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IMAGE SCHEMATA AND LIGHT: A STUDY IN CONTRASTIVE LEXICAL DOMAINS IN ENGLISH AND SPANISH

1. INTRODUCTION

Words and their associations, both on the paradigmatic and syntagmatic axes, encode how we impose order on reality by classifying what we see as one kind of thing or another. Language structure and more particularly, lexical structure, encodes how we make sense of the world around us through categorization.

Our inventory of lexical categories to a certain extent reflects our conceptual ones, and precisely for this reason the study of lexical structure is important, because there is a close relationship between the lexicalization of concepts and broader knowledge structures. Essential to this premise is the fact that the lexicalized concepts in any semantic domain are only a portion of those in a conceptual one. Consequently, in language we have a selective representation of reality, that is we have chosen to name some things, but not others. Why do we have words in English for the body of a dead animal (*carcass*) or a dead person (*corpse*, *cadaver*), but none for a dead plant? Why is *eternity* a word, but not *neverness*? This act of naming things is informative in itself, because what we choose to lexicalize is what we need to talk about the most, or what is most salient for us within our perceptual environment.

Thus the structure within the lexicon is meaningful, because among other things, the structures formed by semantic connections are representations of categorizing relationships. Langacker [1987: 76] underlines the importance of these structures in human cognitive organization, when he writes:

Mapping out the various domains of semantic space and their interrelationships, at least in rudimentary terms, is clearly prerequisite to any kind of definitive semantic analysis.

Consequently, one of the most important attributes of a truly viable model of semantic organization would be the ability to focus on semantic domains, showing how the lexical units within each domain are interrelated. In order to accomplish this, intuition by itself is hardly sufficient. It is necessary to establish a means through which an inventory of domains can be elaborated, membership in these domains determined, and recurrent structural patterns interpreted.

According to G. Lakoff [1987: 333-334]:

The lexicon involves much more than mere labelling concepts. [...] Even at the level of the individual word, language is an inseparable part of general cognition.

1.1. Semantic Space: The Functional Lexematic Approach to the Structure of the Lexicon

As we have stated previously, the lexicon is now known not to be a random list, but a structured whole composed of interrelated lexical items that fall into a series of lexical domains or semantic fields. This is an immensely attractive idea for many reasons. Besides appealing to our innate sense of order, the advantages of an organized lexicon are manifold. Kittay and Lehrer [1992: 14] write:

The concept of an organized lexicon provides a way of looking at the possibility of lexical universals by grouping together conceptually related words that may not have an exact translation [or at least an exact lexicalized counterpart] in another language. Whereas word-for-word translations may not be available, cross-linguistic comparisons can be made given a common conceptual space.

The problem with semantic fields seems, however, to be that though there is a general consensus of opinion that they do exist, there is somewhat less agreement as to:

- (1) their internal configuration
- (2) the basis for determining the field/domain membership of a lexical item.

We believe that these problems can be solved by using a Functional-Lexematic approach to structure lexical fields. This lexicographic model elaborated by Martin Mingorance [1984, 1987, 1990] integrates Coseriu's Theory of Lexematics [Coseriu 1981] and Dik's Functional Grammar [1978] to analyze the definitional structure of semantic units, and thus obtain the criteria through which one can assign units to a specific domain,

as well as determine and classify their relevant interrelationships both on a micro- and macrostructural level.

Each field has one archilexeme in terms of which all the members of the field are defined. To justify the inclusion of a verb in the field in question, it is lexically decomposed, so that its definition consists of a nuclear word [or a previously defined non-nuclear one] and one or more features which differentiate it from the preceding members of the hierarchy. The nuclear word is the *definiens* (or defining element) which labels the lexical dimension, and this word in turn contains a *definiens* which labels the lexical field in question.

Lexical dimensions in each field are established in terms of oppositions formulated from the definitional structure of the lexical units. These oppositions characterize both the internal structure of the domain in question as well as the lexical structure of the items it contains. Lexical dimensions are thus directly derived from the definitional structure of lexical units.

Working upwards from definitional structure and classifying approximately 8, 000 verbs, we have found that words fall into the following basic domains: EXISTENCE, POSITION, CHANGE, POSSESSION, PERCEPTION (including stimulus verbs), EMOTION, COGNITION, SPEECH, and GENERAL ACTION [composed of subgroups such as verbs of consumption, contact, use, etc.]. It is interesting to note that the domains we have found by working upwards from the factorization of definitions of lexical items (i.e. from specific to general terms) in English and Spanish largely correspond to those established by Miller [1991] to structure WordNet. This would seem to argue in favour of the existence of core areas of conceptual organization. It is our belief that in crosslinguistic comparison, the search for semantic universals would begin here with these basic areas of human experience.

The lexical domains we have found are all closely interrelated, but some can be said to be more basic than others. PERCEPTION is one of the most basic, as many of its members have metaphorical extensions into more abstract domains.

- Ex. (1) Feel (TACTILE PERCEPTION) → Feel (EMOTION)
 (2) See, regard, contemplate, observe, perceive, etc. (VISUAL PERCEPTION) → idem (MENTAL PERCEPTION)
 (3) Hear (AUDITORY PERCEPTION) → Hear (MENTAL PERCEPTION)

2. GENERAL PERCEPTION IN ENGLISH AND SPANISH

The importance of the verbs of PERCEPTION in the lexicon cannot be overstressed, and is in direct correlation with the fact that we are all human beings and are constantly receiving information from the outside world which we have to process and make sense of in some way. This means that at some very basic level, languages must be similar, because they have been constructed [at least to a certain degree] on the basis of our own bodily experience and our interactions with our physical environment [Johnson 1987].

One of the principal ways by which we make sense of our world is by sorting objects, people, events and ideas into categories [Lakoff 1987]. The way we first experience them, is by perceiving them and distinguishing defining characteristics about them which will help us to name them. Wierzbicka [1980] does not include *perception* among her semantic primitives, because she argues that it can be defined in terms of other primitives. However, in our opinion, it is undeniable that the perceptual component in meaning is basic to our understanding and construction of reality, and as we shall see, there is abundant evidence of this in the structure of language.

Verbs of PERCEPTION, therefore, are those which encode this experience of the outside world. It is far from coincidental that many of these have metaphorical projections to more abstract domains such as MENTAL PROCESSES/THOUGHT/EMOTIONS, and are thus also used to structure the experience of our inside world. This in itself is a reflection of the critical role of perception as a structuring mechanism in our conceptual system. It is by examining lexical structure that we obtain clues as to salient aspects of reality both inside and outside of ourselves.

The fact that PERCEPTION is so basic to a wide variety of interrelations between different lexical domains is principally due to the fact that perception is man's way of having a world, in the construction of which he takes an active part. St. Thomas Aquinas in his *Summa Theologica* wrote:

Quidquid recipitur, secundum modum recipientis recipitur. [Whatever is received is received according to the mode of being of the recipient.]

Johnson [1987: 124], accordingly, has recently said much the same thing though in a more specific way:

The fact of our physical embodiment gives a very definite character to our perceptual experience. Our world radiates out from our bodies as perceptual centers from which we see, hear, touch, taste and smell our world.

In fact, the human body conceptualized as a container is an important factor in our particular interpretation/creation of the world around us, something that is vividly reflected in our language. The dimensions of the domain of PERCEPTION show us its importance as a process that can occur from without or within. Verbs of general perception, (or INTERMODALS as labelled in Miller [1976:601]), such as *notice*, *note*, *perceive*, *detect*, etc. are thus called because they can be used to refer to any sensory modality of perception [perceptually neutral] so, they refer to our awareness of the physical world or to an awareness of ideas within our mind. This mirrors the complicated relationship between physical and mental perception, a fact that can be observed in the definitional structure of these lexemes, where the descriptive element [Snell-Hornby 1983] has been underlined. This descriptive element distinguishes one lexeme from another and also serves as a link, relating the physical realm to a more abstract one:

ENGLISH LEXICAL DIMENSION OF GENERAL PERCEPTION.

notice to become aware *though your senses* or *in your mind*.

note to notice sth (usu. mentioning it/writing it down/recognizing it).

perceive to notice sth /sb. *through your senses* or *in your mind* (usu. sth not obvious to others).

spot to perceive sth *momentarily* as a result of *attending* to it.
< +intention, +difficulty >

identify to perceive sth, assigning it to a certain *category*.

discern to perceive sth with *difficulty* and *know* what it is.
< formal >

distinguish to perceive the *difference* between two or more things.

differentiate to distinguish, paying *attention* to *characteristics* or *details*.

discriminate to distinguish two or more things, *recognizing* and *understanding* the differences between them.

feel to perceive a *state of mind* or a *condition of the body*, through mental, emotional or physical stimulus (other than sight).

detect to notice sth *not obvious* to others, making an *effort* to do so.

miss to notice the *lack* of sth./to *fail* to notice sth.

find to become aware of the *existence* of sth.

discover to find sth *not known before*, either by accident or after *looking for them*.

experience to have certain *experiences*, *feelings*, *sensations* (being affected by what one meets with).

recognize to become aware that sth perceived *has been perceived before*.

SPANISH LEXICAL DIMENSION OF GENERAL PERCEPTION

percibir llegar al conocimiento de la existencia o la presencia de algo o de alguien *mediante los sentidos* o la *inteligencia* auxiliada por los sentidos.

aprehender percibir <formal>.

captar percibir algo a través de los sentidos o la mente, que *está distante* o es de *difícil* percepción.

detectar captar la existencia de algo/la presencia de alguien a través de *indicios* que no son obvios.

apreciar percibir algo, generalmente su *tamaño, intensidad, importancia*, etc.

notar percibir algo, generalmente porque atrae nuestra *atención*, tanto física, como mentalmente.

advertir notar algo (generalmente con el sentido de la vista), por lo general *mencionándolo*.

hallar (que) notar *súbitamente* algo, o la presencia de alguien, casualmente o buscándolo.

descubrir hallar algo que *no se conocía antes*, casualmente o buscándolo.

percatare (de) percibir algo (generalmente con *la vista*), o *por un proceso mental*, que no resulta patente.

reconocer percibir a través de los sentidos o la inteligencia que *una persona o cosa ya se conocía*.

distinguir reconocer dos o varias cosas como *distintas* (no la misma) o como *diferentes* (no iguales).

diferenciar distinguir dos cosas, *averiguando y señalando* los rasgos que no les son comunes.

identificar reconocer a algo o a alguien como igual a otro que *ya se conoce* (en cualidad o carácter).

sentir percibir en el organismo un estado causado por un *estímulo externo o interno* y responder a él. (físico o emocional).

experimentar sentir un *cambio o modificación* en el organismo, el estado de ánimo o los sentimientos.

The domain of PERCEPTION (*to become aware/llegar al conocimiento*) is first related to that of CHANGE in both English and Spanish (*to become different/llegar a ser diferente*) through the use of *become /llegar a ser* in its definition. This is understandable since the perceiver experiences a change when something new appears on his mental horizon, and he subsequently goes from a state of unawareness to awareness, a movement from one state to another, relating this field to that of MOTION.

It is significant that within this more general dimension, all of the verbs can be used to refer to both outer and inner perception. In the definition

of the superordinate term, *notice*, as well as in that of its Spanish equivalent, *percibir*, we see that the process of perception (*to become aware*) first specified on a physical plane (*through your senses/mediante los sentidos*), is then extended to include mental processes (*or in your mind/o la inteligencia auxiliada por los sentidos*). In *note*, we can even see a triple interface with the domain of SPEECH included as well. This is also true in Spanish in the case of *advertir* which denotes the physical perception of something, either concrete or abstract, and in many cases implies that the perceiver says what he has perceived.

The underlined descriptive elements also emphasize the different mental processes related to these verbs. One group is concerned with *categorization* of the perceived object (*identify/identificar*), but this categorization is more specifically defined in the following lexemes:

Categorization plus:

- already known object → *recognize/reconocer*
- perception of differences → *distinguish/distinguir*
- focus on details → *differentiate/diferenciar*
- distinctive features → *discriminate/discriminar*

(*Discriminar* is more restricted in use to either scientific/technical contexts or to the sense of "social discrimination" than the English lexeme, although in some contexts it may also refer to general perception).

In English, when perception (either physical or mental) entails an element of difficulty, *discern* is used. On the other hand, *spot* focalizes the momentary attention paid by the subject.

In Spanish, *apreciar* focuses on the perception of the characteristics of something, implying a strong element of *evaluation* on the part of the perceiver, of something, either concrete or abstract. In both instances, a mental process of knowledge and understanding is required. The evaluative element serves as a basis for its *metaphorically motivated secondary use* [cf. Sweetser 1990: 8], when it is used to convey a *positive evaluation* of someone. Its use is thus extended to the domain of FEELINGS, where its meaning focalizes the positive emotions (respect, admiration, etc.) that the perceived object elicits in the perceiver.

In both English and Spanish, there are four lexical items that focus on the object, which again can either be a concrete or an abstract entity: *find/hallar* denote the physical and mental perception of an object (already known or unknown), whereas *discover/descubrir* focus on the perception of an object not known before.

Captar and *detectar* in Spanish and *detect* in English appear more frequently with inanimate objects (artifacts or machines). When they are used in reference to human subjects, they are examples of an *ontological metaphor* [Lakoff and Johnson 1980: 25; Johnson 1987: 131] that can be

provisionally labeled *the mind-as-a-machine* metaphor. The mind is thus conceptualized as a machine that is able to perceive the existence of an object on the basis of weak signals: in this sense, the mind is able to become aware of the existence of something either concrete or abstract on the basis of some stimulus not obvious to other people by means of intuition or wit.

In both languages two lexical items focalize the state of the perceiver: *feel/sentir* are used to convey the effect of the physical stimulus on the perceiver. Both verbs are clear instances of the close relationship between the physical and the non-physical dimensions of experience, as they are used to denote the inner perception of a non-physical stimulus. Consequently their meaning is extended into the field of EMOTION. *Experience* in English and *experimentar* in Spanish focus not only on the perceiver's state, but on the internal process undergone by the subject or on the modification caused by the stimulus, relating again the physical perception domain to that of CHANGE.

These interfaces in GENERAL PERCEPTION underline the very close relationship that exists between the domains of THOUGHT/ SPEECH/ PERCEPTION. This is understandable because in order to be able to classify thought, understanding and knowledge, words have been taken from other closely related domains. This extension of words describing experience in the physical world onto more abstract domains is a sign that we understand the activities in question as inherently similar, and it is also a means by which we manage to understand understanding and think about thinking. Sweetser [1990: 18] writes:

It seems clear that more abstract domains tend to derive their vocabulary from more concrete domains (rather than vice versa) and, furthermore, that in some cases there is a deep cognitive predisposition to draw from certain particular concrete domains in deriving vocabulary for a given abstract domain.

3. PHYSICAL PERCEPTION

The verbs of PERCEPTION are divided into five major groups: those referring to SIGHT, HEARING, TOUCH, TASTE, and SMELL. Although each verb has as its most salient meaning that of physical perception via the relevant sense organ, each verb has additional senses extending into more abstract domains. The structure of physical perception is thus used to structure more abstract experience.

4. VISUAL PERCEPTION IN ENGLISH AND SPANISH

Vision is our most central perceptual experience and the one upon which we depend the most for knowledge about the world. For example, of the verbs of general perception, only *feel* restricts vision as perceptual modality. Consequently, it is not surprising to find that this lexical field is larger and more complex than those of the other senses. It is also the one that has the most extensive range of extensions into more abstract domains.

As is well-known, *see* can also mean *know* or *understand*. Sweetser [1990: 5-6] considers that the choice of *see* for extension to the sense of knowledge is a well motivated one, and has to do with conceptual organization, as we are instinctively aware of the similarity between knowledge and vision.

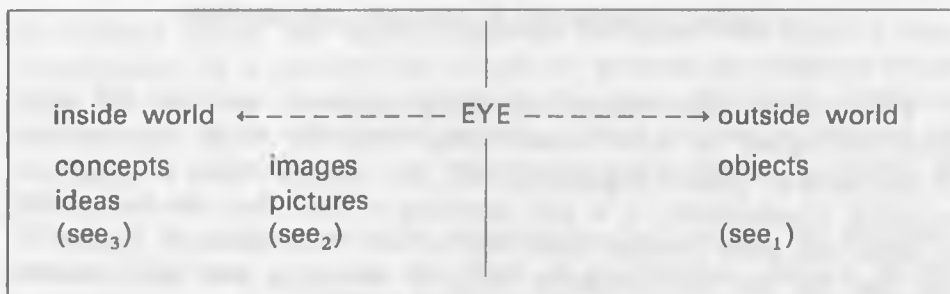
Our prototypical way of perceiving is with our eyes (75% of our information about the world is perceived visually), something evidenced in the degree of lexicalization within this dimension, and also by the greater number of sight-perceived differentiation features in the verbs in other domains (i.e. *walk*).

As we have already mentioned, Sweetser [1990] underlines the connection of vision with intellectual activity. As we will later see, verbs of visual perception, such as *see*, *glimpse*, *notice*, *contemplate*, and *regard* are examples of a metaphorical understanding of vision, projected onto the domain of mental processes. Vision can thus be projected outwards toward the concrete world or inward towards our mind. Therefore our mind acquires a visual capacity (*in the mind's eye*) and many of our thoughts are conceptualized as pictures/images. Seeing is our primary source of data about the world, and though there are other knowledge metaphors from other domains related to VISION, (i.e. LIGHT – within field of stimulus verbs) none is as dominant as vision.

According to Miller [1976: 585], *see* has the following three senses:

- (1) to perceive with the eye
- (2) to have a mental image of
- (3) to understand; comprehend [Miller and Johnson-Laird, 1976: 585]

Of the three possible meanings for *see*, (1) refers to vision of objects in the concrete world, (3) refers to mental awareness of abstract things (feelings, ideas, concepts, etc.), and (2) is a transition definition between the other two. Actual vision is involved, but it is projected internally to see/create pictures/images of concrete objects within our minds.



4.1. Differentiation parameters

The three different meanings distinguished by Miller relate, although they do not cover the structure given to the lexical field we are going to study here. The lexical field of vision verbs in English and Spanish has been divided into three major subdimensions (with *see*₁, *see*₂ and *look* as partial archilexemes).

Within each sub-dimension the verbs have been arranged according to parameters derived from the repetition of descriptive elements found in the definitional structure of the lexemes themselves. Some of these parameters are vision-specific, (i.e. *partial vision of the perceptual object*), while others, such as *difficulty*, *duration* and *manner* can be considered cross-field differentiation parameters which appear in a wide range of lexical fields, such as CHANGE, MOVEMENT or SPEECH.

Aside from *see*₁, which expresses the physical ability of perceiving by using our eyes (an intransitive and purely stative use), the main differentiation parameters found in the definitional structure of the lexemes are the following [see also Appendix II, diagrams 1 and 2 (a)/(b)]:

Descriptive Parameters:

1. Intention
2. Duration
 - 2.1. Short duration
 - 2.2. Long duration
 - 2.2.1. Explicit time
 - (a) steadiness
 - (b) facial expression: anger and surprise
 - 2.2.2. Implicit time
 - (a) carefulness/higher intentions
 - (b) authority
3. Manner
 - 3.1. Quickness

3.2. Difficulty/Difficulty + distance/ + partial vision

3.3. Secrecy

4. "To see sth in your mind" → from the outer to the inner perceptual field.

The parameters of *intention* and *duration* are intimately related to each other. This is the case, because most of the verbs belonging to the *-duration* group are hyponyms of *see*₂, though there are some exceptions such as *skim* or the Spanish *ojear*, which are hyponyms of *look/mirar* respectively. The verbs grouped under *+duration*, can be further divided into those which bear an *explicit* time component and those in which the time component is stated *implicitly*, as a consequence of other descriptive parameters such as carefulness or authority.

This parameter is the clearest example of the lack of isomorphism between the two languages in question, as the English verbal lexicon is much richer than the Spanish one. In the lexical fields we have been working on, some instances of descriptive verbs [Snell-Hornby 1983] have to be rendered in Spanish by means of periphrastic constructions (i.e. verb + adverbial modification). It is also true that certain descriptive parameters are not lexicalized at all in Spanish (i.e. *facial expression*).

Another important parameter is that of manner. In English three main manner parameters have been distinguished: *secrecy of perception*, *facial expression* and *difficulty of perception*.

In Spanish the relevant *manner* parameters found are: *quickness in the perceptual event*, *distance of the perceptual object* running together with *difficulty of perception* (with a sub-parameter of *partial vision of the object*) and *secrecy*.

4.1.1. Non-intentional vs. intentional visual perception: *see*₂ vs. *look*

The distinction between *see* as a non-intentional verb, with an experiencer subject, and *look* as an intentional verb whose subject is the agent of the action is a controversial matter; as such, it has received a great deal of attention, and it has been a source of debate among scholars dealing with perception from various standpoints: philosophy, psychology, psycholinguistics. [c.f. Kolinsky 1989; Held 1989; Eimas and Galaburda 1989].

In relation to the opposition between *see* and *look* Miller and Johnson-Laird, [1976: 604] write:

...yet it may be argued that looking implies seeing. This implication may hold for some statements, like "I'm looking at the frame rather than the picture" or "They spent the

morning looking at the Picassos". But it is not invariably true. You can look at something without seeing it. It may also be argued that there should be an intentional component to looking: you look in order to see. Although there is often an intention to see, there often is no such intention. . Rather, as a result of looking, you come to perceive whatever you happened to look at. Statements of the form "*He accidentally looked at it*" are not self-contradictory...

The above quotation would seem to contradict the definition of *look* as "to direct your eyes in a certain direction in order to see", or "to see by intentionally directing your eyes". However, the contradiction is only apparent, since *look* in some instances can lose the intentional character explicit in its definition. For this to happen, it has to be stated overtly by means of an adverbial modification, as can be seen in the example given by Miller: "*I accidentally looked at it*". In this example, it is "accidentally" that gives *look* its non-intentional character, neutralising the intentional value in its definition. Therefore, *+intentional* can be considered a default value for *look*, except when there is modification specifying otherwise. The question of the intentionality of vision as we shall see is also closely related to parameters such as carefulness or authority.

Rodríguez Fernández [1990: 97] considers that the opposition *intentional/non-intentional* can be established between *mirar* and *ver* in Spanish. She considers *ver* as a dynamic instantaneous state of affairs controlled by an agent, whereas in *mirar*, the state of affairs is extended in time, and the action specified can be considered an activity rather than an act. More revealing for our purposes is the *resultative/non-resultative* opposition between the two verbs:

Mirar marca el inicio de un proceso en cuyo fin puede estar o no la percepción visual, cuando éste se quiere especificar aparece *ver*₂ que marca el fin de dicho proceso. [...] *Pensar-entender* poscen la misma relación secuencial que *mirar-ver*: *pensar* es *no-resultativo*; *entender* es *resultativo*. [Rodríguez Fernández 1990: 104].

Mirar (-resultative) cannot be modified by adverbs such as *bien* or *mal* that evaluate the action of sight in itself, whereas *ver*₂ (+resultative) does accept this type of modification. On the other hand, *mirar* (+intentional) permits adverbial modification that describes the attitude of the subject or the manner in which the action is carried out, something which is impossible with *ver*₂, because it is unintentional. In both English and Spanish, you can *look* without actually *seeing* (just as you can *think* without actually *understanding*).

This is also true of our differentiation parameters, since, in a sense they are a type of adverbial modification embedded in the lexical structure of the verb. All the lexical items within the parameters of secrecy, steadiness,

facial expression and carefulness are hyponyms of *look/mirar*, and it is no accident that these parameters characterize both the attitude of the subject and the way the verbal action is carried out.

The parameters for the hyponyms of *see/ver* are distance of the perceptual object and difficulty of perception (including the Spanish parameter of partial vision). There are only two exceptions to this: *peer* is included in the group of *difficulty of perception*, but it also implies effort and carefulness in the subject as a consequence of the difficulty. Thus, the adverbial modification relates to both verbal action and the attitude of the subject. The other exception is the Spanish lexeme *otear*, included in the group of *distance+difficulty*, but again, this can be explained as the focus of this verb is placed on the distance of the **subject** from the perceptual object, and the difficulty element appears as a consequence of this.

More complicated is the relation between the +/–duration component and the hyponyms of *look* and *see*. In Spanish nearly all the lexemes implying short duration belong to the *ver/(see)* subdimension, but in English this is not so. It would thus be safer to affirm that the *see* hyponyms prototypically imply a short duration of the **perceptual act**, and the *look* hyponyms prototypically imply some sort of time span. This time span may be long or short, but in both cases, the subject decides on and controls the duration of the **perceptual action**.

This leads us to an interesting conclusion concerning the relation between *mirar/look* (–*resultative*) vs. *ver/see* (+*resultative*) and the verbs of mental perception, *pensar/think* (–*resultative*) vs. *entender/understand* (+*resultative*). Our initial thesis is that there is a cross-linguistic tendency to use physical domains of experience to conceptualize more abstract ones, a fact clearly demonstrated by the metaphorical extensions of these verbs. The following points are worth mentioning to demonstrate the consistency and coherence of this cross-language phenomenon:

(1) As we already observed in relation to light (Faber, Pérez Hernández, in press), when a verb of visual perception is metaphorically extended to convey either thinking or understanding, what changes is the *act-nucleus* (i.e. the domain of experience: from light to emotions, from visual perception to mental perception, etc.) but the modificant or the descriptive parameter remains constant. For example, if a verb denotes carefulness in vision, it will denote carefulness in thinking.

(2) This consistency also extends to the aspectual character of the lexemes involved. The resultative vs. non-resultative character of the lexemes is also maintained in the metaphorical projections of the lexemes:

(a) *See/ver* (+*resultative*) and all their hyponyms are metaphorically extended to convey some kind of *understanding/comprehension* (the +*resultative*

mental pair). *Seeing* as a mental event focalizes the act rather than the action, the same as *understand* in the domain of MENTAL PERCEPTION.

(b) *Look/mirar* (– *resultative*) and all their hyponyms are metaphorically extended to *thought/pensamiento* (the *non-resultative* mental pair). Since *looking* is a *physical process*, it is logical that the target domain on which it is metaphorically projected is that of *mental process* or *thinking*.

This is striking evidence that “metaphor is pervasive in everyday life, not just in language, but in thought and action” [Johnson 1987: 65], and can be a means to explain how conceptual categories are organized, how they interrelate and how the lexical structure of language is a reflection of our metaphorical understanding of reality.

4.1.2. The Parameter of Duration (see appendix II, diagrams 1(a) and (b))

As has been previously stated, the *durative/non-durative* opposition is an important factor in the lexical structure of the verbs of vision, and stands in close relation to the previous parameter. The basic lexical opposition we have drawn is the one between verbs denoting a short duration of the perceptual act and those in which the act of perception is extended over a certain time span controlled by the subject.

4.1.2.1. Short Duration

In both English and Spanish, there is an important group of verbs belonging to the sub-dimension of *see₂/ver₂* that involve momentary visual perception. In most cases this element appears in combination with others, such as *difficulty of perception*, *partial vision* or *distance of the perceptual object*. It is the combination of these parameters that supplies us with the tools to establish the lexical oppositions both at inter and intra-language levels. As can be seen in Diagram 1 (a) and (b), the English verbs implying a short duration of the perceptual act are *spy*, *glimpse*, *spot*, and *sight*. The Spanish ones are *divisar*, *avistar*, *atisbar*, *vislumbrar*, *entrever*, and *guipar*.

Within the sub-dimension of *look/mirar*, *glance*, *peek*, *peep* and *scan* also imply a short duration of the perceptual activity. The Spanish lexemes included in this group are *reparar en* and *ojear*. Since this parameter is not sufficient in itself to establish contrast and correspondences, we will discuss these in relation to the parameters that follow.

4.1.2.2. Long Duration

All the lexical items which indicate an activity with a long time span belong to the sub-dimension of *look/mirar*. This time span can either be explicit within the definition of the verbs (as in those denoting steadiness or facial expressions) or be a consequence implicit in some other meaning component of the verb, such as carefulness or authority.

4.1.2.2.1. Explicit Time

In this group the duration of the action is explicitly stated within the definitional structure of the lexemes, and it is controlled by the subject/agent. Within this group the lexical items are subdivided into those which point to the continued intensity of the perceiver's look, and those which describe the facial expression of the perceiver.

a) Steadiness:

All the lexical items in this subgroup focus on the steadiness of the perceiver's look, and imply at the same time a mental process parallel to the perceptual one, which in most cases involves also some kind of intention. *Observe/observar* is a good example of this, as it focuses on the mental process parallel to physical perception, emphasizing the neutrality of the perceiver in relation to what he is seeing. In addition, what he has perceived (both physically and mentally) is often reported, thus adding another element to the sequence: PERCEPTION + MENTAL PROCESS + SPEECH. Both verbs can denote as well a sudden physical perception of something, parallel to a mental awareness of the existence of the perceived object.

The definition of *watch* includes the meaning components of *steadiness*, *attention* and *intention*, as one usually watches in order to learn what someone is doing or what happens to something (either concrete or abstract). When the focus is placed on the purpose of the action, *vigilar* is its nearer Spanish equivalent. However, there is only partial correspondence, because in some contexts the Spanish verb also implies *secrecy* of perception.

In both *contemplate* and *gaze* there is an emotional or evaluative element on the part of the perceiver. Both verbs generally convey the attraction felt by the perceiver towards what he is seeing. In *contemplate* this attraction is aesthetic, as it is mainly used in relation to something beautiful in an artistic way. This positive evaluative element is shared by

admirar, which can be metaphorically projected onto the domain of FEELING. When *contemplate* is metaphorically projected onto the field of MENTAL PROCESSES (Thought), it is more neutral. For example, if someone is *contemplating a course of action*, he is thinking about whether to do it or not. *Contemplate* normally corresponds to *contemprar* with the difference that *contemprar* may imply in certain contexts that the subject arrives at some conclusion as a result of his perception.

In *gaze*, there may be a "separation of the perceiver's mind" while the visual perception is taking place. Someone may be deep in thought, but these thoughts may or may not be related to the perceptual object, while *stare* implies a fixed look at somebody or something. Since there is no equivalent term in Spanish, these verbs have to be rendered by the superordinate term plus adverbial modification: *mirar fijamente*.

b) Facial Expression: *Manner-of-looking verbs*.

In this group all the English verbs are used to convey a facial expression, which is in turn perceived by a second perceiver who sees and evaluates the facial expression of the first. The description of the facial expression implicit in verbs such as *goggle*, *gape*, *gawk*, etc. implies the presence of a second perceiver who is necessarily looking at and evaluating the act of perception being carried out by the subject of the utterance. It is evident that if someone is *gaping at* something (looking at it with an open mouth and very wide open eyes), he cannot see his own face and realize that he is gaping, unless he happens to be looking in a mirror. Therefore the description of his face is necessarily being carried out by someone else whose presence though not explicitly stated is very real.

Needless to say, what is lexicalized is what catches the perceiver's attention. This varies according to the action being realized. From the structure of this dimension, we can deduce certain default values for the action observed by analyzing what features are lexicalized. Deviations from the norm create a bigger "splash" in the perceiver's sensory environment, and consequently become lexicalized. Once the perceiver's attention is caught, the activity is observed and categorized as one type or another. However, in this process, there are other factors that are being judged as well. Within the lexicalization of the verbs of manner-of-looking we find information encoded as to how the physical activity is perceived as well as an evaluation of physical/emotional characteristics of the person who is seeing.

In this subgroup, all the English have to be rendered in Spanish by means of periphrastic constructions, due to the greater verbal descriptivity of the English language as compared with the Spanish. The English verbs *glare* and *glower* are used to denote an angry facial expression but they

differ in the degree of intensity of the emotion conveyed. *Glare* is weaker than (*glow*)*er*. The explanation can be found in the double field membership of these verbs. Both belong either directly or indirectly to the lexical field of LIGHT, and this is reflected in their definitions. While *glare* contains the meaning of a strong, unpleasant light, *glower* adds also the element of burning, because *glow* is strongly associated with fire. The most appropriate periphrastic equivalents in Spanish would be:

stare → *mirar fijamente*.

glare → *mirar ceñudamente, echar fuego por los ojos, fulminar con la mirada*.

glower → *mirar ferozmente, con ira*.

Three other verbs in English convey the expression of some emotion in the face of the subject, focusing on the eyes: The first is *goggle* which denotes surprise, or lack of understanding of what is being perceived, and the subject has his eyes wide open. Its Spanish equivalent would be *mirar sin comprender*, o *mirar con ojos desorbitados*; the second is *gape* whose meaning adds the fact that the subject has his mouth open. Thus in Spanish this meaning would be conveyed by the phrase *mirar boquiabierto*, and the last is *gawk*, which is a colloquial term with a decidedly negative evaluation. As such, it can be related to the informal Spanish expression *estar en babia*.

4.1.2.2.2. Implicit Time

All the verbs belonging to this group imply in some way or another a kind of intention involved in the perceptual activity. What varies is the way in which the process is carried out, the nature of the object, or the final goal of the perceiver. In the first group, the visual descriptive parameter focuses on the carefulness of the action performed, as well as on the completeness of the process; when the lexemes are moved from *vision* to *thought*, the parameter remains constant, and they denote an analytical way of thinking, for which both care and attention is required. This fact can account for the common diaphasic feature of these verbs. For example, they are more likely to appear in reference to intellectual activities, such as research, study or work where some sort of detailed analysis is required.

The verbs in the second group also possess the pragmatic feature of the authority that the subject exercises over the perceived object. In both groups a canonical viewpoint is assumed. As Langacker [1987: 123]

points out, in any given visual experience the subject perceives the object from a *vantage point*, in other words, from a definite position, and with a certain orientation in relation to the object. In verbs such as *ensor*, *inspect*, and *review*, the subject is in a higher position than the perceived object, which he is therefore looking down on. The physical experience of the subject being above the object, accounts for the conceptualization of human relations in terms of the *scale schema*. As Johnson convincingly argues [Johnson 1987: 125], scalarity permeates the whole of human experience: we measure our distance from the perceptual object, and superimpose an orientation over it. Correspondingly, when we refer to someone's authority over something, we conceptualize him in terms of a scale in which the higher the subject is placed, the more powerful he is. If we consider this, it is not surprising that we use the expression *social scale* to refer to the power relations between people in our culture.

(a) Carefulness / Higher Intentions

Regard conveys a mental or emotional evaluation on the part of the perceiver (positive or negative evaluation of the perceived object). Such an axiological evaluation is not conveyed by *view*, which denotes carefulness and interest, usually because of the necessity of making a decision. When what is being *viewed* is concrete, it is generally an area or something spread over a spatial extension. When the object in question is an abstract entity, *view* is one of the clearest instances of a *metaphorically motivated secondary use*. *View*, denoting someone's way of thinking, is so embedded in everyday language that no one considers it to be an extension of its primary sense of visual perception. In Spanish, "*la vision*" (the view) someone has of non-concrete things, such as facts or events, also denotes his way of thinking, with an important element of personal evaluation (cf. the expression "*point of view*" and its Spanish correlate "*punto de vista*".)

Survey and its Spanish equivalents *inspeccionar* and *reconocer* imply careful and thorough observation on the part of the perceiver, whose purpose is to check out the "state of affairs" in relation to something. This use of the Spanish verb *reconocer* has to be distinguished from the one we saw in relation to the *verbs of general perception*, where it denotes the sudden perception of some object which has already been perceived before. In *examine/examinar*, the object perceived is both checked and evaluated, and in most cases the perceiver forms an opinion of it. In both verbs, what is perceived can be either concrete or abstract. When it is abstract, the basic visual activity is translated into intellectual activity, and accordingly, the field changes from VISUAL PERCEPTION to MENTAL PERCEPTION (THOUGHT).

In this group, there are two Spanish verbs which show interesting characteristics. The first is *fijarse*, which denotes great concentration on the part of the perceiver, usually in order to learn something. This verb can be used as well to convey a sudden mental awareness of the existence of something. This awareness may be brought on by a visual or mental stimulus, and when it is thus used it is synonymous with *reparar en*. The reflexive use (-*se*) of this verb is metaphorical in itself, as it is an extension of *fijar* (to fix, fasten, secure). In a sense, it implies that the subject wants to *fasten* his mind onto something in order to achieve greater understanding. This verb, in the same way as its archilexeme *mirar*, is widely used in Spanish as an expletive, meaning "pay attention": "*Fijate, están todos los libros aquí*".

The second verb is *desojarse* which, in consonance with the Spanish tendency to exaggerate, can be said to be the lexicalization of the result of a virtually superhuman visual effort: the privative suffix, *des-*, combined with the verbalized form of *ojos* (*ojea*) literally means *to become without eyes*. In other words, this verb means to look at something so closely and with such a care that this effort causes you to "lose" your eyes.

Scrutinize implies paying attention to tiny details with the purpose of extracting some information from or about the object. Its meaning corresponds to that of *escrutar*, which in most instances appears with an explicit reference to purpose. There is also a meaning overlap with the more intensive *escudriñar*. It is interesting to note that when these lexical items are metaphorically projected onto the field of MENTAL PROCESSES (THOUGHT), all of them maintain the same focus on details.

b) Authority

The lexical items in this group all imply that the perceiver carries out the action carefully, and above all, is in a position of authority. His actions are generally oriented to obtain some conclusion or make some judgement. *Censor* denotes a moral or political judgement made by someone in an official capacity. When the object of perception is an abstract entity, (for example, someone else's attitudes, behaviour or feelings) the negative axiological weight increases. The same is true for *censurar*, which implies mental and emotional evaluation at the same time, and even action, as the subject may do something to show his rejection. This verb, however, in Spanish is rarely used for visual perception.

Inspect/inspeccionar imply a careful look to ascertain that everything is the way it should be. In most cases, the perceiver is in a position to punish when his evaluation is not favourable. *Review/revisar* both involve an intellectual and evaluative judgement. However, when *review* is used in its sense of inspecting soldiers, ships, etc., then the Spanish construction *pasar revista* is its nearer semantic equivalent.

4.1.3. The Parameter of Manner (see Appendix II, diagrams 2(a) and (b))

4.1.3.1. Quickness

Glimpse, *spy* and *spot* are all hyponyms of *see*₂ focusing on the quickness of the perceptual act. *Glimpse* suggests the momentary perception of something while the subject is often engaged in some other activity. On the other hand, *spy* means to catch sight of something. *Spot*, on the other hand, implies the momentary perception of something as a result of attending to it, attention required in most cases by the difficulty of perception.

When *glimpse* is used to describe the perception of something abstract, the superordinate term within its definition would be *see*₂ denoting "to have a mental image of" (For co-hyponyms of this sense of *glimpse*, see 4.1.4). Despite the change of field (VISUAL PERCEPTION → MENTAL PERCEPTION), the adverbial modification of quickness remains constant.

Glimpse and *spot* correspond to *avistar* and *atisbar* in Spanish, both of which focus on the difficulty of perception and the distance of the perceiver from the object of perception. When *atisbar* appears with an abstract complement, it tends to be something of a positive nature such as *esperanza* (hope) or *solución* (solution). This is related to the ontological metaphor, *LIGHT IS LIFE*, conceptualizing the forthcoming positive event as the perception of a flash of light in the dark [Faber, Pérez Hernández, to appear].

When *spot* focuses on the mental awareness provoked by a sudden stimulus, either physical or mental, its Spanish translation is *reparar en*, which usually refers to details or small things. *Glance* denotes a quick look at something concrete, its nearest Spanish equivalent being the expression "echar un vistazo". *Skim* is used in reference to the quick and inattentive reading of a book or newspaper. In this sense it corresponds to *ojear*, derived from *ojo* (eye), and indicating a quick, superficial look at something. Another equivalent would be its homophone *hojear*, derived from "hoja" (sheet of paper). When the object of *ojear* is a book or a newspaper, there seems to be neutralization of the lexical opposition with *hojear*, as it means to look at something and turn pages at the same time, thus becoming interchangeable, and for many native speakers, indistinguishable.

Scan is clearly goal-directed, the purpose of the perceiver being to extract key information from the object of perception. This verb is ambivalent with respect to manner, since it can be used either to imply a quick look or a careful one. *Browse*, on the other hand, does not have *quickness* among its meaning components. Rather it focuses on the movement of the

perceiver who looks and moves at the same time as he goes from one thing to another within the same general area. *Curiosear* is its nearest equivalent, but in certain contexts the Spanish verb has a negative axiological value, indicating disapproval of the action being carried out by the perceiver.

4.1.3.2. Difficulty/Difficulty + Distance/+ Partial Vision

Within the group denoting difficulty, the English verb *sight* implies that the perceptual object comes into the visual field suddenly, as does *divisar* in Spanish. Nearly all the Spanish verbs in this group also imply distance from the perceptual object: *divisar* is used only in reference to concrete objects and bears an element of directionality (forward) or of perception from a high place; Like *divisar*, *avistar* also contains this explicit element of "forward projection", but is mainly used in "sailing". The Spanish verb *otear* conveys the visual process of looking over an area or surface from a high place, usually for a long time, and with a fixed look.

Discern in its more specific sense of visual perception, implies the identification of an object, mainly in contrast with its background. Its nearest equivalent would be *distinguir* which also, can be translated as *distinguish* when it implies the identification of differences or details.

An important difference between the two languages can be found in the fact that in Spanish there is a group of verbs which convey partial vision of the object, a parameter not found in the English lexical field. What distinguishes these verbs is the cause that makes total perception impossible. In *vislumbrar* the obstacles to total vision are distance and lack of the light, necessary for the perception. In *entrever*, there is some sort of barrier (such as a curtain or a wall) between the perceiver and the perceptual object, and in the case of *trasver*, perception is made difficult because the perceiver is looking through something, (such as piece of gauzy material).

Both *vislumbrar* and *entrever* share the metaphorical use we have seen in relation to *atisbar*, referring to the (partial, or intuitive) mental perception of forthcoming positive events such as solutions or aims which will put an end to problems or bad situations.

4.1.3.3. Secrecy

Another important parameter within the field of visual perception is that of *secrecy*. *Peek* and *peep* imply that there is a barrier (i.e. a curtain)

between the perceiver and the object perceived, and that consequently the person carrying out the action is hidden from others, usually at his own wish. What he perceives is normally something he has mixed feelings about. It is something he greatly desires to see, but at the same time he feels ashamed, because he thinks he should not be looking at it.

This element of shame does not exist in *spy on*, which is more intentional, premeditated and durative; it is also goal-directed, since such an action is performed to learn something. In Spanish, the same distinction can be drawn between *fisgar/fisgonear* on the one hand, and *espiar* on the other. The first two denote a reprehensible, but unimportant secretive quick look at something or someone, whereas *espiar* implies a more premeditated, continuous and disguised series of perceptions. *Acechar* denotes steadiness of perception, as the perceiver is waiting to do something usually bad, such as make an attack on somebody.

4.1.4. *To see sth in your mind* → from the Outer to the Inner Perceptual Field

In the analysis of all the previous verbs in the field, we have been distinguishing between: (i) the visual perception of an entity from the outside world, (an entity which must be within our visual field and having certain physical properties such as shape, colour and size and (ii) the mental perception of something without these properties: an abstract entity, the perception of which can be achieved only through our mental abilities. We have posited that in both English and Spanish, when we use a verb of visual perception to refer to the perception of such abstract entities, they are conceptualized as visible ones, and the mental process/act required to perceive them is conceptualized as a metaphorical extension of the physical one.

Langacker [1987: 111] writes in relation to this distinction:

...The sensation directly induced by stimulating a sense organ is an instance of a peripherally connected event; the corresponding sensory image, evoked in the absence of such stimulation, is an autonomous but equivalent event. For large classes of autonomous events, of course, there are no equivalent events that are peripherally connected (consider emotions or abstract concepts).

But what we are dealing with in this subdimension of visual perception is a different matter: in these verbs actual vision is involved, but the visual stimulus is not in the outside world, but is created within our minds. For example, verbs such as *imagine* allow the object which we create in our

minds to have a concrete matching in the outside world, but just as often it is something abstract (i.e. "*Imagine a cat on the table*" or "*Imagine a good reason to stop smoking/ I imagine that you don't mean what you are really saying...*") Other verbs, such as *visualize/visualizar* in Spanish, imply the converse process: to give (in our minds, of course) a concrete shape, size... to something which often is lacking in such visible properties.

These are "autonomous mental events", thus explained by Langacker [1987: 113]:

...Through these mental operations and others, we are capable of constructing conceptual worlds of arbitrary complexity involving entities and phenomena that have no direct counterpart in peripherally connected experience. Such are the worlds of dreams, stories, mathematics, predictions about the future, flights of the imagination, and linguistic theories...

In this subdimension, the hierarchical structure as well as the descriptive parameters found in the verbs are quite similar in English and Spanish; in both languages *dream/soñar* can refer to the subject's creation of mental images when he is sleeping and also when he is awake. This second possibility is when the subject **sees in his mind** a situation or event that he wishes would happen in the future, and consequently would like to **see with his eyes**.

Daydream in English corresponds to *ensoñarse* in Spanish in that both refer to the "autonomous mental experience" of imagining a better or more pleasant situation than the real one, but they differ in their definitional structure: whereas the Spanish verb is a hyponym of *see* (thus defined as "to see in your mind, things or situations which are much better than they really are"), the English verb is a hyponym of *think* (thus "to think about pleasant things for a period of time"). For this reason, this verb has not been included within the lexical field of VISUAL PERCEPTION, although both verbs cover a similar, and in most contexts, equivalent semantic area, something which serves again to underline the close relation between VISION and THOUGHT.

5. VISION AND LIGHT

According to Taylor [1990: 83], meanings do not exist in themselves, but are "cognitive structures, embedded in patterns of knowledge and belief". Consequently any comprehensive semantic analysis must necessarily take into account how human beings organize their patterns of knowledge

and belief in order to give coherence to our world. According to Johnson [1987: 29], there must be a pattern and order to our actions, perceptions and conceptions in order for us to have meaningful connected experiences which we can comprehend. He defines such patterns or *image schemata* in the following way:

...a recurrent pattern, shape, regularity in, or of these ongoing ordering activities. These patterns emerge as meaningful structures for us chiefly at the level of our bodily movements through space, our manipulation of objects and our *perceptual interactions*.

Image schemata are thus structures for organizing our experience and comprehension, and can be conceptualized as dynamic patterns rather than fixed and static images, since they can take on any number of specific instantiations in varying contexts. In this sense, they can be modified to fit many similar but different situations that manifest a recurring, underlying structure, and at the same time gain a certain relative stability by becoming conventionally located in our network of meaning.

A basic schema can also be figuratively elaborated and extended so as to allow its shape to be filled by entities that are not strictly physical or spatial in the prototypical senses. Different senses of a lexical item are connected by means of these metaphorical projections, which thus can be said to play a constitutive role in the structuring of our experiences.

The prototypical image schema relating to vision emerges from our daily interactions with stimuli in the world around us. As the stimulus field for VISION is that of LIGHT, it is only natural that there should exist a close interrelationship between the two. In fact, what we are saying is that our understanding of vision is directly dependent on our understanding of light and that their image schemata embedded in their lexical structure is therefore similar. Direct evidence of this can be found in the similarity of certain differentiation parameters in both fields, or the fact that in English certain verbs, such as *glare*, (*glow*)*er* and *beam* present double field membership. In the same way that light is a prerequisite for visual perception, we also use our conceptualization of light to pattern our understanding of vision.

In a previous study [Faber, Pérez Hernández, to appear], we pointed out that the image schema in the field of LIGHT involves a natural light source such as the sun, a fire or the stars, which constitutes the focal point for the outward emission of light.

Apart from this first projection we can identify a further projection which, as Johnson [1987: 65] has demonstrated, is the "pervasive act of metaphorically extending a schema from the physical to the non-physical".

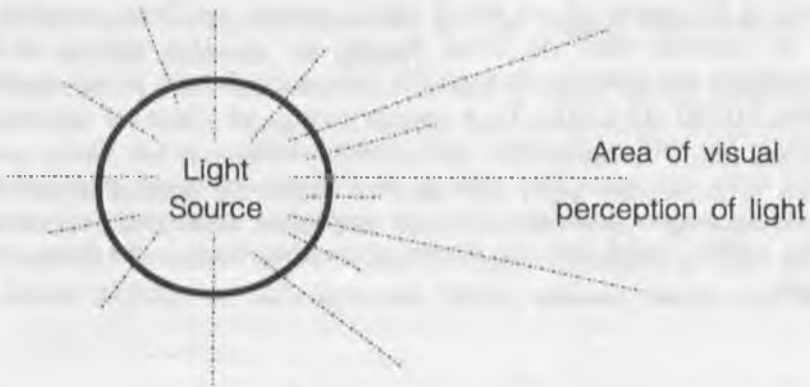


Fig. 1. Image schema: visual image of light sources

In the field of LIGHT, the metaphorical projection of the basic image schema is based on the CONTAINER SCHEMA [Lakoff 1987: 271], [Johnson 1987: 23], in which human beings are conceptualized as containers for their feelings. Strong feelings (either positive or negative) are conceptualized as light within our body that is emitted from our eyes.

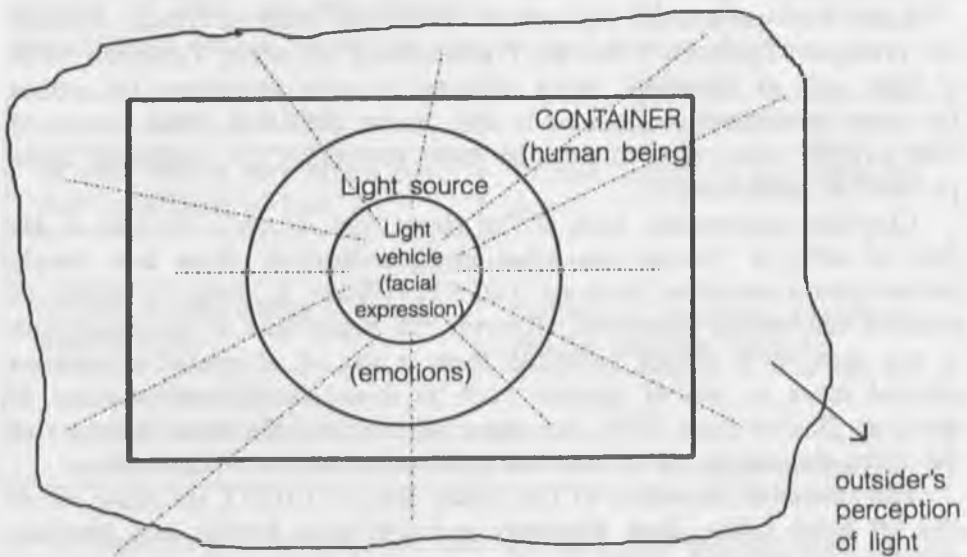


Fig. 2. Metaphorical extension of Fig. 1

This is just one example of many in which language shows that we see ourselves as the center of our world which extends out from ourselves and which we interact with. As living beings, we are also centers of light, conceptualizing our existence through the various entailments of the *ontological metaphor* LIGHT IS LIFE. To a certain extent, we think of ourselves as controlling the feelings/invisible light which radiate (*shine, glare, sparkle, etc.*) out from our eyes. Our eyes as instruments of visual perception are not seen as passive recipients, but as projecting some part of ourselves onto the objects which for one reason or another become the focus of our attention.

5.1. Verbs with Double Field Membership

The principal descriptive parameters in the lexical field of Light are *stability* and *intensity*. Each of these parameters has a norm which is lexicalized in the superordinate term, since in our world the presence of light is a default value. Deviations from the norm (for example, the presence of an excessively intense light, as in *glare*) or an unstable light, necessarily produce evaluation on our part, and part of this evaluation is the lexicalization of a term which includes this negative/positive value within its definition.

Light is of paramount importance within the Field of Vision, because the presence of light is a necessary prerequisite for sight. Therefore verbs of light such as *illuminate*, when referring to outer perception fall within the causative dimension (*to cause to see*). In the same way, verbs connected with LIGHT when used to describe inner perception (i.e. *enlighten*) mean *to cause to understand*.

Countless expressions, such as “*to throw light on sth*”, “*to take a dim view of sth*”, or “*arrojar luz sobre algo*” in Spanish, show how deeply rooted this connection between LIGHT/VISION is, both in terms of physical and mental perception. However, the importance of this connection is not seen in a corpus compiled from a list of idiomatic expressions selected more or less at random such as found in Kövecses’s study of emotions [Kövecses 1986], but rather within the definitional structure of the verbs themselves, structured hierarchically in terms of dimensions.

The causative dimension of the lexical field of LIGHT (*to cause sth to give off light*), (*shine, flash, illuminate* and *light up* in English and *iluminar, alumbrar* in Spanish), refers to the action of making visual perception possible. (c. f. the fact that without light, it does not make sense to talk about vision). The other causative dimension of this lexical field (*to cause*

sth to give off less light/to become without light) refers, in turn, to the action of making visual perception impossible (i.e. the English verbs *darken* or *dim* and the Spanish *oscurecer*, or *apagar*).

Consequently, this sub-dimension covers a rather similar semantic area to that one we have considered within the hierarchical structure of the lexicon to be the causative dimension for the verbs of visual perception: (i.e. "Human actions performed to cause the visual perception of sth."). It is far from coincidental then, that many lexemes from this sub-dimension refer explicitly in some way or other to light: Examples of this are *flash* (this lexeme belongs to both light and vision), *obscure*, *dazzle*, and *project*.

5.2. Correlation of Subcategorization Frames: *glare*, *contemplate* and *flash*

5.2.1. *Glare*

In view of all the above mentioned interfaces, it becomes evident why verbs like *glare* belong to both VISUAL PERCEPTION (manner-of-looking verbs) and LIGHT. *Glare* can be said to have two different definitions depending on its use as a verb of visual perception or as a verb denoting emission of light, and this distinction is extended to its respective subcategorization frames, as can be seen in the following diagram:

<i>glare</i> ₁ [LIGHT]	<i>glare</i> ₂ [VISION]
to <i>shine</i> with a very bright light that is difficult to look at.	to <i>stare</i> angrily/in an unfriendly way.
<i>subcategorization frames:</i>	
Subject = light source ∈ <disagreeable light>	Subject = +human ∈ <disagreeable emotion (anger)>
<i>equality relations:</i> (i) Human subject = Light source (ii) Anger = disagreeable light emitted by the light source	

In these two definitions we can see how the nuclear part of the definitions defines the field membership of *glare*₁ (shine → light) and *glare*₂ (stare → look (visual perception)). In a way there is an equality relationship implicit in the two definitions: the subject which in *glare*₁

(LIGHT) is prototypically a light source becomes +human in *glare*₂ (VISUAL PERCEPTION).

5.2.2. Contemplate

In the same way that LIGHT is mapped onto VISUAL PERCEPTION, VISUAL PERCEPTION is also mapped onto MENTAL PERCEPTION. This can be seen in the following diagram, which shows the two meanings and corresponding subcategorization frames of the verb *contemplate*:

<i>contemplate</i> ₁ [VISION]	<i>contemplate</i> ₂ [MENTAL PERCEPTION]
to <i>look</i> at sth steadily and quietly, for a long time, while thinking about them, esp. in a favourable way.	to <i>think</i> about sth carefully and deeply with continued attention, (esp. a course of action, some future event, state of affairs).
<i>subcategorization frames:</i>	
Subject = prototypically human Object = +concrete ∈ visible (attractive, impressive).	Subject = prototypically human Object = - concrete ∈ action, future courses of action or facts.
<i>correspondences between meaning components:</i>	
(i) look (ii) something/somebody (iii) attractive impression (iv) steadily (v) quietly	(i) think (ii) action, future event, fact. (iii) attention-catching mental object (iv) carefully (v) deeply

Contemplate contains the meaning components of *Looking* and *Thinking*. When it is used to refer in first instance to visual perception the "look" component is focalized in the nuclear part of the definition while the "thinking" component is within the adverbial modification. In contrast, when the mental perception is focalized, the "look" component is included within thinking since the basic image schemata of "look" is used in "think". The only difference would be that the direction of the arrows is reversed. Instead of the arrow going forward from our eye, out towards the world, it goes inward towards our mind. As the above diagram shows,

further correspondences can be established between the meaning components of the two different uses of *contemplate*.

It is interesting to note, however, that the forward direction of the arrow in the source domain is captured in the target by its reference to future time. When someone contemplates (THINK) sth, it is often some course of action he is considering doing in the *future*. So in a sense, the subject is looking ahead in time to see what he will do.

As we have seen in reference to *glare*, there is also an interrelation between the subcategorization frames corresponding to the two definitions of *contemplate*: the concrete and visible perceptual object in *contemplate*₁ becomes an abstract entity, such as a future course of action or fact, in *contemplate*₂.

5.2.3. Flash

The English verb *flash* can be used to show a further correlation between Light and Vision as when there is enough light, we use our eyes to get information about the physical world around us. To get information about the mental world, of ideas, feelings, emotions, however, we also need light; in this case direction of our gaze is reversed so as to look into the mind (or the heart) and the light is transformed into intellectual or emotional data. The physical objects we seen before are now transformed into emotional/intellectual ones.

The verb *flash* belongs, as we have already said, to the lexical field of light (both causative and non-causative) and to the causative dimension of vision; as such, its metaphorical projections map onto the field of EMOTIONS on the one hand and onto the field of THOUGHT on the other as can be observed in the following examples:

- 1(a) Emission of light: natural light source as subject:
i.e. We could see *little lights* flashing quickly...
- 1(b) Expression of EMOTIONS: eyes as light sources:
i.e. *Her eyes* flashed with anger/*Anger* flashed in her eyes...
- 2(a) To cause something material to give off light:
i.e. *I'll flash my headlight* to make him see us...
- 2(b) Light + Vision + Knowledge:
i.e. He flashed *a glance of recognition* to me...
- 3(a) To be seen with a material subject:
i.e. *The picture* flashed on the screen but suddenly disappeared...

- 3(b) To be seen with an abstract subject + movement/forward projection:
i.e. *That idea* flashed through his mind...
- 4(a) To cause something material to be seen:
i.e. *He* flashed *his identification card*...
- 4(b) To cause sth abstract to be seen/understood:
i.e. When the teacher spoke, he flashed *interesting ideas* at the students in quick succession.

In these examples, 1(b) is an instance of the widespread ontological metaphor “eyes are containers for the emotions”, 2(b) shows the interface between light and vision implying also knowledge, as the human look is conceptualized as an element that is both momentarily seen by other perceiver and at the same time is caused to give off light. In example 3(b) a mental object and not a material one appears on the perceptual horizon of the perceiver, changing then from VISION to THOUGHT, where the element of movement/ directionality is derived from the direction of the focal emission of light. In the fourth example the visual perception of a material object is mapped in 4(b) onto a mental one, in which someone causes not to see something, but to mentally perceive an abstract object which, in the same way that a light enables a visual perception, will enable someone to understand something.

5.3. Visual perception 25 centuries ago

The relation **light/eyes/vision** and their metaphorical projection onto **emotions/ideas/thought** is in direct concordance with the explanation of vision given by the Pythagoreans 25 centuries ago. Pythagoras and his followers affirmed that vision was the result of an invisible fire (or a collection of rays, according to Euclid) emitted from the eye itself. This fire touched the object(s) of perception, thus enabling the perceiver to distinguish forms and colours. They believed that the relationship between the eye and the object perceived was the following:

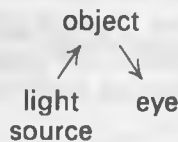


Of the various explanations of vision proposed at that time, this was the one which achieved the greatest popularity. The following arguments were put forward in favor of the eyes as sources emitting invisible light:

1. The eyes of certain animals glow in the dark.
2. The eyes of magicians can mesmerize/hypnotize people.
3. The eyes have a convex shape appropriate for emission in contrast to other sense organs (i.e. ears) with a concave shape more apt for reception.
4. We can look for a needle at our feet for a long time without finding it. (To see it, one of the luminous rays from the collection of those emitted from our eyes has to fall on it.)
5. Someone else's gaze on us can produce a burning/tingling sensation on the back of our neck.

Some traces of these Pre-Socratic explanations can still be found in the Spanish expressions " *echar fuego por los ojos*" or " *echar chispas por los ojos*".

Needless to say, the physicist's model of visual perception is very different from that encoded in our language, since in reality our eye is only a passive receptor. The light shining from the light source (i.e. the sun, a lamp, etc.) is reflected off of the perceptual object. These reflected light rays transmit the features of the object to our eye. The image of the object is then formed on the retina as a result of the refraction of the light rays on the lens.



The image formed on the retina is an upside down picture of the object perceived. Electric signals then travel along the optic nerve to the brain to be interpreted.

As science teachers have good reason to know, this conception of vision is not spontaneously acquired. The fact that an object *reflects* light is far from obvious. We only conceive of an object in relation to light when it is a light source (i.e. a light bulb). Of course, no one believes any more that we can see because our eyes emit luminous rays, but within lexical structure we can that the eye is given a very active role.

Everyday language, which may reflect and reinforce the common ways of thinking, conveys the same idea: it attributes an active role to the eye, while the object 'looked at' has only a passive role; an eye examines, probes, scrutinizes; in romantic literature, eyes flash fire, one looks daggers at someone. Indeed, when looking at an object, there is more a feeling of being an active subject than a passive receptor. [Guesne in Driver 1985: 26].

5.4. *Image Schemata* Encoded in the Lexical Structure of the Field of Visual Perception

Although the role of the eye is always active, it is interesting to note that as we will see, the image schemata which can be derived from our analysis of lexical structure underline different types of relationships between the object perceived and the perceiver depending on the different meanings conveyed by *see/look* and their hyponyms, in much the same way as the theory proposed by the Pythagoreans. It is perhaps no accident that this explanation of visual perception was the one that gained the widest acceptance in ancient times.

Within the hierarchical structure of the lexical fields under analysis we have found that the basic *image schema* that emerges from our physical interactions with the physical world around us can be represented in the following diagram:

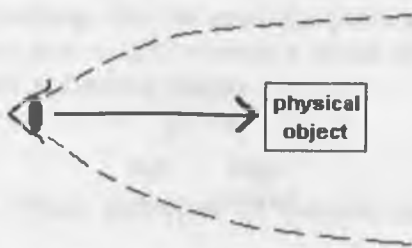


Fig. 3. Visual perception (physical)

This figure does not correspond to the physicist's model of visual perception, but rather to how we conceptualize the fact of seeing/looking at sth. This schematic structure operating in visual perception is lexicalized on the one hand as **visual acts or events**, when an *experiencer* and a *physical object* are involved (that is the case of *see/ver* and all its hyponyms) and on the other, as **visual activities or processes** when an *agent* and a *physical object* are involved (the case of *look/mirar* and its hyponyms).

This prototypical image schema is conceptualized as a dynamic pattern rather than as a fixed or static image. Thus it takes on different specific instantiations depending on the various situations lexicalized within the hierarchical structure of the verbs referring to vision. In our lexical field one of these further elaborations of the basic schema can be found in the verbs denoting "**manner-of-looking**", (such as *ogle*, *goggle*, or *gawk*), group of English verbs which lexicalize how a perceiver₂ sees and evaluates the facial expression of a perceiver₁.

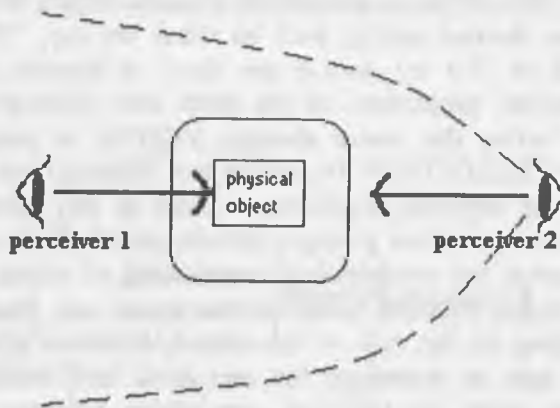


Fig. 4. Manner-of-looking verbs

Figure 5 is a schematic representation of a second **instantiation** of the basic perceptual schema, it represents the group of verbs conveying a mental process that is parallel to the visual perception, and in most instances, appears as a consequence of it. They are verbs such as the English *survey* or the Spanish *inspeccionar* which imply looking at something to ascertain its condition, or both *examine* and *examinar/reconocer* in English and Spanish in which the perceiver gives an evaluation of the object physically perceived.

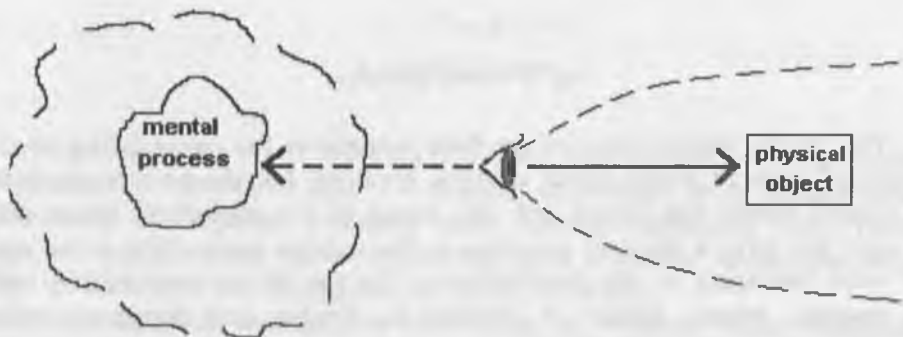


Fig. 5. Physical perception with a parallel mental process

The basic schema we use to structure our physical perception can be figuratively elaborated, thus allowing its shape to be filled by entities that are not physical (see Fig. 6). That happens when a verb of vision is used

to convey, not the physical perception of an object, but the mental perception of an abstract entity, such as when we say, “*I see what you mean*” in English or “*No veo claro lo que dices*” in Spanish. In the process of this metaphorical projection, as we have seen through the semantic analysis of the verbs, the *source domain*, VISION, is mapped onto the *target domain*, INTELLECTION. In English and Spanish both the descriptive parameters and the aspectual distinctions found in the lexical structure of the field are maintained, thus giving a definite proof of the consistent and coherent structure of the metaphorical *experiencing* of vision. Consequently the distinction drawn between *visual acts or events* and *visual activities or processes* depending on the role of the subject, becomes now a distinction between *mental acts or events* on the one hand and *mental activities or processes* on the other. In the first case *seeing* becomes *understanding*, involving an *experiencer* and an *abstract object* and correspondingly, *looking* becomes *thinking*, where an *agent* and an *abstract object* are involved.

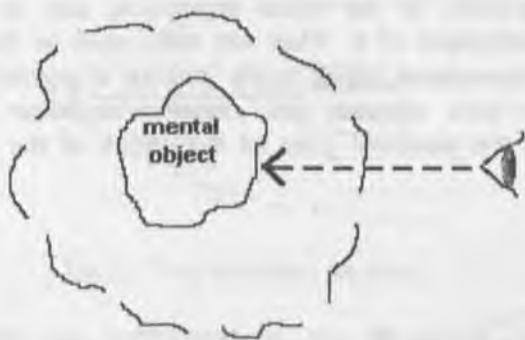


Fig. 6. Mental perception

The fourth instantiation of the basic schema is the one relating to the group of verbs in which actual vision is involved, but the perceptual object is created within our minds and this image of the perceptual object may or may not have a physical matching in the outside world. This is the case of verbs belonging to the sub-dimension “to see sth in your mind”, such as *imagine*, *dream*, *picture* or *visualize* in English and *imaginar*, *soñar*, *visualizar* or *ensoñarse* in Spanish.

In all of these schemata the arrows extend out from the eye, indicating that the perceiver is lexicalized as being active in the process of perception. Unbroken arrows have been used when the perceived object is physical, and as such belongs to the outside world, whereas dotted lines have been used to indicate the perception of a non-physical object belonging to the

mental world. For this reason both unbroken and dotted lines have been used in Fig. 7.

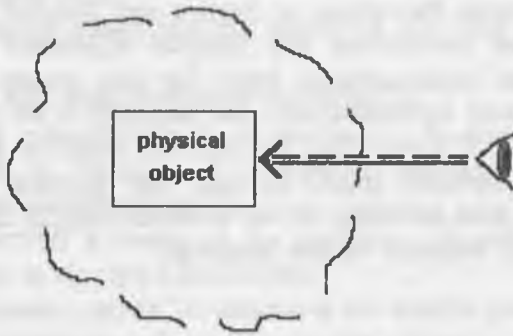


Fig. 7. To see sth. in one's mind

In the metaphorical mapping from the physical onto the non-physical domain the direction of the arrows are reversed, and as we move from the subject's outer world to his inner world, the physical perceptual space becomes a mental perceptual space, but a thorough analysis of the metaphorical projections of these verbs shows that in the change of experiential domain, the relation between the perceiver and the object perceived remains constant.

6. CONCLUSIONS

According to Lewandowska [1992: 62], even though not all principles of Cognitive Linguistics can be directly applicable in a lexicographic description of linguistic concepts, some findings stemming from recent cognitive analysis seem worth considering, such as certain procedures which help to illuminate the conceptual structure of words.

In line with this assertion, we have taken the verbs of Visual Perception and shown how preconceptual image schemata are reflected in lexical structure. By using a Functional-Lexematic approach to lexical analysis, it is possible to determine and classify lexical interrelationships both on a micro- and macrostructural level. The resulting hierarchies which structure the lexicon into fields, dimensions and subdimensions are obtained through the structure of language itself. These hierarchies are vitally important,

because they reveal the existence of recurrent patterns, semantic interrelations and crosslanguage correspondences.

Our conclusions are in accordance with those of Cognitive Linguists, as the recurrent patterns and interrelations evidenced in the lexical structure of the Field of Visual Perception in English and Spanish reflect the way that our perceptual interactions and physical experience of the outside world serve as an organizational basis for our system of conceptual categories and mental representations. As language is an inseparable part of general cognition, it must reflect the different cognitive processes we use to structure our semantic space. In fact, our physical and perceptual experience is what gives coherence to our understanding of reality, something which is necessarily reflected in our language.

APPENDIX I: LEXICAL FIELD OF PERCEPTION IN ENGLISH AND SPANISH

[A.1] VERBS OF GENERAL PERCEPTION

TO BECOME AWARE

notice to become aware *though your senses or in your mind*.

note to notice sth (usu. *mentioning it/writing it down/recognizing it*).

perceive to notice sth /sb. *through your senses or in your mind* (usu. sth not obvious to others).

spot to perceive sth *momentarily* as a result of *attending* to it. < +intention, +difficulty >

identify to perceive sth, assigning it to a certain *category*.

discern to perceive sth with *difficulty* and *know* what it is. <formal>

distinguish to perceive the *difference* between two or more things.

differentiate to distinguish, paying *attention* to *characteristics* or *details*.

discriminate to distinguish two or more things, *recognizing* and *understanding* the differences between them.

feel to perceive a *state of mind* or a *condition of the body*, through mental, emotional or physical stimulus (other than sight).

detect to notice sth *not obvious* to others, making an *effort* to do so.

miss to notice the *lack* of sth. / to *fail* to notice sth.

find to become aware of the *existence* of sth.

discover to find sth *not known before*, either by accident or after *looking for them*.

experience to have certain *experiences, feelings, sensations* (being affected by what one meets with).

recognize to become aware that sth perceived has *been perceived before*.

[A.2] VERBOS DE PERCEPCION GENERICA

percibir llegar al conocimiento de la existencia o la presencia de algo o de alguien *mediante los sentidos* o la *inteligencia* auxiliada por los sentidos.

aprehender percibir (formal).

captar percibir a través de los sentidos o la mente, algo que *está distante* o es de *difícil* percepción.

detectar captar la existencia de algo/la presencia de alguien a través de *indicios* que no son obvios.

apreciar percibir algo, generalmente su *tamaño, intensidad, importancia*, etc.

notar percibir algo, generalmente porque atrae nuestra *atención*, tanto física, como mentalmente.

advertir notar algo (generalmente con el sentido de la vista), por lo general *mencionándolo*.

hallar (que) notar *súbitamente* algo, o la presencia de alguien, casualmente o buscándolo.

descubrir hallar algo que *no se conocía antes*, casualmente o buscándolo.

percatarse (de) percibir algo (generalmente con *la vista*), o *por un proceso mental*, que no resulta patente.

reconocer percibir a través de los sentidos o la inteligencia que *una persona o cosa ya se conocía*.

distinguir reconocer dos o varias cosas como *distintas* (no la misma) o como *diferentes* (no iguales).

diferenciar distinguir dos cosas, *averiguando y señalando* los rasgos que no les son comunes.

identificar reconocer a algo o a alguien como igual a otro que *ya se conoce*. (en cualidad o carácter).

sentir percibir en el organismo un estado causado por un *estímulo externo o interno* y responder a él. (físico o emocional)

experimentar sentir un *cambio o modificación* en el organismo, el estado de ánimo o los sentimientos.

[B.1] VERBS OF VISUAL PERCEPTION**ARCHILEXEMES**

see₁ to be able to become aware by using your eyes.

see₂ to recognise or become aware by using your eyes.

look to direct your eyes in a certain direction in order to see.

[B.1.1] TO GET KNOWLEDGE/BECOME AWARE BY USING YOUR EYES

see₂ to become aware/get knowledge by using your eyes.

spy to perceive sb/sth, catching sight of them.

glimpse to perceive sb/sth briefly. (usu. not very well).

notice to see/become aware of sth. through your senses or experience.

observe₂ to notice visually, <formal>.

behold to notice visually as sb/sth comes into sight. <archaic>.

miss to notice the lack of sth.

witness to see sth happen (formal).

to see making an effort to do so.

distinguish to see making an effort to do so, because there is difficulty.

discern to distinguish but not clearly.

sight to see making an effort, briefly and suddenly.

spot to see sb/sth making an effort (usu. when it is difficult to do so).

to see sth in your mind

dream₁ to see imaginary pictures in your mind while sleeping.

imagine to see sth in your mind, forming a picture of it in your mind.

dream₂ to imagine sth you would like to happen (esp. when you are asleep).

visualize to imagine sth forming a very clear picture of it in your mind.

picture to imagine sth in order to have a clear idea of it.

to not notice sth.

overlook to fail to notice sth, often on purpose.

miss to fail to notice sth.

[B.1.2] TO SEE BY INTENTIONALLY DIRECTING YOUR EYES.

look at to see by intentionally directing your eyes (usu. giving your attention to it).

peruse to look over a surface.

glance to look at quickly.

skim to glance through sth rapidly.

peek to look at quickly, furtively from a place of concealment.

peep to peek quietly, secretly.

scan₁ to look at sth quickly, (usu. to find interesting information).

watch to look at for a long time paying attention to what is happening.

spy on to watch secretly.

observe to watch carefully (usu. in order to learn sth).

gaze to look at steady for a long time, usu. because you find sb/sth attractive or surprising.

contemplate to look at steadily, in a quiet, thoughtful way.

stare to look for a long time with wide open eyes.

goggle to stare at in surprise.

gape to goggle esp. with an open mouth.

gawk to stare in a stupid, unthinking way. (informal)

glare to stare angrily, in an unfriendly way.

glower to glare for a long time. (+redness, burning).

ogle to stare at with sexual interest.

regard to look at sth esp. with a particular feeling (having that feeling for them).

peer to look carefully at sth. (usu. difficult to perceive).

view to look carefully at sth with great interest.

review₂ to view retrospectively.

survey to look carefully at the whole of sth.

examine to look carefully and closely at sth.

scrutinize to examine sth closely (usu. to find information from or about it).

scan₂ to examine the whole of sth carefully to find sth in particular.

ensor to examine sth, (book, play, film...) officially, cutting out what is considered immoral/dangerous.

inspect to look carefully at sth/sb to check that it is all right.

review to formally inspect sth (soldiers/sailors/ships...).

eye to look carefully at sth in a suspicious way.

browse to look carefully/leisurely at sth. (esp. a book/things for sale), often moving slowly from one thing to another.

look for to look carefully trying to find sth.

search to look for sth carefully, trying to find sth hidden.

[B.2] VERBOS DE PERCEPCION VISUAL

ARCHILEXEMAS

ver₁ poseer el sentido de la vista.

ver₂ percibir algo con el sentido de la vista.

mirar dirigir la mirada con la intención de ver.

[B.2.1] PERCIBIR ALGO CON EL SENTIDO DE LA VISTA

ver₂ percibir algo con el sentido de la vista.

distinguir ver algo separándolo de su entorno.

guipar distinguir la presencia de algo o de alguien (coloquial)

presenciar ver algo (acontecimiento, espectáculo) por hallarse presente cuando ocurre.

ver algo a distancia o con dificultad

divisar ver algo sin nitidez, generalmente a lo lejos o desde una altura.

avistar divisar algo a considerable distancia en el campo o en el mar.

atisbar divisar algo muy débilmente o con dificultad, generalmente a distancia.

columbrar atisbar algo, sin poder precisarlo. <poco usual>

vislumbrar ver algo confusamente, generalmente a causa de la distancia o de la falta de luz.

entrever vislumbrar algo parcialmente.

trasver vislumbrar a través de algo. <poco usual>

ver algo en la mente

imaginar ver algo en la mente, formando una imagen/reproducción que lo representa mentalmente.

soñar₁ imaginar mientras se duerme sucesos o escenas que se perciben como reales.

soñar₂ (por extensión) imaginar como posibles o reales cosas que no lo son o que nos gustaría que lo fueran.

ensoñarse soñar₂ con cosas o situaciones mucho mejores de lo que son.

visionar imaginar como reales cosas que sólo existen en nuestra mente.

visualizar imaginar con rasgos visibles un concepto abstracto por medio de imágenes, esquemas, etc...

[B.2.2] DIRIGIR LA MIRADA CON LA INTENCION DE VER

mirar dirigir la mirada a algo o alguien con la intención de ver.

oíear mirar atentamente hacia una extensión de terreno desde un lugar elevado.

contemplar mirar algo con atención y durante un periodo de tiempo.

admirar contemplar con sorpresa, placer o entusiasmo.

observar mirar algo con mucha atención, dándose cuenta a la vez de cómo es, está, se hace u ocurre.

vigilar observar algo o a alguien para evitar que cause o que reciba daño.

espiar observar a alguien con continuidad y disimulo, persiguiendo un objetivo.

figar observar (normalmente a vecinos) sin ser visto para saber lo que ocurre.

acechar observar cautelosamente una persona o una cosa con algún propósito.

escrutar observar algo/ algún lugar detenidamente para descubrir algo.

escudriñar escrutar intensamente.

avizar escrutar intensamente y en todas direcciones para hallar algo.

fijarse mirar atentamente, intentando captar los detalles o particularidades de algo.

examinar mirar algo por entero y detenidamente, normalmente con un fin.

revisar examinar algo para corregirlo o repararlo.

inspeccionar examinar atentamente (normalmente para determinar si algo está como debe).

curiosear mirar (normalmente varias cosas a la vez) moviendo la vista de una a otra, para buscar algo.

oíear mirar algo con cierta rapidez para buscar algo.

reparar en mirar algo inadvertidamente, que termina suscitando nuestro interés.

remirar mirar algo o en algún lugar repetidamente, generalmente para buscar algo.

desojarse mirar algo con mucho ahínco para tratar de hallar algo.

fulminar mirar a alguien de manera irritada o colérica.

APPENDIX II: Descriptive Parameters

Diagram 1(a)

– TIME (short duration)	+ TIME (long duration)			
	EXPLICIT TIME		IMPLICIT TIME	
	STEADINESS	FACIAL EXPRESSION	CAREFUL-NESS	CARE + AUTHORITY
spy glimpse spot sight glance peek peep scan skim	watch spy on observe gaze contemplate stare	stare <i>surprise:</i> goggle gape gawk <i>anger:</i> glare glower <i>sexual interest</i> ogle	regard view survey examine scrutinize scan look for search	censor inspect review eye

Diagram 1(b)

– TIME (short duration)	+ TIME (long duration)		
	EXPLICIT TIME	IMPLICIT TIME	
		CAREFULNESS	CARE + AUTHORITY
divisar avistar guipar atisbar vislumbrar entrever reparar en ojea	contemplar admirar observar vigilar remirar acechar espiar	escudriñar fijarse examinar revisar otear desojarse	examinar revisar inspeccionar

Diagram 2(a)

MANNER		
QUICKNESS	DIFFICULTY	SECRECY
glance peek peep scan skim	distinguish discern sight spot peer	peek peep spy on

Diagram 2(b)

MANNER			
QUICKNESS	DISTANCE + DIFFICULTY		SECRECY
avistar guipar reparar en ojea curiosear	divisar avistar otear distinguir	<i>PARTIAL VISION</i> atisbar vislumbrar columbrar entrever trasver	vigilar espiar fisgar fisgonear acechar

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SCHEMATY WYOBRAŻENIOWE I OPOZYCJE LEKSYKALNE W LEKSYKOGRAFII FUNKCJONALNEJ

Artykuł jest analizą hipotezy dowodzącej, że struktura języka może być źródłem inwentarza kategorii konceptualnych. Autorki stosują model funkcjonalno-leksematyczny leksykografii funkcjonalnej do analizy struktury definicyjnej pojęć oznaczających emitowanie światła i ich rozszerzeń metaforycznych w języku angielskim i hiszpańskim. Poprzez taką analizę autorki dochodzą do ustalenia zbioru zasadniczych kryteriów służących do klasyfikacji jednostek leksykalnych do poszczególnych domen poznawczych oraz do zdeterminowania i klasyfikacji związków między nimi zarówno na poziomie mikro-, jak i makrostruktury.

Ustalone parametry wydają się być zbieżne ze znanymi w literaturze gramatyki kognitywnej schematami wyobrażeniowymi, co może być traktowane jako kolejny dowód na potwierdzenie też podejścia kognitywnego do języka.