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Vision Metaphors for the Intellect: Are they Really Cross-Linguistic?

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Many metaphor researchers, especially within the framework of Cognitive Linguistics, have argued that the conceptual link between sight and intellect is universal. However, there are many studies, mainly anthropological but also linguistic, that contradict not only the universality of these metaphors, but also the predominant role of vision in the domain of cognition. In this paper, I will discuss the role of 'embodiment' and the importance of 'culture' in the creation and conceptualisation of perception metaphors. The main point will be to show that all human beings use the senses for gathering and processing information, but that the sense through which they choose to access that knowledge depends on the culture they are embedded in. First of all, I will describe the senses in terms of 'prototypical properties'. Then, I will show that the properties that apply to one sense in one culture might be applicable to a different sense in another culture. Rather than identifying one specific sense with one specific cognitive capability (UNDERSTANDING IS VISION), it is necessary to formulate these relationships on a more general and abstract level (UNDERSTANDING IS PERCEPTION).

Keywords: metaphor, perception, embodiment, culture

Metaphor in Cognitive Linguistics is understood as a mapping or correspondence between two conceptual domains, where properties from one domain, the source, are transferred onto another domain, the target. It is in this way that metaphors "allow us to understand one domain of experience in terms of another" (Lakoff and Johnson 1980: 135). According to the standard view of metaphor in this framework (cf. Johnson 1987; Kövecses 2002; Lakoff and Johnson 1980, 1999; Grady 1997), the conceptual associations between source and target domains are usually considered universal, since they are grounded on an experiential bodily basis, i.e. embodied human experience. For example, it has been shown that the target domain of emotions is usually conceptualised by means of the source domain of physiological changes in the body (Kövecses 2000). A typical example of such a conceptual correspondence is the metaphor ANGER IS A HOT FLUID IN A PRESSURISED CONTAINER. This metaphor is based not only on our knowledge of the behaviour of liquid substances in pressurised containers but also on our physical experience when we are angry, that is, an increase in

skin temperature, blood pressure and other activities in the nervous system (Ekman, Levenson and Friesen 1983; Gibbs *et al.* 1997; Levenson, Ekman and Friesen 1990; Levenson *et al.* 1992; Valenzuela and Soriano 2007).

However, both anthropology and linguistics researchers (Fernandez 1991; Kövecses 2005) have questioned the universality of these metaphors and pointed out that there are other metaphors which are possible only in some languages and not in others. In Kövecses's own words: "As a general tendency, cognitive linguists have overemphasised the universality of some of the metaphorical structures that they found and ignored the many cases of non-universality in metaphorical conceptualisation" (2005: xii).

In this study, I will examine one of those metaphors considered universal in cognitive linguistics, namely the link between sight and intellect (Sweetser 1990). Based on cross-linguistic data, I will show not only that this link is not totally universal but also that the predominant role of vision in the domain of cognition is culturally bounded. In other words, I will discuss the role of 'embodiment' and the importance of 'culture' in the creation and conceptualisation of perception metaphors. Section 1 briefly reviews some of the main studies on the polysemy of perception verbs in Cognitive Linguistics. Section 2 discusses the issue of motivation in polysemy and offers a detailed description of the possible conceptual bases for perception verb meaning by means of prototypical properties. Section 3 tackles the issue of universality vs. language-specificity in the polysemy of perception verbs in different languages. The main goal will be to show that all human beings use the senses for gathering and processing information, but that the sense they choose in order to access that knowledge depends on the culture they are embedded in. Finally, Section 4 draws some conclusions and proposes a model that takes into account both embodiment and culture as the bases of the conceptual motivation for perception metaphors.

1. Polysemy in perception verbs

The semantic field of perception verbs is one of the favourite domains in linguistic research. Due to their wide variety of constructional and syntactical possibilities and their rich polysemous structures, these verbs have been the object of study not only in morpho-syntax (Dik and Hengeveld 1991; Enghels 2005; Fernández Jaén 2006; García-Miguel 2005; Gisborne 1996; Horie 1993; Roegiest 2003) but also in semantics (Alm-Arvius 1993; Horno Chéliz 2002-2004, in press; Ibarretxe-Antuñano 1999a, forthcoming; Rojo and Valenzuela 2004-2005; Sweetser 1990; Viberg 1984).

In the area of polysemy, one can find numerous studies devoted to the analysis of the semantic extensions that these verbs lexicalise. Within the framework of Cognitive Linguistics, Sweetser (1990) reviews some of the semantic extensions of perception verbs in English. Her main aim is to provide a motivated explanation for the relationships between senses of a single morpheme or word and between diachronically earlier and later senses of a morpheme or word. In order to do so, she proposes a semantic link-up—the MIND AS BODY metaphor—to account for this pervasive tendency in the Indo-European languages to borrow concepts and vocabulary from the more accessible physical and social world to refer to the less accessible worlds of reasoning,

emotion and conversational structure. Figure 1 summarises Sweetser's paths of semantic extension in English perception verbs:

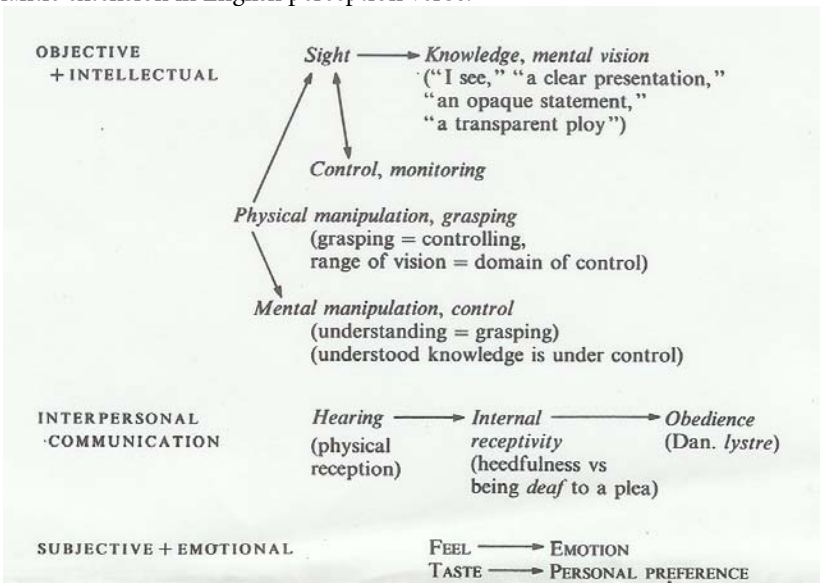

Figure 1: Structure of English perception metaphors (From Sweetser 1990: 38)

Sweetser's list of perception metaphors can be complemented with more recent analyses that add new meanings not only to verbs of sight and hearing—which are the perceptual modalities that attract the attention of most linguists (Alm-Arvius 1993; Baker 1999; Danesi 1990)—but also to verbs of touch, smell and taste—usually more marginal in linguistic discussions. Ibarretxe-Antuñano (2002: 114) offers the semantic extensions shown in Table 1.

These studies clearly show that perception verbs are polysemous, but the question one has to put forward is whether these semantic extensions are arbitrary or motivated. In other words, are there any reasons that can explain why a verb like *smell* lexicalises the meaning 'suspect' as in (1) or that a verb like *see* can be used in the sense of 'understand' as in (2)?

(1) *In Ferrari terms, it wasn't, and Niki should have* ***smelled*** *earlier that yet another Ferrari plot was under way, and without Montezemolo, his flanks were unprotected* (BNC)
(2) *I explained the problem but he could not* ***see*** *it*

Furthermore, provided that these reasons are found, the next step is to ask whether these paths of semantic extensions are applicable to all languages. That is to say, are these connections between the domain of sense perception and other domains like cognition universal or language-specific?

Metaphors in the perceptual domain	
VISION	Understanding is seeing
	Foreseeing is seeing
	Imagining is seeing
	Considering is seeing
	Studying / Examining is seeing
	Finding out is seeing
	Making sure is seeing
	Taking care is seeing / looking after
	Witnessing is seeing
	Suffering is seeing
	Obeying is seeing
	Refraining is seeing
	Being involved is having to see
HEAR ING	Paying attention is hearing
	Obeying is hearing
	Being told / knowing is hearing
	Understanding is hearing
	Being trained is being heard
	Having an agreement is having a hearing
TOUCH	Affecting is touching
	Dealing with is touching
	Considering is touching
	Persuading is touching
SMELL	Suspecting is smelling
	Sensing/guessing is smelling
	Investigating is smelling/sniffing around
	Showing contempt is sniffing
	Corrupting is smelling
	Not to get wind of something is not to smell
	Prophesying is smelling
TASTE	Experiencing something is tasting
	Producing a feeling is tasting (enjoying/disliking)
	Knowing is tasting

Table 1: Conceptual metaphors in perception verbs (From Ibarretxe-Antuñano 2002: 114)

2. Arbitrariness vs. Motivation: Conceptual bases in perception verbs

Some authors have attempted to study the meaning of words on the basis of a series of truth conditions independently from any type of human understanding (see, for instance, Fregean semantics [Geach and Black 1952] and Montague's Model-theoretical semantics [Dowty, Wall and Peters 1981; Cann 1993]). Although this objectivist view of meaning can account for certain formal semantic properties, it falls short when it comes to explain the type of polysemous structures discussed in Section 1. As Lakoff (1987: 157-218) argues, language is intrinsically linked to human beings. Language does not reflect a reality based on an external objectivist world, totally independent of what people observe and experience; quite the contrary, language reflects conceptual structures based on people's experience and knowledge of the external world that surrounds them. Therefore, to think that the relationship between linguistic forms and the concepts they represent is, as traditionally proposed, arbitrary cannot be totally true. To some extent, one can accept that there is a certain essential arbitrary component in the association of words with what they mean but, as Sweetser (1990: 5) points out, this arbitrariness is very restricted. Human conceptual categories and the meaning of linguistic structures at any level are not a set of universal abstract features or uninterpreted symbols; they are motivated and grounded more or less directly in experience, in our bodily, physical and socio-cultural experiences. This notion of 'motivated' language is known in Cognitive Linguistics as *embodiment* (Johnson 1987; Lakoff 1987; Lakoff and Johnson 1980, 1999).

If the idea of embodiment is correct, then, it is possible to hypothesise that the semantic extensions that occur in perception verbs (Section 1) have to be motivated and grounded in the way we perceive and experience the senses. The senses have frequently been described as the different channels we have through which we gather information about the world (Sekuler and Blake 1994; Classen 1993). There are two key words in this definition: *information* and *different*. The five senses give us information about the world in which we live, but the way this information is received, processed and understood by human beings is different. These differences are based on biological as well as cultural constraints. Biologically, each sense has its own receptors—eyes, ears, skin, nose, mouth—and its own pathways to the brain. Each sense receptor responds to different stimuli: light, sound waves, mechanical disturbances, volatile substances and soluble substances. In sum, the way in which each sense modality links us to the world is different. Each modality makes us perceive certain stimuli and interpret the same reality in a particular manner.

In order to explain the conceptual basis of the semantic extensions in perception verbs, it is crucial to take this diversity into account and to characterise the experiential domain of perception. The model I propose for this characterisation is the creation of a typology of *prototypical properties*. These properties are based not only on the physiology of the five senses—biological foundations—but also on the psychology of the senses—folk models, how people think they perceive with the senses (see Classen 1993; Howard Hughes Medical Institute 1995; Howes 2005; Rouby *et al.* 2002; Sekuler and Blake 1994). This guarantees the independence of description of the perception domain and eliminates any post hoc analysis derived from the semantic extensions found in perception verbs (for a discussion on this issue, see Keysar and Bly 1995; Murphy 1996).

Due to restrictions of space, I can only enumerate and briefly describe the main prototypical properties that characterise and constrain the domain of perception.[1] Definitions for each property are based on the relationship among the three main elements that participate in a perceptual act: the person that carries out the perception or perceiver (PR), the object—animate or inanimate—being perceived (OP) and the act of perception itself (P). These properties are not to be understood as semantic primitives or innate atomic conceptual units but as shorthand ways of referring to the defining properties used to describe perception. Prototypical properties are summarised in Table 2.

[1] For a more comprehensive account of these prototypical properties including information about the physiological and psychological bases for these properties, and the distribution of positive/negative values, see Ibarretxe-Antuñano (1999a: chap. 5) and the references therein: http://www.unizar.es/linguisticageneral/Ibarretxe-PhD-Thesis-99.pdf

<contact>	whether the PR must have a physical contact with the OP in order to be perceived
<closeness>	whether the OP must be in the vicinity of the PR to be perceived
<internal>	whether the OP must go inside the PR to be perceived
<limits>	whether the PR is aware of the boundaries imposed by the OP when perceived
<location>	whether the PR is aware of the situation of the OP when perceiving
<detection>	how the PR performs the P: how PR discloses the presence of an object, and distinguishes one object from another
<identification>	how well the PR can discriminate what he is perceiving, the P
<voluntary>	whether the PR can choose when to perform a P
<directness>	whether the P depends on the PR directly, or is mediated by another element
<effects>	whether the P causes any change in the OP
<briefness>	how long the relation between P and OP should be in order for the perception to be successful
<evaluation>	whether the P assesses the OP
<correction of hypothesis>	how correct and accurate the hypothesis formulated about the OP in the P are in comparison with the real object of P
<subjectivity>	how much influence the PR has on the P

Table 2: Prototypical properties in perception

The distribution of these properties in each sense is shown in Table 3. These properties are organised in accordance with two parameters: (i) the interrelations between the three elements involved in perceptual processes: PR, OP and P (shown in the first column), and (ii) the presence or absence of these properties in each sense since there are properties that are applicable to all senses, group A, and others which only apply to some, group B (shown in the second column). Based on the physiological and psychological information about the senses, each property receives a $_{yes}$ or $_{no}$ tag depending on the positive or negative value it receives with respect to the role properties play in the characterisation of each perceptual modality. For example, senses like touch that require contact between the PR and OP will have a $_{yes}$ tag, whereas senses like sight that do not require contact will have a $_{no}$ tag instead (Sekuler and Blake 1996: 6-7, 27). It is important to bear in mind that each sense has its own characteristics and its own way of processing information. This diversity has to be reflected in the distribution of both properties and values.

PR, OP, P	Presence	Properties	VISION	HEAR	TOUCH	SMELL	TASTE
PR→P	A	<contact>	no	no	yes	no	yes
		<closeness>	no	no	yes	yes	yes
		<internal>	no	yes	no	yes	yes
	B	<limits>			yes		
		<location>	yes	yes			
		<subjectivity>			yes		yes
PR→P	A	<detection>	yes	yes	yes	yes	yes
		<identification>	yes	yes	yes	no	yes
		<voluntary>	yes	no	yes	no	yes
		<directness>	yes	no	yes	yes	yes
	B	<correction of hypothesis>	yes	yes		yes	
OP→P	A	----------					
	B	<effects>			yes		
		<evaluation>	yes				yes
		<briefness>			yes		yes

Table 3: Distribution of prototypical properties in the senses arranged according to the Western mode

2.1. Prototypical properties in action: An example <Correction of hypothesis> The prototypical property <correction of hypothesis> refers to the degree of accuracy and precision of the OP during the P with respect to the real object perceived. In other words, how correct and accurate the information received about the OP is. This property is composed of the properties <directness> and <identification> and only seems to be applicable to vision, hearing and smell. There might be an explanation for this. When we perceive with these three senses, we formulate hypotheses about the nature and characteristics of the OP. Depending on the sense we use, these hypotheses are considered more or less accurate and reliable. Information gathered by these senses follows a scale of reliability and accuracy from top to down: vision→hearing→smell. The reasons for this hierarchy must lie in the values that the properties <directness> and <identification> take in each case. In vision, both properties have positive values. The fact that there are no mediators in the perception, as well as the fact that the identification of what we see is very accurate, make the hypotheses resulting from visual perception those that correspond best to the real object. Hearing is also very good at identifying what is heard; however, its hypotheses are not as correct as visual ones are because the P depends on the source of sound. Smell has a positive value for <directness>, but a negative value for <identification>. It is very difficult to identify exactly what is being accurately perceived by this sense; this difficulty is known as the *tip of the nose* phenomenon by perception psychologists (Lawless and Engen 1977). The distribution of the values in these properties and the perceptual processes in these senses are illustrated in Figure 2. The smiley represents the PR, the box the OP, and the arrow the P.

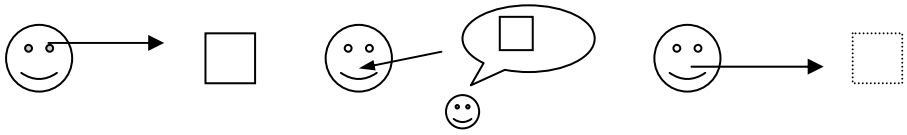

Figure 2.1: Vision Figure 2.2: Hearing Figure 2.3: Smell

In Figure 2.1 and 2.3, the direction of the arrow (P) goes from the PR to the OP, whereas in Figure 2.2 the direction is the other way round, from the OP to the PR. The direction of the arrow represents the property <directness>, which takes a positive value in vision and smelling, and a negative one in hearing since the PR cannot hear a sound unless it is produced by the OP. In Figure 2.1 and 2.2, the box that represents the OP has continuous lines meaning that it is easily identifiable. The discontinuous lines in the box in Figure 2.3 show the difficulty of identification of the OP in the case of smell. A common characteristic of the three figures is that the arrow does not have a contact with the OP, which corresponds to the property <contact $_{no}$> shared by the three modalities (see Table 3).

The same hierarchy of accuracy and reliability can explain some of the metaphorical semantic extensions of sight, hearing and smell verbs. Let us have a look at the following examples:

(3) *I **saw** that there was going to be trouble*
(4) *I **heard** that there was going to be trouble*
(5) *I **smelt** that there was going to be trouble*

All these examples are the same except for the modality of the perception verb used in each group: *see*, *hear* and *smell*. This allows the meaning in each group to be different: example (1) can be paraphrased as 'to know', (2) as 'to be told'[2] and (3) as 'to guess, to suspect'. However, if we look at these sentences more carefully, one realises that all these meanings belong to the domain of 'knowledge'. What seems to be different is the type of knowledge that can be inferred from each of these sentences. It is not the same to say about a certain situation that *I knew about it*, in contrast with *I was told about it* or *I suspected something*. In each of these examples, there is a variation in the degree of accuracy and reliability between the hypothesis inferred from the Ps and the real object. This variation can be explained by means of the prototypical property <correction of hypothesis>.

In the case of vision, it is I—the PR— who figures out that there was going to be trouble; I not only saw some indications that clearly pointed to me that there were

[2] It has been suggested by one of the Atlantis referees that the semantic extension of the verb *hear* in sentence (4) could be a metonymy (EFFECT FOR CAUSE) rather than a metaphor. This explanation is possible if the sentence were to refer to a physical event, that is to say, if I were referring to the fact that somebody actually came and told me that information. However, I would argue that the mapping in (4) takes place from the domain of physical perception (hearing) to the abstract domain of cognition (knowing with less certainty), and therefore, I would consider (4) a metaphor.

going to be some problems, but I also interpreted these in a specific manner. In (2), I did not see *with my own eyes* that there was going to be trouble; another person told me so and, as experience tells us, sometimes what other people say, especially when reporting some event, is not always accurate. Finally in (3), I perceived that there was going to be trouble, but the indications to that conclusion were not very clear; the evidence for such an assumption is not strong enough for me to be sure of it.

The different meanings in these sentences are a faithful portrait of the perceptual experiences that we undergo when we use each of these sense modalities. When we perceive by means of these senses we formulate or create hypotheses about the nature and characteristics of the OP that correspond more or less accurately to the nature of the real object. The information gathered by the sense of vision, and consequently, the hypothesis formulated on the basis of that information is more accurate than that of the sense of hearing or smell. Therefore, what we are doing when we use metaphorical expressions that contain verbs such as *see*, *hear*, or *smell* is to map that experience from the domain of physical perception onto the more abstract domain of knowledge.

It is interesting to point out that the same distinctions about reliability of information we have just seen in the examples above are also lexicalised in evidentials, i.e. grammatical forms that provide information about the evidence on which a statement is based; they participate in the expression of the speaker's attitude towards the situation his/her utterance describes (Aikhenvald 2004; Chafe and Nichols 1986). Sense perception verbs are a common cross-linguistic source for evidentials (see Aikhenvald and Dixon 1998, 2003; De Haan 2005; Willett 1988). Sensory evidentials (visual and non-visual) are used to mark direct evidence acquired by any of the sense modalities (visual, auditory, olfactory…). That is to say, these evidentials mark that the speaker knows the information because s/he saw, heard, smelt, felt… it. For example, the evidential *ink'e* in Eastern Pomo (McLendon 2003) with the verbal form $p^hb\acute{e}^k$ tells us that the speaker knows that the object is burned because s/he felt it. However, what is really interesting is that these sensory evidentials also lexicalise the same metaphorical meanings described above. Visual evidentials provide a higher degree of reliability than auditory ones. For instance, in Tuyuca (Barnes 1984), the visual evidential *wi*[3] asserts a direct and reliable knowledge which does not require the speaker to be an eyewitness. Another example could be that of the morpheme *wonon* in the Samoyedic language of Russia, Nenets (Perrot 1996). This morpheme is used as an auditory evidential (the speaker hears a sound) but also as a quotative or hearsay evidential (the speaker is told).

3. Universality vs. language-specificity: Embodiment and culture

As shown in the previous section, prototypical properties help us understand why verbs such as *see*, *hear* or *smell* in English lexicalise meanings related to the domain of knowledge. The next step is to ask whether this conceptual grounding also motivates the semantic extensions of these perception verbs in other languages. In theory, the

[3] *Wi* is only one of the possible forms of the visual evidential, since evidentials in Tuyuca are expressed by means of a portmanteau morpheme together with person, number, gender, and tense. *Wi* is the visual evidential for the 3rd person singular masculine past (Barnes 1984: 258).

answer should be affirmative. It is necessary to bear in mind that one of the main aspects in the cognitive theory of embodiment is that all human beings perceive and experience the world that surround us in a similar way since all of us are built in the same way and rely on the same mechanisms (body, motor skills, perceptual skills and so on). Therefore, similar semantic extensions should be found in other languages and should be explained in an analogous manner.

In previous research, Ibarretxe-Antuñano (1999a, b, 2002, 2006, forthcoming) carries out a contrastive study of the polysemy of perception verbs in two other genetically unrelated languages, apart from English: Basque and Spanish. She finds similar semantic extensions in the perception verbs in these languages, including the mapping onto the domain of knowledge. Let us see some parallel examples to the English ones in (3), (4), y (5) above:

(6) a. *Ya **vi** que iba a haber problemas*
already saw that went to there.be problems
b. *Arazoak egongo direla **ikusi** nuen*
problem.abs.pl be.fut aux.comp see aux.1sg
'I saw that there was going to be trouble'

(7) a. *Ya **oí** que iba a haber problemas*
already heard that went to there.be problems
b. *Arazoak egongo direla **entzun** nuen*
problem.abs.pl be.fut aux.comp hear aux.1sg
'I heard that there was going to be trouble'

(8) a. *Ya **me olía** que iba a haber problemas*
already refl.1sg smelled that went to there.be problems
b. *Arazoak egongo direla **usaitu** nuen*
problem.abs.pl be.fut aux.comp smell aux.1sg
'I smelled that there was going to be trouble'

Judging from these examples, one can assume that these semantic extensions can be regarded as universal. In fact, in Cognitive Linguistics literature, the link between vision and cognition has been generally accepted as one of the most consistently universal mappings in this domain. Authors such as Sweetser (1990) claim that vision has primacy as the modality from which verbs of higher intellection, such as 'knowing', 'understanding' and 'thinking', are recruited, whereas hearing verbs, such as *hear* or *listen*, would not take these readings, because they are more "connected with the specifically communicative aspects of understanding, rather than with intellection at large" (1990: 43). This claim is shared by several psychologists and psycholinguists such as Gardner (1983) and Arnheim (1969), who consider vision the most important sense, and therefore, the association between vision and thinking/knowledge natural.

However, research in non-Western languages seems to cause problems for this universal tendency. Evans and Wilkins (2000), for example, point out that in Australian aboriginal languages verbs of hearing are those that establish links with the domain of intellection, whereas the great majority of semantic extensions derived from sight verbs

are more related to desire, sexual attraction, supervision and aggression. In their own words,

> …within Australia, 'hearing' is the only perceptual modality that regularly maps into the domain of cognition throughout the whole continent. It regularly extends to 'think', 'know' and 'remember', as well as 'understand' and 'obey', thus presenting a pattern quite distinct from the Indo-European one…When 'see' extends outside of the domain of perception, it most commonly shifts into the domain of social interaction. (Evans and Wilkins 2000: 576)

These authors offer a great amount of empirical linguistic data illustrating this pervasive mapping from hearing onto cognition in different Australian languages. Let us draw some examples. The verbs *awe* in Arrernte, *kulini* in Pitjantjatjara, *yangkura* in Ngar, *gannga-* in Banjalang with the meaning 'hear, listen' and 'understand'. The verb *marrija* in Yukulta which means 'listen, hear' if it is used transitively and, 'think, feel' if it is used intransitively. The word for *pina* 'ear' in Walmajarri and its derived forms *pina-jarti* (lit. 'having an ear') 'intelligent', *pina-pina-karrinyu* (lit. 'ear-ear-stand') 'think', and *pina-rri* 'knowing, knowledge'. 'Ear' based expressions in Kayrdild such as *marraldunbuwatha* (lit. 'ear become useless') and *marraldurldiija* (lit. 'ear shit') 'to forget'.

What Evans and Wilkins have found in their analysis of over 60 Australian languages is, by no means, an exception. There are several examples that demonstrate that vision is not universally linked to knowledge. Seeger (1975), for example, reports that the Suya Indians of Brazil use the same verb *ku-mba* for 'listen', 'understand' and 'know', and that "when the Suya have learned something—even something visual such as a weaving pattern—they say, 'it is in my ear'" (1975: 214). Devereux (1991) also attests that the Sedang Moi from Indochina conceptualise the ear as the seat of reason, and expressions such as *tlek* 'deaf' and *oh ta ay tue(n)*, literally 'has no ear', are used to describe people who lack intelligence. Mayer (1982) explains that in Ommura (Papua New Guinea) all intellectual processes are associated with the auditory. According to this author, all that has to do with motives, thoughts or intentions are 'in the ear', and verbs such as *iero* mean both 'to hear (a sound)' and 'to know, to understand'. The Desana of the equatorial rain forest of Colombian Northwest Amazon (Reichel-Dolmatoff 1981) consider hearing as the most important function of the brain; it is the sense that connects both brain hemispheres (*pee yíri* 'to hear to act'), and provides abstract thought. Hearing, however, is not the only alternative to vision; there are other possibilities. The Ongee of the Andaman Islands in the South Pacific, for instance, order their lives by smells (see Classen, Howes and Synnott 1994, Pandya 1993) and the Tzotzil of Mexico consider heat (hence, touch) to be the basic force of the cosmos (see Classen 1993). Furthermore, there are cultures in which several perceptual modalities work together in the conceptualisation of cognition. The Shipibo-Conibo Indians from Peru are reported to use visual, auditory and olfactory perceptions to form a body of shamanic cognition (see Gebhart-Sayer 1985).

As suggested by several anthropologists, to take for granted that vision is the perceptual modality universally linked to the intellect is the direct consequence of an omnipresent Western perspective that somehow 'pollutes' conceptual reality in the

domain of perception. Howes (1991), Ong (1991) and Tyler (1984), among others, have already warned us against this *ethnocentrism* (see also Palmer 2003). Nowadays, it is undeniable that vision occupies a salient position in our conceptualisation of the intellect, but this saliency is not shared by all cultures or even present in older stages in the Indo-European culture. As Tyler puts it: "The hegemony of the visual…is not universal, for it: (a) has a history as a commonsense concept in Indo-European, influenced particularly by literacy; (b) is not 'substantiated' in the conceptual 'structures' of other languages; and (c) is based on a profound misunderstanding of the evolution and functioning of the human sensorium" (1984: 23).

An important consequence for the analysis of polysemy in perception verbs can be drawn from these linguistic and anthropological studies: The motivation and grounding of these semantic extensions cannot be solely explained by means of a common body-basis.[4] The culture in which these human beings live in is also a key factor and as Ong points out: "Cultures vary greatly in their exploitation of the various senses and in the way in which they related their conceptual apparatus to the various senses" (1991: 26).

The semantic extensions of the verbs *see*, *hear* and *smell* are found in English, Basque and Spanish not only because the embodiment of these senses is the same, but also because these languages, despite their genetic differences, share the same Western cultural background. In the other cases—the Australian languages, the Suya, the Sedang Moi, the Ommura, the Desana, the Ongee, the Tzotzil and the Shipibo-Conibo—the cultural basis is not the same and as a result the embodiment of the senses is used in a different manner. In other words, if we want to explain the motivation of these polysemous verbs we must take into account what we know about our own biology but also about our own culture since "language is a bio-cultural hybrid" (Levinson 2000: 5).

Once it is clear that culture plays a role in the conceptualisation of the senses, the next step is to discover what it is in a given culture that leads to such a specific choice. Some anthropologists such as Howes (2003) and Classen (1993) suggest that this choice is based on social factors. Others such as Gell (1995) and Feld (1990) give preference to environmental factors (e.g. open desert versus dense jungle) instead. Evans and Wilkins (2000: 580-85), for example, offer six cultural factors in order to explain why 'hearing' rather than 'seeing' is related to cognition verbs in Australian languages. These are: (i) the role of individual choice in selectively directing attention in hearing, (ii) a non-dyadic or broadcast conversational style, (iii) different prototypes for perceiving objects

[4] The term *embodiment* has several different interpretations in both psychological and anthropological studies (see Chrisley and Ziemke 2002; Wilson 2002; Ziemke 2003). In this paper, embodiment is always used in the cognitive linguistic tradition of Johnson's (1987) work. Johnson's definition of embodiment is quite problematic though, especially with regard to the role of culture as a determining factor in the interpretation of what embodiment is. Although Johnson includes social and cultural factors in his definition of embodiment, these two elements have been somehow ignored or perhaps, pushed into the background, in many cognitive linguistic studies. This situation is changing in current cognitive linguistic research. A proper discussion of the interaction between culture and embodiment lies outside the scope of this paper, but the interested reader can consult the following references: Dirven, Frank and Pütz (2003), Ziemke, Zlatev and Frank (in press); Frank, Dirven and Ziemke (in press).

absent from the immediate scene, (iv) accumulation of relevant knowledge about the country, land, tracks, myths… by hearing, (v) the role of hearing in the socialisation process, and (vi) oral tradition.

4. Conclusions: Conceptual motivation in perception

In the previous section, I argued that it is necessary to take into account both embodiment and culture in order to understand and prove that the polysemous structures in perception verbs are motivated.[5] This statement gives rise to a problem for the distribution and values of the prototypical properties of perception summarised in Table 3, which are arranged according to the Western model.

In spite of the differences between cultures, what seems to be clear is that the senses are used as "channels for information about the world" (Sekuler and Blake 1994) everywhere. Although mappings between one particular sense and one specific conceptual domain do not coincide across different cultures, these mappings are still carried out in the field of perception. Therefore, as a possible solution to Table 3, I propose the flexible motivation pattern that is schematically represented in Figure 3:

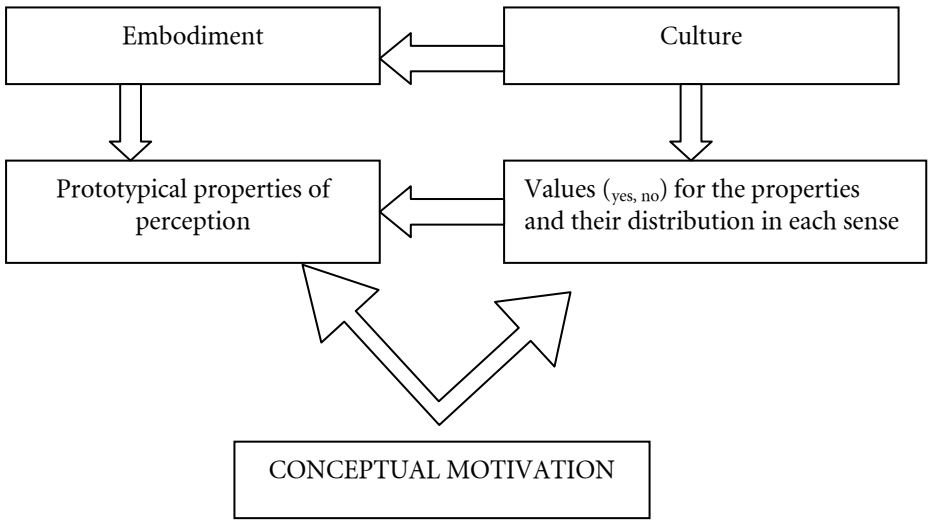

Figure 3: Conceptual motivation in perception verbs

The prototypical properties that describe the senses are kept the same, because they are based on the relationships established between the perceiver, the object perceived and the act of perception. Human beings have the same physical configuration and our organs work in the same way; therefore, these prototypical properties do not need to change. What has to be changed is the distribution of the properties in each sense and

[5] For a general overview on the relationship between language and culture, see Duranti 1997, 2001; Foley 1997; Kövecses 2006; Levinson 2006; Palmer 1996.

the values attached to each of these properties depending on the sense. Distribution and values depend on culture, and, therefore, they will be different according to the culture in which these human beings are embedded. Physical mechanisms for perception do not change, but it is important to remember that our interpretation and use of these senses can change. Thus, as shown in Figure 4, it is possible to describe the correspondences between properties and values for the semantic extensions of 'see' and 'hear' in two different cultures.

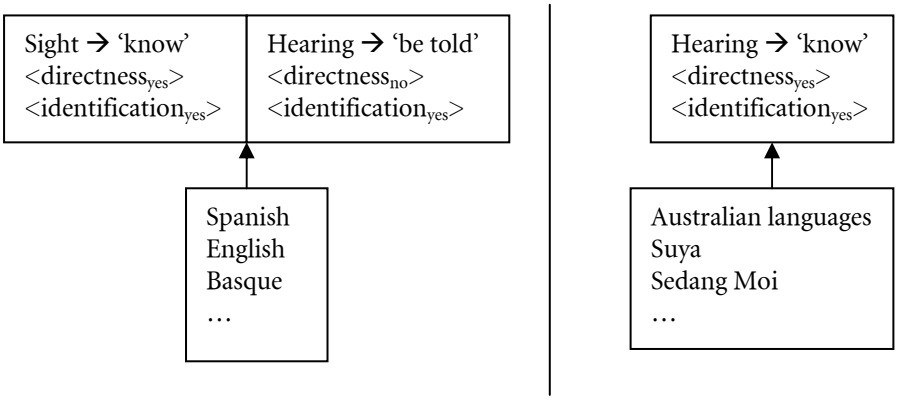

Figure 4: Semantic extensions in 'see' and 'hear' in two different cultures

The distribution of properties in Figure 4 corresponds to two different ways of using the senses in two different cultural models. On the left hand side, the Western model that relies on sight as the perceptual modality for identifying and gathering more reliable information, and on the right hand side, the alternative or 'Australian' model, in which the sense of hearing is the one considered more accurate and reliable. Based on these two ways of experiencing and being in contact with the world, it is possible to argue that the semantic extensions that take place in perception verbs are the same—there is a mapping from perception onto knowledge / intellection—but that the grounding that underlies these extensions varies, depending on the sense that these cultures consider more appropriate for this domain. In other words, there is a *shift* of prototypical properties and values based on the cultural background or, following Kövecses' (2005) terminology, a *differential experiential focus*, that is: "different peoples may be attuned to different aspects of their bodily functioning in relation to a target domain, or that they can ignore or downplay certain aspects of their bodily functioning as regards the metaphorical conceptualisation of a particular target domain" (2005: 246).

This flexible motivation schema is not only useful for explaining differences between cultures. It can also be applied to other more individual cases. Let us draw an example from universal literature: the case of Patrick Süskind's best-seller *Perfume* (1986 [1954]). In this novel, the main character, Grenouille, has an exceptional sense of smell, so acute that he uses it as his main source of information. His gift becomes evident in the linguistic descriptions of things, feelings and situations that Grenouille

makes throughout the book. While other people talk about 'seeing things' and 'clear problems', Grenouille behaves as if he could *see with his nostrils* (1986: 18), be on the *olfactory lookout* (1986: 119) and have an *olfactory imagination* (1986: 176).

Authors such as Popova (2003) have proposed a synesthetic metaphor SMELL IS VISION to account for Grenouille's 'special' way of experiencing the world. However, this new metaphor is not strictly necessary. From the point of view of Western conceptualisation of perception, this metaphor holds. However, this solution easily runs into trouble. Let us consider the other examples about Australian languages discussed in the previous section. If SMELL IS VISION in the case of Grenouille, then HEARING IS VISION in the case of Australian languages. In my opinion, both cases can be explained without the need to postulate new synesthetic metaphors that presuppose a Western viewpoint. Grenouille prefers a different sense modality as his main source of reliable information, just as Australian languages do with regard to hearing. Therefore, it is possible to apply the same procedure to Grenouille's case. This time vision properties shift to the sense of smell. Figure 4 schematically represents these correspondences.

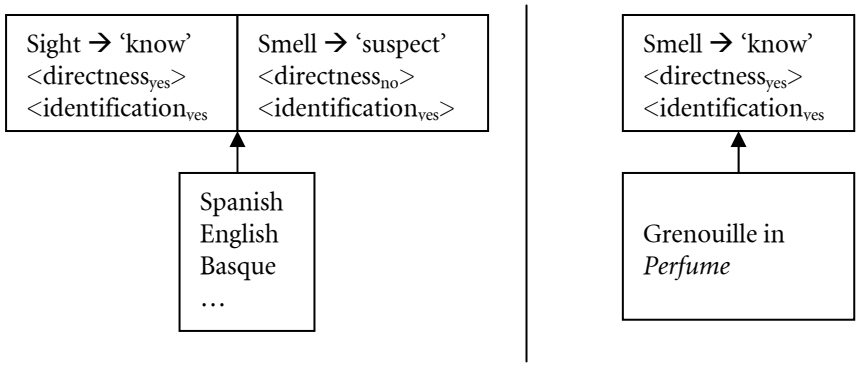

Figure 5: 'See' and 'smell' in Western culture and in Grenouille's model in *Perfume*.

In conclusion, in this paper I have attempted to show that the semantic extensions of perception verbs are not the result of a more or less whimsical and arbitrary process. They are motivated and grounded in our own conceptualisation and experience of the world. This motivation, described in terms of prototypical properties, is based on the embodiment of the senses and is constrained by the culture in which individuals of a given language are embedded. Since cultures are not the same for all human beings, the properties that apply to one sense in one culture (e.g. vision in the West) might be applicable to a different sense in another culture (e.g. hearing in Australian languages); there are *shifts* of properties. Therefore, rather than identifying one specific sense with one specific cognitive capability (e.g. UNDERSTANDING IS VISION), it is necessary to formulate these relationships on a more general and abstract level (e.g. UNDERSTANDING IS PERCEPTION). Given the nature of this study, I have been able to focus on only a few examples but I would like to argue that the shift of properties and values proposed here

can be applied to all semantic extensions in perception verbs and other semantic domains. This is a hypothesis that I leave open for discussion in future research.

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