Thinking in space: the lexis of thinking from a cognitive perspective

SOLVEIG GRANATH and MICHAEL WHERRITY

An in-depth account of how English speakers think about thinking, using perspectives from etymology, metaphor and cognitive linguistics

> Language structure is a product of our interaction with the world around us. The way we build discourses and develop linguistic categories can immediately be derived from the way we experience our environment and use that experience in species-specific communication. (Heine, 1997:3)

1 Introduction

Cognitive linguistics addresses how we conceptually structure and linguistically categorize experience in order to render our world coherent and accessible. One of the ways we do so is through the creation of spatial metaphors. In cognitive theory, language is not regarded as a representation of objective reality, but rather, as the product of our interaction with the world as entities in three-dimensional space. The metaphors we use to structure experience conceptually are grounded in this interaction. Our ability to generate metaphors makes it possible for us to get a mental and linguistic grip on abstract concepts by representing them as tangible, concrete entities situated in space. Hence, from a cognitive perspective, metaphors are much more than occasional ornamental figures of speech occurring primarily in literary contexts; rather, they are all-pervasive components of everyday language and reflections of how we cognitively structure our world. It should come as no surprise then that, as we shall see, metaphorical expressions are particularly prevalent in the lexis of that most abstract of realms, the realm of thinking.

2 THINK as a universal semantic prime

Thinking is conceptualized as an activity, something people do, but unlike prototypical activities, one that does not lend itself to external observation. In the words of Michael Fortescue (2001:16): '[i]t is potentially divorced from all outer manifestation, although everyone does it and we all think we *know* that they do.' Fortescue's own comparison of expressions for mental activity, based on data from 73 languages, indicates that cultural differences are small, especially when it comes to the basic words. Metaphors in this domain appear to be a little more language specific, however (Fortescue, 2001). This ties in well with Wierzbicka's categorization of THINK as a semantic prime. A semantic prime, or semantic primitive, is defined by Wierzbicka as an element that is so basic in language that it is undefinable: it belongs to a set of simple and self-explanatory terms that in their turn can be used to 'define" or explicate more complex meanings (Wierzbicka, 1996:10f). One consequence of this is that semantic primes are usually also semantic universals, in the sense that we find them in more or less all languages. If words such as these are given dictionary definitions, the result is usually circularity. Instead of clarity, we get confusion, or, as Wierzbicka (1996:49) says, it is 'the … practice of "defining" something that is clear via something that is obscure, and something that is simple via something that is complex'. She illustrates her

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claim with some definitions from *The American Heritage Dictionary*:

to think – to have a thought
thought – the act or process of thinking, cogitation
cogitation – 1. thoughtful consideration
2. a serious thought

Etymologically, the word *think,* which eventually came to designate the indefinable prelinguistic semantic prime THINK, goes back to the Proto-Indo-European root **tong*, meaning 'to seem (to one)', 'to think it so' (Shipley, 1984:105). In Gothic, this became *thugkjan*, 'seem' (Bennet, 1980:105); in Old English it split into *thyncan*, 'seem', which is the earliest recorded meaning (c.800 according to the *OED*), and *thencan*, 'think'. Both of these were attested in the writings of King Alfred the Great (c.888). The sense 'seem' has become obsolete in English, but we still find it in Shakespeare's works, where *methinks* is used, equivalent to 'it seems to me, it appears to me'. This development suggests that verbs of thinking were originally rooted in sensory perception: that which appears before us enters our minds through our eyes, and provides the 'stuff of thought'. Incidentally, the Indo-European root *men-*, which we find in English *mind* as well as *mention, reminisce, amnesia* and *maniac*,[1] originally meant 'have one's mind roused' (Shipley, 1984: 245), but can also be glossed as 'think'. Having one's mind roused by necessity also implies (unspecified) sensory perception.

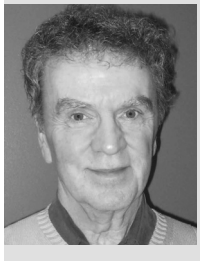
English *think* is not only a semantic prime; it is also polysemous. This may seem like a contradiction; if it cannot be defined, how can it take on more than one meaning? Wierzbicka (1996:25) explains: 'Polysemy is extremely widespread in natural language, and common everyday words – including indefinables – are particularly likely to be involved in it.' One way to identify polysemous words is by comparing illustrative sentences; another way is to identify their 'valency', i.e. to see what syntactic slots need to be filled for each sense (Wierzbicka, 1996:113f). Fortescue suggests the following three categories for polysemous *think*: 'thinking as believing', 'thinking as considering/judging', and 'thinking as unspecified mental activity' (Fortescue 2001:20). He points out that Danish has three different words for the three categories: *tro, synes, tænke*; the same holds true for Swedish, where they can be rendered as *tro, anse* and *tänka*. Etymologically, only the last item in these two sets goes back to the same root as *think*, which hints that it is the 'thinking as unspecified mental activity' that is the semantic prime rather than the other two. Nevertheless, Wierzbicka's 'valency options' (i.e. the patterns which the semantic prime THINK can enter into) actually correspond very nicely to Fortescue's three categories. They are represented below as (A), (B), and (C) (Wierzbicka, 1996: 114):

THINK
(A) someone thought something
(B) someone thought something about something
(C) someone thought about something

In Fortescue's terms, (A) here thus indicates belief, (B) opinion, and (C) mental process in general.



SOLVEIG GRANATH received her Ph.D. in English from Göteborg University in 1994 and is currently Professor of English at Karlstad University, Sweden, where she teaches graduate and undergraduate courses in syntax, language history, and general linguistics. Her major research interest is syntax, especially the interplay of syntactic structures with semantic and pragmatic factors. Recent papers deal with the impact word order has on meaning on the sentence and phrase level in English. Her research involves using corpora to study on-going changes in English today.



MICHAEL WHERRITY received his doctorate in 2001 and is now a senior lecturer in English linguistics at Karlstad University, where he teaches phonology, general linguistics, semantics and pragmatics. He has published articles on topics ranging from the English gerund/infinitive contrast to the semantics of Irish English. Recent research has focused on the function of –ing in grammatical constructions and the semantics of prepositions. He previously taught ESL for many years in the USA and has presented at IATEFL, TESOL, ICAME and Columbia School Linguistics conferences.

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3 Thought-related verbs with their origin in cognition and space

In this part of our paper we will make use of etymology to demonstrate what different words for thinking can tell us about this mental process. Fortescue (2001) distinguishes between 'basic terms of mental activity' and what he refers to as 'stylistically marked/technical terms'. It is these latter we shall focus on, since our aim is to demonstrate how words, which today by and large have an abstract meaning, started out as expressions denoting concrete relations and processes. Their etymology alone can tell us a great deal about how thinking is perceived in terms of our interaction with the physical realm. Some of these words have meanings that are still transparent to us; nevertheless, the majority of them are opaque etymologically. Most of them are adoptions from Latin; a few of them are of Germanic origin.

That thinking is an important part of being human is demonstrated by the large number of words in the language that is found to represent thinking in one way or another. For example, D'Andrade used 65 (originally 75) 'verbal constructions referring to mental activity' in his two studies from 1987 and 1995 (summarized in Lee, 2003: 221–5); Lee (2003) used 106 so-called mental predicates (like *doubt, find out, love, calculate* and *recollect*) in her own study. Her aim was to find out how non-linguists categorize such words; she therefore presented her 15 informants with a stack of 106 cards, and asked them to sort them in any arrangement that suited them. She also encouraged them to 'talk aloud' while working on the task. Her main findings (apart from the fact that no two informants categorized the words in exactly the same way) were first, that there was a main division into verbs of thinking and verbs of feeling, and, second, that within the category of thinking, informants were consistent in making a distinction between analytical and contemplative thinking. In the former category we find *analyze, reason, deduce, evaluate, assess* and *identify*; in the latter *think, contemplate, speculate, consider, compare, suppose* and *ponder*. It is on this latter category that we will focus here. For our study, we selected 22 verbs that appeared to be central members of this category and, using *The Oxford English Dictionary* [online], we traced their etymology in order to see what information could be had about how humans conceptualize thinking. One verb, namely *muse*, had to be discarded due to its obscure original meaning, which means that we ended up with 21 verbs.

One important aspect of thinking is the fact that it can be controlled: we can steer our thoughts in a certain direction and decide what to think about. In this way, it is different from emotions, which are much more difficult for the individual to control. This is reflected in the way we present the verbs below, where we have used different criteria depending on what our thoughts are based on. The following three categories are used:

We have a substantial amount of information, which we go over in our mind.
We have inconclusive information which forces us to make guesses.
We create our own objects of thought in the mind.

To category (i) belong verbs such as *consider, contemplate, deliberate* and *digest*. In the second category we have *conjecture, suppose, presume,* and *speculate*. Finally, in group (iii), we have included *imagine, visualize* and *conceptualize*, among others. For a few of the verbs in the study, the meaning is transparent to speakers of present-day English. This goes especially for words from category (iii), many of which mean something like 'create a picture in one's mind' or 'see with the mind's eye'. As pointed out above, most of the words are of Latin origin and, as a result, many of them are etymologically opaque to speakers of modern English. Unearthing the original meaning of these words reveals how they all, in one way or other, are ultimately grounded in the spatial domain.

(i) We have a substantial amount of information, which we go over in our mind

The first category, which is by far the largest, includes eleven verbs: *brood, cogitate, consider, contemplate, deliberate, digest, meditate, ponder, reflect, ruminate* and *weigh*. Two of these verbs can be traced back to very concrete situations, namely *consider* and *contemplate*. *Consider* originally meant 'to observe star groups for augury purposes', where the second part, *sidus*, or *sider-* means 'star, constellation' and the first part is an assimilated form of the original Latin preposition *cum*, whose basic meaning was 'with'. This *con-* also makes up the first

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half of *contemplate*; here, the second half refers to the templum, which was an open place for observation, marked out by the augur with his staff. The concept of space is thus common to both these verbs: stellar space in the first, and open terrestrial space in the second.

Cogitate and *reflect* are verbs which conceptualize the process of thinking as turning or shaping something in the mind. Whereas *cogitate* refers to a revolving process, *reflect* means to give something a backward bend. Thus, thinking is both turning over and looking back. Again, we see that words originally used to describe processes in the physical realm have been metaphorically extended to describe abstract, mental operations. This metaphor is not culturally bound, as Fortescue (2001: 28) found it also in Japanese, where *furikaeru*, 'reflect on', literally means 'look back over the shoulder'.

The conceptualization of thoughts as objects in physical space is very much present in the next four verbs in this category, namely *weigh, ponder, deliberate* and *meditate.* Of these, only the metaphorical use of *weigh* is transparent to present-day speakers of English, as in the following example:

(1) Your source has flaws as well, and what they say must be *weighed* with that in mind.

Ponder goes back to Latin *ponderare*, whose original meaning is 'weigh'. Thus 'to ponder' is, metaphorically, 'to weigh a matter mentally'. Likewise, the second part of *deliberate*, Latin *librare*, means 'balance, weigh'; the noun on which it is based is *libra*, i.e. a balance or pair of scales. The word was borrowed into English from French in the fourteenth century, and the gloss in the OED actually has 'to weigh well, consider maturely'. Finally, *meditate* goes back to the Indo-European root *med-*, cognate to Old English *metan* and Swedish *mäta* (after the operation of Grimm's law, by which the voiced stop /d/ became voiceless /t/). The underlying sense of this word is thus 'measure'. Implicit in all the four words is the notion that ideas are objects that can be weighed and measured.

The last three words in this group, *brood, digest* and *ruminate,* are all transparent in present-day English; here, the metaphorical extensions are easily spotted. Both *brood* and *ruminate* are metaphors taken from the barnyard: *brood* denoting what hens (and other birds) do before their eggs are hatched, and *ruminate* the way cows chew the cud. The latter word, like *reflect* (discussed above), implies a turning back to and going over a thought again and again; in one of its entries the *OED* even reiterates *over* as a way of showing the persistence of this concept: 'to … turn over and over in the mind.' *Brood* in its transferred sense today usually incorporates the notion of the hen anxiously protecting the eggs from outside attack; the synonym given in the *OED* is 'to meditate' with the addition '(*esp*. in a moody or morbid way)'. *Digest*, like *ruminate*, conceptualizes thinking as food. In its literal sense, it describes how food is broken down into smaller parts in the stomach, a process that requires time – a notion that is also present in *digest* when it refers to thinking:

(2) The report contains too much to *digest* at one reading. (*The Collins Cobuild Dictionary*)

We find the same notion of a time-consuming activity also in some of the other verbs discussed above, such as *cogitate* and *deliberate.*

(ii) We have inconclusive information which forces us to make guesses

The second category contains verbs of thinking that involve a certain amount of guesswork. In this group we have included *conjecture, speculate, suppose* and *presume.* They differ slightly from the words in the first category since three of them – *conjecture, suppose* and *presume* – semantically belong to the group labelled by Fortescue (2001: 20) 'thinking as believing'. *Speculate* is closer to the words in group one in the sense that it refers to the general activity of thinking. Its etymology is also similar to two words in the first category (*consider* and *contemplate*) in the way it is firmly grounded in space: Latin *specula* originally meant 'watchtower'. Like many other words related to thinking, the Latin verb *speculare* was related to seeing, and meant 'watch, examine, observe'. It is obvious that very much of our thinking was originally conceived of in terms of visual perception.

The remaining three verbs, *suppose, presume* and *conjecture*, basically designate placing objects in space. *Suppose* originally meant 'to place something under something', and *presume* meant 'to take before'. *Conjecture* is more dramatic: the literal sense in Latin was 'to throw /something/ before /someone/'. In all three, the notion of visual perception is also

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present: we see the objects of thought being placed before us. Latin *præsumere* had the added sense 'anticipate', which adds futurity to the concept: what is presumed is taken for granted 'until evidence to the contrary is forthcoming' (*OED* [online]). From the literal sense of *conjecture* the qualities 'hastily' and 'carelessly' appear to be carried over to the transferred sense.

(iii) We create our own objects of thought in the mind

Six verbs will be discussed in this last group, namely *conceive, conceptualize, envisage, envision, imagine* and *visualize*. We have noted several times that visual perception is a basic notion in thinking, something that is confirmed by the members of this group, where four out of six refer to the process of placing something virtually before the mind's eye: *imagine, visualize, envision* and *envisage*. Whereas a handful of members of the two previous groups involved looking back, these four verbs frequently evoke a hypothetical future. Despite this, Fortescue's claim that 'thinking in general is orientated towards the future' (Fortescue, 2001:31) is not corroborated in the present study, since, as we have seen, much of our thinking is in fact orientated towards the past, albeit possibly with the goal of bringing about some change in the future. This, however, is the result of pragmatic modulation; it is not encoded in the semantics of the word.

Conceive and *conceptualize,* finally, both go back to Latin *concipere*, whose primary sense is 'to take effectively, take to oneself, take in and hold' (*OED* [online]). Via the sense 'become pregnant with offspring' the meaning developed into the metaphorical 'to form in the mind'. We recognize another pervasive metaphor here, namely thought as an object in the mind. In the second part of our paper, we will pursue this metaphor further.

4 The mind in terms of the conduit metaphor

In this section we will leave our discussion of how we linguistically represent verbs of cognition and take a look at how we conceptualize both the locus and product(s) of thinking and cognitive activity in general. We begin with the notion 'idea'. Like *think*, this word has its origins in a verb relating to visual perception, here, the Proto-Indo-European root **weid,* meaning 'look at', 'see'. Not surprisingly, this root is also the source of words having to do with 'knowing', such as Sanskrit *vedah* and Old English *witan,* both meaning 'to know' (*cf.* Mod. English *wit*). Our word 'idea' is directly traceable to the Classical Greek *idea* (a nominalization of Greek οραω, 'to see'), which meant 'appearance' or 'form', especially in connection with the Platonic forms, hence, 'form in the mind' (Shipley, 1984:427).[2] Here again a word once used in a concrete sense to describe our interaction with and experience within the spatial realm has lost its original meaning, i.e., has become opaque through time, and is now used exclusively to refer to an abstract mental entity. It has, in effect, long since left its association with physical space and visual perception behind. This is not the end of the story, however. Modern English usage reflects that people continue to conceive of the now quite abstract notion 'idea' in terms of spatial relations. Although the notion of 'idea' is no longer directly identified with the activity of seeing, it is frequently conceived metaphorically in terms of concrete entities in a visual field. Types of ideas which may be conceived in this way include 'thoughts', 'suggestions', 'proposals', 'notions', 'arguments', 'views', 'opinions' and even 'memories', as well as a whole host of others specific to particular contexts. Indeed, the semantic domain of 'idea' is quite large in modern English and speakers have a variety of terms which are informationally richer than the superordinate to choose from.



Communication is sending

A prevailing metaphor relating to the mind and ideas which has become well established is the Conduit Metaphor, first discussed by Reddy (1979). The conduit metaphor is actually a set of metaphors according to which

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THE MIND IS A CONTAINER
IDEAS ARE OBJECTS
COMMUNICATION IS SENDING IDEAS FROM ONE MIND CONTAINER TO ANOTHER (Kövesces, 2002:74)

The conduit metaphor is not an expert description of the nature of the mind and communication, but rather, a popular, conventionalized model according to which ideas are assumed to move, like objects, along a conduit or path, from one speaker to another, as we can see in the expression: 'He finally got his ideas across.' A subsidiary metaphor is that language itself functions as a container in which ideas are packaged: 'speak *in* English', 'the *content* of the speech'.



The mind is a container
Ideas are objects

As pointed out above, metaphor is one of the cognitive devices human beings use to structure and make sense of their experiences. More specifically, cognitive linguists speak of **conceptual metaphors,** by which we understand one conceptual domain in terms of another conceptual domain with which it shares certain structural affinities. In other words, a source domain is mapped onto a target domain. In the case of the conduit metaphor, for example, the mind (target domain), is represented as a container (source domain) with an inner space in which mental objects, i.e., ideas are stored.[3] This model is highly schematic and essentially functions to give ontological status to the notions of mind, ideas and communication. In effect, it functions to reify these notions, thereby enabling us to refer to them and manipulate them as if they were concrete entities and bounded areas in physical space. For example, by conceiving 'ideas' as objects, we can talk about them as our possessions, e.g. 'my ideas', and even twist them to our advantage by 'putting a spin on them'; by representing the mind as a container, we can speak of it in terms of spatial dimensions: 'broad-minded', 'narrow-minded'.

Crucial to an understanding of the conduit metaphor is the notion of containment. According to Lakoff and Johnson (1980), 'containment' is one of a rather limited number of **image schemas** we apply metaphorically to a great number of non-spatial domains. Such image schemas ultimately derive from our experience of our bodies as containers, possessing an inside and outside, located in physical space. In addition to the image schema of containment, Lakoff and Johnson list those of proximity and distance, front-back and up-down orientation among others. Common to all and the source of all is our experience of our bodies in three-dimensional space. Although these image schemas are essentially non-metaphorical, they give rise to **ontological metaphors**, such as the conduit metaphor, which in turn are the source of the large number of culturally bound **structural metaphors** by which we regularly organize and understand our physical and mental world. Classic examples of structural metaphors from Lakoff and Johnson (1980) are:

ARGUMENT IS WAR
LOVE IS A JOURNEY

In comparison with ontological metaphors, such structural metaphors are more specific and correspondingly richer in the amount of information they provide. As such they underlie the wide variety of linguistic metaphors and metaphorical expressions that characterize everyday language use. For example, the structural metaphors ARGUMENT IS WAR and LOVE IS A JOURNEY provide the conceptual underpinnings for the following linguistic metaphors respectively:

(3) a. Your position regarding this question is *indefensible*.
    b. This relationship has reached a *dead-end*.

Here it is to be observed that the words *indefensible* and *dead-end* are not chosen arbitrarily, but rather, are motivated by their respective underlying conceptual metaphors. Many more linguistic expressions could be cited which are grounded in these same two conceptual metaphors.

The metaphorical structuring of mind-related notions in three-dimensional space can clearly be seen in the case of linguistic expressions based on the conduit metaphor where

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ideas are objects and the mind a container:

(4) He's got *nothing in* his *head*.

Here *head* is used metonymically to stand for the mind as container, while *nothing* refers to the metaphorical absence of ideas from this container. There are a large number of such established metaphors directly motivated by the conduit metaphor, i.e., there is no intervening, more specific structural metaphor involved:

(5) The *thought* of his wife came into his *mind*.
(6) I have *it* in my *mind* that…
(7) Some *things* stick in the *mind*.
(8) For three kindly years he had *shut out* all the *memories of childhood*.
(9) The *idea* had been for a short time in his *head*.
(10) I shouldn't ever have allowed the *thought* to enter my *mind*.
(11) The only thing to do now is put *it* all out of your *head*.
(12) Keep *it* in *mind*.
(13) I can't get *it* out of my *mind*.
(14) *It* stayed in my *imagination*.
(15) I couldn't get *that* into my *skull*.

Observe that in some of these examples, the 'mind' is metonymically referred to as the 'head' 'skull', or 'imagination'. Metonymy is another cognitive device, often used in conjunction with metaphor, by which we structure thought. [4]

The ontological metaphor IDEAS ARE OBJECTS has given rise to a number of more specific conceptual metaphors which underlie the following linguistic expressions:

IDEAS ARE BALLS
(16) a. I have an *idea* I'd like to *bounce off you*.
b. Can I *toss out a suggestion?* (cf. *conjecture* above)
c. I didn't *catch* what she said.

IDEAS ARE FOOD
(17) a. That's *food for thought*.
b. The crowd *ate up* everything the rabble-rouser said.
c. *Chew on this* for a while. You can give me your answer later. (cf. *ruminate* above)
d. He would *swallow* just about anything.

IDEAS ARE PLANTS
(18) a. I may have *planted that idea* in Mark's head.
b. What Ruth most put into Dorothy's mind were *seeds of thought*.

IDEAS ARE COMMODITIES
(19) a. Your argument may sound convincing, but I don't *buy it*.
b. The candidate tries to *sell* the party's new *platform* to his constituency.
c. Gerard *stowed it away* in his mind for later inspection.

In all of these, 'ideas' are metaphorically conceived as objects in three-dimensional space. Like physical objects, they can be 'bounced', 'tossed', 'caught', 'bought', 'sold', 'chewed on' and even 'eaten-up'. Sometimes, more than one conceptual metaphor is involved:

(20) a. She *shot* down his *argument*.
b. Don't *spill the beans*.

In (20a), ARGUMENT IS WAR is combined with the notion of IDEAS ARE FLYING OBJECTS. The latter reifies both the 'argument' itself as well as the implicit 'missile' that downs it. In (20b), IDEAS are not only OBJECTS, but also FOOD, and perhaps even PLANTS. Here the notion of a 'secret', a possible hyponym of the more general term 'idea', is understood. Under particular circumstances a divulged secret may not only be new knowledge, but serve both to generate and nourish new ideas.

Not all linguistic metaphors are based on established, conventionalized conceptual metaphors. Many are nonce creations deriving from a novel, one-time mapping of a particular source domain onto a particular target domain. Some, with time, can become mainstream. Such metaphors, although they often originate in literature, are not infrequent in the daily give-and-take of conversation. Some examples of nonce creations are:

(21) a. My *mind* is filled with the *grain of earth*. (IDEAS ARE PARTICLES OF EARTH)
b. The *thoughts swam* in the inspector's head. (IDEAS ARE MARINE LIFE, THE MIND IS A BODY OF WATER)
c. She searched her *mind* for whatever *cliff notes* might be jotted there. (IDEAS ARE CLIFF NOTES, THE MIND IS A NOTE PAD)

In these examples it is to be observed that, despite the novelty of the conceptual metaphor, the underlying basic conduit metaphor remains operative, though in (21c) the container is reduced to two dimensions. An example of a mainstream conceptual metaphor appearing in Western literature – this time not based on the conduit metaphor, though conceived in spatial terms – is LIFE IS A JOURNEY.

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This is the dominant metaphor in both Dante's *Divina Commedia* and Bunyan's *Pilgrim's Progress* and most likely has the Bible as its ultimate source.

An interesting variation on the conduit metaphor is that of 'thought' itself as a container within which the thinker's body is conceptualized as being contained; hence such expressions as *immersed in thought, wrapped in thought, buried in thought* and *absorbed in thought.*

5 Conclusion

To conclude, much of the language of thought takes the form of mental imagery which is rooted in the spatial domain. As we have seen, the visual field is a particularly fertile source of images. By a process of metaphorical extension, we are able to use words referring to entities and events in physical space to describe abstract realms of experience such as thinking and conceptualization. Many of the words of Latin origin we have examined are opaque to modern speakers, in that they have lost their spatial associations, thus leaving the original metaphor no longer transparent. They have, in effect, become 'disembodied' with time. Nevertheless, that people continue to conceive mental processes in spatial terms is clear from the many metaphorical expressions in modern English that we have cited. Such expressions not only vividly reassert our penchant for conceptualizing the abstract in terms of the concrete, but also serve to contribute freshness and vitality to the lexis and discourse of thought. ■

Notes

1 These and a few more are mentioned by Fortescue (2001: 28).
2 Here it is interesting to observe that in Chinese the characters for both 'think' and 'idea' contain the eye radical *mu*.
3 In Chinese culture, it is the heart that might be considered a container since it is regarded as the location of both thinking and the emotions. The heart radical *xin* appears in the character for 'mind'.
4 As opposed to conceptual metaphor, conceptual metonymy refers to the cognitive device of using one entity to refer to another in the *same* conceptual domain.

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