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How basic is UNDERSTANDING IS SEEING when reasoning about knowledge?
Asymmetric uses of SIGHT metaphors in office hours' consultations in English as
academic lingua franca.*

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Abstract: Twenty-seven semi-guided conversations between lecturers and Spanish-speaking undergraduate students were recorded at five different universities in Europe where English is the medium of instruction. Examination of the metaphorical language used in these conversations revealed that SIGHT plays an important role in academic mentoring in English. Lecturers often frame their advice to undergraduate students in terms of what has been called “UNDERSTANDING IS SEEING”, on the face of it a somewhat unsurprising finding. If one takes it that the correlation between mental and visual activity is somehow “primary” (Grady, 1997; Lakoff & Johnson, 1999; Sweetser, 1991) then this way of reasoning about learning and knowledge should be common ground in conversations between English- and Spanish-speaking interlocutors. However, we found no such alignment between the two groups of participants in an academic setting. The Spanish speakers not only used words and terms associated with vision significantly less frequently than their English-speaking interlocutors, but also with different meanings. We explore these quantitative and qualitative differences in metaphorical uses of three of the terms used by all participants to talk about learning – *see*, *look* and *focus* – and conclude that, although the “UNDERSTANDING IS SEEING”

mapping might be available as a way of reasoning about learning and knowledge to people from different cultures, discourse practices influences how salient it is for different groups of speakers. In this regard, it appears to be culturally salient for English-speaking academics, but not necessarily so for speakers of other languages.

1. Introduction

It is well known that metaphor fulfils important ideational, interpersonal and textual functions in spoken academic discourse in English. Lecturers use metaphor to explain and evaluate concepts, organize their discourse, frame problems, or change topic (Beger, 2011; Corts & Pollio, 1999; Low, 2010; Low et al., 2008). In turn, the use of metaphorical language can prove quite challenging for international students studying at a university where English is the medium of instruction (Littlemore, 2001, 2003; Littlemore et al., 2011): it has been found that students whose first language (L1) is not English often misinterpret the metaphors their English-speaking lecturers use. However, this lack of alignment between meanings and understandings would, on the face of it, appear to be much less likely to occur when the linguistic metaphors lecturers employ realize conceptual mappings that motivate similar expressions in the students' first language (L1).

This would be the case of the metaphorical mapping variously expressed as “UNDERSTANDING IS SEEING” (Lakoff & Johnson, 1980), “THINKING IS PERCEIVING” (Lakoff & Johnson, 1999), “SEEING IS BELIEVING” [Dundes, 1972], “THINKING IS SEEING” (Danesi, 1990) or “PHYSICAL SIGHT = KNOWLEDGE, INTELECTION/ PHYSICAL VISION = MENTAL ‘VISION’” (Sweetser, 1991), for it appears to be a prime example of the type of metaphor that arises from the repeated experience of correlations between

sensorimotor functioning and subjective judgement, a kind of metaphorical mapping that is sometimes regarded as being at the heart of much of human cognition. The claim made about this kind of metaphor is, as Lakoff and Johnson (1999, p.555) put it, that “[s]ubjective experiences and judgements correlate in our everyday functioning with sensorimotor experiences so regularly that they become neurally linked”. Metaphors activate these neural connections and “permit the use of sensorimotor inference for abstract conceptualization and reason” (*ibid*, p. 556). In turn, such correlations or “primary” metaphors (Grady, 1997) are hypothesized as being universal “because everybody has basically the same kinds of bodies and brains and lives in basically the same kinds of environments, so far as the features relevant to metaphor are concerned” (Lakoff and Johnson, 2003, p. 257).

If sight constitutes such an important or universal means of reasoning about knowledge or understanding, one would expect not only that the mapping would be instantiated in similar ways in all the world’s languages, but also that speakers of those languages would reason about mental activity in very similar ways when talking about this topic. However, this metaphor does not appear to be instantiated in all languages (see Ibarretxe-Antuñano [2008, 2013] for a comprehensive summary of research in this area). While it may be true that sight verbs in Indo-European languages commonly develop abstract senses of mental activity (e.g. Sweetser, 1991; Fernández Jaén, 2012), this does not hold true for typologically different languages: Evan and Wilkins’ (2000) study of 60 Australian languages found that knowledge is not talked about in terms of vision, but rather of hearing. Moreover, even researchers who have limited their investigations to the use of this metaphor in English have commented on the surprising absence of realizations of “UNDERSTANDING IS SEEING” in discourse contexts where learning and knowledge were central topics of concern (Cameron, 2003, p. 262).

The research reported in this article contributes to existing descriptions of the “UNDERSTANDING IS SEEING” metaphor through the examination of 27 face to face conversations in English between lecturers and undergraduate students at five European universities. Unlike previous studies of academic or educational discourse (e.g. Cameron, 2003; Herrmann, 2013) , we found that in the context of individual academic consultations – when students sought advice or information from their lecturers about their academic work – sight metaphors were used by all participants to talk about learning. Furthermore, because English was being used as academic lingua franca in these conversations (the lecturers had different L1s while the undergraduate students were all native speakers of Spanish), the corpus provided sufficient data to explore the similarities and differences between the ways that speakers with different language backgrounds used such metaphors in this particular discourse context. Our findings indicate that although speakers of English and Spanish may very well sometimes metaphorically construe mental activity as particular ways of SEEING, how and when they actually used the linguistic metaphors realizing the mapping (*see*, *look* and *focus*) in discourse displayed some interesting differences which cannot be adequately explained by cognitive linguists’ accounts of this “primary” metaphor.

Our article begins with a brief overview of research into the use of the sight domain to refer to knowledge and mental processes, and looks at cross-linguistic variation as regards how this metaphor is instantiated and exploited. We then describe our study, which focused on the use of sight metaphors by academic staff and Spanish-speaking Erasmus students in one-to-one office hour consultations in four European countries, all of which are popular destinations for Erasmus students (The UK, Ireland, The Netherlands and Sweden). As is typical in European academia, the academics had a range of L1 backgrounds. We then present our findings with respect to the ways in

which sight metaphors are used by the lecturers and the students, the range of forms, meanings and functions that accompanied the use of sight metaphors.

2. Background

The way that people talk and reason about mental processes in terms of visual perception has generated an enormous literature and indeed quite heated debate. Discussion of this metaphor, which has been expressed as “UNDERSTANDING IS SEEING” (Lakoff and Johnson, 1980; Goschler, 2005; Kövecses, 2010), “SEEING IS BELIEVING” (Dundes, 1972), “THINKING IS SEEING” (Danesi, 1990), or “PHYSICAL SIGHT = KNOWLEDGE, INTELECTION/ PHYSICAL VISION = MENTAL ‘VISION’” (Sweetser, 1991), has been illustrated by one and all with its realization in the metaphorical expression “I see (what you mean)”. However, it should be noted at the outset that a considerably larger number of words and expressions can instantiate the mapping.

Sweetser (1991, p.33) pointed out that that vision verbs in different languages commonly develop abstract senses of mental activity. For example, English *see* with the sense of ‘understand’ has a parallel in the Spanish verb *ver* (‘see’) which can refer to visual or mental perception. Fernández Jaén (2012, pp. 345-346) finds instantiations of the metaphor in Spanish from the 14th century onwards, but reminds us that metaphorical uses of the *ver* are, in part, inherited from Latin uses of the verb *videre* from which the Spanish verb derives. In other words, this is an enduring metaphorical mapping that appears to be common to different Indo-European languages.

Sweetser explained the ubiquity of the mapping of physical sight onto knowledge or intellection as having “its basis in vision’s primary status as a source of data” and said that “study of evidentials in many languages shows that direct visual data

is considered to be the most certain kind of knowledge” (1991, p. 33). In her discussion of “PHYSICAL VISION IS MENTAL ‘VISION’”, Sweetser suggested that the metaphor is not only based on the close connection between sight and knowledge, but also “on the shared structural properties of the visual and intellectual domains –our ability to focus our mental and visual attentions, to monitor stimuli mentally and visually”(1991, p. 33), adding that “[v]ision is ... identical for different people – that is to say, two people who stand in the same place are generally understood to see the same thing”. Of course, how something is viewed (and hence understood) depends crucially on a number of variables: whether it is in darkness or lit up, whether the viewer is close or far from the object, from what angle it is perceived, and so on and so forth. As Danesi (1990, p. 227) observed, “the images generated by metaphors are subject to the same variation parameters as are visual percepts: some images will have a high resolution, while others manifest themselves in ‘fuzzier’ ways”. This would explain why “UNDERSTANDING IS SEEING” may combine or overlap with various other metaphors: “IDEAS ARE LIGHT-SOURCES”, “DISCOURSE IS A LIGHT-MEDIUM” or ARGUMENT metaphors (for example, “AN ARGUMENT IS A JOURNEY”) (Lakoff and Johnson, 1980). In fact, the question of perspective seems to be particularly important in how the “UNDERSTANDING IS SEEING” metaphor is instantiated in English. Danesi (1990) drew attention to how English realizations of the mapping draw on vehicles that refer to geometrical concepts or mechanical devices which alter the visual input (p.223) (for example, ‘angle’, ‘focus on’ or ‘through the lens of’), which he regarded as constituting a “culturally specific subcategory of the *Thinking Is Seeing* formula” (Danesi, 1990, pp. 223-4).

If “primary” metaphors (Grady, 1997; Lakoff & Johnson, 1999) are based on direct correlations between subjective judgement and sensorimotor experience, and involve a perceptual faculty that develops in all unimpaired humans from early infancy,

it would not be unreasonable to suppose that all speakers, regardless of their linguistic or cultural background, would use and understand the linguistic instantiations of the correlation between sight and intellectual activity. However, cross-linguistic comparisons have done much to temper the claim that “UNDERSTANDING IS SEEING” is shared by speakers worldwide. For example, Tyler (1984) denied the so-called universality of this mapping, relating its ubiquity in Indo-European languages to a tradition which was strongly reinforced by literacy. Ibarretxe-Antuñano (2008, 2013) summarizes research that has shown that some speech communities display a preference for establishing a link between perception and intellection via hearing rather than sight (Evan and Wilkins, 2000). Furthermore, as she points out, the fact that the correlation between sight and knowing or understanding is instantiated in linguistic metaphors in different languages does not mean that they will be used with the same frequency or in the same contexts as the English metaphorical expressions. When Ibarretxe Antuñano (2013, p.126) compared the use of English ‘I see’ and its equivalents in Spanish (*veo*) and Basque (*ikusten dut*) in three corpora, she found that although speakers of Spanish and Basque do indeed use these expressions slightly more frequently with the sense of “I understand” rather than in the sight sense, in the case of English speakers, the metaphorical sense was used more than twice as frequently as the literal one in the English corpus she examined (the BNC), reflecting a much greater entrenchment of the metaphorical expression in English than in Spanish or Basque. As is well known, English ‘I see’ (sometimes preceded by ‘oh’) fulfills specific interactional functions in conversation (Ajimer, 2002 Schiffrin, 1988) that do not seem to be replicated in other languages. Viberg (2008, p.139), for example, showed that in Swedish translations of English texts, *See?*, *You see*, and *I see* were not translated using the Swedish verb *se*, but rather by expressions such as *jaså* (‘yes-so’) and *förstå* (‘understand’); that is,

Swedish *se* does not serve as a discourse marker as *I see* does in English, although Swedish *se* can also instantiate the same metaphorical mapping.

Furthermore, different languages may afford different possibilities for the realization of “UNDERSTANDING IS SEEING”. Dundes (1972, p. 9) noted the “cultural bias for the sense of sight” in an Anglo-American context and related this bias to the metaphorical formula he dubbed as “THINKING IS SEEING”. Evidence of this “cultural bias” can be detected in the lexical resources available to speakers of English when talking about vision. Thus, to judge by the number and range of words and phrases recorded in a dictionary of synonyms and antonyms, for English speakers, perceptual experience through sight is privileged over the senses of hearing, touch, smell and taste. If we compare the entries for the verbs ‘hear’ and ‘see’, we find that Roget’s Thesaurus (1981) records only 21 different ways of expressing ‘hear’ in comparison with 117 ways of talking about seeing. When speaking about sight, English speakers can make lexical choices to express the distinction between whether this perceptual faculty is exercised voluntarily or involuntarily (*look* versus *see*, for example), whether the distal object is perceived accurately or not (*glimpse* versus *spot*, for example), how long gaze is directed at the object (*glance* versus *gaze*, for example), whether the object is moving or not (*watch* versus *look at*, for example), the attitude of the perceiver (*ogle* versus *contemplate*, for example), and the relative success of the viewer in organizing and interpreting the visual stimulus (*spot* versus *miss*, for example), among other possible distinctions. In contrast, other languages, such as Spanish, do not display the same wealth of terms for the sight domain nor encode some of these fine-grained distinctions in the lexicon. A glance through an equivalent Spanish dictionary of synonyms and antonyms (Sainz de Robles, 1984), for example, shows that just 42 words and phrases are provided as synonyms of *ver* in comparison with the much larger number possible

for English *see*. In addition, many of the synonyms listed for *ver* are exactly the same as the synonyms provided for *mirar* ('look').

The difference between the metaphorical use of *see* and equivalent verbs in other languages may be due in part to the difference between the basic senses of the English verb and, for example, Spanish *ver* or Swedish *se*. Vendler (1957, p. 154-156) suggested, in his description of the 'time' of English *see*, "'seeing' is an achievement initiating the generic state of seeing" (1957, p. 158) and therefore, like *know*, is not usually used in continuous aspect (*I am/was seeing/knowning X). And, although he reaches somewhat different conclusions about this aspectual restriction on the use of *see*, Gisborne (2010, pp. 118-150) likewise describes the polysemous senses of *see* in relation to their aspectual classification. Thus, if describing a process or activity, speakers of English must choose other verbs, such as *look* or *watch*. In contrast, Spanish *ver* and Swedish *se* can both be used as "activity" verbs. For example, Spanish *Lo estuve viendo* cannot be translated by English *see* ("*I was seeing it") but rather by *watch* or *look* ("I was watching/looking at it"). It seems likely that differences such as these will have some influence on how sight metaphors are realized and used by speakers of these different languages

In this regard, discussion of the "UNDERSTANDING IS SEEING" metaphor as instantiated in language has been limited by the kind of linguistic data examined. In some cases, the linguistic metaphors have been divorced from any real context of use (for example, Danesi, 1990; Lakoff & Johnson, 1980, 1999; Sweetser, 1991); in others, discussion has focused on a single instantiation by the verb *see* (e.g. Deignan & Cameron, 2009; Ibarretxe-Antuñano, 2013). The fact that these two approaches have dominated discussion of the metaphor may partly be a consequence of the lack of relevant discourse data. For example, Cameron (2003) found that Primary School

teachers in England did not use the “UNDERSTANDING IS SEEING” metaphor with any systematicity when talking to their pupils “even though several of the classroom events involved teachers trying to help students think about ideas” (2003, p. 262). Likewise, Goschler (2005, p.42) remarked that in the corpus she examined (a popular science magazine), realizations of “UNDERSTANDING IS SEEING” were not very frequent. And, although Herrmann (2013) finds the verb *see* is among the top 10 verbs found in a corpus of academic discourse (with 25 metaphorical uses out of a total of 73 uses in the corpus), most of these metaphorical uses had to do with textual organization (*see X for...*) rather than in its “understanding” sense. And no other realizations of the metaphor mentioned in the literature (for example, nouns like *view* or adjectives like *clear*) figured among the most frequent metaphorically-used nouns and adjectives in the academic corpus she examined. The findings in the three cases seem to contradict what might be predicted by cognitive linguists: if knowledge or understanding are central topics of discourse – as they are in educational or academic contexts – then one would expect to find that sight terms would be used in these contexts fairly frequently. However, this was not the case, and the absence of sight metaphors in these very discourse contexts might cast doubt on the importance of vision for English speakers when reasoning about knowledge and understanding.

In contrast, the data gathered in the current study, which investigated one-to-one office hours’ consultations in English between lecturers and Spanish-speaking undergraduate students, showed that sight metaphors were indeed used with a certain frequency by all participants when advice was being sought and given about academic work. This finding led us to explore in detail the uses made of these metaphors by the different participants in order to discover to what extent and in what ways the use of sight metaphors varied among speakers with different linguistic backgrounds.

In the next section, we describe how the data was gathered and the sight metaphors retrieved and identified. In Section 4, we present the detailed results of the analysis and then, in Section 5, turn to consideration of how these metaphors were used in context.

3. Method

The data analysed here were obtained during the course of a three-year research project into the use of metaphor in office-hours' consultations involving Spanish undergraduate students spending a period of time at another university in Europe. The research responded not only to the need for more data on metaphor in academic communication in English generally (previously limited to monologic texts, such as lectures or textbooks) but also to considering its role in face-to-face interactions involving international students. International student mobility is an increasingly important aspect of higher education in Europe. In 2013, only counting student exchanges taking place within the European Region Action Scheme for the Mobility of University Students (Erasmus) programme, 3 million students from 33 European countries spent some time in another country completing part of their degrees. Within the Erasmus programme, Spain plays a particularly important role: in 2012 it was the country that sent most students to another European university (39,545) and, in turn, its universities hosted the largest number of exchange students from other parts of Europe (39,300).

3.1 Participants and procedure

27 conversations between lecturers and Spanish undergraduate students were video-recorded at five different European universities between April and November 2012. The 27 student participants (11 male and 16 female) were all Spanish undergraduates spending between 5 and 9 months at universities in Ireland, England, the Netherlands

and Sweden within the Erasmus programme. All the undergraduate degree courses in which these students were enrolled were taught in English, an increasingly common phenomenon in higher education institutions across Europe (Coleman, 2006).

21 lecturers were involved in these conversations (5 participated in more than one session). 14 of the lecturers were L1 speakers of English; the remaining 7 had different L1s: Greek (1), Spanish (1), Dutch (2), Chinese (1), Swedish (1) and German (1). This means that in only one of these conversations, where Spanish was the first language of both participants, did there exist a shared language background. And in all cases, English was being used as academic lingua franca.

The data being sought was intended to resemble, as far as possible, the kind of interaction that may take place in office hours' consultations, when lecturers are available for individual consultations with students. To this end, we sought volunteers among Erasmus students at the five different universities involved, asking those willing to participate in the study to suggest the name of a lecturer they were currently being taught by in order to engage in a semi-guided academic consultation with him/her that would be video-recorded, transcribed and later analysed. Once agreement had been reached with the lecturer, timetables for the recordings were set up.

In order to ensure that the conversations would deal with academic topics (rather than others that might arise, such as personal problems the students were experiencing), we asked the students to prepare two or three questions for their lecturers on one of three topics: written or other assignments that they had completed or were in the process of completing; the systems of assessment used at the host university for that particular subject; and/or difficulties being experienced in understanding the course contents. The lecturers were not informed in advance of the content of the questions, although they were made aware of the general areas that the students would wish to discuss. All

participants were remunerated for their participation and were informed of the aims of the study before giving their consent.

The conversations took place in the lecturer's office and were video-recorded. After the equipment had been set up, the researcher responsible for the recording left the room and did not enter again until invited to do so by the participants, although after 9 minutes s/he knocked on the door to warn them that the 10 minutes foreseen for the conversations to last were almost up. This procedure meant that participants were free to continue talking for as long as they liked, resulting in conversations of unequal length, as might be the case of "real" conversations of this kind. This yielded a total of 5 hours, 47 minutes and 33 seconds of conversational data recorded (consisting of conversations lasting between 6 minutes 32 seconds [the shortest] and 22 minutes 22 seconds [the longest]). The recordings were later transcribed, using a slightly modified version of the conventions used by researchers in the Vienna-Oxford International Corpus of English (VOICE, 2013). Each transcript is identified by the country in which the conversation took place (UE for England, UI for Ireland, UNL for The Netherlands and US for Sweden) followed by a number (UE1, UE2, etc.). For reasons of readability, the excerpts from the transcripts cited here have been greatly simplified. (For further details on the data gathering method, the participants and method of transcription, see the research project website: <http://www.eurocoat.es/home>.)

3.2 Corpus

The corpus as a whole consists of 62,792 words¹, of which 42,183 were uttered by the lecturers and 20,609 by the students.

3.3 Tool

SIGHT metaphors were extracted using the semantic annotation tool Wmatrix (Rayson, 2003, 2008). Wmatrix automatically assigns one or more semantic fields to each word

in an uploaded text (see Table 1). The Wmatrix dictionary contains three fields relating to sight: “sensory: sight” (X3.4), “seen” (X3.4+) and “unseen” (X3.4-). The semantic fields roughly correspond to conceptual domains (Hardie et al., 2007). Even though they are not exactly the same, Wmatrix has proved useful in assisting the researcher in quickly scanning text for metaphorical expressions from selected source domains, in this case SIGHT.

@ Insert Table 1 here @

3.3.1 Extracting sight terms

When Wmatrix assigns multiple semantic tags for a word, they are ordered according to likelihood, placing the most likely tag in initial position. The ranking is derived by a combination of factors such as, for example, the part of speech of the word (e.g. if *spring* is a noun, it filters out the “jump” sense), frequency (e.g. *green* as a color is more likely than *green* as in ‘inexperienced’), the context a word is likely to occur in (e.g. *account of* followed and preceded by a noun phrase most likely refers to narration), or the surrounding words (see Rayson, 2003, pp. 67-68; Rayson et al., 2004). This ordering of semantic tags is detrimental to metaphor analysis because in order to extract words from the SIGHT source domain, we are not interested in the most likely tag (the semantic field representing the contextual meaning of the word) but the tag representing the most basic meaning. For the word *focus*, in Table 1, for example, we were interested in the second tag, X3.4 (sensory: sight), as this tag represents the basic meaning of the word “if your eyes focus, or if you focus your eyes, you look at something carefully until you can start to see it clearly” (Rundell & Fox [2007] *Macmillan English Dictionary for Advanced Learners*) (henceforth MEDAL), and not in the first tag, which represents the contextual meaning of “to concentrate on something and pay particular attention to it”. We therefore uploaded the corpus using the ‘Domain Tag Wizard’, which allows for privileging the sight-related semantic fields, placing them in the first position of a word’s tag list (see also Koller et al., 2008).

As a first step, the goal was to establish whether there were significant differences between lecturers and students as regards the number of terms from the semantic field of ‘sight’ in the first place. In order to establish a potential difference, we performed a ‘keyness analysis’. This entails comparing the occurrence of semantic fields in the lecturer corpus and the student corpus. The analysis produces a list of semantic categories that are either over- or underused in one corpus compared to the other. Indeed the semantic field “sensory: sight” was significantly overused in the

lecturer corpus with a Log-Likelihood value of 24.71 (we use a value of 3.84 as a cut-off point for significance). The semantic categories “seen” and “unseen” were also overused in the lecturer corpus but not significantly so.

As a second step, we checked the concordances of the three semantic fields related to sight, namely “sensory: sight”, “seen,” and “unseen”. The semantic categories include words of different grammatical classes that have the relevant semantic tag occurring in the first position in the taglist. For instance, in our student corpus, the semantic field of “sensory: sight” contained concordance lines including *see*, *focus*, *view*, *watch*, *reflect*, *look*, *follow*, and *visual*. The field of “seen” only contained *miss* and the field of “unseen” only the item *notice*. This procedure produced 253 concordance lines for the lecturer corpus and 73 concordance lines for the student corpus.

Despite the fact that we had used the “Domain Tag Wizard,” a small number of relevant words were not listed under the semantic fields of sight. In order to be maximally inclusive, we also examined the ‘broad list’ (Hardie et al., 2007; Krennmayr, 2011) for each of the three fields related to sight. This list includes all words, regardless of the position of the sight tag in the taglist. We produced concordances for the additional items found. In the lecturer corpus we found twenty additional concordance lines and in the student corpus eight. A total of five concordances were excluded from analysis in the student corpus and a total of sixteen from the lecturer corpus because they did not fit into the sight source domain. Examples are *follow*, for which the basic meaning has to do with movement and not with sight, or *miss*, for which the basic meaning is related to shooting. This yielded 76 concordance lines for the student corpus and 258 lines for the lecturer corpus.

Researchers using Wmatrix for retrieving lexical units of interest need to be aware that even though most relevant items will be found by making use of the “broad” list, there will be a small number of lexical units of potential interest that are not found, simply because of their categorization in the Wmatrix dictionary. Consider for example a lecturer’s comment on a student’s essay: “... something that you need to ... make clearer”. *Clear* could be considered as a sight metaphor based on its basic meanings of transparent (MEDAL, sense four) and easy to see (MEDAL, sense five). However, *clear* was not extracted by the approach we used. This is because *clear* received the following semantic tags: *likely*, *open*; *finding*; *showing*, *colour* and *colour patterns*, *general appearance* and *physical properties*, *entire*; *maximum*, and *weather*. None of the

semantic tags in the Wmatrix dictionary pertain to the sight sense that we were searching for, which is why *clear* is not among the sight terms retrieved. While this is a potential limitation of the approach, the advantages outweigh the disadvantages: Wmatrix allows a quick way into a large amount of data.

3.3.2 *Metaphor coding*

While Wmatrix can automatically retrieve words that have been assigned to the semantic field of sight, decisions on whether or not the sight terms are metaphorically used need to be made by the researcher.

The dataset was coded for metaphor by three researchers (the authors) using the principles of the MIP procedure (Pragglejaz Group, 2007). This means that for each lexical item, they identified the contextual meaning and checked if that meaning could be contrasted and be understood in comparison with a more basic (sight-related) meaning. The dataset was divided into three parts. Each researcher coded one set and cross-checked another set, making notes when they disagreed about the other coder's annotation decisions. The cases of disagreement were subsequently discussed as a group.

It soon became clear during group discussion that the initial binary coding scheme of metaphor versus non-metaphor was not a sufficiently good measure for the data at hand. This is because a group of sight metaphors emerged that did not neatly fit into these categories, as both metaphor and non-metaphor were at work at the same time. Consider the following example: "I have some NOT so good responses to some questions and you will *see* what people have done in the past". On the one hand, *see* is metaphorically used, because the contextual meaning of 'understand' can be understood in comparison with the basic meaning of "notice someone/something using your eyes" (MEDAL). However, when considering the larger context, it becomes clear that the literal meaning of *see* is also involved. The teacher tells the student that he will bring typed up student answers to exam questions from previous years to analyze for their quality. In order to understand how previous students answered the questions, the students also need to look at the texts "using their eyes". Both metaphorical and non-metaphorical meanings of *see* are present at the same time. This is in line with Deignan and Cameron (2009), who found what they call 'hybrid' cases in identifying metaphorical instances of *see* in the Oxford English corpus, a general corpus of written

and spoken contemporary English. We therefore introduced a third category, and *see* in the example above was marked as a ‘conflated’ case. The three categories established were therefore: metaphorical, non-metaphorical, and conflation. The scheme is illustrated with examples in Table 2. Cases for which the contextual meaning could not be established because of insufficient context (aborted or unintelligible utterances) were discarded from metaphor analysis.

@Insert Table 2 here@

3.4. Coding for meanings

In order to be able to determine the range of meanings of lecturers’ and students’ sight metaphors, one researcher determined the contextual meaning of each sight metaphor. The coder’s decisions were double-checked by two researchers and cases of disagreement were discussed, using MEDAL as a reference.

4. Results

4.1 Sight terms

In their conversations with the students, lecturers draw on a much wider range of sight terms than the students do. While the lecturers make use of twelve different terms (*see, look, focus, view, reflect, observe, spot, notice, visible, watch, viewpoints, blind*) comprising 258 tokens, the students make use of a limited range of eight (*focus, look, see, reflect, watch, view, visual, notice*) comprising 76 tokens (see Figure 1). The sight term that has the largest proportion of occurrences in the lecturer corpus is *see* (39.9%), followed by *look* (35.7%), and *focus* (9.3%). The top three in the student corpus are the same three terms albeit in a different order: *focus* (40.8%), *look* (23.7%), and *see* (22.4%). *Observe, spot, visible, viewpoint, and blind* are exclusively used by the lecturers, whereas only the term *visual* is exclusively used in the student corpus.

@ Insert Figure 1 here @

Office hours' conversations are clearly dominated by the lecturers so the raw number of sight terms produced by lecturers is much higher. For example, while *focus* is the dominating sight term in the student corpus, it is only used 31 times. Compare this to its use in the lecturer corpus, where *focus* is clearly used less frequently than *look* (92 tokens) or *see* (103 tokens) but still counts 24 tokens. Table 3 presents normed rates (by 10,000 words).

@ Insert Table 3 here @

4.2 Metaphorical sight terms

See, *look*, and *focus* are not only the top sight terms in both corpora, they also rank highest in their use as metaphors both by lectures and by students. 40 per cent of all metaphorically used sight terms fall on the lexical unit *see*. This is followed by *look* (33.6%) and *focus* (12.4%). The most frequently used metaphorical sight term in the student corpus is *focus* (54.4%), followed by *look* (21.1%) and *see* (15.8%) (Figure 2). Again, the lecturers exhibit a much wider range of metaphorical uses (*see*, *look*, *focus*, *view*, *spot*, *reflect*, *notice*, *observe* and *viewpoints*). They were metaphorically used between 2 (*viewpoints*) and 78 (*see*) times. *Watch*, *visual* and *visible* were never metaphorically used. Students made use of the metaphorical units *focus*, *look*, *see*, *reflect*, *view*, and *notice*. They were metaphorically used between 1 (*notice*, *view*) and 31 (*focus*) times. *Watch*, *visual*, *observe*, *spot*, *visible*, *viewpoints*, and *blind* were never metaphorically used by the students.

@ Insert Figure 2 here @

@ Insert Table 4 here @

4.3 Range of forms, meanings and functions

We examined the range of forms, meanings and functions of the three most frequently used metaphorical terms in both the student and the lecturer corpus, namely *focus*, *look*, and *see*. In the following sections, we describe their uses by lecturers and students,

drawing attention to similarities and differences in the ways these verbs were used metaphorically by the different participants. For the use of *look* and *see*, striking differences were observed. While the lecturers employed metaphorical *look* to express a range of different meanings (*analyze, concentrate attention on, do some more work on, pay attention to me, read, think carefully about*), the students' use was restricted to one single metaphorical meaning, namely *think carefully about*). Although the students did use more than one meaning in the case of *see*, their expressions of meaning were again less broad than those of the lecturers. The students used *see* metaphorically to mean *understand, learn about, become aware of, find out*, and as a discourse marker, while the lecturers expressed the following additional meanings: *talk about, make sure, decide, consider, and appreciate*. In the case of *focus*, there was much greater overlap between lecturers' and students' use of the verb, although here again, differences were noted.

4.3.1 See

As has been mentioned, English *see* has an equivalent verb in Spanish *ver* and the verbs in both languages can be used metaphorically to mean 'understand'. This made it particularly interesting to discover that the way the L1 Spanish speakers used the equivalent verb *see* in English diverged notably from that of the lecturers, both in terms in terms of the form of the verb employed and its senses.

In the corpus, we found *see* used in finite (e.g. *I/you see, we saw, we have seen*) and non-finite forms (e.g. *it was interesting to see*). Active uses of the verb were much more frequent than the passive. *See* was only used in passive voice twice in the lecturer corpus (one occurrence was from a text being read aloud) and not at all by the students:

- (1) then you can actually get a lower mark if it's **seen** as irrelevant to the question so where the context is (.) is relevant (UI3 Lecturer. L1 English).

Metaphorical uses of the verb to refer to the past in the forms *saw* or *have seen* were used overwhelmingly by the L1 Spanish speakers (12 times) with the sense of 'learn about' or 'deal with' in reference to an activity carried out in the past in class:

(2) we can see (.) the character of el negro and as we **saw** during the classes hh is a view of the negritud (UI1 Lecturer. L1 Spanish).

(3) the other day er (.) hm (.) we have **seen** this part erm about the quality of profit right (UI8 Student)

In contrast, only one metaphorical use of the verb in the past tense was used by an English L1 lecturer, with the sense of ‘became aware of’:

(4) it is (.) ’cause I **saw** lots of different approaches (UE6 Lecturer. L1 English)

As a group, the lecturers did not tend to use *see* to refer to specific moments of enlightenment or understanding in the past. Only one other instance was found, in this case accompanied by ‘could’:

(5) I don't remember the figures you had but I had a quick look at the company and I could **see** (.) that (.) this here is a loss (UI8 Lecturer. L1 English)

Instead, they showed a preference for using *see* metaphorically to refer to current or future mental activities or those not marked as being temporally bounded:

(6) it is tricky (.) the the conclusion (1) hh I can **see** (.) I can **see** that (UE6 Lecturer. L1 English)

(7) this ratio is going to tie into what they have and you 're going to be able to **see** that they will have analysed the loss (UI8 Lecturer. L1 English)

(8) and a lot of the historians who've looked at this period hh (.) **see** Cristobal de Mora as being something of (.) a precedent (UI4 Lecturer. L1 English)

The ways that the L1 Spanish speakers temporally situate mental activity thus diverges considerably from the other participants in these conversations, although some overlap is discernible. The student participants used *see* in non-past 10 times: ‘I see’ and ‘I can see’ with the meaning of ‘understand’ three times; and ‘Let’s see’ as a discourse marker once. The remaining 5 uses of ‘see’ to refer to current or future actions were literal. In one further case, the student was referring to a book she had been reading and her use of *see* seemed to encompass both the literal use of the eyes to perceive and the metaphorical sense of ‘becoming aware’:

(9) yeah yeah yeah (.) I **see** the difference (UI5 Student)

Perhaps unsurprisingly, the conflation of visual and mental activity meanings in uses of the verb *see* in the corpus was frequent. In university settings, much knowledge is communicated through the written word, and thus understanding comes about through the visual activity of reading – and, more recently, through looking at visuals or writing on screens (film, presentations or computers, for example). We identified 25 such ambiguous or conflated senses of *see* used by the lecturers, some of which are illustrated below:

- (10) okay yeah that's fine you can also (.) **see** as we **saw** in the (.) in the film *Fresa y Chocolate* (UI1 Lecturer. L1 Spanish)
- (11) the exam is exactly like that (.) so in the exam I expect to **see** (.) the same kind of analysis (UE7 Lecturer. L1 English)
- (12) knowledge (.) to analyse whatever it is that the question says so what you will **see** erm (.) I said in the last week of term I have some excellent responses to some questions (UE7 Lecturer. L1 English)

In context, these utterances clearly had to do with mental activity (understanding, appreciating, and so on) but this was made possible by visual stimuli (books, exam scripts, films and so on).

Apart from the differences between the range of forms and senses between the L1 Spanish speakers' uses of *see* in comparison with the lecturers', the number of tokens of the verb in the lecturer corpus reveals how important sight is communicating ways that students can learn and gain understanding. Table 5 below summarises the main functions of *see* as used by the lecturers and students.

@ *Insert Table 5 about here* @

We found 24 uses of 'you' + *see* ('you will see', 'you'll be able to see', 'you need to see', among others) as well as imperatives ('have a look and see', for example) in advice and injunctions about successful learning outcomes:

- (13) okay then you can **see** how it goes that's such a convenient thing about not er having a debate (UNL3 Lecturer. L1 Dutch)
- (14) so have a look at the readings and **see** if there's a polemic of any kind that comes out (UE2 Lecturer. L1 English)

(15) go at the start for a couple of examples of each type and then **see** how much that gives you maybe it's better to have too much than too little (US1 Lecturer. L1 English)

The imperative force of such advice may be tempered by modals as in (16), as well as being expressed in other, less face-threatening ways:

(16) so remember we discussed about this huge (.) change and that you need to maybe **see** what's going on (UI8 Lecturer. L1 English)

(17) but on the other hand you might look and **see** well actually when I look at those topics a couple of them actually go together (UE2 Lecturer. L1 English)

We found 11 metaphorical uses of 'I see' by the lecturers in response to something the student has said, as in the following example:

(18) right right I **see** (.) so will will you use grammar books ? (US2 Lecturer. L1 English)

The lecturers not only signal their comprehension in this way but also use emphatic 'you see' to draw attention to a point they are making or 'do you see' to check that the students are understanding. There were 7 such uses in the lecturer corpus, of which the following are two examples:

(19) so its good you **see** the thing is there's a very big emphasis on shorthand here (UI9 Lecturer. L1 English)

(20) because you don't have to write about the other things do you **see** what I mean you don't have to study everything in the term (UE2 Lecturer. L1 English)

This makes the relative absence of 'I see' or 'you see' in the student corpus all the more arresting, because if, as has been posited, Spanish speakers use (*Ya*) *veo* (*lo que quieres decir*) ('(Now) I see (what you mean)') in ways that are very similar to speakers of other languages such as English (Ibarretxe-Antuñano, 2013), we might expect this to facilitate their use of 'I see' in English with this type of function.

However, as has been seen, the expression was only used by the Spanish students 3

times. Instead, they signalled understanding what the lecturer was telling them with ‘yeah’ or ‘okay’ – the 3rd and 4th most frequently used words in the student corpus.

See was found 4 times used in the phrase ‘look and see’, as in example (13). For the lecturers, *seeing* or rather, metaphorically *understanding*, is an achievement that comes after a search for knowledge (*look*), accomplished after conscious use of the eyes/mental attention to the object of study. We turn now to the two most frequent instantiations referring to this voluntary use of sight in the two corpora: *look* and *focus*.

4.3.2 Look

Like *see* and *ver*, *look* has a closely equivalent verb in Spanish: *mirar*. The use of *mirar* to denote mental activity is well-attested in dictionaries and thus coincides in its metaphorical sense with English *look*, meaning to turn or fix one’s attention on something. However, in comparison with the lecturers’ use of the verb, the Spanish students significantly under-used the verb in these conversations ($p < 0.01$, $t = 3.498$, $df = 52$). Table 6 summarises the main functions of *look* as used by the lecturer and student participants.

@ Insert Table 6 about here @

Conflation of the basic and metaphorical senses of *look* in the lecturer corpus was a consequence of the verb’s often being used metonymically to refer to the act of reading a text of some kind. The verb in this sense could be followed by different prepositions or particles:

- (21) you've got the theory of the lectures so you've got to **look** through your lecture notes (UE2 Lecturer. L1 English)
- (22) er you CAN **look** at the court of Charles the sixth (UI4 Lecturer. L1 English).
- (23) you can use your dictionary to **look** up or (.) make a note of all the words in Spanish (UE2 Lecturer. L1 English)

However, the verb is also used by the lecturers with the metaphorical sense of ‘pay attention to/concentrate on’ as well as with the more specific senses of ‘think about’ or ‘write/talk about’. Giving advice about exam preparation, for example, a lecturer says:

(24) you choose the questions that suit you (.) and you **look** at (.) analysing the most important points (UE7 Lecturer. L1 English)

And, when reflecting on the difficulties experienced by international students, a lecturer comments on the desirability of thinking about how to solve these problems:

(25) so that that might be something to **look** at in the future for er students who are not familiar with it (UE4 Lecturer. L1 English)

Look is also used by the lecturers to refer to something that is being written or spoken about, implying that this directs the attention of the reader/hearer to the perspective of the writer/reader and speakers/hearers:

(26) if you can find an author for (.) what you are **looking** at then (.) you do it in the same way (US2 Lecturer. L1 English)

(27) we will have (.) a full two hour session (.) **looking** at (.) the way in which (.) you answer exam questions (UE7. Lecturer. L1 English)

Look is also found in the lecturer corpus used as a discourse marker, with a sense something like ‘pay attention’. 6 such uses were found, 5 of them associated with the same lecturer in the same conversation reporting previous conversations she had had with students:

(28) one or two students have come up (.) maybe at the end of a particular class to say **look** (.) I got the feedback from you on e-mail you know (UI9 Lecturer. L1 English)

(29) so i said **look** that’s fine (UI9 Lecturer. L1 English)

This use of *look*, however, was not used to address students directly in order to draw their attention to something being said. Rather, as in the case of *see*, the lecturers most often metaphorically use the verb when attempting to guide the students’ learning activities. There were 19 instances preceded by ‘you’:

(30) there are two ways of doing this you either take a lot of different examples and **look** at them in general terms or you take a few examples and go deep (US1 Lecturer. L1 English)

(31) any kind of (.) association in the first and the third (.) then you **look** at the second (.) but usually you go back to the first (US4 Lecturer. L1 English)

(32) and it's the same in the exam you will only have to **look** at (.) one of the three chapters in the report so much much shorter (UI8 Lecturer. L1 English)

Interestingly, *look* was also used by one lecturer to introduce an invitation to think about something in terms of something else (more will be said about this in Section 5):

(33) you have to have that done first and **look** at it as a pyramid (UI5 Lecturer. L1 English)

Advice or injunctions involving *look* are also expressed more indirectly than this imperative:

(34) so it'll be interesting to **look** at it from that perspective (UI7 Lecturer. L1 English)

(35) the (.) easiest way to learn (.) and also **look** at what works for me (.) do I prefer to listen (US4 Lecturer. L1 English)

(36) you could do it in general terms yes and then say specifically I'm going to **look at** this type of compound (.) that would be a useful thing to do (US1 Lecturer. L1 English)

Examples such as these show how lecturers may “display” for the students what considering or thinking about an academic task involves, which may also involve referring to other scholars in the field:

(37) and a lot of the historians who've **looked** at this period (UI4 Lecturer. L1 English).

4.3.3 Focus

The Oxford English Dictionary offers a nice definition of *focus* (noun) that clarifies the motivation for its metaphorical senses in English (sense 2e): “that point or position at

which an object must be situated, in order that the image produced by the lens may be clear and well-defined”. Hence *focus* (verb) is the action of bringing the object of view into a proper focus, so that it can be perceived clearly. Used metaphorically, the verb preserves the notion that very close attention to an object makes it possible to understand it in detail, distinguishing the metaphorical sense of this verb from that of *look*. In the visual field, Spanish has an equivalent verb, *enfocar*. However, the verb is not used metaphorically to talk about mental activity, and the translations offered of *focus* in bilingual dictionaries instead offer *concentrar(se) en* (‘concentrate on’), *centrar(se) en* or *fijar(se) en* (‘pay attention to’/‘notice’) as possible equivalents. *Fijarse en* perhaps bears the closest relationship with English *focus*, because ‘fixing’ the eye on something means that the distal object is isolated from surrounding visual stimuli, as does *focus*; however, it lacks the sense of that adjustment of attention that brings the object in view closer to the observer so that detail can be discerned. In contrast, the product, rather than the process, can be expressed by the nominal *enfoque* (‘focus’), which is used metaphorically, translating roughly as ‘approach’ or ‘perspective’.

Interestingly, *focus* was the only one of the three sight terms we have examined that was used to give students’ negative feedback on work they had done. Furthermore, although both *see* and *look* were often used by the lecturers to offer advice, *focus* was used almost exclusively for this purpose, revealing the importance of this kind of mental attention for the mentors. Table 7 summarises the main functions of *focus* as used by the different participants.

@ Insert Table 7 about here @

As has already been noted, all the meanings of *focus* in both corpora were metaphorical. Both the students and the lecturers used *focus* with the general meaning of “to concentrate on”. However, some slight differences were discerned. The students and the Spanish-speaking lecturer showed an overwhelming preference for using *focus(ed)* followed by a prepositional phrase (with *on* [24 times] or *in* [5 times], with only one student using the verb without a prepositional object, as in the following case:

(38) maybe th- the introduction (.) has to be more (.) **focused** (US3)

In contrast, the lecturers' use of the same word was more varied. While they also used the verb in the pattern *focus* + prepositional object, they further used it as an intransitive verb, describing mental attention, or as a noun, as the following examples illustrate:

- (39) I'm giving a half an hour to read this chapter and just sit down (.) **focus** (.) read through it (.) you don't need to know it inside out (.) (UI5 Lecturer. L1 English)
- (40) it all together at the very top (.) are the lecture slides so that's your **focus** (.) the **focus** narrows (UI5 Lecturer. L1 English)
- (41) yes it's not a profit okay so you know so this is where you need to **focus** a LOT of your attention (UI8 Lecturer. L1 English)
- (42) it 'd be good to but you need to **focus** because you don't have to write about the other things (UE2 Lecturer. L1 English)

Examples (39)-(42) show how the lecturers use *focus* in advice or injunctions about approaching a task by isolating or singling out a particular aspect of it, in order to remove any number of possible distractions. *Focusing* involves a deliberate shift in attention (“the focus narrows”, “you need to focus”) in ways coherent with the basic sense of this word to denote “that the image produced by the lens may be clear and well-defined bringing the object of attention closer”. In contrast, the preference shown by the Spanish L1 speakers for the use of *focus* + prepositional phrase revealed that the object of attention was not always fully coherent with this narrow sense of the verb:

- (43) right there so I am not sure (.) if you are gonna (.) **focus** on (.) taking some (.) extracts from books or something like that (UI3 Student)
- (44) because that was too much t- theory I think so it was (.) rather **focusing** much on (.) on theory than practice (UE3 Student)

These prepositional objects (“taking some extracts” or “theory”) are somewhat unusual in English. Neither in the lecturer corpus nor in the larger corpus consulted (the BNC) did we find “theory” or *v-ing* as significant collocates of “focus(ing) on”. And the occurrence of these somewhat unidiomatic collocates seems to show that, for the students, *focus* has a very general sense of “concentrate on” (something), and, for them, often has an either/or sense of “do/write/talk about one thing rather than another”. That

is, the way it is mostly used by this group of speakers does not reflect the full metaphoric potential of the word.

4.4 *See, look and focus and the lecturer's L1*

In Sections 4.3.1 and 4.3.3, we have noted that the Spanish-speaking lecturer's use of *see* and *focus* had more in common with the undergraduate students' than with that of the other lecturers. However, this particular lecturer was not the only one who was not an L1 speaker of English; there were another 6 who were also using English as an L2 in these mentoring sessions. They spoke a range of first languages (Greek, Dutch, Chinese, Swedish, and German) which might have been influencing how they were employing sight terms metaphorically. As regards the lecturer whose first language was Greek, we found that she – like the Spanish speakers – showed a preference for *focus*, using this verb 9 times in the course of a conversation lasting just over 13 minutes, while only using *see* metaphorically 4 times, and *look* not at all. The two L1 speakers of Dutch, in contrast, did not use *focus* at all, but used *see* 4 times and *look* twice in metaphorical ways. The Chinese-speaking lecturer used *focus* and *I see* each once in his 11 minute conversation with the undergraduate student, while the L1 German lecturer at a university in Sweden only used *see* once in a conflated sense. Her colleague, an L1 speaker of Swedish, used *see* 3 times in a metaphorical sense, and *look* twice in his conversation. Yet this last lecturer was responsible for co-producing the clearest realization of the complex interplay of the “UNDERSTANDING IS SEEING” metaphor with “IDEAS ARE LIGHT-SOURCES” or “DISCOURSE IS A LIGHT-MEDIUM” or “ARGUMENT IS A JOURNEY” as described by Lakoff and Johnson (1980) (see Section 5 below).

Given the small number of speakers whose L1 was neither English nor Spanish participating in these conversations, it is impossible to generalize about any preferences speakers of Greek, Dutch, Chinese, German or Swedish might have when using or avoiding these sight terms metaphorically. All we can do is to note that use of SIGHT metaphors seems to vary across individuals working in academia, with greater metaphorical use being made of sight terms by the L1 English lecturers (all from the United Kingdom or Ireland).

5. SIGHT metaphors in context

To a certain extent, the mismatch between the lecturers' and the students' metaphorical use of the sight terms can be attributed to the different roles played by the participants in these mentoring sessions. The lecturers see their role as supporting the students' efforts to learn through giving specific advice about how this can be achieved; and, as we have seen, sight terms, when used metaphorically, appear to comprise an important means of communicating this advice. However, once we move away from consideration of the decontextualised uses of the three terms located by Wmatrix in the two corpora, and turn to how these are actually used in the context of the different conversations, the lack of alignment (or occasional harmonious use of sight metaphors by the student and lecturer) can more clearly be perceived.

As has already been noted, the students rarely used *I see (what you mean)* to signal that they were understanding the advice they were being given. Rather they showed a preference for minimal response tokens like *yeah* and *okay*, which accounted for 4.6% and 3.2% respectively of the total number of words they uttered. These words, rather than signalling understanding, are tokens of agreement, and the students' preference for these may reflect discourse practice in their L1. That is, the relative absence of the equivalent to the L1 phrase (*ya*) *veo (lo que quieres decir)* when speaking in English to their lecturers suggests that this is not a natural way for Spanish-speaking students to signal comprehension of advice they are being given. Likewise, the lecturer whose L1 was Spanish used sight terms in sufficiently different ways from the English-speaking lecturers to suggest that metaphorically framing academic tasks or activity using words from the domain of vision is not a significant part of the discourse activity of Spanish academics when mentoring their students. This suggestion would have to be confirmed or refuted by analysis of similar conversations held in Spanish. However, even the limited data examined here points to the fact that "UNDERSTANDING IS SEEING" is not used or understood in the same ways by speakers of Spanish and English. Indeed, it occasionally appeared that the students did not understand what their lecturers were getting at when they reasoned about learning in this way.

Thus, if we consider an extract from one conversation (UE3) about exam preparation, when a lecturer metaphorically framed the topic at hand in terms of UNDERSTANDING IS SEEING, it is not clear that the student was fully taking in what he was being told or advised to do, because, as found on other occasions, his responses to these metaphorical "offers" were minimal.

EV sort of making this more extensive (.) and **focusing** on when the institution doesn't work (.) or you could've (.) instead of **focusing** on the institutions (.) you could have expanded on this section (.) which is (.) you know here are the ideas about sovereignty (.) about cultural relativism which

JP hm

The systematic (Cameron et al., 2010) use of sight metaphors by another lecturer (NT) when giving advice about exam preparation was similarly not picked up and developed by the undergraduate student (MM) she was talking to, although on one occasion the student did check that she had understood by re-wording the lecturer's metaphorical framing of the topic in ways that sought to clarify the sense of what was being said²:

NT yeah (.) so i mean in theory the seminars were there to: (.) test your knowledge from: the (.) or to give an opportunity for people to ask questions about the (.) the information in the <55> lecture </55>

MM <55> mhm </55>

NT and then maybe to extEND it a little bit so that there was something to discuss (.) so have a **look** at the readings

MM hm

NT and see if there's a polemic of any kind that <56> **comes out** </56>

MM <56> uhu </56>

NT do you **see** what i mean

MM yeah

NT and so (.) then THAT is the connection that you need to try and make in your mind (.) so where is the debate where is the discussion (.) 'cause that's the second half of your essay

MM so (.) the first half is just writing about the theory?

NT er the yeah (.) so the first half is present the theory <57> the second half is </57>

MM <57> to pre- to present </57> the main <58> ideas </58>

NT <58> er </58> these are the debates or this is a debate that **COULD arise** (.) out of this (.) theoretical **background** (.) this pers- these people have this **view** (.) these people have this **view** (.) this is what i think

MM okay (.) <59> so </59>

NT <59> do </59> you **see** what i mean (.) that's quite a **clear** (.)

MM so i <60> have to combine</60>

NT <60> so if if </60>

MM theory and (.) <61> personal criteria </61>

NT <61> and discussion </61>

MM <62> <soft> (yes i can surely) </soft> </62>

NT <62> exactly and </62> the other thing is if you **look HARD** at (.) the (.) topic (.) and you think (.) there **IS** no debate here (.) it's just facts (.) it probably isn't going to be on the exam paper

MM okay



Here, the lecturer (NT) uses a range of sight terms with metaphorical senses ('have a look', 'view', 'look hard at') and uses *see* to check that the student is understanding ('do you **see** what I mean'). She further uses expressions ('comes out', 'arise', 'clear') that are coherent with this type of visual reasoning, because the object of mental attention becomes salient for the perceiver ('comes out/arise', 'clear') against its 'background'.

In terms of the interaction, however, what is interesting about the student's participation is that she does not contribute to or collaborate in the metaphorical framing of her task. She either responds minimally ('hm', 'uhu', 'yeah', 'okay') or focuses on one aspect of what the lecturer is explaining by re-wording it ('so (.) the first half is just writing about the theory?'). This does not seem to replicate what might happen in conversations between L1 speakers of English. For example, Cameron (2008) has found that metaphors which are not repeated, re-worded or challenged across turns simply get dropped. Nevertheless, although the student does not repeat or develop the lecturer's metaphors in this conversation, the lecturer keeps using the same metaphorical frame. This was the conversation in which we found the lecturer using *see*, *look* and *focus* to metaphorically express the search for knowledge a total of 20 times in a conversation lasting just under 11 minutes. Yet the student did not use any of these or other related terms in metaphorical or non-metaphorical ways in the course of their talk. In fact, on one occasion it seemed as though she had not grasped the point the lecturer was making at all. The conversation continued in this way:

- NT exactly and the other thing is if you **look** HARD at (.) the (.) topic (.) and you think (.) there IS no debate here (.) it's just facts (.) it probably isn't going to be on the exam paper
- MM okay okay yeah
- NT that can help you **focus**
- MM yeah
- NT a little bit more
- MM 'cause (.) I'm I was really (.) I really worried about that because (.) sometimes you have a lot of theory but
- NT hm
- MM okay (.) I can learn it but I don't know what to talk about

If the student still did not know "what to talk about", it does not seem that she had understood the point the lecturer was making.

During this exchange, possibly in order to reinforce the message, the lecturer made use of co-speech gestures as she uttered some of these sight terms. These gestures seemed to indicate that, for this particular lecturer, “UNDERSTANDING IS SEEING” was *actively* informing her view of what intellectual activity entails (Müller, 2008). We can see this in the following two gestures:

	
<p>is if you look HARD at (.) the (.) topic</p>	<p>that can help you focus</p>

In the first gesture (which she repeats), the lecturer uses a combination of gesture and gaze to underscore the meaning of ‘look hard’. In this gesture, her fingers gradually splay out as her hand moves downwards towards the desk, presumably to indicate the direction of the vision. In the second gesture, her hands come together in a narrowing action, to reflect the basic meaning of ‘focus’.

Of course, sight metaphors did not occur in isolation from other metaphorical language uses. Indeed, the use of sight metaphors alongside others which fleshed out the metaphorical scenario a lecturer wanted to communicate to a student seemed to result in more successful communication of the metaphorical idea. Thus, a greater alignment between a lecturer (FL) and student (RH) could be discerned when a lecturer at a Swedish university framed his advice about successful academic writing by means

of a complex extended metaphor that also drew on the SIGHT domain, albeit in a more indirect way:

- FL what you do is that you **pick out** something that you want to (.) argue for or against or (.) prove or (.) develop (.) that is the that is the topic sentence
- RH o:kay
- FL (.) and I THINK but you need to correct me now because when when I read your essay it was sort of a little hhh difficult to **follow** your
- RH mhm
- FL train of thought but I think that what you want to do (.) is to say that he contradicts himself
- RH yeah
- FL that is your main **point**
- RH mhm
- FL so this (.) this ONE thing is something that you need to **pick out** from your essay (.) **lift out** and make **clearer** (.) this is your main idea (.) you're not talking about (.) Oscar Wilde or (.) or or the (.) article (.) you are talking about how he contraDICTS himself in the article this is your **point** (.) and you need to **lift it out**
- RH yeah (.) I have to be more **clear** (.) I know
- FL yes (.) <laughs> that that you need to work more with that
- RH yeah and also with the introduction I think
- FL exactly
- RH maybe th- the introduction has to be more **focused**

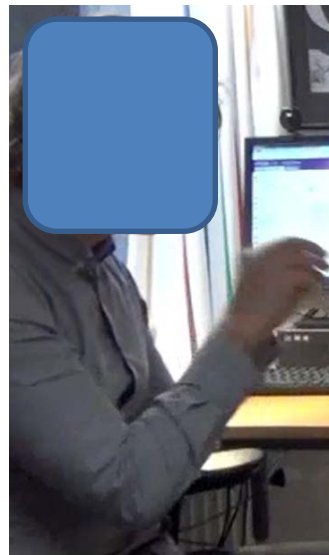
Rather than simply reiterating the same or similar words, the lecturer provided an explanation which draws on interlocking metaphors. The most important was that of the writer as a guide ('it was sort of a little hhh difficult to **follow** your train of thought'), which was developed more fully in the course of the conversation. (For reasons of space, this cannot be included here, but the interested reader can read the full transcript on www.eurocoat.es). Working alongside this basic idea were those which had to do with signposting the way ('your main point'³, 'pick out', 'lift out', or 'make

clearer’). These were not terms automatically retrieved by Wmatrix for the semantic domains “sensory:sight”, “seen” and “unseen”, but are relevant to the analysis of this stretch of the discourse because the base metaphor (“UNDERSTANDING IS SEEING”) has attracted different metaphors on the same topic (Cameron & Low, 2004).

This lecturer’s use of interlocking metaphors is reflected in his use of gesture. It is particularly interesting to look at the gestures that accompany his use of the words ‘pick out’ and ‘lift out’, in this exchange. His first two uses of ‘pick out’ are each accompanied by gestures that appear to emphasize the selective nature of this verb:

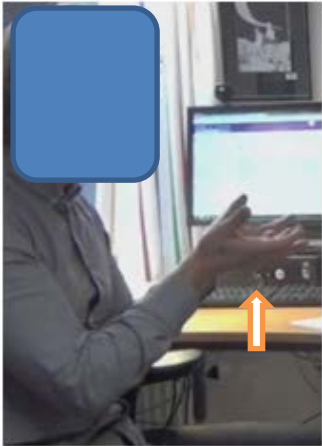
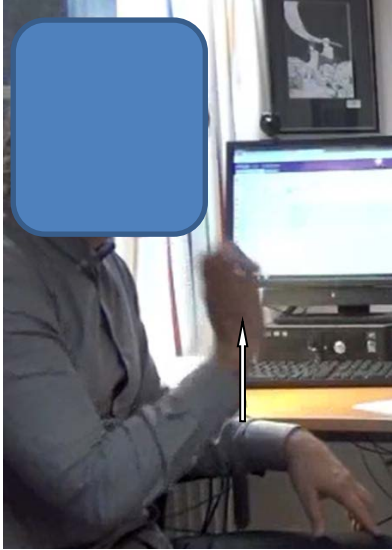


what you do is that you **pick out**
something



this ONE thing is something that you need
to **pick out** from your essay

In contrast, while uttering the words ‘lift out’, this lecturer lifted his hands upwards, with his palms open, as we can see in the first of the following two screenshots:

	
<p>lift out and make clearer</p>	<p>and you need to lift it out</p>

At first sight, the gesture in the first screenshot appears to relate to the ‘lifting out’ rather than the ‘make clearer’ part of the message. However, the fact that the palms are open rather than closed may reflect the metaphorical idea that the ideas are more visible (and therefore clearer). As we can see in the second screenshot, the second instance of ‘lift’ in this extract is also accompanied by a gesture that more closely resembles those used for ‘pick out’ that were presented above. Here the gesture is much smaller and emphasises the selective, ‘picking’ aspect of the lifting out. The use of these gestures suggests that the two concepts are related in the lecturer’s mind, and their repetition may have served to reinforce the meaning in the mind of the student.

What is clear is that the gesture contributes to the salience of the metaphor(s) in this extract. The use of gestures, such as these, to illustrate metaphor has been well-documented. Many apparently ‘dead’ metaphors are often accompanied by gestures indicating that at some level, in the mind of the speaker, they are very much alive (Cienki, 2008). Müller (2008) has pointed out that the use of gesture can increase the degree to which attention is drawn to a particular metaphoric expression in use, making

it cognitively more or less salient. The metaphoric gesture in this example certainly serves to increase the salience and hence the noticeability of the metaphor and may have facilitated comprehension.


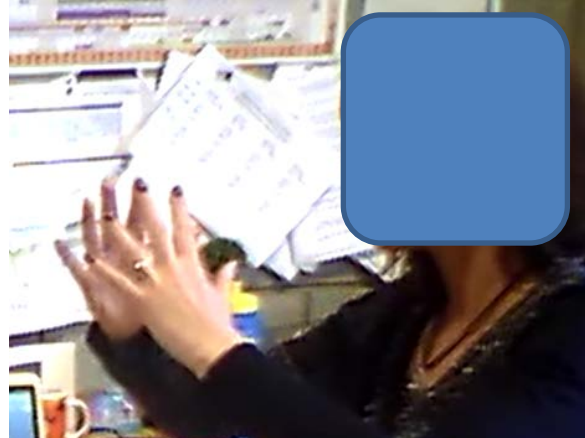
In this extract, the student responded ('I have to be more clear', 'the introduction has to be more focused') in a way that built on and contributed to the lecturer's metaphorical framing of the topic. In fact, this discourse event illustrates Lakoff and Johnson's description of the way that "UNDERSTANDING IS SEEING" overlaps and combines with "IDEAS ARE LIGHT-SOURCES", "DISCOURSE IS A LIGHT-MEDIUM" or ARGUMENT metaphors, when, in the last case, the 'author [of an argument] is the guide who takes us through the argument' (Lakoff and Johnson 1980:103) revealing or sharing with us his/her perspective on what he sees/understands.

Interestingly, one lecturer's use of *look* was used to introduce an overt invitation to the student to think about the relative importance of different sources of information when preparing for an exam. She introduced this topic in terms of a physical structure: "look at it as a pyramid". In context, this seemed to function as a repair, because the lecturer (MO) had been somewhat confusing in her explanation of how such a physical structure might be assembled:

- MO I want you to prioritize (.) your study (.) so (.) the basic wide reading (.) **comes from** your text-book
 DS mhm
 MO er (.) the more applied to industry (.) which is **narrowing down** (.) **comes from** your tutorials and the case studies
 DS mhm
 MO and then (.) what **pulls** it all **together** at the very **top** (.) are the lecture slides
 DS okay
 MO so that's your **focus** (.) the **focus narrows**

The lecturer used a number of movement metaphors (*comes from*, *narrow down*) alongside expressions that refer to a static arrangement (*at the very top*) as well as sight

(*focus*). The mixing of vehicle terms that refer to movement was potentially very confusing. *Come from* describes movement from one place (the text-book and the tutorials and case studies [UI5: 253 and 255]) in the direction of the subject (the student), while *narrow down* (UI5: 255) does not specify the point of departure or arrival but rather downward movement on a vertical axis. However, this *narrowing down* turned out to be an upward movement (what **pulls** it all **together** at the very **top** [UI5: 257]), that is, the highest point in this physical arrangement was also the narrowest. Any coherence in the metaphorical expression of this idea – if indeed it existed – emerged when the lecturer linked her use of *narrow* with *focus* (“the focus narrows” [UI5: 259]). She used illustrative gestures to accompany this last phrase. It is interesting to note that there is a slight downward movement in these gestures:

	
so that's your focus	the focus narrows

Analysis of the metaphorical vehicles in this stretch of the discourse reveals a somewhat incoherent formulation of the advice being given, which did not seem to contribute to communicating with any clarity what it was that the student needed to do. However, the student seemed to grasp the general idea and the conversation continued with the student explaining that, although he found the lectures and tutorials easy to



understand, “the thing is for me the reading from the textbook is a bit tough” (UI5: 264), to which the lecturer responded “you DO need to read it” (UI5: 271) because “I DO need you to have that **foundation level** first” (UI5:275).

The lecturer’s phrase *foundation level* was connected to her previous use of words about the physical arrangement of the sources of knowledge and information (*foundation* and *basic* are both linked semantically to the notion of providing support from below), and it was perhaps here that she perceived the connection between simple physical arrangement and a building, for she then began to talk about this physical structure as a container: “that’s why it’s there as the recommended reading DO any other reading you do **outside** that oh well any other reading you do **outside** that (.) is additional and great to do” (UI5: 227 & 279). The kind of building she had in mind was then clarified:

MO and **look at** it as a **pyramid**
 DS mhm
 MO and what you need to do is you you need to be exTREmely familiar with the **top** s- the stuff at the **TOP** (.) you <53> have to know that </53>
 DS <53> but have the **base** </53>
 MO yeah exactly

This overt invitation to see the preparation of an exam as if it were a pyramid seemed to be functioning in this context as a summary statement (perhaps in order to repair the lecturer’s communicative *faux pas*) by clarifying the grounds of the comparison set up earlier with talk of “narrowing” “at the top”. Interestingly, the student contributed to expanding and explaining the metaphorical idea by completing the lecturer’s “you need to be extremely familiar with the stuff at the **top**” (UI5: 287) with “but have the **base**” (UI5: 288). This kind of other-completion (overlapping with the lecturer’s words) is evidence of a very close coordination of meanings emerging in the discourse of the two participants. In terms of the metaphorical idea expressed, the student’s use of *base* was

completely coherent with the building metaphor and leads to the conclusion that the lecturer's metaphorical comparison with a pyramid was communicatively very effective. Here, the student's degree of understanding may have been aided by the lecturer's use of gesture, which helped both her and the student to co-construct the idea of a pyramid:

	
<p>and what you need to do is you you need to be exTREmely familiar with the top s- the stuff at the TOP (.) you <53> have to know that </53></p>	<p><53>but have the base </53></p>

There appears to have been successful communication between the lecturer and the student here, despite the potential contradiction between the 'pyramid' metaphor and the 'narrowing down' metaphor. However, it must be noted that the successful co-construction of this metaphorical scenario between a lecturer and a student was exceptional in the corpus as a whole. It was unfortunately all too often the case that the metaphorical frames proffered by the lecturers did not result in any metaphorical uptake by their student interlocutors. In the case of "UNDERSTANDING IS SEEING" this lack of alignment between speakers might seem somewhat surprising if, as has been argued, this mapping constitutes the kind of primary metaphor that is hardly subject to important variation of cultural or linguistic kinds.

6. Discussion and Conclusions

The analysis of a corpus of academic office hours' consultations reveals that, for lecturers using English as the medium of instruction in five European universities, the sight domain provides an important means of talking about and explaining the academic challenges undergraduate students face. Unlike previous findings (Cameron, 2003; Goschler, 2005; Herrmann, 2013) on the realization of the "UNDERSTANDING IS SEEING" mapping in educational or academic contexts, we have seen that, when mentoring undergraduate students on topics like academic writing or exam preparation, these lecturers draw on the domain of sight to suggest what it is that students must do to gain or show their knowledge. However, the very absence of any systematic use of these metaphors in other educational contexts such as the Primary School discourse studied by Cameron (2003) raises an intriguing question: when or how do such metaphors become incorporated into educational discourse? Is this simply a characteristic of academic talk in Higher Education or does it manifest itself at earlier stages of the educational system? As far as we know, this question has not been addressed in research looking at this metaphor.

This analysis has also highlighted the importance of considering all possible realizations of a mapping such as this if we wish to describe it adequately. Although one expression (English "*I see*" and its equivalents in other languages) has often been cited as the prototypical realization of "UNDERSTANDING IS SEEING", this mapping – as is the case of other conceptual metaphors – motivates a much wider range of linguistic expressions than this. The semantic annotation tool Wmatrix has allowed us to locate and identify some of the words that realized this mapping in a corpus of academic conversations in English: *see*, *look*, *focus*, *view*, *observe*, *spot*, *notice*, and *viewpoint*. Furthermore, the identification of the three words (*see*, *look* and *focus*) most frequently used to reason about knowledge and understanding in the context of one-to-one conversations between lecturers and Spanish Erasmus students has made it possible to offer a detailed description of the forms, meanings and functions of these instantiations of the mapping in this particular discourse context. This description, in turn, draws attention to the fact that reasoning about knowledge and understanding among English-speaking academics is somewhat more complex than suggested by formulations of the mapping as "UNDERSTANDING IS SEEING", "THINKING IS PERCEIVING", "SEEING IS BELIEVING", or "THINKING IS SEEING", because, as has been noted, the verbs can be used

to express a number of slightly different meanings and orient listeners to different types of intellectual activity. Moreover, as the data show, the achievement of a state of seeing/understanding is necessarily preceded by voluntary acts of *looking* and *focusing* on the part of those wishing to gain knowledge or enlightenment. The success of students in their quest for knowledge can therefore be evaluated and guided by their mentors (“you have a lack of focus”, “it’ll be interesting to look at it from that perspective” or “you need to focus”, for example) – something not easily predicted by accounts of a metaphorical mapping that focus on its conceptual underpinning or on how it is motivated by correlations between subjective judgement and sensorimotor experience.

Furthermore, the view that this type of primary metaphor is at the heart of human cognition generally and equally available to speakers of different languages, “because everybody has basically the same kinds of bodies and brains and lives in basically the same kinds of environments, so far as the features relevant to metaphor are concerned” (Lakoff and Johnson 2003: 257), is not borne out by the linguistic data examined here. Speakers of Spanish and English do not use the metaphorical expressions motivated by the “UNDERSTANDING IS SEEING” mapping in the same ways: we have noted some overlap but also substantial divergence in terms of the frequency, forms and meanings of sight metaphors in this corpus. As regards frequency, the Spanish speakers significantly under-used sight metaphors in comparison with their English-speaking lecturers, and both groups of speakers used the words *see*, *look* and *focus* in distinctive ways. And while it is true that some of this asymmetry in the use of sight metaphors in this discourse context was a result of the different roles of the interlocutors in these conversations (mentors versus mentees), it does not fully account for the lack of alignment between the two groups of speakers when using the metaphorical expressions in context. As has been seen, the Spanish-speaking lecturer’s use of sight metaphors had more in common with that of the Spanish-speaking students than with her English-speaking counterparts.

When considering why sight metaphors should be so ubiquitous in English-speaking lecturers’ talk about learning, it is important to recall the multiple instances we found of conflated senses of *see* and *look*. A great deal of knowledge, in literate societies generally, and in academic institutions in particular, is gained via the evidence provided by writing or other visual displays. In one sense, then, SEEING is – quite

literally – UNDERSTANDING, for without this visual evidence in written and other records, knowledge can only with difficulty be communicated from one person to another and preserved for future learning occasions. The library, the laboratory, and other kinds of visual displays play a fundamental role in the acquisition of knowledge and skills in academic environments – and the lecturers’ use of sight terms underlines their understanding of the role of the visual (and how it is used) in teaching and learning. The occurrence of co-speech gestures when sight terms (or others related to them in the discourse) are used seems also to underscore how “active” these metaphors are for the lecturers (Müller, 2008).

However, if were true that the “UNDERSTANDING IS SEEING” metaphor were particularly associated with literate cultures, as argued by Tyler (1984), we would expect that the Spanish undergraduate students (members also of a literate society) would engage in the metaphorical framing of their tasks in ways that were very similar to those of their lecturers. Yet, we have seen that this is either not the case or occurs so rarely as to be noteworthy (as seen in Section 5). The lack of alignment between the members of different language speaking groups is unlikely to be due to differences in background experience: Centres of Higher Education in Europe (and elsewhere) do not differ to the degree that visual evidence provided for learning should be highly valued in one country or university and not in another. The visual evidence pointed to earlier (libraries or laboratories, for example) plays a fundamental role in all academic institutions, not just those found in English-speaking countries and therefore it seems unlikely that the relative under-use of sight metaphors in the student corpus should arise from some kind of fundamental difference in the Spanish speakers’ previous experience of learning. The experiential base for the metaphor is thus probably very similar in Spain, England, the Netherlands or Sweden. However, this ‘primary’ metaphor does not surface in the same way among speakers of these different languages, as our data confirm.

Insights into cross-cultural variation in the way that metaphors like “UNDERSTANDING IS SEEING” motivate verbal expression in different languages, or how entrenched or marginal they may be in different language-speaking communities, cannot adequately be provided by research that does not examine discourse practice. Language use not only provides much of the evidence for the existence of conceptual mappings in the first place; language itself is also among the most important cultural

mechanisms that serve to propagate metaphors such as the one considered here (see MacArthur [2005, pp. 89–90] for discussion). The introduction, maintenance and entrenchment of metaphorical language use of any kind is located in discourse. The metaphores (Cameron & Deignan, 2006) that emerge in particular discourse events may be *ad hoc* and in use on only one or two occasions. Others, however, may be repeated in other discourse events. When they are repeated and replicated by other speakers in other contexts, we can say that they become entrenched in the discourse practice of smaller or larger groups of speakers. In the case of the metaphorical use of the sight terms examined in this article, it seems clear that reasoning about learning and knowledge in terms of vision is part of the entrenched discourse practices of English-speaking members of academia – and possibly reflect some kind of conceptual link between these two domains. However, it does not appear that these discourse practices find more than a vague echo in Spanish academia, to judge from the way that their student (and one lecturer) representatives use sight metaphors in their talk. To understand why this may be so and how the discourse practices of different communities of speakers differ in this regard (not simply English versus Spanish speakers but also younger and older members of academic communities), it would be necessary to examine many more discourse events where knowledge and understanding are central topics of talk and concern. This is likely to be found in the analysis of face-to-face interaction between teachers and students in universities or other centres of education, rather than in general corpora. The analysis of academic dialogue between lecturers and students in different countries, carried out in different languages, is likely to yield greater insights into the relative entrenchment of SIGHT metaphors in different communities. This is because the responsibility of educators in guiding their students' efforts to learn will yield the discourse data necessary for carrying out the kind of cross-cultural or cross-linguistic analysis that will allow us to account for similarities and differences among different language-speaking and discourse communities. The present article has offered a first step in this direction.

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¹ This number includes items not found in dictionaries, such as hesitation markers like *mhm* or the orthographic representation of speaker sounds, such as *haeh*.

² The numbers between carets (e.g. <55>) signal an overlap between the participants' words.

³ Sense 6 of 'point' provided by the MEDAL is 'a very small area of light or colour' which we take to be the basic meaning motivating this metaphorical use.

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