneck and a frozen asset, and biology speaks of gene expression and of a genetic code. These units are not decorative additions to a neutral nomenclature. They are the working names of the concepts themselves.

The theoretical position on this question has changed considerably. The classical school of terminology founded by Wüster required a one to one correspondence between concept and term, so any figurative motivation was seen as an obstacle to standardisation. Conceptual metaphor theory [9] demonstrated instead that metaphor is a mechanism of thought and that abstract domains are regularly understood through concrete ones. Temmerman applied this insight to

terminology and showed that metaphorical models are productive in the formation of scientific knowledge, particularly in the life sciences.

The problem which motivates the present article is methodological rather than theoretical. Researchers largely agree that terminological metaphor exists and matters, yet they use very different procedures to identify and classify it, and the results of such studies are consequently difficult to compare. The aim of the research is to describe the methodological foundations of the field in a systematic way. The article sets out the theoretical premises of the analysis, defines the unit of analysis, adapts the existing identification procedures to specialised material, and formulates the criteria of classification and verification.

LITERATURE REVIEW

Lakoff and Johnson [9] provided the theoretical basis of the modern approach. They argued that metaphor is not a figure

of speech but a systematic mapping between conceptual domains, and that such mappings are visible in ordinary language rather than in poetry alone. For terminology their most relevant claim concerns the structuring role of these mappings, since a source domain supplies not one name but a whole network of related expressions. Kövecses [7] later formulated this apparatus as a working method and specified how source and target domains, mappings and entailments can be described. In a subsequent study he examined cultural variation and showed that the same target concept may attract different source domains in different linguistic communities [8].

Boyd [1] approached the question from the philosophy of science and introduced the notion of theory constitutive metaphor. He argued that certain scientific metaphors are not expository devices but instruments of research, because they generate hypotheses that would not otherwise be formulated. The computational metaphor of the mind and the informational metaphor in genetics serve as his principal examples. This distinction between explanatory and theory constitutive metaphor is methodologically important, since the two types require different kinds of evidence.

Temmerman reconsidered the foundations of terminology in the light of cognitive semantics. She criticised the requirement of univocity as descriptively inadequate and demonstrated that many scientific categories have prototype structure and fuzzy boundaries. Her analysis of the terminology of the life sciences showed that metaphorical models organise whole clusters of terms and that they develop historically together with the underlying theory. Cabré [2] and Sager [11] contributed the communicative dimension, emphasising that terms function in texts and in professional situations rather than in isolated lists. Faber [5] developed the frame based approach, in which a term is described through its position in a conceptual frame of events and participants.

The procedural side of metaphor research was formalised by the Pragglejaz Group [10], which proposed a replicable method for identifying metaphorically used words in discourse. The procedure compares the contextual meaning of a lexical unit with its more basic meaning and marks the unit as metaphorical when the two meanings contrast yet can be understood in comparison. Steen and his colleagues [13] refined this method and added the categories of direct and implicit metaphor together with the treatment of metaphor signals. Their work supplies the field with explicit decision

rules and with measurable intercoder reliability.

Corpus oriented studies established the third methodological component. Charteris-Black [4] combined qualitative interpretation with quantitative corpus evidence and showed how source domain vocabulary can be traced through frequency and collocation. Cameron [3] worked with spoken discourse and demonstrated that metaphor use is shaped by the immediate communicative task. Semino [12] provided a comprehensive account of metaphor across registers, including scientific and educational texts, while Gibbs [6] assembled the psycholinguistic evidence on how figurative expressions are actually processed. Taken together these studies indicate that a description of terminological metaphor requires textual, quantitative and experimental support.

METHODOLOGY

The present research is theoretical and methodological. It proceeds by the comparative analysis of existing procedures and by their testing on illustrative samples of terminology drawn from information technology, economics, medicine and linguistics. Three sources of evidence were used for each sample, namely general dictionaries for the basic meaning of the lexical unit, specialised dictionaries and standards for its terminological meaning, and contexts of actual professional use. The identification stage follows the procedure of the Pragglejaz Group [10] in the extended version of Steen and his colleagues [13], with modifications required by specialised material. The description of mappings follows Kövecses [7], and the terminological interpretation follows the sociocognitive framework of Temmerman.

DISCUSSION AND RESULTS

The analysis shows that a methodology of terminological metaphor must consist of five connected components. These are the theoretical premises, the unit of analysis, the identification procedure, the reconstruction of mappings and the system of classification. Verification requirements apply to each component. When any of them is left implicit, the study loses comparability, because different researchers then count different things as instances of the same phenomenon.

The first component concerns theoretical premises. Terminological metaphor is treated here as a cognitive instrument of concept formation rather than as a rhetorical ornament or a naming shortage. This premise has a direct methodological consequence for the treatment of conventionalised units. A term such as mouse or virus no

longer surprises the specialist, and it is often called a dead metaphor for that reason. The analysis of such units nevertheless remains legitimate, since the source domain continues to organise a whole family of related expressions. The computer mouse is accompanied by clicking, dragging and pointing, and a virus is accompanied by infection, quarantine and immunity. The productivity of the network, not the freshness of the individual image, is the evidence of an active model.

The second component is the unit of analysis. General metaphor research takes the lexical unit as its basic unit, but terminologies consist very largely of multiword units. Expressions such as greenhouse effect, tax haven, memory leak and language acquisition device function as single names of single concepts. The methodological decision adopted here is to take the term as the unit of terminological analysis while identifying metaphoricity at the level of its components. This makes it possible to distinguish fully metaphorical terms, in which the whole expression is transferred, from partially metaphorical terms, in which one component belongs to the source domain and another to the target domain. Terminological phrasemes and collocations of the type to launch a product or to freeze an account require the same treatment.

The third component is the identification procedure. The method of the Pragglejaz Group [10] compares the contextual meaning of a unit with its more basic meaning, where the basic meaning is the more concrete, body related or historically prior sense recorded in a general dictionary. Specialised material requires one modification of this step. The contextual meaning of a term must be established from a specialised dictionary, a standard or a textbook, since general dictionaries record specialised senses incompletely and inconsistently. The procedure therefore operates with two lexicographic sources at once, and the contrast is established between the general basic sense and the codified specialised sense [13]. Metaphor signals such as so called, a kind of and as it were are recorded separately, because they mark the stage at which a metaphorical name has not yet been accepted as a term.

The fourth component is the reconstruction of conceptual mappings. Individual metaphorical terms are grouped by source domain, and the correspondences between the elements of the two domains are then described explicitly [7]. The material examined here shows a limited and recurrent set

of source domains. The most productive are the human body and its illnesses, the family and kinship, war and competition, construction and architecture, movement along a path, the container, the machine and the plant. Each domain transfers a specific inferential structure. The illness domain brings with it the expectations of diagnosis, contagion, treatment and immunity, and the vocabulary of computer security follows those expectations closely. The reconstruction of the mapping is also the point at which the gaps of the model become visible, since a source domain always highlights some aspects of the target concept and hides others.

The fifth component is classification, and the analysis proposes four independent criteria. The first is the source domain, which yields the thematic grouping described above. The second is the degree of conventionalisation, which distinguishes occasional metaphorical nominations from codified terms recorded in standards. The third is structural type, which distinguishes simple, derived, compound and phrasal terms and allows the position of the metaphorical component to be specified. The fourth is function, which distinguishes nominative metaphor that simply supplies a name, didactic metaphor that explains a concept to learners, and theory constitutive metaphor that generates research hypotheses [1]. Keeping these criteria separate is essential, because a single term may be highly conventionalised and at the same time theory constitutive.

Corpus methods provide the quantitative support for all five components. A representative corpus of professional texts is required, and its composition should reflect the genres in which the terminology actually functions, including research articles, standards, manuals and popular expositions. Frequency analysis identifies the source domain lexemes that occur unusually often in the specialised corpus by comparison with a general reference corpus. Collocation and concordance analysis then shows whether these lexemes form a coherent network or occur in isolation [4]. Diachronic corpora add the dimension of term history and reveal the moment at which a metaphorical nomination becomes a codified term.

The comparative and translational dimension deserves separate treatment. The same specialised concept may be named through different source domains in different languages, and this asymmetry creates practical problems for translators and for the compilers of multilingual dictionaries [8]. Three situations can be distinguished. The metaphor may be preserved by calquing, it may be replaced by a different

image, or it may be lost in favour of a descriptive equivalent. The comparison of English terminology with Uzbek material is particularly instructive here, because much of the specialised vocabulary has been formed through borrowing and calquing within a short historical period.

The final methodological requirement is verification. Metaphor analysis relies to a considerable extent on the intuition of the analyst, and intuition alone does not distinguish a genuine model from an artefact of interpretation. Three controls reduce this risk. The first is independent coding of the same material by several analysts with a reported measure of agreement [13]. The second is the use of specialised lexicographic sources instead of the analyst's own judgement when the terminological meaning is established. The third is consultation with domain specialists, who can confirm whether a reconstructed mapping corresponds to the way practitioners actually reason. Psycholinguistic evidence on the processing of conventionalised figurative expressions offers a further external check [6].

CONCLUSION

The study of terminological metaphor requires an explicit and reproducible methodology rather than a general appeal to cognitive theory. The five components described in the article form such a methodology. Clear theoretical premises define the object, a defined unit of analysis makes counting possible, an adapted identification procedure with two lexicographic sources secures replicability, the reconstruction of mappings reveals the conceptual structure behind individual names, and independent classification criteria prevent the confusion of unrelated properties. Corpus evidence and verification through specialists give the results an empirical basis. The principal theoretical conclusion is that metaphor in terminology is a means of forming knowledge and not a deviation from terminological norms. Further research should apply this framework to the comparative study of English and Uzbek terminologies and should examine how the choice of source domain affects the way specialists and learners understand the concepts involved.

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