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Figurative thought, colour categorisation and vantage construal in scientific language ☆

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ABSTRACT

Research following Vantage Theory (VT) (MacLaury, 1992, 1995, 1997, 2002, 2003) has traditionally focused on general, and occasionally, domain-specific language (e.g. Anishchanka, 2010; Steinvall, 2002, 2011) for modelling colour categorisation, but not on specialised terminology in itself. This research analyses colour categories in the terminology of marine biology in English and Spanish. For this purpose, the study draws on principles from VT and (socio-)cognitive linguistics, including some general premises from cognitive psychology (e.g. Langacker, 1987; Kristiansen, 2008; Plümacher, 2007). Based on a corpus of academic articles and books, this work explores the semantic and cognitive basis of colour, and explains how vantage construal has a bearing on colour dimensions, such as hue, hue distribution, and brightness, when conceptualising and designating sea organisms and processes. The analysis of the terms revealed that figurative thought plays a pivotal role in the formation of specialised concepts through colour attribution both in English and Spanish. The influence of figurative thought is also shown to give rise to inter- and intralingual terminological variation.

1. Introduction

There is a large body of research that studies colour naming and categorisation to access and characterise human cognitive processes. In cognitive anthropology, Kay and colleagues (e.g. Berlin and Kay, 1969; Kay et al., 1991) pioneered modern colour term semantics, arguing against the relativism of post-Saussurean linguistics and for a pattern of universality grounded in basic colour terms. Vantage Theory (VT) (MacLaury, 1992, 1995, 1997, 2002, 2003) is currently one of the reference models. Although basically consistent with their foundational tenets, VT refines Berlin and Kay's approach to colour naming and mapping at the lexeme level.

For this reason, a significant number of studies are based on VT today. Particularly interesting are those that follow a usage-based perspective, contextualising the analysis of colour semantics by means of corpus description. For example, Steinvall (2002, 2011) analyses colour terms from the Bank of English corpus and from 19th century English travelogues, respectively; Anishchanka (2010) studies colour vantages in painting descriptions. More specifically, these studies shift the focus of analysis from purely denotational or decontextualised meanings of colour terms, which was the predominant trend in early studies (e.g. Brown and Lenneberg, 1954; Berlin and Kay, 1969), to aspects such as the attributive use of

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colours, relations of colour terms to other lexemes and the general status of one colour term in the context of the set of colour terms in a given language.

Current research also highlights and explores meaning extensions of colour as a common phenomenon, which had also been neglected in the past (Steinvall, 2002, p. 189). There are methodologically and theoretically well-grounded studies that discuss the combination of metaphor and colour from cognitivist (Ohtsuki, 2000; Galloway, 2007) and linguistic (Rakhilina, 2007; Niemeier, 2007; Philip, 2011) points of view. Conceptual colour metaphor/metonymy theory (Sandford, 2011) is the most recent model, which builds upon cognitive linguistic constructs, such as vantage points, embodiment, and categorisation to account for the connotation of figurative colour items.

However, to the best of my knowledge, there are no studies on the nature of colour terms in scientific discourse to provide insights into the conceptual and psychological rationale of figurative thought associated with colour perception and categorisation in specialised knowledge. Moreover, little attention has been given to the close relation between type modification and figurative use (Steinvall, 2002, p. 193). To fill this gap, this paper examines a set of figurative terms extracted from a corpus of academic journal articles on marine biology in English and Spanish. The study describes the semantic and cognitive underpinnings of complex terms that designate sea organisms by colour associations. For this purpose, premises from VT as well as general (Langacker 1987, 2000; Kristiansen, 2008) and specific (colour-oriented) (e.g. Plümacher, 2007) principles within (socio-)cognitive linguistics are followed.

The analysis follows a usage-based paradigm insofar as the terms under examination were extracted from texts in marine biology, and contextualised in this field of knowledge. As will be shown, this was crucial for the figurative meaning of the terms. By the same token, this study analyses an aspect of colour categories that is dependent on context: *characteristic referential range* (the different referents of a category across a range of contexts) (Lucy, 1997, p. 322).

Finally, in some cases the paper analyses terms in English and Spanish from a contrastive perspective. The results obtained provide evidence that inter-cultural regularities and differences can be identified by looking into the way colours are conceptualised and categorised in scientific language.

2. Materials and method

The data of the study were extracted from a bilingual corpus that was compiled for the purpose of this study from marine biology academic journals and books. The nature of this corpus ensures the analysis of authentic, that is, not artificially constructed examples. The corpus is made up of 4,588,968 tokens (2,279,105 in English and 2,309,863 in Spanish). Apart from the book *The 101 Best Saltwater Fishes*, which is also part of the corpus, Tables 1 and 2 list the English-language and Spanish-language journals used in this study, respectively. *Ciencias Marinas*, a bilingual journal that publishes English and Spanish research papers in all areas of marine science, was particularly useful to identify interlinguistic term pairs.

The Journal Citation Reports (JCR) website was found to be useful for the classification and quality evaluation of the journal articles. The JCR is an on-line service which provides a ranking of the most cited journals published by over 3000 publishers worldwide. Journals are ranked according to a citation index defined by the website itself. As for the Spanish-language journals, only three journals appeared on the list. The rest also meet quality standards. The journal *Boletín del Instituto Español de Oceanografía* is published by the Spanish Ministry of Science and Innovation. The other journals are published either on the *SciELO* (Scientific Electronic Library Online) or *Redalyc* (*Red de Revistas Científicas de América Latina, el Caribe, España y Portugal*) websites. These websites follow strict norms, guidelines, and selection criteria that guarantee the quality of the scientific journal articles that they host.[1]

The articles were converted into plain text *.txt* for their processing in *Wordsmith Tools*®, a lexical analysis software. The methodology of this study, which was applied in previous research both for qualitative and quantitative purposes (cf. Ureña and Faber, 2011a,b), consists of a set of highly productive strategies for the semi-automatic retrieval of figurative terms in marine biology. For the purpose of retrieving colour terms, two of these strategies were mostly used in this research (see Ureña and Faber, 2011a,b for the rest of strategies):

(i) searching for target domain vocabulary, including frequently occurring marine biology words, such as *fish/pez*, *shark/tiburón*, *coral*, *sea/(de) mar*, and *turtle/tortuga*, as well as common colour words, such as *green/verde*, *red/rojo*, *white/blanco*, and *yellow/amarillo*;
(ii) searching for taxonomic designations,[2] which were extracted from the checklists included in the academic articles consulted and from the co-text of figurative terms already identified.

Concordances revealed plenty of simple and complex terms. Indeed, as many as 74 figurative colour terms were retrieved by means of these techniques. Concordances of target domain words revealed phraseological units, including figurative colour terms, such as *olive ridley turtle*. Taxonomic designations are extremely productive markers for metaphorical terms both in

[1] The SciELO website's criteria for journal evaluation and selection can be accessed at http://www.scielo.org/php/level.php?lang=es&component=44&item=2.
[2] The taxonomic designation of a species is the Latin name in binomial nomenclature used by the scientific community to classify such a species into a specific taxon. The first and the second constituents of the binomial refer to the genus and the specific name, respectively. Both constituents must be written in italics (e.g. *Dicentrarchus labrax*).