Chapter 4

Approaches to meaning and mental representation

At the end of Chapter 3, linguistic creativity was defined essentially as the '**making of new meaning**' (which is sometimes but not always accompanied by new form). It was argued that this 'making of new meaning' is rooted in the existing knowledge of individual speakers. The meaning of linguistic units and the way that meaning constitutes human knowledge, has been an issue from ancient to modern times (Crystal 1987: 100-101). Schank and Kass (1988) formulate these issues under the rubric of cognitive science as *What is the nature of (linguistic-semantic) knowledge?* And *How is this knowledge used?* To trace the historical development of the notions related to linguistic meaning from the start of human thought and writing, and to relate the various threads across cultures and traditions of thought, is a task beyond the scope of this thesis. I will therefore, in this chapter, focus on the various approaches to the issue of linguistic, and specifically, lexical meaning in the twentieth century, especially in the latter half of this century.

This chapter is divided into two main sections. In Section 4.1, some of the current approaches to (lexical) meaning in semantic theories will be explored, and their contributions will be synthesised, particularly as regards their contribution to the

general problem identified in Chapter 1, namely what is the nature of the lexical knowledge of normal, adult, mother-tongue speakers of a language and the mental representation of this knowledge, so that it can form the basis for the cognitive processes that will enable speakers to be linguistically creative? The way in which these various semantic theories deal with the nature of the (mental) representation of meaning, particularly lexical meaning, will be the focus of Section 4.2.

4.1 Approaches to lexical meaning

The study of linguistic meaning is an interdisciplinary enterprise, and has by no means been the sole responsibility of linguists. In fact, more often than not, linguistics has shied away from issues of meaning, and has left them to be resolved by philosophers, psychologists and more recently cognitive scientists working on the human mind or on artificial intelligence. I will not be dealing with the various contributions of the different disciplines to the study of meaning in any detail in this thesis.

In Sections 4.1.1 to 4.1.9 the following approaches to linguistic meaning will therefore be looked at: the lexicographical approach, the referential approach, the structuralist approach, the behaviouristic approach, the functional-pragmatic approach, the psychologistic approach, the computational approach, the neuro- and biological approaches and the approach followed in corpus linguistics (Crystal 1987: 100-105, De Stadler 1989: 9-13, Geeraerts 2002, Saeed 2003: Part III). The order in which these approaches are presented is not necessarily a reflection of

their historical development. Also, the contribution of diachronic approach to lexical meaning has already been discussed in some detail in Section 2.3 (as lexical creativity) and will therefore only feature here as an antecedent to the lexicographical approach.

In Chapter 3, conceptual creativity was identified as being at the most creative end of the continuum of linguistic creativity. Conceptualism, or the equation of the meaning of the word with a mental concept, was already suggested by Ogden and Richards in 1923 (cf. Ogden and Richards 1948). The so-called semiotic triangle represented in Figure 4.1 (based on Crystal 1987: 101) indicates the notion that words are not directly related to objects in the world, but need to be mediated in the mind through concepts (as shown by the broken line between the form and the symbol):

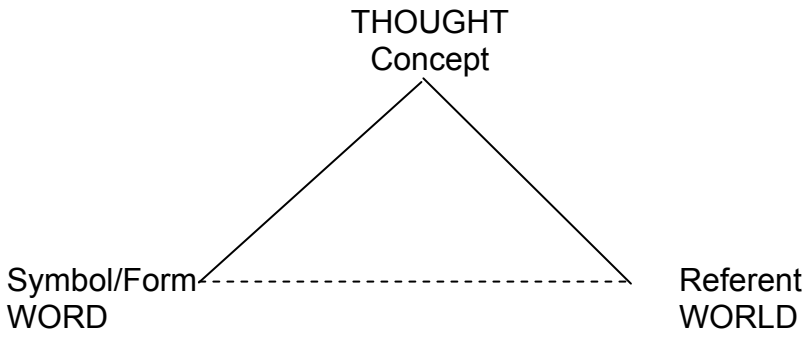

Figure 4.1 *The semiotic triangle*

To provide structure to the following discussion of semantic theories, these themes will be highlighted in each case:

- the general contributions of the particular approach
- the focus of the particular approach on aspects of the semiotic triangle, and
- the way in which linguistic creativity is handled by the approach.

4.1.1 The lexicographical approach

In the philological era at the end of the nineteenth and in the beginning of the twentieth century, the main concern with lexical meaning was the way(s) in which the meaning (and form) of individual lexical items in the languages of Western Europe had been changing. Detailed etymological studies of individual lexical items (often in relation to their cognates in related European languages) were therefore undertaken. This fitted into the broader goal of tracing the origin of modern European languages from a common, single source, such as Indo-European (Crystal 1987: 296, 330). This diachronic approach to word meaning made a significant contribution to the study of lexical creativity as was discussed in Section 2.3. The mechanisms at work in changing the meanings of words, such as metaphor, metonymy, bleaching, etc. were identified and studied and have played a significant role in the development in modern Cognitive Semantics (cf. Nehrlich et al. 2003).

From these etymological studies, the first modern dictionaries (which reflected this etymological focus) were produced (Crystal 1987: 109). Modern lexicography has,

since its birth in 1755 with Samuel Johnson's **Dictionary of the English Language**, changed dramatically in various ways. For example, many different types of dictionaries (including bilingual, specialist and learner dictionaries, as well as thesauri) are now being produced, of which only monolingual dictionaries are directly relevant to this study since they are typically regarded as a descriptive representation of the mental lexicon of mature monolingual speakers. The following developments in modern monolingual lexicography have had an impact on the study of word meaning:

- Dictionaries have changed from being normative and prescriptive to being descriptive records of a specific language.

- The focus of dictionary entries has largely shifted from (although not excluding) the etymology and pronunciation of words, to their meaning (by giving definitions) and their use (by giving example phrases and sentences).

- Rather than being based only on a literary corpus and relying on the individual lexicographer for definitions, recent dictionaries are now based on large electronic text data bases which reflect all registers, dialects and text and discourse types in a language.

- Modern technology is increasingly being used both in the creation of new information contained in dictionaries (such as frequency counts and

collocations with the aid of computational concordances) and in the representation of this information in large computerised data bases.

The contribution of modern, monolingual dictionaries to the study of word meaning is twofold:

- Detailed definitions, authentic examples of use, typical collocations and frequency counts are available for study and comparison. This issue will be taken up again in the discussion of methodology underlying semantic theorising.
- The specific model in which the information is represented in printed dictionaries and in electronic has had a profound effect on the way that cognitive scientists believe information is represented in the mind. In this model the vocabulary of a language is typically seen as part of a lexicon or lexical module independent from the grammar of the language, with a list of entries in which each lexical item is represented, and where each lexical entry contains all the phonological, semantic and grammatical information necessary to use and understand that particular word. This issue will be taken up again in the discussion of mental representation.

The focus of the lexicographical approach in terms of the semiotic triangle is, in a sense, on the triangle as a whole: lexemes (the orthographic and/or phonetic word form), the concepts they represent (in the definition), and the referents in the real world (e.g. with examples of a concept) are discussed. It is, however, important to

note that the ‘concept’ in the lexicographical approach has no status as a mental entity; it merely refers to the sense or meaning of a word. Since the purpose of the lexicographical approach as such is to record the *conventionalised* lexical aspects of a language as an external object, the lexicographical approach makes no contribution to linguistic creativity, except in the recording of productive derivational word-formation rules. However, its antecedent namely diachronic lexical semantics, has made a significant contribution, as has already been discussed in Section 2.3.

4.1.2 The referential approach

The referential approach to meaning is, in a sense a folk theory of meaning. Most people believe that the meaning of words can be equated with the fact that they name, or refer to, objects in the real world (Lyons 1968: 403-404). The *reference* of an expression is the relationship between the expression, and the objects, events, actions and features in the world to which the expression refers. The meaning of a word is therefore regarded as equivalent to the reference of that word to the external world (Lyons 1968: 424-427, De Stadler 1989: 9, 17), and the focus of this approach is therefore exclusively on the relationship between WORD and WORLD. Saeed (2003: 46) calls this the “denotational approach which emphasizes the links between language and external reality”. Since linguistic creativity was defined as ‘making new meaning’ in terms of conceptual creativity, the referential approach which excludes the ‘concept’ end of the triangle, cannot, in principle, make a contribution to linguistic creativity.

Several problems have traditionally been identified with the notion of reference as a way of describing word meaning (De Stadler 1989: 9, 17-18):

- There are many words for which the reference is not easily established. For example, adjectives such as *large, beautiful* and *almighty,* as well as fictional or mythical entities such as *goblin* and *unicorn*.
- Compositional meaning, for example in compound words such as *laptop* (referring to a portable computer), are problematic, since the meaning of the compound can not be derived from the reference of either a lap or a top, or from a straightforward combination of the references of the two words.
- Reference is a feature of expressions, such as full noun phrases in a specific context, rather than individual lexical items. For example, the word *table* in isolation has a sense which can be given in a dictionary, but the word *table* will only have referential meaning is an expression such as *The table in my dining room sits 8 people*.
- The same object in the real world (for example, *Venus)* can be referred to by different expressions which are both meaningful (namely *the morning star* and *the evening star*).

The notion of reference (as opposed to sense) has, however, remained part of the discussion of word meaning, even if it is only to use it as a way of discarding the external world from the realm of semantic theory, as the following quote from

Crystal (1987: 102) illustrates:

> Semantics is not directly concerned with the study of the external world, or its conceptualization. The world of non-linguistic experience is the province of physicists, geographers, psychologists, and others. Nor, ... is semantics easily able to cope with the study of how language *refers* to this external world ... Rather, the primary focus of the modern subject is on the way people relate words to each other within the framework of their language - on their 'sense', rather than their reference.

This quote illustrates a view in so-called autonomous linguistics that linguistic meaning (the speaker's knowledge of the meaning or sense of a word) is different, and to be distinguished from encyclopaedic knowledge (the speaker's world knowledge, i.e. knowledge which speakers have of the real world in which they need to function and act, including such knowledge as is presented by the physical sciences) (Taylor 1991: 81).

The question, however, is: What is the contribution of the notion of reference to the study of word meaning, and why can it not be ignored, even though there are such patent problems with it? In my view, the contribution and persistence of the notion of reference can be attributed to the fact that human beings do not exist in a Platonic ideal world, but in a concrete real world in which they speak and act, and use words and linguistic expressions to refer to concrete objects and events. That is, part of the meaning of a word is always the third part of the semiotic triangle (WORLD), which captures the idea that part of the meaning of a word is that it captures human experience in the real world.

4.1.3 The structuralist approach

In the structuralist approach, the meaning of a word is equated with the *sense* of the word. ABy the *sense* of a word, we mean its place in a system of relationships which it contracts with other words in the vocabulary.@ (Lyons 1968: 427). The sense of a word is therefore the whole set of the paradigmatic and syntagmatic sense relations that the word enters into in a specific language (De Stadler 1989: 54). Since the sense of a word is definable purely in terms of its relationship to other words in the vocabulary of that language, the notion of sense makes no presuppositions either about the existence of objects or properties outside of the vocabulary of that language, or about the mental representation of words and concepts in the minds of speakers. Paradigmatic sense relations exist between the members of the sets of semantically-related terms that can occur in the same context. For example, *knock, tap* and *rap* are paradigmatically related, whereas *dog* and *bark* are syntagmatically related (as collocations they occur together in the same context). Sense relations that typically feature in structural analyses of the meaning of words include synonymy, antonymy, hyponymy, homonymy and polysemy (cf. Bloomfield 1933, Hockett 1958 and the summary by Crystal 1987: 105-106). These sense relations, specifically homonymy and polysemy, will be discussed in greater detail in Chapter 5.

In the structuralist approach to word meaning (as well as to language in general), the analytical method of investigating the structure of the vocabulary of a language was of prime importance. The analytical methods used were componential

analysis, whereby the meanings of words were analysed into smaller, components (Lyons 1968: 470-481, Nida 1975, Crystal 1987: 107, De Stadler 1989: 107-116, Taylor 1991: 29-37, Wierzbicka 1992, Wierzbicka 1996, Saeed 2003: 35-36 and 247-254), and the investigation of semantic fields (Lyons 1968: 429, Lehrer 1974, Crystal 1987: 104, De Stadler 1989: 92-107, Saeed 2003: 63), and various semantic tests and diagnostic frames that were developed for specific semantic phenomena (Cruse 1986: 8-12, 13-17, 54-69, De Stadler 1987: 71-72, Saeed 2003: 60-62).

According to Lyons (1968:429), the value of the structural approach to semantics

- lies in the rigorous demands on methodology and analysis that must be met by all future approaches, and
- has been demonstrated by investigations into *semantic fields* (or domains), such as kinship terms, colour terms, body parts, the terms of moral and aesthetic evaluation, and various other kinds of knowledge, skill and understanding, which have confirmed that particular fields of human activity and knowledge are categorized differently by different languages.

The focus of the structuralist approach was exclusively on conventionalised language as an external object, which means that it could not, in principle, make a contribution to linguistic creativity, although the detailed studies into a variety of fields of human activity, alluded to above, have opened the way for a recognition of

the role of background knowledge in the making of meaning.

4.1.4 The behaviouristic approach

In the behaviouristic view of meaning, the meaning of an expression is equated to the stimulus created on the side of the speaker and the response that ensues from the hearer (Crystal 1987: 101, De Stadler 1989: 10). Many socially-prescribed, ready-made responses to typical repetitive events in the social process (such as greetings) are in the form of conditioned responses, and according to Lyons (1968: 416) “quite properly described in behaviourist terms”, even though behaviourism as a general explanation for human action is no longer seen as valid. The main problem that is usually attributed to the behaviouristic approach in linguistics is that formulaic expressions only form a small subpart of our linguistic repertoire. Modern corpus linguistics is, however, showing that formulaic expressions may, in fact, not be such a small part of our linguistic repertoire. The way in which formulaic expressions may, in fact, contribute to creativity, were briefly highlighted in Section 3.2.3. The problem with behaviourism in terms of linguistic creativity lies in the fact that the human agent as the locus of creativity is negated. The contribution that this approach makes to the study of word meaning, is that phatic communication and the social responses that speakers make to meaning and communication, are not left out of the picture. An interesting aspect that this approach brings to the semiotic triangle is that the WORLD part of the triangle does now not only consist of things and events in the real world which are named by words, but that the WORLD now also includes the actual language users in actual language use

situations.

4.1.5 The functional-pragmatic approach

The functional-pragmatic approach sees language as a social instrument with which we perform social communicative functions, such as greeting each other, asking questions, giving commands, providing information and linguistically *acting* in the world. In this approach the meaning of an utterance is equivalent to its *use*. This view of meaning has given rise to the domain of pragmatics, in which theories such as speech act theory view utterances as speech acts with various types of forces. For example, an utterance or a locution such as *It is cold today* can have the illocutionary force of both a statement and a request, and can have the perlocutionary effect of a confirmation (in response to the statement) or an action (in response to the request). In many views of meaning, the semantic component (in which the *sense* of an utterance is described) and the pragmatic component (in which the *use* of an utterance is described) are seen as distinct components, each with their own set of descriptive units and rules (Crystal 1987: 120-121; De Stadler 1989: 11-12; 325-339). As is the case with the behaviourist approach, the focus in this approach is on the language form and its use in the real world which includes other language users.

The contribution of the functional-pragmatic approach has been twofold:

X linguistic utterances as social acts have remained as part of what has to be explained within the broader framework of meaning; and

X the fact that non-literal and indirect utterances form a large part of our daily linguistic and creative behaviour (and remained largely unaccounted for in semantic theories) was highlighted.

4.1.6 The logical approach

In the search for a formal model of meaning, some semanticists turned to the language of propositional and predicate logic to describe meaning. For example, in the logical approach to meaning, the meaning of a sentence, or a proposition, is equated with the conditions under which this proposition would be true in all possible worlds. This type of semantics is therefore often also called 'possible world semantics' (Van Fraassen 1988, Saeed 2003: 137). This approach was influenced to a large extent by the ascendancy of mathematical and computational models and gave rise to theories such as truth-conditional semantics, logical form and mathematical linguistics. The logical approach as a whole will not be described here in any more detail since its main focus was not on lexical semantics as such, with the obvious exception of the logical operators such as conjunctions and quantifiers (Crystal 1989: 107; De Stadler 1987: 12-13; 29-45).

For the description of the meaning of lexical items, the logical approach largely relied on the notion of compositionality from the structuralists. The descriptive mechanisms of the structuralists (like binary definitional features) were turned into theoretical mental constructs (Katz and Fodor 1963, Kempson 1977, Saeed 2003: 250-254) (see also the psychologistic approach). The logical approach also

initiated the idea of the computational modelling of semantic theories. Santambrogio and Violi (1988:7), for example, state that “logical semantics does not aim at giving a psychologically plausible representation of meaning ... [even though it is] committed to some degree of psychological realism”. In the logical approach there is therefore a focus on the relationship between words and the concepts they represent, although the concepts are not always intended as modelling the lexical knowledge of a speaker. The only sense in which this approach makes a contribution to linguistic creativity is that the definitional features can be combined in different ways to create meanings for different words. Linguistic creativity in the sense described in Chapter 3 is not accounted for in this approach at all.

4.1.7 The psychologistic approach

The term **psychologistic** is borrowed from Santambrogio and Violi (1988) and refers to the explicit idea that theories of meaning should be psychologically real. That is psychologistic refers to the assumption that linguistic meaning is in the first instance a phenomenon of the human mind or ‘psyche’. Using the term **psychologistic** as an umbrella term for this approach (instead of the simpler terms **mental**, **cognitive** or even **conceptual**) is necessitated by the fact that the terms **mental**, **cognitive** and **conceptual** have all been used to designate specific theories (with very different assumptions, methodologies and hypotheses) in this approach. The only commonality between the various theories in this approach is that they all view linguistic meaning as a phenomenon of the human mind. Even

though the psychologistic approach to the study of language is often seen as originating in the rejection in the sixties (by Chomsky) of Skinnerian behaviourism, it must be borne in mind that in studies of word meaning, conceptualism dates back to the beginning of the 20th century (Crystal 1987: 101). By virtue of the nature of the approach, the main focus in all the individual theories in this approach is on the concept as a mentally represented entity. Proposals regarding the nature of the concept and the nature of the mental representation differ from theory to theory.

A more modern formulation of the psychologistic stance can be found in Jackendoff (1988: 81) with his Mentalist Postulate: “meaning in natural language is an information structure that is mentally encoded by human beings”. Jackendoff (1988) emphasises that it is the *construal* of the external world by speakers that is of importance, rather than the objects of the real world themselves as the entities to which language refers. *Construal* is defined as “the result of an external input and the means available to internally represent it” (Jackendoff 1988: 83). Since mental construal is, in principle, inaccessible to direct observation and description, several theories about the nature of semantic construal and mental representation developed in the psychologistic approach. Jackendoff’s *Conceptual Semantics* is only one such theory and largely originated in the logical approach initiated by Katz and Fodor (1963) mentioned before.

Another type of psychologistic theory to word meaning was developed within the

domain of psycholinguistics, such as Johnson-Laird's (1988) semantic networks and mental models, which is explicitly based on data from language acquisition and developmental psycholinguistics, and on experimental data on inferencing, memory and perception from the domain of cognitive psychology (Lehnert 1988:176-177). Yet another type of psychologistic theory is the one developed under the name of *Cognitive Linguistics* (Lakoff 1987, Langacker 1987) which developed largely from the so-called 'Roschian revolution' on prototype categorisation (a term coined by Posner 1986) in the seventies but has now expanded to include all aspects of word meaning, sentence and discourse meaning as well as linguistic structure. One of the main tenets of Cognitive Linguistics is that of *embodiment* or *experiential realism* where "meaning is understood via real experiences in a very real world with very real bodies" (Lakoff 1987: 206).

Santambrogio and Violi (1988:10) say the following about the psychologistic approach to meaning

> [It] is first of all a theory of understanding and of language use, as opposed to a theory of abstract entities called "meanings". As such it is clearly sensitive to empirical constraints of various kinds; it must depict what "actually goes on in the mind" (psychological realism), and it must explain how language itself can be so efficiently learned by human beings - which is a stricter constraint than merely requiring ... finite representability of meaning.
>
> Such an outlook is widely shared in various areas of intellectual research such as theoretical linguistics, artificial intelligence and cognitive psychology, and is embodied in a number of specific theories of meaning ...

Santambrogio and Violi (1988:10-11) then identify four main trends or “families of theories” in the psychologistic approach to meaning:

- the decompositional theory, the meaning postulates theory and the view based on semantic networks, which are historically and conceptually closely related
- the approaches based on the notions of prototypes, stereotypes and frames
- the perspective from artificial intelligence that the notion of procedure is a key to the construction of meaning, and
- approaches based on the notion of mental models.

The differences between the various types of theories in the psychologistic approach to word meaning can be largely attributed to differences in philosophical points of departure, which lead to different background assumptions, which in turn determine the questions that have to be accounted for, as well as the relevant data and possible explanations (cf. also Bosch 1988). These issues will be taken up again in Chapter 5 where a more direct comparison of some of these theories as regards word meaning, and specifically lexical polysemy, will be made.

The contribution of the psychologistic approach to meaning is threefold:

- A focus on meaning conceived as an *information structure*.
- A focus on meaning conceived as an *act of construal* by the speaker.
- Studies in word meaning were lifted from the realm of observation and description to a realm of theorising, which has been supported by the

computational modelling of these theories.

Given these contributions of the psychologistic approaches, these types of approaches should be able to make the most important kind of contribution to the study of linguistic creativity defined as the ‘making of new meaning’, although this has not been evident.

At the end of the twentieth century we find ourselves in a technological era which has also had an effect on the way that meaning can be studied. Technology, mostly in the form of computers, has had an effect on the study of word meaning in terms of its methodology, since huge lexical data bases can now be studied (as was pointed out in the lexicographical approach), but also in the sense that new approaches to the study of word meaning have emerged in that the nature of meaning could be computationally modelled. These new approaches, the computational approach (including natural-language processing (NLP) and artificial intelligence (AI)), and the neurological approach, will be dealt with in the next sections.

4.1.8 The computational approach

Apart from the use of computers in the development of large electronic lexical data bases, the advent of faster, more powerful computers have created the new domains of NLP and AI. Natural language processing involves human-machine interaction in which the machines are programmed to understand human speech

(speech recognition) as well as to respond in human speech (speech synthesis). NLP is typically used in communications applications, as well as in machine translation (Crystal 1987: 150-151, 350-351). Artificial intelligence, on the other hand, encompasses a wider field (which includes NLP), and involves the simulation of various types of human knowledge and skills by machines. As Schank and Kass (1988:181) put it: “The AI researcher tries to program the computer so that it can understand and interact with the outside world”. Typical examples include the simulation of the skills of chess masters, as well as the representation of the knowledge bases used in diagnostic medicine. The focus here is therefore on the WORD and WORLD aspects of the semiotic triangle. No contribution is, in principle, meant to be made to conceptual creativity since only existing knowledge is or can be modelled. Attempts have been made to model conceptual creativity as well as other types of creativity in AI approaches, but since they do not focus on lexical meaning and the representation thereof in human minds and brains, these studies will not be pursued here (Mithen 1998, Boden 1998, Hofstadter 1997).

Within these two closely related domains there are two main philosophies (which in broad terms co-incide with the distinction between applied and theoretical work):

X the idea that software applications should be developed as practical support in specific environments, for example as communication aids, as opposed to

X the idea that a partial (or even complete) simulation of the activities of the human mind by a computer is an achievable goal, which will contribute to

the understanding of how the human mind works (Kourie 1989).

In both NLP and AI, the role of lexical knowledge has played a large part, and successes and failures in these domains have contributed the following to the debate on the representation of meaning: The successful computational simulation of linguistic (and therefore semantic) theories seems to have become a desirable goal both as a test for linguistic theories and as a crucial element in practical applications.

4.1.9 The neuro- and biological approaches

The introduction of a neurological perspective in the debate on the representation of linguistic meaning, inevitably raises the issue of classical dualism, i.e. the question of whether the mind and the body (or brain) should be regarded as separate entities. Since this is not a question that has in any way been resolved, and since modern neuroscience has been contributing some interesting new perspectives on the issue, it is perhaps important to include this approach here.

Two different trends have always dominated the neurological study of language. On the one hand, since the times of Broca and Wernicke in the previous century (Crystal 1987:260), the domain of neurolinguistics has devoted itself to pathological linguistic disorders. Since specific disorders were usually related to specific areas of the brain, hypotheses were formed as to the specific loci of linguistic abilities in the brain.

On the other hand, a persistent, though fluctuating, interest in the evolution of the human brain, specifically as it is related to the development of the linguistic ability in humans, has remained throughout the century (what Crystal 1987: 412 calls biological linguistics). In the modern development of the neurosciences in the last two decades, and specifically with the introduction of new scientific technology, these two trends have persisted, but with a renewed interest in the development of the brain in phylogenetic as well as in ontogenetic terms (for example, Deacon 1997, Lamb 1998, Schwarz 1992). More and more studies of the functioning of healthy, normal brains rather than only of damaged or diseased brains are also being undertaken.

The main contribution of the neurological and biological approaches to the study of language in general, and meaning specifically, is that it balances the need and desirability of computational simulations of semantic theories. Neuro- and biological approaches remind linguists that is, after all, human beings that 'make new meaning' and not machines. The need to embed any semantic theory within a plausible account of the development of the linguistic ability of human beings as a species, as well as in a specific individual, in terms of biological structures and processes, seems a constraint that can hardly be ignored. The introduction of studies of the architecture and functioning of the brain in semantic approaches has added yet another dimension to the semiotic triangle which was not present before. The CONCEPT part of the semiotic triangle can no longer simply be regarded as a

purely abstract notion, but neurological structures and processes may, in future, need to be taken into account. Neuro- and biological approaches have made no contribution to studies of linguistic creativity as yet.

4.1.10 Summary

In this chapter so far, I have discussed some of the main approaches to the study of word meaning, namely the lexicographical approach, the referential approach, the structuralist approach, the behaviouristic approach, the functional-pragmatic approach, the logical approach, the psychologistic approach, the computational approach and the neuro- and biological approaches. In each case, I have attempted to point out the general contribution(s) of each of these approaches. I have also tried to show, whether they could, in principle, based on the nature of the approach, make a contribution to the study of linguistic creativity. In the following section I condense these contributions in a typology of contributions.

Methodological contributions:

Types of data:

- X large, representative, descriptive data bases are available for the study of word meaning (from the lexicographical and computational approaches);
- X semantic relations highlighted both syntagmatic and paradigmatic, as well as semantic field relations, which have to be accounted for (from the lexicographical and the structural approach);
- X linguistic communication, as social, functional and pragmatic acting and

existence in the world has to be accounted for (from the behaviouristic and the functional-pragmatic approach);

X data on the interaction between linguistic meaning and cognition in general, i.e. language acquisition, memory, inferencing and perception, and other general knowledge structures, should be accounted for (from the mentalist and cognitive approach, especially from psycholinguistics and cognitive psychology, and from the computational approach);

X data on the interaction between linguistic meaning and the human body and the human brain (in terms of the development of the human brain in general, as well in individuals, and in healthy as well as in diseased or damaged brains) should be accounted for (from the neurological and biological approaches, as well as from Cognitive Linguistics in terms of the tenet of experiential realism).

Analytical tools:

X descriptive linguistic generalisations based on the regular and systematic structural patterns in language data (from the structuralist approach, but also from language acquisition studies, but in recent times more specifically from lexically-based studies of large corpora in corpus linguistic studies);

X deductive reasoning (from the logical, mentalist and computational approach);

X psychological and psycholinguistic experimentation, such as for example, timed responses and priming (from the mentalist and cognitive approach, as

well as from the traditional neurolinguistic approach);

- X computational modelling (from the lexicographical, logical and computational approach);
- X various types of brain-imaging technologies, such as brain scans, during linguistic processing (mainly from the neurological and biological approaches, but used in cognitive psychology as well).

Substantive contributions:

In contrast to the methodological contributions of all these approaches which are impressive, the substantive contribution from the various approaches to linguistic meaning can hardly be summarised. This is due to the fact that each of the above approaches usually consists of more than one theory, and that each of these theories usually makes a partial selection of semantic phenomena and then proposes a unique substantive framework. This leads to a dearth in concepts and conceptual confusions (where the same terms mean different things in different theories). The more specific substantive frameworks presented by some of the relevant theories, specifically as regards lexical meaning relations with specific reference to polysemy, will be presented and discussed in Chapter 5. However, three issues emerge from a comparison of these approaches:

- X The basic notion of the semiotic triangle is shared by all the approaches, albeit implicitly and with a different focus (sometimes on the relation between the linguistic form and its sense (in the structural and computational approaches), sometimes on the relation between the referent

and the linguistic form (in the referential approach), sometimes on the concept itself (as in the psychologistic approach), sometimes on the triangle as a whole (as in the lexicographical approach)).

X There is often a direct relationship between the descriptive mechanisms used to systematise and describe the data and the theoretical constructs in a particular theory (for example, the model of presenting lexical information in dictionaries in the lexicographical approach has almost become the standardised or orthodox model for the mental lexicon; and when prototype effects were experimentally recognised during experiments, *prototypes* became a theoretical construct of how information is stored in the mind).

- There is almost no direct contribution to linguistic creativity from any one of the approaches, except if the philological or diachronic approach in lexical semantics (as was discussed in Chapter 2), is viewed as part of the lexicographical approach. Some approaches which are meant to model existing knowledge excluded linguistic creativity in principle.

From this discussion, the linguistic study of meaning emerges as a truly interdisciplinary domain, with a rich variety of methodological tools, information and data to draw from as useful products in the study of lexical semantics. However, the lack of even basic substantive uniformity between the various approaches shows that the study of linguistic meaning remains a rich and fertile ground for future study. It is my view that introducing the notion of linguistic creativity, defined as the 'making of new meaning' into this domain, may give some kind of coherence

to future studies of meaning.

4.2 What is a mental representation?

In the overview of the various linguistic approaches to meaning, it was stated that the only substantive common ground between these approaches was the traditional semiotic triangle. In this section, I will give a brief overview of how each of these approaches viewed the notion of a concept within the parameters of the semiotic triangle. Since the focus here remains on lexical semantics, I will only refer to the approaches that have made a contribution to the notion of lexical meaning. I will then show that all the approaches share basically similar views on the general nature of concepts, and on how they are mentally represented, if they do take a psychologistic point of view. Some of the approaches, like the lexicographical approach would, by definition not take a pscyhologistic point of view.

4.2.1 Concepts and mental representations in the various approaches

In the lexicographical approach the semiotic triangle is implicitly present in the model in which lexicographical information is presented in monolingual dictionaries. The word *form* (represented in its orthographic and phonetic form) is linked to *a meaning* or *concept* in the form of a definition in which the features of the *referent* are listed in the lexical entry of the dictionary. In the lexicographical approach no claims are made about the 'mental' representation of the meaning or concept, because the main function of a dictionary is to describe the vocabulary of a specific

language (as an external object of study), rather than to give a psychological account of the lexical knowledge of speakers of that language.

The referential and the structural approach are both based on the semiotic triangle, but each of these approaches (which are often seen as complementary, rather than in opposition), focussed on a different aspect of the semiotic triangle. The referential approach focussed on *the relation between the word form and the referent* (for example, the relation between the word *dog* and the furry animal that the word refers to in reality), whereas the structural approach focussed on *the relation between the word form and the sense or concept of the word* (for example, the relation between the word *dog* and the concept DOG). Neither of these approaches view concepts as being mentally represented (as in the psychologistic approach), but concepts are seen as part of the linguistic reality, external to the speaker, that has to be described. These approaches, therefore share the focus of the lexicographical approach on the description of a specific language as an external object of study, rather than an account of the knowledge of the speakers of that language. In the structural approach, the sense of a word form was represented by means of semantic definitional features, e.g. the word *dog* would be represented by a set of abstract, binary features such as [+animal] and [+ canine].

In the behaviouristic and functional-pragmatic approaches, the semiotic triangle plays apparently no role. Since meaning is construed as (complex) *acts in the*

world, the focus is on so-called speech acts, rather than on the meaning of individual lexical items, which explains the non-relevance of the semiotic triangle in this approach. It could, however, also be argued that this approach adds another dimension to the semiotic triangle by including the language users in the communicative act. However, conceptual mental representations were often seen as mediating between the acting organism and the environment (Shanon 1992: 9). As was indicated before, the logical approach also did not focus on lexical semantics as such, but accepted the idea from structural semantics that lexical items were represented by concepts in the form of compositional feature bundles.

It is only with the advent of the psychologistic approach to meaning (as well as the computational approach; and with cognitive science in general) that the notion of a concept as being a mentally represented unit of knowledge comes into its own right (what Shanon 1992:11 calls technical-psychological representations). In the discussion of this approach certain Afamilies of theories@ were identified, only two of which are directly relevant to word meaning, namely the decompositional theory (together with the meaning postulates theory and semantic networks, which are viewed as notational variants), and the approaches based on prototypes, stereotypes and frames. In both these types of theories, the meaning of a word is equated to a concept that is mentally represented in some form or another. It is only in the form of the mental representation that these theories differ, using either definitional features, nodes in semantic networks, prototypes, schemas, frames, etc. What these theories have in common are the following basic characteristics of

the proposed mentally represented concepts (Shanon 1992:11-12):

- Concepts are *symbolic*, i.e. they contain both a content and a form or a medium.
- Concepts are *canonical,* i.e. they are given in a code which is complete, exhaustive, fixed and determinate.
- The code in which the concepts are given is *structured and well-defined*.
- Concepts are *static* and set in a permanent representational structure, and are distinct from the processes that operate on them.
- Concepts are *abstract* or *amodal*, i.e. they are independent of the medium in which they are experienced, and independent of the physical entity experiencing the concept.

These basic characteristics are all derivable from the underlying assumption that mentally represented concepts are well-defined, abstract, symbolic, determinate and static **entities**. In terms of linguistic, and particularly lexical knowledge, the question in the context of this definition is: How can these determinate and static entities form the basis of linguistic creativity?

4.2.2 Is the notion of a mental representation justifiable?

In his discussion of mental representation, Sandra (1998) makes a distinction between representational content (i.e. what is represented) and representational format (how it is represented in psychological and neural terms). Different examples of representational format are, for example, that concepts are represented in a symbolical or in a connectionist way. Even by making this kind of

distinction, the notion of a concept remains central to the discussion of mental representation. This is what Shanon (1992) refers to as representationalism, which centres on the notion of a mentally represented concept with the basic characteristics given above. In his comprehensive critique of this kind of representationalism, based on an extensive literature, Shanon (1992:21) uses four main lines of critique:

- Fixed, abstract semantic representations cannot fully characterize the knowledge people have of the world and the totality of meaning that they invest it with.
- These representations cannot account for the relation between human beings and the external world.
- Mental representations cannot account for the origin of knowledge, its development and its progression in time, i.e. static and determinate mental representations cannot account for **conceptual creativity**.
- Mental representations, as the fixed abstract structures that form the basis of memory and the representation of knowledge, are not the basis for memory retrieval or for a cognitive agent's knowledge of the world (Shanon 1992:227-232).

In terms of the semiotic triangle then, what Shanon is saying is that both the world and our knowledge of it is more complex and more dynamic than these orthodox views on the mental representation of concepts can account for. In the following sections, the main points of Shanon's critique will be represented. In his first line of critique, Shanon (1992:24-40) shows that

- Both linguistic and extralinguistic context (in such phenomena as polysemy, contextual expressions, phrasal composition, etc.) plays such a large part in the meaning of a particular use of a word, that a fixed semantic representation of the meaning of a word is not feasible. In other words, the WORLD in the semiotic triangle is an ever-changing and ever-shifting dynamic system (not a rigid set of entities) to which human beings can adapt appropriately and meaningfully.
- The content and the medium of a message are interdependent, i.e. that medium and message cannot be separated, and that the content of the message is altered if the medium is altered (Shanon 1992: 66ff.). For example, if knowledge is gained in auditory form, the knowledge is stored in memory in auditory form, and not in any other form. The semiotic triangle makes no provision at all for differences in medium.
- The world does not present itself in terms of fixed, predetermined, well-defined entities that can be matched with (or coded as) fixed, predetermined, well-defined concepts (Shanon 1992:79-80). In other words, the matching between the world and our concepts about the world are also for ever changing and shifting.

In his second line of critique, Shanon (1992: 93ff.) shows that the notion of representationalism can not account for human interaction on various levels. For example, static, abstract conceptual representations cannot account for the interaction between the mind and the body, between the mind and the world, between the mind and the social other, or between the mind and affect and

motivation. In discussing the behavioural and functional approaches in Sections 4.1.4 and 4.1.5, it was already pointed out that the three parts of the semiotic triangle are inadequate, and that the social other, the communicative partner should be included. The brain, as yet another variable should also be accounted for (also see the neuro- and biological approaches in Section 4.1.9). Recall also the social and pragmatic motivations for linguistic creativity that were discussed in Section 3.1 where it is the interaction between speakers and the changing patterns of communication and the forming of identity and consolidation with others that motivates aspects of linguistic creativity.

And finally, Shanon (1992:178-179) shows that the fixed representations postulated as the substantive contribution of all the approaches to linguistic meaning, ignore the temporal aspect, both in that the representations are regarded as stable and fixed in time, and in the sense that it does not allow for the development of knowledge and learning in the individual and in the species over time, which is typical of conceptual creativity. Changes in knowledge structures and the language that encodes these knowledge structures were discussed in Section 3.2 where the temporal aspect of linguistic and conceptual creativity were discussed.

In Section 4.1 it was found that the only substantive notion which all the linguistic approaches to meaning have in common, is that the meaning of words can be represented by concepts. Only the psychologistic approaches equate these concepts with mentally represented entities. By specifying the basic general characteristics of such mentally represented concepts, I showed (using Shanon (1992)'s criticism) that the notion of a mentally represented concept as the basis for the description of lexical meaning does not conform to some of the basic requirements that would be essential to account for linguistic creativity. This is not to say that representational structures have no place in the mind, or as Shanon (1992:18) puts it

> I am not denying the existence of cognitive structures and patterns of activity that exhibit a representational profile. Rather, I am arguing that representations cannot serve as the basis for cognitive modelling. They are not conceptually primary, they do not characterize what is generally the case, and they have neither procedural nor developmental primacy. Such a non-representational position does not imply that representational structures do not play a role in cognition and in cognitive modelling. What is argued, rather, is that representational structures, if and when they exist, are the products of cognitive activity, not the basis for it. (Shanon 1992:18)

It is important to note, however, that even though Shanon argues that representational structures are only the products or outcomes of, and not the basis for, cognitive processes, it is important to note that the outcomes of one cognitive process can very often form the basis for another. One thought leads to another so to speak or, to give a linguistic example, the outcomes of the word-formation rule of compounding in a word like *computer desktop* can form the input to the inflectional process of pluralisation to form *computer desktops*. It would, however, also not be advisable to think of cognitive processes as always proceeding in a linear and

sequential fashion. To continue with the linguistic illustration, the compounding of *desk* and *top* to form *desktop*, and the metaphorical transfer from the domain of office furniture to the domain of the office computer happens simultaneously.

4.3 Conclusion

In a study that forms part of cognitive science in general, and of a linguistic theory of lexical semantics in particular, the bewildering array of approaches and theories were systematised into nine general approaches. The methodological and substantive contributions that are common to more than one of these approaches were noted.

There appeared to be only one substantive notion which formed part of most of the nine approaches, namely the notion of a *concept* (whether in the form of a feature bundle, a semantic network, a prototype, a schema or a frame). The psychologistic approaches, which are concerned with accounting for the lexical knowledge of the speakers of a language (rather than merely describing the vocabulary of a specific language) have used the notion ‘concept’ as a mechanism for the mental representation of the lexical knowledge of speakers. The basic characteristics of such a mentally represented concept were identified, and then, following Shanon (1992)’s critique of representationalism, it was shown that the notion of an abstract, static, fixed, determinate, well-defined, canonical and symbolic concept as the basis for the cognitive modelling of lexical meaning is inadequate, in spite of its long philosophical tradition. It was also shown that the traditional semiotic triangle,

representing the three aspects (word, world and concept) cannot account for the complexities of (lexical) meaning or for conceptual creativity.

Recall the main problem of this thesis presented in Chapter 1:

> *What is the nature of lexical knowledge and how should this knowledge be represented mentally in order to account for linguistic creativity?*

The question is now: If the classical notion of representationalism as presented by Shanon (1992) cannot account for (lexical) knowledge, how else can this knowledge be represented? And also, If the classical notion of representationalism cannot form the basis of cognitive processes, how can they form the basis of linguistic creativity? In his critiques, Shanon (1992:30-32) uses polysemy as one of the types of evidence against representationalism. Since his work falls mainly within a psychological framework, the problem of polysemy (which is primarily a linguistic phenomenon) is not explored at great length by Shanon (1992). In the next chapter, the problem of polysemy, and specifically the problem of intercategorial polysemy, which falls in the centre of the creativity continuum (cf. Figure 3.2), will be explored in the domain of lexical semantics. Since (intercategorial) polysemy is both an excellent example of linguistic creativity and a major challenge for the representationalist view, it will be used as a case study, or a test case so to speak, to explore the nature of the mental representation of lexical knowledge. Two proposals for the handling of (intercategorial) polysemy will be presented and evaluated in Chapter 5.