

Mental imagery and metaphor

Imagem mental e metáfora

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ABSTRACT: This paper focuses on the nature of mental imagery as a component of human cognition. Imagery has been considered as mere epiphenomena and unable to alter belief. However, recent evidence in neuroscience and psycholinguistics suggest that the mental image can be accessed and interact with higher order processes of cognition in the determination of speaker meaning. If this is true, then mental imagery can play a role during the comprehension procedure for metaphoric utterances. To understand the reasons why mental images have been discarded from linguistic theories of utterance comprehension, past philosophical ideas about the mental image are discussed. Many have questioned the existence of the image, stating that they are, in fact, constituted by propositional components. These perspectives fit within a theory of the mind that conforms to an amodal symbol system in which the relation between perceptual input and mental representation is an arbitrary one. This paper is suggesting that the mind follows a perceptual symbol system, and that the relation is an analogous one. Therefore, through an extension of relevance theory, it is possible to flesh out the meaning of metaphors by incorporating this embodied view of the mind.

KEYWORDS: Mental imagery; Propositional and non-propositional; Amodal symbol systems; Perceptual symbol systems.

RESUMO: Este artigo foca na natureza das imagens mentais como um componente da cognição humana. As imagens mentais têm sido consideradas como mero epifenômeno e incapazes de alterar crença. No entanto, evidências recentes em neurociência e psicolinguística sugerem que elas podem ser acessadas e interagir com os processos de ordem superior de cognição na determinação do significado do falante. Se isso for verdade, então as imagens mentais podem desempenhar um papel durante o processo de compreensão de expressões metafóricas. Para entender as razões pelas quais imagens mentais teriam sido descartadas de teorias linguísticas de compreensão do enunciado, são discutidas ideias filosóficas sobre o assunto. Muitos questionaram a existência da imagem, afirmando que elas são, de fato, constituída por componentes proposicionais. Essa perspectiva cabe dentro de uma teoria da mente que está de acordo com um sistema de símbolos amodais, em que a relação entre input perceptual e representação mental é arbitrária. Este trabalho sugere que a mente segue um sistema simbólico-perceptual e que a relação é de um método análogo. Portanto, através de uma extensão da teoria da relevância, é possível detalhar o significado de metáforas, incorporando a visão corporificada da mente.

PALAVRAS-CHAVE: Imagens mentais; Proposicional e não proposicional; Sistema de símbolo amodal; Sistema simbólico-perceptual.



Introduction

Language is thought to access abstract propositional representations in the mind of the hearer whilst processing the utterance. The distinction between propositional and non-propositional works along these lines: propositions are mental representations in the conceptual part of cognition that are about entities in the world, and so can be judged in terms of their truth or falsity (SPERBER & WILSON, 1986, 1995); non-propositional entities refer to phenomenological qualities, such as sensory and affective information that correlate with notions of aptness rather than truth. Sensory here incorporates mental imagery. The idea that human cognition is separated into areas that either process propositional or non-propositional information has been influenced by Fodor's (1983) work on the modular mind. Fodor (1983) divided the mind into perception and cognition in which the latter refers to this conceptual and propositional format. On this account, it is only the conceptual mental representations that are given the status to alter belief and behaviour, and, thus, more importantly, to determine speaker meaning (FODOR, 1983). Perception, by contrast, does not have access to these conscious mental representations, and so cannot be made available during the confirmation of utterance meaning and affect belief.

The implication is that non-propositional theories of metaphorical comprehension see metaphors as represented in the perceptual part of human cognition, and so do not interact with or alter belief (DAVIDSON, 1978; LEPORE & STONE, 2010). By contrast, propositional theories view metaphor as being converted into a conceptual format with no access to perceptual information in their mental representation (SPERBER & WILSON, 1986, 1995). If we question the Fodorian (1983) view of the mind, then there is a possibility to conceive of metaphors accessing propositional and non-propositional information in their representations in human cognition.

Thus, it seems more likely that propositional and non-propositional processing are equally necessary in the comprehension procedures for metaphors. Metaphors seem to explore in more depth the non-propositional aspects of the mind, such as perceptual and affective¹ information that ordinary propositional language can bypass in its drive for efficiency.

The proposal is that these so-called *higher*² areas of cognition that deal with rational conceptualising about the world can access the *lower*³ areas of perception and feelings. This basically means that propositional information is able to interact with non-propositional states of mind in the processing of metaphors in human cognition. This has the implication that there are no separate modules for the processing of utterances, especially figurative ones.

The focus of this paper is on the mental image as an example of non-propositional or perceptual information. The aim is to compare the way different disciplines have understood the role of mental imagery in human cognition, over the years. This paper reviews classical philosophical arguments from the eighties with recent empirical research from psycholinguistics and neuroscience to demonstrate how ideas based on experimental findings have more validity. Moreover, mental imagery is assumed here to access *higher* and *lower* areas of cognition in the understanding of speaker meaning, particularly with metaphor. This is seen to be in contrast to Fodor's (1983) ideas on the modular mind. Firstly, this paper looks at McGinn's (2006) distinction between the mental image and the percept to understand how imaging differs; it, subsequently, provides a brief overview of past philosophical debates about mental imagery since they express ideas that

¹ It is perceptual if it derives from the sensory organs and is processed in the relevant auditory, visual, olfactory, tactile and taste areas of the mind. It is affective if it relates to the emotions and ensuing feeling of an emotion that is registered cognitively.

² Information is *higher* if it conforms to rational and conceptual information that can express a proposition.

³ Information is *lower* if it is non-propositional, conforming to perceptual or affective information.

are argued to still hold prominence in certain disciplines. Further to this, this paper considers evidence from the psycholinguistic and neuroscientific literature to develop a new way of looking at vision and mental imagery. The last section employs aspects of relevance theory, a theory rooted in communication and cognition, to explain how the mind/brain chooses the correct speaker meaning from the words. It focuses on metaphors and the way the mental image functions in the processing of meaning.

1 Philosophy and the Mental Image

1.1 Percepts and Imaging: McGinn

This section aims to provide a short introduction to the percept and the image to understand some important qualitative differences. McGinn (2006) views percepts and images as two aspects of visual experience: seeing with the sensory organs and seeing with the mind's eye. They are dichotomous in nature so that perceiving an object is the polar opposite of imaging⁴ one. A percept is sensory information, derived from the peripheral sense organs, and processed in the occipital part of the brain. Perception represents objects in the external world (MCGINN, 2006). By contrast, an image brings objects to mind without requiring the outside world (MCGINN, 2006). Both pertain to sensory information, but percepts require an object to be present in the environment whereas images do not. McGinn (2006) separates the processes of perceiving and imaging in human cognition as if they were not part of the same machinery in the human brain.

One crucial difference between percept and image, according to McGinn (2006), is that the former is passive whilst an image requires an active mind. McGinn (2006) views perception as a process by which objects fall passively

on the retina via the visual apparatus, and this occurs without conscious effort. We cannot help but perceive the world around us. Alternatively, imaging certain objects in human cognition necessitates active mental effort because it is subject to the will: it cannot survive without conscious attention (MCGINN, 2006). This gives the sense that images are internally and wilfully created while percepts are mere receptors of the world outside. McGinn (2006) thinks this is reflected by the respective verbs for perceiving and imaging: *see* and *visualise*. *See* infers passivity whilst *visualise* implies active effort. This idea that perception is passive seems a somewhat naïve explanation, and this will become evident when considering the psycholinguistic literature in this area.

An illustration of the differences between percept and image, within McGinn's (2006) framework, is provided here: whilst sitting on the beach, perceiving the sun falling over the sea, external information of light falls onto the retina. The mind replicates this visual experience identically in the visual cortex (MCGINN, 2006). Simultaneous to this percept of the sun, sea and light, the mind may wander into an image of a desired interaction with a friend. Whilst your mind is captivated by its new audience of this imaged scenario with the friend, the perception of the sun and light may fade from consciousness. It does not disappear entirely as it does not require conscious, active attention to keep it mentally present. By construing perception as this passive process, McGinn (2006) suggests it is fixed by the external world without any interference from *higher* order processes so that what is perceived is identical to the object in the world. This would mean that vision works independently from our rational thought processes. For many, this may seem an out-dated view of vision, especially regarding recent research in this area.

A significant consequence of this view, for McGinn (2006), is that images cannot alter the mental content of belief. For him, this is because they are

⁴ This term or active verb 'to image' is borrowed from McGinn (2006).

produced internally. If the person is the source of the image, the knowledge acquired is already held by them: it is not new information (MCGINN, 2006). Any information that has not derived from the outside world cannot contribute to the formation of new beliefs (MCGINN, 2006). By contrast, perception works differently as its source is the external world, enabling the processing of novel information. This allows, in McGinn's (2006) perspective, the possibility to change beliefs held about the world. In this way, McGinn (2006) appears to be saying that images are isolated from the thought processes of belief, in line with Fodor's (1983) account of human cognition in which conceptual processes are blind to the inner processes of perception. This also equates with Davidson (1978) and Lepore and Stone (2010) who propose a purely non-propositional account of metaphors, in which only an image is accessed, but no propositional information. According to these authors, metaphors are unable to comment on states of affairs in the world, and considering the ubiquity of metaphors in speech, this seems counterintuitive. Whilst McGinn (2006) produces some interesting and qualitative distinctions between percept and image, it seems that his view resides within a view of human cognition that does not accord with recent research, presented in section 3.

1.2 A Philosophical Debate from the Eighties on Mental Imagery

This section intends to provide a brief historical trajectory of how the mental image has been viewed in the philosophical tradition in the past, and how they may be similar or different to McGinn's (2006) more modern account.

What all researchers are in agreement about is the way that images are representational, or rather *of something* (MCGINN, 2006; REY, 1981; DENNETT, 1981). It is predominantly the format they are represented in, and their role in human cognition that causes controversy. The bigger question

is whether they are mere epiphenomena or whether they can interact with other conceptual and propositional representations in the processing of speaker meaning. McGinn (2006) would view them as the former, and unable to alter belief.

With mental imagery, humans can report the experience of forming an image in the mind, which Rey (1981, p. 117) refers to as 'image-experiences' or otherwise known as a quasi-perceptual experience. Because of this subjective experience, and, perhaps, as a result of common sense, mental images were thought to conform to a picture in the head, dating back to Aristotle (in BLOCH, 2006). The picture theory of mental images basically states that the mental representations are picture-like in a similar way to a photograph or painting. McGinn (2006, p. 61), although not an advocate of this theory, has described this in the following way: 'when I form an image of X, it is thought, I form a mental picture of X, which is then the "immediate object" of my imaginative consciousness. This inner picture represents X, so that I am mediately conscious of X, but it is the picture itself that I most directly see with my mind's eye'. The implication is that the picture is the object of imaginative consciousness or the mind's eye, not the object, as McGinn (2006) argues for. It is the picture as the object of consciousness that runs into the problem of the infinite regress in which the mind's eye needs to interpret the image, which would then require another eye to interpret the first and so on (PYLYSHYN, 1973). However, Kosslyn and Pomerantz (1981) would argue that imagery is not the result of homunculus looking at a screen, but of sensory processing of these representations.

Kosslyn's (1980) quasi-picture theory proposes that the information for the image is stored in deep representations in long-term memory, in the form of propositional representations. A visual buffer, in the form of an interface, enables the surface construction of the image, from these propositional memories, which is made available to consciousness. In contrast to the

early picture theorists, these authors are not saying that mental images are exact replicas of external pictures (paintings and photographs), but that the experience of imaging resembles the experience of seeing, and this is because they share similar brain structures: ‘at some point in the data-processing stream, images and percepts have a common format, which differs from the format of representations of other (e.g., linguistic) sorts of information’ (KOSSLYN & POMERANTZ, 1981, p. 154). Whilst the quasi-picture theory is unpopular in the philosophical literature, it agrees with research from the psycholinguistics and neuroscience, as discussed in section 3.

The type of evidence to support this theory at the time is presented here. Segal and Fusella (1970) found participant’s visual signal deteriorated as a result of imaging the same object at the same time. If imaging can block a visual percept, then perhaps this could be because they utilise similar structures or processes. Moreover, Copper and Shepard’s (1973) participants were shown a letter of the alphabet, rotated to a degree so that it was not in the normal upright position. They had to judge whether the letter was in: mirror image or normal form. The participant response time increased as the degree of orientation away from the upright position increased. The supposition is that they were mentally imaging the rotation of the letter to the upright form to be able to make the judgement proficiently. Another experiment by Kosslyn (1975) showed how subjects took longer to provide details of imaged animals when asked to image a smaller version in their mind. This was performed comparatively by asking subjects to image a small rabbit next to an elephant. It was harder to distinguish certain features on smaller imaged objects, suggesting similarities between imaging and perceiving.

This approach has been widely criticized for several reasons. Dennett (1981) believes a mental image shares no resemblances to a picture, in the painting or photograph sense. To start with, they are subjective and intentional. Rey (1981, p. 120) elaborates by saying ‘it is not obvious that

mental images can literally be said to have any visual properties whatsoever’. This is because the visual properties associated with perception, such as light and colour, spatial properties of depth, proportion, orientation and so on are not part of the mental image. Dennett (1981, p.129) presumes an image only exists on the retina, and once this representation travels up the optic nerve, this is “lost” and replaced with information about characteristics of this pattern’. The neurobiological processes of imaging are not considered relevant to philosophical arguments even though they do venture to offer some explanation.

Therefore, Dennett (1981) claims that mental images do not exist, and the best way to define these quasi-perceptual experiences is in a descriptive way. Dennett (1981) presents the hypothetical task of describing a tall man with a wooden leg. A descriptive approach would mean that there is no need to represent his having a certain hair colour or clothes as not every detail is important. This seems to capture the indeterminacy of imagery. For Dennett (1981), when representing a tiger and its stripes, the picture theory would need to represent accurately the specific number of stripes it has, which is impossible, whereas the description theory would just say ‘numerous stripes’ as it does not need to resemble the object in question. However, Kosslyn and Pomerantz (1981) are not saying that an image is like a picture at all, but that image experiences resemble seeing ones.

Pylyshyn (1981) argues against the picture-in-the-head hypothesis because mental images are not raw uninterpreted sensory patterns. Visual mental representations are stored as meaningful interpreted propositional chunks so that if part of the image were missing, it would be a meaningful aspect, not a geometric part (PYLYSHYN, 1981). Image is the wrong term, for Pylyshyn (1981), for a representation that has no pictorial qualities. These so-called images are structural descriptions, constructed from concepts, and which have a referential semantic relation to the objects they

represent, opposed to a resemblance one, in a similar way to sentences. It seems that Pylyshyn (1981) with his emphasis on the symbolic nature of images, provides an answer that would suit an amodal symbolic view of mind. This means that perceptual input is transduced into a symbolic and representational format that is arbitrary in its relation to the original percept (BARSALOU, 1999). As with Dennett (1981), the idea that an image is amodal and symbolic suggests it is similar to linguistic structures, which fails to capture the essential difference of the imagistic format. The next part looks at a different way of viewing the mental image that may shed light on the findings from this section.

2 Psycholinguistics and Neuroscience on Vision/Imaging

This section unites psycholinguistics and neuroscience in discovering what constitutes vision and imaging in the mind/brain. The focus is on their neurological structures. This aim is not to suggest that the mind can be reduced to the brain, but that the correlations between the two can help narrow how imagery is to be understood against the differing views presented in the philosophical literature.

Many modern psycholinguistic accounts of vision view the process of seeing as a constructive process in which optical information combines with memory stores of world knowledge in deriving perception of the outside world (COULSON, 2006). This is because the world is far more complex than the optical information that falls on the retina, so the brain fills in the gaps of meaning (COULSON, 2006). This is called perceptual completion and is evidenced by: the blind spot, a region in the retina that receives little visual information; and the phenomenon of blinking every 5 seconds, leaving 250 milliseconds with no external visual stimulus (COULSON, 2006). Despite these neural gaps in our sight, we receive constant visual stimuli as our

world knowledge stores supply the remaining data. As a result of this type of phenomena, Coulson (2006) suggests two-way processing mechanisms in which *higher* areas of the mind, such as the rational and conceptual parts, can access the *lower* areas of perceptual processing. This seems to counter the idea that perception is a passive phenomenon, as McGinn (2006) suggests. It would also refute identity relations between external object and mental representation: representations are constructed and coloured by our past experience.

Not only is vision constructive, but also when stored, it is remembered not just with visual information, but with other embodied aspects. Barsalou's (2009) claims that the mind is multi-modal, meaning that memory stores original percepts with sensory information, motor functions, emotions, intentions and motivations. In order to retrieve a stored percept in the form of an image, it constitutes a partial re-enactment of these various multi modal states (BARSALOU, 2009). Barsalou (2009) states that any retrieval from memory stores to create a mental representation involves only part of the original. Hence, this may explain why images seem to lack the distinct notion of space and determinacy afforded to percepts. This is also known as the perceptual symbol system in which part of the perceptual input is thought to be extracted into a symbolic representation, meaning that it has an analogous relation to its source, rather than an arbitrary one, as the amodal system predicts (BARSALOU, 1999).

Damasio (2000) would no doubt favour the perceptual symbol system as he also presents an embodied view of the mind. Perception, for him, does not equate with an identical transmission of information from world to mind, as McGinn (2006) suggests:

There is no picture of an object being transferred from the object to the retina and from the retina to the brain. There is rather a set of correspondences between physical characteristics of the object and modes of reaction of the

organism according to which an internally generated image is constructed. (DAMASIO, 2000, p. 321)

Similar to Coulson (2006), the representation of the object undergoes the process of mental reconstruction so that what your mind perceives will not be identical to the object in the external world. This clearly counters Fodor's (1983) input systems of perception as being encapsulated from belief as there are higher order processes that are able to penetrate the percept. This highlights the subjective nature of perception and how it is shaped by our background knowledge, attitudes and beliefs. Both percept and image seem to draw on memory resources and attention in the construction of a form that is not wholly bound to accord with the actual.

This, therefore, presents a distinct idea to Dennett (1980) of what constitutes visual properties. Neither vision nor imaging is seen as a visual object in the mind/brain, but as a mental construction that can be correlated with certain brain structures. Vision is a neural construction between higher and lower areas, so it does not represent an object as an external picture would. It is not an identical picture of light, colour and spatial properties that is perceived. If vision is not like a picture, then the same must be true for imaging, considering they share similar neural substrates. In a way, Dennett (1980) was correct in saying there is no image object, but he follows an amodal view of the mind/brain. Pylyshyn's (1980) idea that an image or structural description is not raw unprocessed sensory data and has undergone the higher level processing of interpretation also agrees with aspects of Coulson's (2006) view although the approaches are vastly different.

In accordance with Barsalou (2009), perception, for Damasio (2000), is intimately tied up with embodiment and consciousness. Damasio (2000) has termed the root of consciousness as the relationship that is mapped between a perceived or imaged object and the body. It is linked to how

humans interact with objects whether they are sourced from the external world or memory.

To illustrate, as I look at the plastic skeleton hanging in my room, this object is mapped into neural patterns in the early sensory and motor cortices in my brain (DAMASIO, 2000). More specifically, the object is represented by the way that patterns of light on my retina have been translated into a cortical representation that is no more than the interactions between the neurons in my brain. These sensory and motor representations are first-order because they are only one level (DAMASIO, 2000). This would also be the same for imaging, but that images would constitute a partial reconstruction of the percept, as Barsalou (2009) suggests.

In contrast to McGinn (2006), Dennett (1980) and Pylyshyn (1980), these patterns of interaction communicate to the body, which is represented in the form of maps in the brain stem, hypothalamus, the insular cortex 2 and medial parietal cortices (DAMASIO, 2000). These first-order body maps are able to chart the entire body and any ensuing changes from the bones, muscles, tissue, nerves, hormones and so on. In this way, the brain minds the body. The body proper will change, however minutely, as a result of the new incoming object, and this new relationship between the body and object is mapped in a second-order relationship. It is second-order as it represents the temporal changes to both representations, and is able to exert an influence on these structures about this change (DAMASIO, 2000). For instance, the perception of drinking my tea whilst I write these words, such as the warmth and sweetness of the liquid combines with how my body changes, the slight pick-me-up from the sugar, and a background emotion of a slight pleasant sensation. This second-order mental image is aware of how these processes are affecting the other because it combines the first-order mental images from sensation and the body. It is processed in the superior colliculi and the cingulate cortex through the coordination of the thalamus (DAMASIO, 2000).

This is a clear incidence of localising biological structures and processes in the identification of mental content. It also shows how perception and imagery occurs in a wider part of human cognition as previously thought, and how it connects to the body proper.

Ganis, Thompson and Kosslyn (2004) have also shown that vision and imagery share substantial neural substrates. These researchers asked participants to either visualise a previously seen line drawing or look at a faint one on a computer screen, and to answer evaluative questions about them. The results showed that there was considerable overlap, especially in the frontal and parietal lobes, which was comparatively more than the occipital and temporal regions (GANIS, THOMPSON & KOSSLYN, 2004). Whilst there was considerable similarity, the differences could highlight that perception is sourced the external world while imagery is from memory. This view of imagery clearly supports parts of Kosslyn and Pomerantz's (1981) early paper: vision and imagery share similar neural substrates, and, therefore, are similar in kind. This questions McGinn's (2006) notion of image and percept as being qualitatively different, and not in terms of degree.

Ganis, Thompson and Kosslyn's (2004) paper showed that several frontal regions were activated bilaterally: the inferior, middle, superior and medial frontal gyri, the insular cortex, the precentral gyrus and the cingulate gyrus (GANIS, THOMPSON & KOSSLYN, 2004). The insular cortex, for Damasio (2000), is linked to how the body is represented during perception whilst the cingulate gyrus is linked to these second-order representations between sensory perception and ensuing body changes. The frontal cortex is involved in cognitive control processes that might be utilised in imaging and perceiving, such as the accessing of episodic memory (memories of unique persons, places and events) or a judgement on the content (KOSSLYN, 1994). More importantly, this shows that higher level processing is employed in vision and imaging, which agrees with Coulson (2006).

The activated parietal regions are also thought to be involved in similar cognitive processes as above, and also for attentional and spatial purposes. These include the left angular gyrus, the supramarginal gyrus, the inferior parietal lobule, the superior parietal lobule, the precuneus, the postcentral gyrus, and the middle and posterior cingulate were all activated (GANIS, THOMPSON & KOSSLYN, 2004). Interestingly, the activation of the post central gyrus suggests somatosensory processing, or more specifically to a motor response for both vision and imagery. This would support Barsalou's (2009) ideas that the mind is multi-modal.

Ganis, Thompson and Kosslyn (2004) also reported that there was generally less overlapping activation in the temporal lobe, and even less in the occipital cortex, which consisted in only twenty-six percent. The reason for the latter is because it is responsible for tasks, such as object identification and classification, which is reserved for perception: we know what we image as we will it into being.

Therefore, imagery and perception have been shown to employ similar brain regions, and that visual properties for both are created between *lower* and *higher* areas of cognition. This challenges Pylyshyn's (1981) structured description that follows an amodal picture of the mind/brain. It also questions Kosslyn's (1980) proposal of a visual buffer that translates propositions into images. More specifically, however, it shows that images interact with higher cognitive states, and so can inform rational thought processes, including the pragmatic processing of speaker meaning.

3 Pragmatics, Metaphor and Mental Imagery

3.1 Relevance Theory

If images can access higher cognitive processes and influence speaker meaning, it would seem that this suggests that both non-propositional and

propositional information is employed in the interpretation of metaphors. What is missing is a cognitive theory that defines how speakers move from word meanings to speaker meaning, especially for creative uses of language.

This part looks at relevance theory as a cognitive linguistic theory, developed by Sperber and Wilson (1986, 1995). It is an inferential model of communication in which the intended meaning is not wholly provided by the linguistically encoded sentence, but inferred on the basis of ‘ostensive’ evidence. Verbal comprehension occurs on the grounds that utterances create expectations of relevance, which are accurate enough to direct the hearer toward this intended meaning (SPERBER & WILSON, 1986, 1995). The audience is responsible for constructing psychological contextual assumptions as to the intended meaning, retrieved from their personal and cultural encyclopaedic knowledge found in memory (SPERBER & WILSON, 1986, 1995).

For these theorists, an input is defined as relevant if in its processing context it yields enough positive cognitive effects to be worth the processing effort:

- a. Other things being equal, the greater the positive cognitive effects achieved by processing an input, the greater the relevance of the input to the individual at that time.
- b. Other things being equal, the greater the processing effort expended, the lower the relevance of the input to the individual at that time. (SPERBER & WILSON, 2002, p. 2)

A positive cognitive effect is achieved by new information that alters an individual’s way of representing the world. This new input gains relevance by interacting with previously held assumptions and evoking contextual effects, such as strengthening, contradicting or combining with them to yield an implicated conclusion (SPERBER & WILSON, 1986, 1995). In short, relevance is characterised in terms of a trade-off between cognitive effects and processing effort.

The claim is that the human cognitive system is automatically set up to attend to relevant information in the environment. Relevance theory conjectures that natural selection tends to create and favour efficiency processing devices (SPERBER & WILSON, 1986, 1995). In this way, it is comprehensible that: the perceptual mechanisms select relevant stimuli, including utterances; memory accesses relevant assumptions; and the naïve psychology module (Theory of Mind) attributes beliefs automatically and accurately, and without conscious deliberation (SPERBER & WILSON, 2002). This is in accord with the cognitive principle of relevance ‘human cognition tends to be geared to the maximisation of relevance’ (SPERBER & WILSON, 2002, p. 6). In addition, it is understood that the communicative intention is fulfilled if and only if the audience recognises this intention in the process of comprehension. This can be achieved by the utilisation of an ostensive stimulus, a verbal or non-verbal utterance, that makes mutually manifest the speaker’s intentions (SPERBER & WILSON, 2002).

It is important to clarify that the communicative principle of relevance is a special case since it concerns the way in which ostensive (that is overt communication) stimuli impinge on their audiences (SPERBER & WILSON, 1986, 1995). This principle captures a special property of these stimuli, namely that they come with a guarantee of relevance, which renders them distinct from other non-communicative phenomena in the environment:

Every ostensive stimulus conveys a presumption of its own optimal relevance. (SPERBER & WILSON, 2002, p. 7)

Optimal relevance is described as:

- An ostensive stimulus is optimally relevant to an audience if and only if:
- a. It is relevant enough to be worth the audience’s processing effort
 - b. It is the most relevant one compatible with the communicator’s abilities and preferences (SPERBER & WILSON, 2002, p. 8)

It follows from this that the utterance should be worth the audience's attention (that is have a range of cognitive effects for the hearer) and will not demand any gratuitous effort on part of the hearer.

Moreover, it is understood that the communicative principle of relevance conjoins with the notion of optimal relevance to license a specific comprehension procedure. The hearer takes the linguistically encoded sentence meaning and adheres to the process as outlined below:

- a. Follow a path of least effort in computing cognitive effects: test interpretative hypotheses (disambiguations, reference resolutions, implicatures, etc.) in order of accessibility.
- b. Stop when your expectations of relevance are satisfied (SPERBER & WILSON, 2002, p. 10).

The theory states that within everyday verbal communication, the first satisfactory interpretation constructed should be the only one applicable (SPERBER & WILSON, 1986, 1995). However, this theory would entail that certain uses of language, such as metaphors which have poetic effects demand more processing effort thereby requiring to be offset by cognitive effects if relevance is to be achieved.

Relevance theory is a communicative and cognitive theory with its roots in a propositional and conceptual view of cognition. An utterance communicates a proposition, which constitutes a mental representation in conceptual format, and this expresses a thought. Moreover, verbal communication provides two levels of propositional content: the explicature and implicature (CARSTON & HALL, 2012). The former is the truth evaluable one. The language modules in the perception part of human cognition supply a schematic blue-print of the decoded sentence meaning, which is a sub-propositional constituent in a conceptual format (CARSTON & HALL, 2012). In this way, the perceptual modules only provide information to the

conceptual region and are not able to interact with or influence conscious rational thought processes. This would have the consequence that mental imagery could not be accessed along with other conceptual, propositional information in the determination of speaker meaning. Therefore, to incorporate this, this theory needs to be expanded upon.

2.2 Relevance Theory: Ad-hoc Concepts and Metaphor

Carston & Hall (2012) follow Fodor's (1981) conception of the simple, unstructured, lexical atomic concept. The concept has an address in memory linking to three kinds of information: lexical properties, inclusive of phonetic, phonological and syntactic information of the encoded concept; a logical entry of meaning postulates, which implies certain analytic implications; and an encyclopaedic entry pertaining to stored information in the form of scientific or cultural beliefs, personal experience and so on (CARSTON, 2002). Carston (2002) supports Sperber & Wilson (1986, 1995) in that word meanings do not correspond directly to a concept; rather they provide a schema with which to construct a new concept. This new concept is created on the occasion of use from the lexically encoded concept, in accordance with relevance theoretic principles (SPERBER & WILSON, 1986, 1995), and is known as an ad-hoc concept (CARSTON, 2002). Ad-hoc here equates with non-lexicalised. Barsalou (1987, p. 101) lends credence to this position in the following 'rather than being retrieved as static units from memory to represent categories, concepts originate in a highly flexible process that retrieves generic and episodic information from long- term memory'. This claims that a concept is a variable entity whose meaning is dependent on the context in which it is derived. Alternatively, a lexical concept is stable and independent of its context.

By way of example, take the metaphorical utterance 'blind in love'. The lexically encoded concept 'love' is used to communicate a specific,

non-lexical ad-hoc concept LOVE*, which is found in the proposition explicitly expressed. This means that thoughts are more explicitly expressed. With reference to metaphor, Carston (2002, 2010) proposes that a wide range of assumptions are accessed from the encyclopaedic entry of a concept, which are made marginally more salient to the hearer. Hence, these assumptions are communicated as affording the construction of a new ad-hoc concept embedded in the proposition explicitly expressed.

The emergent property issue in metaphor has caused problems for propositional and conceptual linguistic theories. This means that certain assumptions raised by the metaphor vehicle (such as 'blind' above) were not found in the encyclopaedic entry of the concept (CARSTON, 2002). This is illustrated through the following: metaphors are conceived to be broader and narrower than the encoded lexical concept (SPERBER & WILSON, 2008; WILSON & CARSTON, 2008):

(1) Michael is a HOOVER*

In this example, HOOVER* is broadened to include people in its denotation, and narrowed to include the idea of the intake of certain types of materials, such as ideas and lessons as opposed to dust and dirt. The encoded concept 'hoover' accesses logical information, such as electrical equipment, which is suppressed in the inferential derivation of implications, indicating its broader use (SPERBER & WILSON, 2008). It also accesses encyclopaedic information, such as the fact that Hoovers take in dirt and dust, which would narrow the encoded concept by this acting as a context for the comprehension procedure (WILSON & CARSTON, 2008). Therefore, the utterance creates a set of contextual assumptions from the encyclopaedic information that act as input to the comprehension procedure to yield the relevant implicated conclusion:

- (1) a. Explicit content: Michael is a HOOVER*
- b. Contextual Assumption: Michael takes in ideas and lessons from other colleagues and does not give much in return
- c. Contextual Implication: Michael takes in ideas and lessons from other colleagues and does not give much in return

In this way, the assumptions raised by the vehicle concept HOOVER* are said to constrain the search for relevance within the target concept 'Michael', thus making salient certain information to the hearer. However, it might be noticed that the encyclopaedic entry for 'hoover' does not contain information about using lessons and ideas from other colleagues, and not returning the favour in its address in memory. The fact that features in 'hoover' do not overlap with the features derived in HOOVER* is called the emergent properties issue as certain properties emerge that do not seem to be accounted for by an inferential account (WILSON & CARSTON, 2008).

4 A Move into the Beyond

A pragmatic-based account of poetic effects can lead to a much clearer understanding of what constitutes a poetic thought. But not all of what is important to such an understanding can be dealt with. Although cognitive pragmatics is now in a position to provide a substantive theory of literariness, it is important to be aware of the limits on how far it can go. There is a theory of literariness based on pragmatic theory, and there is a beyond. (PILKINGTON, 2000, p. 192)

It is this notion of a beyond that transcends conceptual and propositional theory that is considered central to understanding metaphor. It was established that creative metaphors link not only to conceptual representations, but also to non-propositional representations, such as images, sounds, smells and feelings. It is suggested that mental imagery is

often predominant in these perceptual type information because thirty per cent of the brain is dedicated to vision (COULSON, 2006). This has possibly led to us being a vision-dominated society.

In line with relevance theory (SPERBER & WILSON, 1986, 1995), novel metaphors require extra effort in their comprehension procedure, and it is this extra effort that is offset by cognitive effects that instigates the mind to search the perceptual and feeling aspects more thoroughly. The example below illustrates this:

- (2) It's always when a man's swollen
 With love and everything
 Else
 That it keeps raining (BUKOWSKI, 2003, p. 192).

This juxtaposition of the concepts 'swollen', meaning physically swollen, and 'love' with the backdrop of rain provides a melancholic look at love. The vehicle concept of 'swollen' is employed to understand the abstract and intangible concept 'love'. It could be accessed from long-term memory, and constitute an ad-hoc concept in short-term memory, constituting multi-modal information, following Barsalou (2009). It would activate a conscious mental image of the bulging physical form. The motor representations along with the body maps could supply the imagery of the body form with the felt sense of heavy, dense expansion as if one is bursting out of their skin. This image and the other embodied information would access an emotion, according to Damasio (2000), and it is a sad one. Investing in the construction of this mental image could enable the reader or hearer to embody what it feels like and draw on personal experiences that embellish this further. It seems to suggest a physically uncomfortable feeling of not being able to sit within your own skin. When this is applied to 'love', it may be possible to understand how disappointments in love can instigate this frustrating feeling in the body.

If following a broadly relevance theoretic procedure, then the metaphor might elicit the following:

- a. Explicit content: when a man's SWOLLEN* with LOVE*
- b. Contextual Assumption (including linguistic, imagistic, emotions and body state representations): A man is bulging, heavy and densely expanding as if bursting out of his own skin because he is in love
- c. Contextual Implication: A man is disappointed and frustrated in love.

In this way, it is conjectured that there is not a problem with the emergent property issue if the ad-hoc concept can access a visual image and also other sensorimotor and affective information to understand the concept of 'love' better in this particular context of use.

Conclusion

This paper has intended to discuss the merits of the mental image in being able to account for determining speaker meaning, especially for metaphorical language. Relevance theory is suggested here to offer some interesting insights into conceptual and propositional theories of language, but misses out the non-propositional aspects, including the mental image. The mental image is argued here to be able to access higher order representations as this is generally how the mind works. There is proposed to be no modular mind that separates our perception and cognition, but a mind that is flexibly interconnected. The multi-modal mind is able to access mental imagery, sensorimotor representations, emotions, body states, and also conceptual and propositional representations. There is no hierarchical order of processing in which perception provides a decoded meaning for the conceptual part in its determination of speaker meaning. Our experience of metaphorical language seems to suggest that mental imagery is predominant to other perceptual components, and this may be due to the fact that vision dominates the brain.

This paper has broadly compared two different approaches to mental imagery: amodal symbol systems and perceptual symbol systems. The latter is consistent with an embodied view of the mind in which the relation between the mental image and the original percept is analogous. This also accords with the early insights, discussed by Kosslyn and Pomerantz (1981), in that image experiences resemble experiences of seeing. The aim, thus, was not to reduce certain mental states to certain brain states, but to correlate them, and utilise findings in neuroscience and psycholinguistics in distinguishing mental imagery and its role in cognition.

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