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Od jazyku ke znaku: tři vlny kognitivismu / From Language to Sign: Three Stages of Cognitivism

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I declare that I have prepared the thesis independently. All sources and literature used have been properly cited. The thesis has not been used to obtain another or the same degree.

V Praze dne 25. června 2021 Šárka Kadavá

In Prague, 25 June 2021

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Contents

Abstract 6

Introduction 8

1. Taking an antimentalist position 11

1.1. The linguistic turn in a narrow sense 11

1.2. The linguistic turn in a broader sense 13

1.3. Behaviourist antimentalism 16

2. The first cognitive shift 19

2.1. Undermining of behaviourist stance 19

2.1. “The cognitive revolution” 20

2.2. “The Chomskyan revolution” 22

2.3. The language of thought hypothesis 27

3. The second cognitive shift 31

3.1. The apparent return to meaning 31

3.2. Generative semantics 32

3.3. Towards embodied experiential cognition 35

3.4. The myth of objectivism 36

3.5. Dethronement of language within cognition 39

3.6. Body in the mind 42

4. From language to sign 45

4.1. Study of signs over study of ideas 45

4.2. Emergence of cognitivism within semiotics 48

4.3. Cognitive semiotics on an international scale 55

4.4. Cognitive Semiotics in Lund 58

Conclusion 68

List of Figures 82

Abstrakt

Tato diplomová práce popisuje tři fáze kognitivismu, který v první polovině 20. století vznikl jako reakce na antimentalistickou tradici filozofického myšlení (reprezentovanou mimo jiné Charlesem S. Peircem a Charlesem Morrisem) a který byl umožněn zejména takzvaným lingvistickým obratem ve vědě (především v analytické filozofii), jenž mentální jednotky, považované za nevědecké, nahradil jednotkami jazykovými, pojímanými jako odraz mentálních stavů, a navíc umožňujícími adekvátní zkoumání. Práce je do velké míry vedena knihou *On Minds and Symbols* Thomase C. Daddesia, která je považovaná za jeden z prvních explicitních pokusů o formulování kognitivněsémiotické perspektivy a v rámci níž autor mapuje předchozí vývoj kognitivního paradigmatu. Nejprve jsou tak popsány faktory, jež vznik kognitivismu umožnily, a poté jeho vývoj, který lze rozdělit podle vzoru Daddesia na dvě vlny. Tato práce však Daddesiovu knihu přesahuje a stanovuje třetí fázi, kdy kognitivismus v rámci sémiotiky vzniká jako samostatné pole bádání, tj. kognitivní sémiotika. V rámci tohoto vývoje práce sleduje zejména proměnu pojímání vztahu jazyka a mysli, který je pro kognitivně-lingvistické vědy klíčový, a ustanovení znaku jakožto jednotky relevantní pro studium lidské kognice.

Klíčová slova: analytická filozofie, lingvistika, sémiotika, kognitivní sémiotika, antimentalismus, mentalismus, kognitivismus, jazyk, mysl, znak

Abstract

This thesis outlines the three phases of cognitivism, which emerged in the first half of the 20th century as a reaction to the anti-mentalist tradition of philosophical thinking (represented by Charles S. Peirce and Charles Morris), and which was made possible in particular by the so-called linguistic turn in science (especially within analytic philosophy), which replaced mental units, regarded as non-scientific, with linguistic units, conceived as reflecting mental states and, moreover, allowing for adequate investigation. The thesis is largely guided by Thomas C. Daddesio's *On Minds and Symbols*, which is considered to be one of the first explicit attempts to formulate a cognitive-semiotic perspective, and wherein the author traces the previous development of the cognitive paradigm. Thus, first the factors that made the emergence of cognitivism possible are described, followed by an account of its development, which can be divided into two phases, as per Daddesio's model. This paper, however, goes beyond Daddesio's book and establishes a third phase, where cognitivism emerges as a separate field of inquiry within semiotics, i.e., cognitive semiotics. Within this development, the work traces in particular the transformation of the conception of the relationship between language and mind, which is central to cognitive-linguistic science, and the emergence of the sign as a unit relevant to the study of human cognition.

Keywords: analytic philosophy, linguistics, semiotics, cognitive semiotics, antimentalism, mentalism, cognitivism, language, mind, sign

Introduction

To determine my area of interest, I am largely guided by the work of "seldom acknowledged pioneer" of cognitive semiotics (Zlatev, 2015 p. 1054) Thomas C. Daddesio, namely his book *On Minds and Symbols: The Relevance of Cognitive Science for Semiotics*. This book can be regarded as one of the first attempts to explicitly express the need for a cognitive perspective in the study of signs, since Daddesio's main goal is to prove and justify such a necessity. As he claims:

> The principal thesis of this view is that to construct an adequate account of intelligent behavior it is necessary to postulate a set of internal representations upon which appropriate transformations are performed. (Daddesio, 1995 p. 5)

He makes an important remark that cognitivism[1] in science was facilitated and built on the legacy of the so-called linguistic turn, despite the fact that the linguistic turn was developed in opposition to nineteenth-century mentalism and therefore eliminated all references to the mind and mental structures as unreliable. Daddesio develops this cognitive shift further and distinguishes two phases. The first phase, represented mainly by Chomsky and Fodor, rejects the antimentalism carried by the linguistic turn, especially analytic philosophy, but retains some of its legacy. Daddesio points out that these scholars bring back cognition as a relevant object of study, but at the same time remain within the conceptual formalist framework of analytic philosophy, so that for them to study cognition means to study language. It is only in the second phase, represented mainly by Lakoff and Johnson, but also by others, that this conceptual framework is abandoned, and language is viewed as a form of human understanding that merely reflects its basic structure (Daddesio, 1995 pp. 46–47).

Daddesio's goal is not to unfold the history of language and cognition, so the few chapters devoted to this matter cannot capture the complexity and completeness of the development I follow in this thesis. He does, however, provide a useful template that I have chosen to follow and expand upon with greater focus on the contextual relationships between different

[1] Attardo (in Chapman & Routledge, 2009 p. 21) claims that mentalism and cognitivism are synonymous in the broad sense, but mentalism has found expression within generative grammar, while cognitive linguistics was initiated as an alternative to the TGG paradigm. Daddesio (1995 p. 52), on the other hand, sees mentalism as a Cartesian/Cantian tradition, and cognitivism as a mid-century tradition that restored respect to the appeal of mental events only in some of the areas where mentalism once prevailed.

scholars and their conceptions of language and cognition because I believe these aspects to be crucial for our understanding of how the discourse on language in cognitive perspective has been shaped either as a connection to the prior tradition or as a formation against it.

Moreover, this work also aims to broaden Daddesio's framework and further explore the conceptualisation of language and mind which emerged at the time he wrote his book, yet which continues to this day, as semiotic scholars accept the cognitive perspective Daddesio postulates as essential to the study of signs (and thus language itself) and begin to establish cognitive semiotics as a distinct field of study throughout the world. Moreover, as Winfried Nöth puts it:

> [T]he new paradigm in the study of mind cannot achieve a satisfactory account of cognition without taking into consideration the insights which semiotics has contributed to the study of cognition since John Locke first postulated a *Sémeiotiké* as a Doctrine of Signs in 1690. (Nöth, 1994 p. 14)

It is important to note that cognitive semiotics is not a unified doctrine. Therefore, it does not overlap completely and differs in some methodological or epistemological theses depending on its location, e.g., Aarhus, Lund, Bologna, Toronto and partially also Prague. To avoid the vagueness that would result from trying to embrace cognitive semiotics in its difference, I narrow down my focus mainly on cognitive semiotics founded in Lund, whose main representatives are Jordan Zlatev and Göran Sonesson. It is this discipline that, in many of its aspects, reopens and reconsiders questions of language and its relation to cognition, and offers new perspectives for thinking about these phenomena. It is precisely because of its departure from a purely linguistic perspective and its incorporation of a broader conceptual framework that it is able to bridge many of the theoretical conflicts that date from the past century and offer compelling answers.

Unlike Daddesio, however, this thesis does not aim to prove the importance of the cognitive perspective or cognitive semiotics. Rather, it aims to show how the linguistic perspective has dominated over cognition, and only recently, through the "dethronement" of language, have scholars begun to view it simply as one part of a more complex semiotic hierarchy, which has brought new insights into language itself, its evolution, and related topics.

At the same time, I am aware that the subject of this work far exceeds its limits, and therefore I focus mainly on those continuities and discontinuities of discourse and changes in the

concept of language in connection with cognition. Moreover, since earlier work on the subject often provides a more accurate or comprehensive understanding of the problem, especially with respect to development in the previous century, I will often refer to it. This is done so that I can then focus mainly on the last phase of the development, the part that aims to extend Daddesio's observation to the present.

1. Taking an antimentalist position

1.1. The linguistic turn in a narrow sense

Although the cognitivist paradigm in science is the main focus of this thesis, in order to comprehensively encompass and understand its content, I consider it important to mention the background from which it grew – not least because it had a considerable influence on its initial phase. Daddesio (1995) uses the term "linguistic turn" to refer to this background, however, the name is rather ambiguous in its character, since scholars differs in the question of who to include and when it emerged. It is noteworthy that, as Hacker (2007 p. 10) points out, none of the major philosophers of the period used the term to refer to their work.

The term "linguistic turn" originally referred to a specific field of philosophy of language. It was Gustav Bergmann, a member of the Vienna Circle, who gave the linguistic turn its name. He defined it as follows:

> All linguistic philosophers talk about the world by means of talking about a suitable language. This is the linguistic turn, the fundamental gambit as to method, on which ordinary and ideal language philosophers (OLP, ILP) agree. Equally fundamentally, they disagree on what is in this sense a "language" and what makes it "suitable". (Bergmann, 1964 p. 177)[2]

Bergmann (ibid.) gives three reasons for the necessity of this turn: first, words are used either ordinarily, or philosophically, and the philosophical use of words is unintelligible, thus in need of commonsensical explication. Second, prelinguistic philosophy often fails to distinguish linguistic statements from meta-linguistic statements. Third, there are things that any language can only show, but which are not ineffable and can be talked about in a meta-linguistic discussion.

Nonetheless, Hacker (2013 p. 173) argues that Bergmann's justification for the turn is rather "spurious". Moreover, he suggests that the expression "linguistic turn" would very likely never have been heard again if Richard Rorty had not used the name in the 1967 anthology *The Linguistic Turn: Recent Essays in Philosophical Method*. Although Rorty uses

[2] The two groups of philosophers referred to by Bergmann emerged within the Vienna Circle. The first stream of the so-called ordinary language philosophers is represented by Schlick and Waismann. The second stream of the so-called ideal language philosophers is represented by Carnap and Neurath.

Bergmann's dichotomy, he does not adopt the characterization that Hacker (2013) finds problematic in Bergmann. He also points out that Rorty was correct in noting that in analytic philosophy in the 1930s and 1940s there had been an important shift in the conception of problems and methods that bridged the separated groups. On the other hand, he claims that for Rorty, the conflict between ideal language philosophers and ordinary language philosophers was still alive at the time when he was writing; thus, his explanation of the linguistic turn was focused on specific issues, making it, according to Hacker (2007 p. 10), "perhaps a little thin and myopic".

Tracking down the emergence of the linguistic turn, Hacker himself regards Ludwig Wittgenstein's philosophy as the beginning of this trend (Hacker, 2007; 2013), although his criteria (and perspective) are a bit different from the ones of Bergmann or Rorty. For example, he claims that if we were to consider the development of formal or ideal language as the decisive criterion for the linguistic turn, it had been already done by many philosophers before. While it is inappropriate to ignore some of the connections, it would also be misleading to consider the linguistic turn as a synonymous term for analytic philosophy. Although Hacker points to analytic-philosophical precursors of the linguistic turn such as G. Frege, B. Russell and G. E. Moore,[3] he also stresses that they were not concerned with language, moreover, they considered it misleading. Their focus was on discovering general truths about the world, which developed into the doctrine of logical atomism (more broadly grasped in Wittgenstein's *Tractatus*).

Nevertheless, both Frege and Russell set much of the agenda for the young Wittgenstein, who came to Cambridge in 1911/12 to study with Russell, and whose *Tractatus* (1921) is regarded by Hacker as the culmination of the first phase of analytic philosophy, as well as the initiation of the linguistic turn. As Hacker points out, it is Wittgenstein's remark that all philosophy is a critique of language that heralds the linguistic turn in twentieth-century philosophy. His assertions had a major impact on further development of analytic philosophy, especially on the Vienna Circle and the school of Cambridge analysis. On the other hand, as Hacker claims, the linguistic turn was not accomplished until the "metaphysical baggage", consisting of the statement that there are things that can be shown

[3] In Frege (1891; 1892a; 1892b), Russell (1905; 1910), Moore (1899; 1903a; 1903b).

but not said, was jettisoned in the 1930s by the Vienna Circle, the Cambridge analysts, and Wittgenstein himself (Hacker, 2007; 2013).

1.2. The linguistic turn in a broader sense

Although the linguistic turn can be characterised in such a narrow sense, some scholars understand it as a more general trend that includes thinkers who have little to do with philosophy of language as such. This is the case of Daddesio, who uses the linguistic turn to mean the paradigm shift characteristic of the first half of the 20th century within disciplines such as anthropology, linguistics, psychology or philosophy (Daddesio, 1995 p. 45). This is not to say that the linguistic turn as defined in the previous part does not overlap with this broader sense of the term. However, Daddesio's point of view is more relevant in the context of this thesis, mainly for his observation that despite the fact that it emerged as an antithesis to nineteenth-century mentalism, replacing mental units with sentences or propositions, it also created the launching pad for the cognitive shift that followed. In order to provide this thesis with a more complex and appropriate background, one directly related to the emergence of the following tradition, namely the return to mentalism within linguistics, I consider Daddesio's sense of the term worthy of use and extension.

As Stenlund (2002 p. 17) notes, it is rather reductive to see the linguistic turn as only a reaction to psychologism or mentalism. The reason why introspective investigation and philosophical language of the mental became discredited is far from obvious. Losonsky (2006 p. 2), for example, claims that there were many significant turns to language, the first of which can be attributed to John Locke, whose epistemology, like psychology and philosophy of mind, is tied to language (see Stenlund, 2002; Losonsky, 2006). John Locke's work, however, is more of a theory of ideas than that of language. He claimed that words signify ideas and, regardless of consequences, different individuals associate different ideas with a specific word. That is not to say that interaction between people is not possible, yet one can never be sure that the sensory idea associated with a word is identical to someone else's use of the same word (see Locke, 1695 Bk. III, Ch. II, 1–4).

Moreover, although Locke never denied that there were cases of successful communication, it was not an urgent task for him to explain why – inasmuch as there was the belief that the intellectual faculties are made alike in most humans. Stenlund (2002 p. 25) claims that such

a belief is predominantly a religious belief.[4] What was considered self-evident in the 18th century and had the role of an overarching framework, however, becomes highly questionable in the later 19th century, due to the secularization of science. On the other hand, according to Stenlund, it was philosophers such as Locke or Descartes who paved the way for this secularization. "They separated the Creator from his creation, and made the understanding of God's creation the business of human reason." (Stenlund, 2002 p. 37) Once secularized scientific empiricism takes hold, it is the belief in the unity of human, among other things, that no longer works. "The 19th century had lost the 18th century's mental conviction, its first theory we might say, that of the uniformity of nature." (Aarsleff, 1970 p. 578) Moreover, Stenlund points out that everything begins to speak against human nature – the differences and variations between languages, communities, between ways of being and of life, not only in different parts of the world but also in different historical epochs. Everything seems to speak more in favour of a linguistic relativity (cf. Sapir-Whorf hypothesis)[5] that gives rise to a "communicative scepticism" as "a discomfort that could no longer be quieted by the idea of a common human nature" (Stenlund, 2002 p. 32).

It is these circumstances, in which Frege formulates his concept of sense (*Sinn*) and reference (*Bedeutung*) as being separated from subjective ideas (see Frege, 1892b), and in which he proposes the idea that nothing is given to our consciousness prior to language and thus that human thinking, understanding, and reason are immanent in language. Although this was not necessarily a new idea either[6], linguistic immanence emerged in the second half of the 19th century in a new, somewhat disturbing way. According to Stenlund (2002 p. 23), it became a historical "imperative" to philosophically explain the possibility of communication.[7]

Another consequence of the scientific secularization is the decreasing authority of philosophical language of the mental, and of the notion that the immediacy of ideas can be

[4] Descartes in the Sixth Meditation defines the nature of human as a totality of all that God has given man (Descartes 1641 p. 81 [1986 p. 56]).
[5] The claim that linguistic differences have consequences in human cognition and behaviour was formulated by Sapir and his student Whorf. However, the term Sapir-Whorf hypothesis was introduced by Harry Hoijer (1954), another student of Sapir.
[6] Stenlund (2002 p. 24) claims that similar ideas had already appeared in the work of Condillac and his followers, however, they remain just "a philosophical notion", simply because it makes no difference to philosophy as long as one still believes in a uniform nature.
[7] See also Hacking (1975) or Aarsleff (1982).

accomplished in thinking, which was a common perspective among philosophers of the time.[8] Stenlund points out that they wrote as if they could step outside of language:

> as if language were merely something "external" from which one can remove oneself and then retreat into the consciousness or soul, where one can view the ideas for which words stand, in a kind of immediate mental seeing (Stenlund, 2002 p. 20).[9]

On the other hand, Stenlund (2002 p. 24) further argues that scholars who claim possibility of immediate insight into ideas and uniformity of human nature merely think within this vocabulary, without considering their particular case as matter of subjectivity. Therefore, for them it serves as an explanatory model sufficient and adequate to the task. However, once science determines its main goal as the search for objective truth through demonstration, proof or conceptualization,[10] psychological vocabulary used for philosophical purposes becomes a threat to science and philosophy itself. Inner and personal vision becomes problematic, even for psychology that becomes an empirical science. Under these conditions, language begins to be formulated in terms of code conception as a structure to be represented in theory, stemming from the natural sciences and modern mathematics. And it is only this language about which scholars start to pose semantic questions (ibid.).

What makes this broad linguistic turn particularly relevant is the influence that it had on the resulting cognitive paradigm, especially regarding the formalist method developed within the mathematical-logical approach to sentence/proposition (for example, as represented by Frege)[11] which also became one of the targets for the second cognitive shift, namely in the critique of Johnson (1987) or Lakoff (1987), as will be further described in chapter three. It is also noteworthy that some scholars, including Daddesio, find signs of the linguistic turn in Frege's work. This is also the case for Michael Dummett (2014). He points out that it was in *Die Grunlagen der Arithmetik* (1884) where Ferge defined his "context principle" to answer the question of how numbers are given to us, provided that we have no idea or intuition of them. And this principle, according to Dummett, is formulated as if it were

[8] See also Deely (2001, p. 485–607).
[9] See Hacking (1975), or Deely (2001).
[10] These ideals were referred to by Frege in the introduction to his *Grundlagen der Arithmetik* (1884).
[11] Losonky (2006 pp. 181–184), for example, mentions some similarities between Frege and Chomsky.

an inquiry into language rather than into ways of thinking, that is, as if a word had a meaning only in the context of a sentence:

> An epistemological enquiry (behind which lies an ontological one) is to be answered by a linguistic investigation. [...] It is simply taken as being the most natural way of going about the philosophical enquiry. (Dummett, 2014 p. 6)

Although he is aware of the fact that Frege never explicitly acknowledged or justified the linguistic turn (what is more, as his philosophy developed, language began appearing to him more of an obstacle), there are some features in his work[12] which are considered to indicate that he set the linguistic turn in motion and which became of utmost interest to analytical philosophers.

In order to fully describe the developments that led directly to the emergence of cognitivism, or the realization that references to the mind cannot be avoided in the study of language, it is useful to briefly describe a specific consequence that can also be subsumed under the term "linguistic turn". Namely, the behaviourist approach in science – its emergence within psychology and its adaptation for linguistic research.

1.3. Behaviourist antimentalism

So far, the focus has been mainly on Continental analytic philosophy and only partly on its American counterpart. However, it is fair to say that when it comes the second half of the century, the thesis emphasises mainly the American development of linguistics and cognitive science, since this is where the so-called cognitivism originated.[13] Yet, it would be wrong to see Continental and American philosophy or science as two separate streams, since many Continental scholars kept intense contacts with American colleagues. This can be said in particular about Roman Jakobson in the field of linguistics (see Joseph, 2015) or the Vienna Circle, whose members, like Carnap, emigrated to the United States after its destruction by the Nazis in the 1930s, and who strongly influenced pragmatism there in the post-war years (Hacker, 2007).

[12] On Frege's treatise on the nature of language see *Funktion und Begriff* (*Function and Concept*, 1891), *Über Sinn und Bedeutung* (*On Sense and Reference*, 1892) or *Über Begriff und Gegenstand* (*On Concept and Object*, 1892).
[13] Gardner (1985 p. 22), however, points out that although he has stressed mainly the American version of the story, certain themes and comparable accounts could be presented from other national perspectives.

As mentioned above, antimentalist tendency emerged also within psychology, thus becoming an empirical science. In the United States, the dominant paradigm of science concerning mind and language was, for many decades, behaviourism, founded on the theses of John B. Watson. He gave his ground-breaking lecture *Psychology as the Behaviorist Views It* at Columbia University in 1912, which was later published in *Psychological Review* and became known as the "behaviourist manifesto". Its main principle stood on the thesis that psychology as a natural science must avoid reference to internal mental states and study overt behaviour:

> A whole generation of scientists – the leading psychologists of the next generation – were trained in the orbit of Watson; and investigators like Clark Hull, B. F. Skinner, Kenneth Spence, and E. L. Thorndike helped to ensure that the psychology of America between 1920 and 1050 was irremediably behaviorist. (Gardner, 1985 p. 11)

When Daddesio (1995 pp. 47–48) speaks about linguistic turn, one of the main characteristics of language (or linguistic behaviour) is that it becomes the subject of matter, as public discourse replaces the mental one, i.e., ideas. Watson (1929 p. 32) puts it as follows: "Thinking is merely talking, but talking with concealed musculature." As Kousta (in Chapman & Routledge, 2009 p. 18) claims, classical behaviourism became of a profound influence on American structuralist linguistics through, for example, Leonard Bloomfield.

North American linguistics in the first half of the 20th century was rooted primarily in structuralism, developed into "a uniquely American structuralism"[14] under the influence of Edward Sapir and Franz Boas, and was concerned with the analytical description of languages.[15] In the 1920s, *The Linguistic Society of America* was founded, and both of these scholars, as Randy A. Harris claims, were instrumental in its creation, along with Leonard Bloomfield, "the definer of the orthodoxy in the forties and fifties" (Harris, 1993 p. 21). As Harris points out, American structuralism was in some respects more psychological than Saussure's, and Bloomfield himself asserted the importance of psychological insights for linguistics as one of the "mental sciences" (ibid. p. 24). However, with the aforementioned advent of behaviourism, as well as logical positivism (through the Vienna Circle), Bloomfield abandoned this conviction and became profoundly antimentalist, claiming that

[14] Thus different from the French structuralism.
[15] Lyons (1970 p. 26) points out that the linguistic theory was for many American scholars no more than a source of techniques for the description of previously unrecorded languages.

mental aspects of language were merely distractions from description (see Harris, 1993 p. 25; Lyons, 1970). He established the character of linguistics – primarily through his book *Language* (1933), considered a handbook codifying the methodology of American structuralism, and through LSA – as a predominantly descriptive and taxonomic, hence eliminating mental speculations as well as meaning. Bloomfield regarded meaning as "the weak point in language study" because of his belief that a precise definition of meaning requires a full "scientific" description of objects, states, etc. (Lyons, 1970 p. 32) This methodology was continued by his students, including Zellig S. Harris, i.e., Noam Chomsky's teacher.

The behaviourist doctrine dominated in (especially American) psychology as well as linguistics for much of the first half of the century, until the late 1950s. However, due to its inability to explain some linguistic phenomena, such as language creativity, behaviourism became undermined. The shift away from this paradigm played an important role in the founding of cognitive science, and many scholars emphasise Noam Chomsky's 1959 review of Skinner's *Verbal Behaviour* in particular as its beginning. Although the role of Chomsky and his rhetoric in this shift cannot be denied, it is important to see it more as a long-term trend caused by several reasons, among them the development of technologies outside linguistics itself and the intellectual environment of American universities and institutes.

2. The first cognitive shift

2.1. Undermining of behaviourist stance

The post-war years were significant for the emergence of the cognitive paradigm; however, it is important to note that this shift should not be seen as an immediate change, but as a long-term development influenced by many factors. Of these factors, the ones mainly considered here are the inadequacy of behaviourism, the development of computer science and of information theory.

Although the antibehaviourist discourse was not explicitly voiced until later in the 1950s, Gardner (1985 p. 10) points out that the first attempt to challenge the dominant doctrine of behaviourism was made by psychologist Karl Lashley at *The Hixon Symposium* in September 1948. In his lecture, *The Problem of Serial Order in Behavior*, he claimed that the explanatory framework of behaviourism, based on an associative chain between a stimulus and a response, cannot explain serially ordered behaviour, such as language – primarily because of the rapidity of these action sequences. Therefore, according to Lashley, these sequences must be planned and organised in advance, and form must precede and determine specific behaviour (ibid. p. 13). Gardner claims that the shared intuition of behaviourists – that the character of the human mind remained unanswered – was greatly strengthened by Lashley's paper. However, he also points out that at the same time, circumstances hindered "the proper launching of a science of cognition" (ibid. p. 15), mainly due to the prevailing view that entities that cannot be observed or measured must be eschewed, but also due to the political situation: the European scientific establishment had been torn apart by the rise of totalitarianism, and then the American scientific establishment had been asked to set aside its theoretical agenda to help wage the war.

On the other hand, the war stimulated other activities in the field of science and technology – computers, for example. Gardner mentions Alan Turing as being of profound importance to researchers interested in computing devices, and thus to cognitive science itself. His notions of the so-called Turing machine (1930s) and the Turing test (1950s) were soon taken up by scientists who began linking the computing machine to the human mind, with the aim of designing a machine with an operating system identical to the human mind, one which

could perform tests based on ideas about how humans function (ibid. p. 18). At the same time, mathematician John von Neumann was interested in comparing an electronic computer to the brain. Inspired by the logic of G. Frege and N. A. Whitehead, he came up with the idea of a programme stored in the computer's internal memory through which the computer could be controlled. Similar attempts were made by Norbert Wiener, who is considered the founder of cybernetics, in the 1930s and 1940s.

Another "progenitor", according to Gardner, is Claude Shannon. He is usually regarded as the founder of information theory and he also provided the key idea, stating that information can be thought of as "simply a single decision between two equally plausible alternatives" (ibid. p. 21), independent of a particular content or subject matter. Thanks to these insights, as Gardner points out, it became possible to consider information (i.e., cognitive processes) detached from a particular transmission device (i.e., embodiment).

Technological developments within computer science, which began to consider the similarities between the computer and the mind, have had important implications for cognitive science itself. In fact, in addition to viewing the computer as a mind, the mind has similarly come to be viewed as a computational machine of a similar kind. The so-called computational theory of the mind played a central role during the 1960s and 1970s, for example in Fodor's language of thought hypothesis (see below). On the other hand, it also became one of the targets of second-wave cognitivism, which came to see the metaphor of the computer (i.e., mind as a formal symbol-manipulating system) in the context of the mind as inappropriate and reductive (see chapter three).

2.1. "The cognitive revolution"[16]

As Gardner argues, by the 1940s "the principal intellectual capital on which cognitive science was to be construed had already emerged" (Gardner, 1985 p. 23). He also stresses the importance of the many meetings that took place in this era. These brought together scholars interested in cognition and helped to promote a new interdisciplinary approach – *The Hixon Symposium* was just one of many. Scholars also met in important intellectual

[16] Pléh (2019) points out that it was mainly a thematic shift and a desire to overcome behaviourism, which motivated the protagonists to speak of a new scientific paradigm as a cognitive revolution. Greenwood (1999) suggests that rather than a revolution, the move from behaviourism to cognitivism should be represented with the term "replacement".

centres such as Princeton (e.g., Neumann's and Wiener's meeting on cybernetics or *The Princeton Institute for Advanced Study*, where George Miller and Jerome Brunner spent a year), Boston (*M.I.T.*), Cambridge (*Society of Fellows at Harvard*, where Noam Chomsky was a "junior fellow") or California (*The Rand Corporation*, where Herbert Simon and Allen Newell worked). Gardner also mentions works that became relevant to the emerging discussion, including that of William R. Ashby on the design of a machine capable of adaptive behaviour or learning, of Roman Jakobson and Morris Halle on distinctive features of language, of Donald Hebb on the evolution of the nervous system, of Gregory Bateson on feedback systems, and so on (ibid. pp. 23–27).

As Gardner (ibid.) points out, many of the same influences were at work in the later founders of cognitive science, however, these intrinsic ideas were still considered outside the mainstream, i.e., behaviourist psychology, structural linguistics, or the neuropsychology of animal learning. Nevertheless, with the new approaches that emerged at the turn of the century, offering new tools for the study of the mind, it became evident that it is no longer sustainable to try and answer questions that are essentially related to the mind only through the behaviourist paradigm and without any reference the mind itself – Lashley's contribution demonstrates this awareness. Although a fundamental shift towards mentalism or cognitivism comes about through explicit arguments by Chomsky and other founders of cognitive science, it is more of a long-term trend that began to emerge even before his scathing critique of behaviourism.

Many scholars agree that the year 1956 was crucial for the development of a new, cognitive paradigm, and even more so for the recognition of the so-called cognitive science (ibid. p. 28). As George A. Miller writes, although the name came much later[17], the moment of conception of cognitive science occurred in September 1956 at *The Symposium of Information Theory* at *M.I.T.* (Miller, 2003 p. 141). There, three main researchers (also mentioned by Daddesio within the first cognitive phase) presented their work – *Logic Theory*

[17] Bruner and Miller founded the *Centre for Cognitive Studies* at Harvard in 1960.

Machine by Herbert Simon and Allen Newell, *Three Models of Language* by Noam Chomsky, and *The Magical Number Seven* by George Miller.[18]

2.2. "The Chomskyan revolution"[19]

Although Noam Chomsky's work can be questioned in many ways, his ideas as well as his influence in the field and on other scholars (especially on Jerry Fodor's concept of the language of thought, which is, according to Dadessio, representative of the first phase of cognitivism) cannot be neglected, especially since the focus of this thesis is mainly on the language in relation to the mind. "In a nontrivial sense, the history of modern linguistics is the history of Chomsky's ideas and of the diverse reactions to them on the part of the community," Gardner (1985 p. 185) asserts.

Harris (1993 p. 29) claims that one of the reasons why Bloomfieldians saw Chomsky's revision as a "methodological appendix" to their concerns was that Chomsky was the student of Zellig S. Harris, a Bloomfieldian and a very respected linguist. Moreover, Harris gave his lecture *Transformation in Linguistic Structures* at LSA in 1955 and his paper *Co-occurrence and Transformation in Linguistic Structure* was published in the 1957, the same year as Chomsky's first important paper, *Syntactic Structures*. Another important contribution of Harris is that he attempted to fill the gap of the absence of syntax in linguistic coverage caused by various factors. These included the Saussurean view that the sentence is a unit of *parole* and thus outside the subject matter of linguistics, and the Bloomfieldian methodological prescription that a linguist works out first the level of phonology, then that of morphology, and then that of syntax (ibid.). "What was missing was method, and since method was the defining notion of science for Bloomfield, syntactic work usually came with an air of embarrassment." (ibid. p. 30) Chomsky acknowledges Zellig S. Harris' contribution in *Syntactic Structures* as follows:

> During the entire period of this research I have had the benefit of very frequent and lengthy discussions with Zellig S. Harris. So many of his ideas and suggestions are

[18] Gardner also points out that in 1956 the Dartmouth workshop was held, which is considered the founding event of artificial intelligence as a field with its founding fathers: John McCarthy, Marvin Minsky, Allen Newell, and Herbert Simon (Gardner, 1985 p. 30).
[19] Cf. Rieber & Vetter (1980).

> incorporated in the text below and in the research on which it is based that I will make no attempt to indicate them by special reference. (Chomsky, 2002 [1957] p. 6)

However, as he goes on to point out, Harris' work on the transformational structure starts from "a somewhat different point of view" in that he intended his transformation for practical purposes, i.e., machine translation or automated information retrieval.

David W. Lightfoot, in the *Introduction* of *Syntactic Structures*, regards this book as "the snowball which began the avalanche of the modern 'cognitive revolution'" (Chomsky, 2002 [1957] p. v). It is important to note, however, that many of the mentalist claims had yet to be made. Chomsky characterises his book as an attempt to develop a formalised general theory of linguistic structure (ibid. p. 5). Unlike his predecessors, he is not concerned with a particular grammar of a language, but with its abstract form; moreover, he claims that the set of grammatical sentences cannot be identified with a particular corpus of utterances, and therefore distinguishes the theory of linguistic structure from a manual of procedures for discovering grammars. He uses this separation primarily to show that one need not wait until lower units of language, such as phonemes and morphemes, are described (as Bloomfieldians believed). On the other hand, what remains similar to the Bloomfieldian point of view is the refusal to study semantics as part of grammar, since for Chomsky, it has "no relevance to the problem of determining or characterizing the set of grammatical utterances" (ibid. p. 17). However, it is important to note that he also makes the antibehaviourist claim that one must reject the identification of "meaning" with "response to language" if the study of meaning is to remain an important aspect of linguistic research (ibid. p. 100). According to Chomsky, an adequate theory of grammar must take into account generality, include the feature of correctness/grammaticality and meet the requirement that a finite grammar produces/generates an infinite number of adequate sequences. Therefore, after rejecting common models of descriptions, he offers a transformational approach in which:

> the terminal strings underlying the kernel sentences are derived by a simple system of phrase structure and can provide the basis from which all sentences can be derived by simple transformations (ibid. p. 61).

Although the crucial points were not yet formulated, the formalised device of grammar, i.e., language, together with the evaluative intuition of the speaker, anticipates many of the mentalist claims.

While *Syntactic Structures* can be seen as an extension of the Bloomfieldian paradigm, Chomsky's 1959 review of B. F. Skinner's deeply behaviouristic book *Verbal Behaviour*[20] marks an attempt to replace the previous paradigm, which, as mentioned above, played an important role in the emergence of cognitive science.[21] Chomsky attacked Skinner's behaviourist position through learning theory[22], in particular through the notion of poverty of stimulus:

> The fact that all normal children acquire essentially comparable grammars of great complexity with remarkable rapidity suggests that human beings are somehow specially designed to do this, with data-handling or "hypothesis-formulating" ability of unknown character and complexity. (Chomsky, 1959 p. 60)

As Harris (1993 p. 58) asserts, this fact was well known in linguistics, but "building a positive program around that observation was something new". Moreover, Chomsky further notes that any theory that refuses to examine these contributions is necessarily only a superficial account of language acquisition (Chomsky, 1959 p. 60). As Harris claims, this critique rehabilitated mentalism and opened the door for anyone to explore mental structures (Harris, 1993 p. 56).[23]

To see Chomsky's explicit claims clearly, it is best to use his two books*, Aspects of the Theory of Syntax* and *Language and Mind*, even though they were published later in the 1960s (1965 and 1968[24] respectively). Chomsky's theory lies in a handful of crucial distinctions that also set it apart from the traditional approaches of structuralism and behaviourism. First, he asserts a fundamental difference between competence – an idealized

[20] Despite its large influence, some scholars point out the misleading character of the review, including citations of Skinner out of context, attacks on behaviourism, although Skinner held rather a radical position in this field, etc. See Joseph (2002), Adelman (2007), Waller (1977).
[21] Leahey (1992 p. 418) claims that his review "is perhaps the single most influential psychological paper published since Watson's behaviourist manifesto of 1913".
[22] Although, as Joseph (2002 p. 176) points out, Skinner never addressed this issue.
[23] Harris (1993 p. 59) mentions another crucial step in the refusal of the Bloomfieldian paradigm, i.e., the paper *Sound Patter of Russian* written by Morris Halle (and presented by Chomsky) in 1959, which proposed arguments against the most respected Bloomfieldian field of phonology.
[24] The first edition (1968) contains three essays, later in 1972 supplemented by another three essays.

knowledge of language – and performance – the actual use of it[25] – and claims that linguists should determine the underlying rule system, thus making competence the subject matter of linguistic theory.[26] Second, in line with his transformational approach, he distinguishes between surface structure of the sentence, i.e., the organisation into categories and phrases directly related to the physical signal, and the underlying deep structure, i.e., the same organization of a more abstract character, which is the subject matter of transformational(-generative) grammar. Therefore, "linguistic theory is mentalistic, since it is concerned with discovering a mental reality underlying actual behaviour" (Chomsky, 1965 p. 4) and "the search for explanatory theories must begin with an attempt to determine these systems of rules and to reveal the principles that govern them" (Chomsky, 2006 [1968] p. 23). As he had already mentioned in his first book (1957), he sees the traditional structuralist grammar as having failed to go beyond the classification of examples and to formulate general rules underlying the common basis of natural languages, i.e., universal grammar.

The inclinations that drove the critique of behaviourism also underlie the TGG approach – Chomsky constructs a language acquisition model within which the child must develop an internal representation of a rule system in order to learn language:

> As a precondition for language learning, he must possess, first, a linguistic theory that specifies the form of the grammar of a possible human language, and, second, a strategy for selecting a grammar of the appropriate form that is compatible with the primary linguistic data. (Chomsky, 1965 p. 24)

Therefore, Chomsky claims that the task of linguistics is to develop an account of innate linguistic theory that provides the basis for language learning, including the discovery of the so-called linguistic universals and the specification of an innate schema. As he claims, without tacit knowledge of these universals, language learning would be impossible for the child (ibid. p. 27). For Chomsky, it is "an empirical fact about the innate *human faculté de langage*" (ibid. p. 37). Here he explicitly anchors his discourse in rationalism – as Harris (1993 p. 66) points out, in a radical one – as opposed to empiricism, thus opposed to Skinner

[25] Although he makes a reference to Saussure's distinction of langue-parole, he claims that it is necessary to reject the concept of langue as a systematic inventory of items and return to the conception of underlying competence as a system of generative processes, proposed earlier by Humboldt (Chomsky, 1965).
[26] Later in 1986, in *Knowledge of Language*, he distinguishes I-language, as an internalist, individual, and intentional conception of language, from external E-language; which is a similar, but not identical distinction.

as well, but also to Quine or Wittgenstein.[27] This opposition arises especially in his assumption that there is an unbridgeable gap between input and acquired knowledge (of language) and thus that some universals are "intrinsic properties of the language-acquisition system" (Chomsky, 1965 p. 53). On the question of philosophical rationalism, he refers in particular to the so-called Cartesian linguistics (term established by his 1966 book *Cartesian linguistics*)[28], i.e., to Descartes, the Port-Royal grammar and W. von Humboldt[29]:

> It may well be that the general features of language structure reflect, not so much the course of one's experience, but rather the general character of one's capacity to acquire knowledge in the traditional sense, one's innate ideas and innate principles. (Chomsky, 1965 p. 59)

These innate principles are supposed to explain the creative aspect of language as well as the approximately equal development of language in all humans, regardless of the quality or quantity of the input data. In this way, universal grammar is a concept through which one can study the nature of human intellectual capacities, even though, as Chomsky himself claims, the language faculty is only one of the faculties of the mind (Chomsky, 2006 [1968] p. 24).

Chomsky further developed his theory in the second half of the century, including changes in the approach itself. Despite the relative veracity of his model, his strictly formal and profoundly psychological[30] approach to language, based on syntax primacy, became an inspirational point for many fields, such as psycholinguistics (through his collaborations with Miller), generative semantics or computational linguistics. As Pléh (2019) points out, although he is not very sympathetic to computer-inspired reductionism in the study of human

[27] In Chomsky's essay *Some Empirical Assumption in Modern Philosophy of Language* (1969) he gives a critical account of Wittgenstein's and Quine's anti-mentalist views. However, for example, Bruce Waller (1977) clarifies some misreading of Wittgenstein and attacks Chomsky's statement of innate mental faculty as a solid fact.

[28] However, some scholars point out that his reading of predecessors concerned with language and mind is often misleading. Hans Aarsleff (1970), for example, shows that Chomsky's broad conception of Cartesian linguistics, as well as his uncompromising rejection of Locke's empiricism, are often driven by "incorrect" reading of the original sources. Also see Sullivan (1980).

[29] „I think it is historically accurate to regard the approach presented in this paper as basically Humboldtian in its assumption that serious investigation of language use and acquisition presupposes a study of underlying generative processes (for which, to be sure, actual performance will supply evidence), and that very little is to be expected of direct operational analysis of 'mentalistic' terms or radical behaviorist reductionism of the sort that has been so dominant in modem speculation on language and cognition." (Chomsky, 1970 [1964] p. 25)

[30] "Linguistics [...] is simply the subfield of psychology that deals with these aspects of mind." (Chomsky, 2006 [1968] p. 25)

cognition, he played a central role in the birth of the syntactic theory of mind, i.e., the language of thought hypothesis proposed by Jerry A. Fodor.

2.3. The language of thought hypothesis

Although Fodor's hypothesis was strongly influenced by the TGG of his colleague Chomsky, it is also necessary to once again emphasise the role of developments in computer science and artificial intelligence, as presented earlier, namely in the theories of Alan Turing or Hillary Putnam.[31] This can be seen in the parallel that Fodor makes during the first explicit attempt to formulate the hypothesis of language of thought in his work *The Language of Thought* (1975):

> Real computers characteristically use at least two different languages: input/output language in which they communicate with their environment and a machine language in which they talk to themselves (i.e., in which they run their computation). [...] Roughly, the machine language differs from the input/output language in that its formulae correspond directly to computationally relevant physical states and operations of the machine: The physics of the machine thus guarantees that the sequences of states and operations it runs through in the course of it computations respect the semantic constraints on formulae in its internal language. [...] For the moment, suffice it to suggest that there are two ways in which it can come about that a device (including, presumably, a person) understands a predicate. In one case, the device has and employs a representation of the extension of the predicate, where the representation is itself given in some language that the device understands. In the second case, the device is so constructed that its use of the predicate (e.g., in computations) comport with the conditions that such a representation would specify. (Fodor, 1975 pp. 73–74)

For Fodor, the first case characterises the predicates of natural languages. The second case is supposed to characterise the internal language in which one thinks. Fodor's hypothesis is essentially based on two arguments: First, that cognitive processes have a computational character. And second: if cognition is computational, there must be a medium of computation, i.e., a representational system in which such processes take place. Therefore, there must also be a language of representation.[32]

[31] Hillary Putnam was Fodor's teacher.
[32] Fodor says that "representation presupposes a medium of representation, and there is no symbolization without symbols. In particular, there is no internal representation without an internal language" (Fodor, 1975 p. 55).

His inspiration by Chomsky is more than obvious in two respects. To support his hypothesis, Fodor underpins it with the argument of language acquisition. He claims that when a child learns its first language, it also learns the predicates of that language, and thus its semantic properties, by learning generalisations that determine its extension. However, when the child learns its first word of the first language, the coextensive predicate is not mentioned, so it must be something that the child already understands, i.e., an innate predicate:

> [O]ne cannot learn that P (predicate) falls under R (rules) unless one has a language in which P and R can be represented. In particular, one cannot learn a first language unless one already has a system capable of representing the predicates in that language and their extensions. (ibid. p. 72)

Furthermore, he uses Chomsky's notion of a universal grammar to support his claim by saying that if language acquisition is driven by constructing a grammar in accordance with an innate system of language universals and testing that grammar against a corpus of observed utterances, then "there must be a language in which the universals, the candidate grammars, and the observed utterances are represented" (ibid. p. 102). This language, then, cannot be a natural language learned by children, i.e., the medium of representation cannot be English, but an unlearned language.[33] As Lawrence J. Kaye (1995 p. 107) explains, Fodor's argument is based on language acquisition as hypothesis testing, i.e., the learner needs a language in which to formulate hypotheses, so there must be an innate one that precedes any language.

Fodor goes on to characterise this internal language using Chomsky's descriptive model of natural language. He argues that the language of thought can be characterised in terms of complexity and systematicity. Analogous to the creative aspect of natural language, Fodor claims that just as there can be the complex and novel sentence, there can also be "a most-complex-situation-that-anyone-can-act-upon" as along with the ability to deal with novel stimuli (Fodor, 1975 p. 31). Another common property implied by the ability to represent salient aspects of the situation one is in is that semantic properties, such as truth or reference, are also included in the representational system.[34] Therefore, the language of

[33] The notion that natural languages cannot be the medium of thought is supported by the argument that there are nonverbal organisms that think. (Fodor, 1975 p. 56)

[34] "[...] one can learn L only if one already knows some language rich enough to express the extension of any predicate of L. To put it tendentiously, one can learn what the semantic properties of a term are only if one already knows a language which contains a term having the same semantic properties." (Fodor, 1975 p. 80)

thought must be as conceptually powerful as natural language. In addition, as part of the requirement for systematicity, Fodor suggests that the rules governing mental processes are similar to those governing natural languages (in the Chomskyan TGG sense). This leads him to the final highly controversial claim that:

> the languages we are able to learn are not so very different from the language we innately know, and the sentences we are able to understand are not so very different from the formulae which internally represents them (ibid. p. 156).

Although he admits that this hypothesis is speculative in character, he claims that it supports the explanation of why natural languages are so easy to learn and sentences so easy to understand.

Fodor's views have been repeatedly developed further by himself and his colleagues[35], but these revisions are not essential for purpose of this thesis. Nonetheless, his account of the computational theory of mind became extremely influential for further development (e.g., Pinker, 1994), including the rejection of some claims (see Braddon-Mitchell & Fitzpatrick, 1990; Kaye, 1995; Viger, 2005). The critique that is most appropriate for the purpose of this thesis is provided by Daddesio (1995).

Daddesio argues that Fodor's model is characteristic of the tendencies among cognitive scientists during the first phase of cognitivism. Although the work of Chomsky, Fodor, and others brought cognition back into focus, the break with the legacy of antimentalist linguistic turn is rather apparent, mainly in the reductive explanatory models. As Daddesio argues, the first reduction is contained in the formalist stance of Chomsky, which favours syntax over semantics. Fodor, on the other hand, holds that semantic properties play a central role in the operation of cognition, however, as Daddesio claims, he refuses to grant cognition its autonomous explanatory power by imposing a linguistic structure on cognitive processes. His critique goes as follows:

> Under this view, the innate linguistic faculty takes the same form as the languages we speak. To understand cognition, we simply have to study language and to explain how we are able to learn language, it suffices to invoke the "language of thought". By conceiving cognition as a "language", Fodor is able to project the structures of natural

[35] See Fodor (1981); Fodor (1987); Fodor & Pylyshyn (1988); Fodor (1990); Fodor (1998); and also recently revisited in *LOT 2: The Language of Thought Revisited* (Fodor, 2008).

> language, as revealed by generative linguistics, onto the mind without having to deal with nonlinguistic cognitive processes and with the question of how language interacts with the rest of cognition. It is a solution that allows us to enjoy, as it were, the best of both worlds: the access to public phenomena offered by the linguistic turn and the causal efficacy of cognitive states made possible by cognitivism. (Daddesio, 1995 pp. 56–57)

Daddesio's main objection to the computational view of the mind is that the theory is unavoidably insufficient since the model views thinking only as a computational process. In order to have an adequate model of the mind, Daddesio claims that it is necessary to postulate meaning as its pivotal constituent:

> Meaning must emerge from within the system itself, function causally within it and not simply appear when an outside observer chooses to add it on. We are thus requiring that representations exert a significant control over behavior due to what they represent. (ibid. p. 102)

According to Daddesio, this, together with the reductive formalist stance, is what becomes one of the main targets of the second phase of cognitivism.

3. The second cognitive shift

3.1. The apparent return to meaning

Although Daddesio dates the second phase of cognitivism to the 1970s and 1980s, important contributions had already been made during the 1960s, mostly within the generative-grammar model. Chomsky's initial theory, as expressed in *Syntactic Structures*, was decontextualised and idealised in order to create simple, systematic and regular model for linguistic enquiry. Hence, meaning – along with communication and other social aspects – was ignored as being uninteresting or irrelevant. As Harris (1993 p. 84) points out, there were two meaning-related complications with *Syntactic Structures*: first, the kernel sentences were unable to fully represent the meaning of sentences, and second, meaning was changed by transformations. The earliest attempt to construct semantic theory within Chomsky's framework, described by Geeraerts (2010 p. 101) as "a landmark in the history of lexical semantics", was undertaken by Jerrold Katz and Jerry A. Fodor in *The Structure of a Semantic Theory* (1963).

This attempt followed two crucial components – a dictionary specifying syntactic behaviour and semantic content of a word, and semantic interpretation rules. Although, as Harris (1993 p. 85) argues, Katz and Fodor "provided a new wing for the grammatical house blueprinted in *Syntactic Structures*", the primary aim of dealing with meaning-alternating transformations was not achieved. However, the authors leave it at the assumption that "it would be theoretically most satisfying if we could take the position that transformations never change meaning" and that problematic cases can be regarded as such because of inadequately formulated transformations (Fodor & Katz, 1963 p. 206). Consequently, Katz reformulated them together with Paul M. Postal in *An Integrated Theory of Linguistic Descriptions* (1964) as having no semantic effect. The so-called Katz-Postal hypothesis became one of the central positions on which Chomsky's model formulated in *Aspects* (1965) was built.

The main features of this model, especially those relevant to this thesis, have already been described in the previous chapter, yet in the context of the current chapter, it is worth exploring how semantics itself was embedded into the reformulated model. In *Aspects*, Chomsky brought in new components: lexicon together with lexical insertion rules

(previously handled by the phrase structure rules) and the semantic component with its semantic interpretation rules. The phrase structure rules, together with the lexical insertion rules, generate the so-called deep structure, which is considered the semantic core of the sentence. As such, it then enters the semantic component, which produces a representation of its meaning, and the transformational component, which produces a representation of its surface (syntactic) structure (Chomsky, 1965 p. 135). However, this is not to say that meaning is supposed to play a significant role in this model. On the contrary, Harris argues that the semantic interpretation rules were not really specified, nor was it described how the semantic representation actually appears. Nonetheless:

> no one was too concerned about the lack of detail concerning the semantic component. It would come, and, in any case, Katz and Fodor had defined semantics as an essentially residual matter (Harris, 1993 p. 94).

Although the model consisted of units related to semantics, the focus was mainly on the syntactic side, which was considered an autonomous base.

3.2. Generative semantics

The attempt to establish semantics as the foundation of the linguistic model, or language itself, emerged in the 1960s. As Harris (1993 p. 104) mentions, while there was the promise that formal syntactic work would enable to get closer to meaning, Chomsky's programme favouring syntax at the expense of meaning started seeming invalid to some scholars. George Lakoff, in his 1963 proposal *Toward Generative Semantics*, commented the situation as follows:

> The approach taken by Katz, Fodor, and Postal has been to view a semantic theory as being necessarily interpretive, rather than generative. The problem, as they see it, is to take given sentences of a language and find a device to tell what they mean. A generative approach to the problem might be to find a device that could generate meanings and could map those meanings onto syntactic structures. (Lakoff, 1963 p. 44)

However, his paper was not accepted at the time, so Lakoff abandoned his idea and returned to working within the interpretive[36] framework of the emerging *Aspects* theory (Harris, 1993 p. 106). It was during this period that a new line of research began to emerge around Postal, in response to some of the problems in transformational grammar, mainly concerning irregularities, which became known as abstract syntax and which George Lakoff, together with J. R. "Haj" Ross and James McCawley (all students of Noam Chomsky) joined.

Research on (ir)regularity also drove the next steps of contradicting the 1965 theory. In Chomsky's model of regular syntactic rules, irregularity was impossible. Yet, somewhat paradoxically, while American ("Bloomfieldian") linguistics focused on describing the variability of languages, Chomsky's theory, though claiming to be a universal model, was heavily dependent on English. In the 1960s, major papers were published that challenged the theory. Harris (1993 p. 119) mentions, for example, Joseph Greenberg's typology of linguistics universals, which presented grammatical patterns of diverse languages. Similar discoveries were made by abstract syntacticians who showed that not all languages have the structure proposed in *Aspects*. The same attempt was made by Lakoff in his dissertation *Irregularity in Syntax* (1965), which Bernardéz (1999) points to as the most important precursor of generative semantics. In the dissertation, Lakoff claims that the postulation of irregularity as an unnatural phenomenon was wrong and that it is a normal part of language. He also proposes that the problem with syntactic irregularity within individual lexical items is related to the structure of the model, namely the deep structure. Lakoff suggests that lexical items are not pretransformationally inserted but are put in superficially. In turn, deep structure is therefore semantic in nature and also contains some kind of universal semantic units.[37] What began as a blurring of the boundary between syntax and semantics, developed into an axiom of generative semantics[38] that was later, in 1967, established by Lakoff and Ross' paper entitled *Is Deep Structure Necessary?*.

[36] Interpretative semantics became and opposition term to generative semantics. While generative semantics attempted to characterise underlying representation as a semantic one, interpretative semantics claimed that the basic structure is a syntactic one (Geeraerts, 2010 p. 109).
[37] The so-called lexical base hypothesis became inspirational also for Fodor's LoT. However, as (Bernárdez, 1999 p. 18) points out, it did not really correspond to Lakoff's original proposal.
[38] Harris (1993) points out that the term "generative" used to be highly valued at the time and began commingling with terms such as "creative" and "productive", which also motivated Lakoff's use of it, together with its technical sense of a meaning-generating device.

Harris describes the contribution of generative semantics as follows:

> If the *Aspects* model was beautiful, generative semantics was gorgeous. The focus of language scholars, as long as there have been language scholars, has always been to provide a link between sound and meaning. In the *Aspects* model, that link was deep structure. To the generative semanticists, deep structure no longer looked like a link. It looked like a barrier. [...] The link between sound and meaning becomes the entire grammar. (Harris, 1993 p. 133)

Although generative semantics is credited with bringing attention back to meaning, Attardo (in Chapman & Routledge, 2009 p. 79) points out that it was not a coherent programme and scholars moved on to other fields. Nevertheless, generative semantics is to be seen as a strong challenge to the dominant Chomskyan model, especially to its syntactic autonomy,[39] and, importantly for the purpose of this thesis, as a precursor to other major approaches, including cognitive linguistics.

Cognitive linguistics in general (uncapitalised) can be seen as an approach which considers language as a mental phenomenon, much like generative grammar or the research within the field of artificial intelligence. On the other hand, Cognitive Linguistics is one of its forms which originated in the late 1970s and early 1980s[40] from the work of George Lakoff, Ronald W. Langacker, and Len Talmy.[41] That is not to say that Cognitive Linguistics is a uniform doctrine, but rather a flexible framework:[42]

> Cognitive Linguistics is the study of language in its cognitive function, where cognitive refers to crucial role of intermediate informational structures in our encounters with the world. (Cuyckens & Geeraerts, 2007 p. 5)

Language, therefore, is seen as a means for organisation, processing, and conveying information, in other words, as a "repository of world knowledge" or "a structured collection of meaningful categories". Geeraerts and Cuyckens distinguished three crucial features of

[39] Gardner (1985 p. 212) points out that when Lakoff and his associates had shown that meaning affect syntax and rules became part of semantics, Chomsky had to narrow progressively the domain of syntax. Although "he does not like to concede this influence explicitly" (ibid. p. 213).
[40] The first conference of *International Cognitive Linguistics Association* (ICLA) was organised in 1989 in Germany. The journal *Cognitive Linguistics* (as the official journal of the ICLA) was founded in 1990 by Dirk Geeraerts.
[41] Geeraerts and Cuyckens (2007 p. 8) point out that Charles Fillmore should be considered on equal footing with them.
[42] Its various research studies are presented in Geeraerts & Cuyckens (2007).

this approach: the primacy of semantics, the encyclopaedic nature of linguistic meaning, and its perspectival nature (ibid.).[43]

3.3. Towards embodied experiential cognition

Although cognitive linguistics is not the only approach to emerge within the second cognitive shift, it is highlighted in this thesis mainly because it focuses exclusively on language and cognition. On the other hand, one of the characteristic features of this "programme" is its interdisciplinarity and its background in both cognitive science and philosophy, best represented by the work of George Lakoff and Mark Johnson. So far, the thesis has focused on the general dissatisfaction with the generative-grammar framework. However, as we shall now see, the emerging shift was not directed just against the Chomskyan formal model.

In the late 1970s and early 1980s, the new research in the field of cognitive development and cognition in general, together with increasing research of chimpanzees, for example, led to a number of proposals that challenged the dominating doctrine, which claimed that language is an autonomous formal and technical system that can be studied from an externalist "God's-Eye" perspective, i.e., outside the social and individual context.[44] Since these proposals are repeated in the works of prominent representatives of the second shift, they are discussed according to thematic units rather than specific authors. Although these prominent works come from cognitive-linguistic scholars, such as Langacker's *Foundation of Cognitive Grammar* (1987), Lakoff's *Women, Fire, and Dangerous Things* (1987)[45] or Lakoff's and Johnson's *Metaphors We Live By* (1980), other perspectives coming from cognitive science and philosophy are also considered, such as those of Elizabeth Bates' *The Emergence of Symbols* (1979)[46] on language acquisition, or Johnson' *The Body in*

[43] "The primacy of semantics in linguistic analysis follows in a straightforward fashion from the cognitive perspective itself: if the primary function of language is categorization, then meaning must be the primary linguistic phenomenon. The encyclopedic nature of linguistic meaning follows from the categorial function of language: if language is a system for the categorization of the world, there is no need to postulate a systemic or structural level of linguistic meaning that is different from the level where world knowledge is associated with linguistic forms. The perspectival nature of linguistic meaning implies that the world is not objectively reflected in the language: the categorization function of the language imposes a structure on the world rather than just mirroring objective reality." (Geeraerts & Cuyckens, 2007 p. 5)

[44] It is also worth noting that in the 1980s Umberto Eco writes *Theory of Semiotics* and *Semiotics and the Philosophy of Language*. Although he conducts his theory from the position of a semiotician, remarks pointing to similarities between cognitive science and semiotics begin to appear (more in chapter four).

[45] Both Langacker and Lakoff came from the generative semantics programme.

[46] The book is made with the collaboration with other scholars, however, most of the chapters considered in this thesis were written by Bates.

the Mind (1987) on more general questions of the nature of cognition. Nevertheless, although language serves as a major "tool" in how cognition is approached, it is mainly because it is the most evident one (and easily observed). A major difference from the TGG approach is the epistemological character of knowledge – while TGG states the knowledge *of* language, scholars of the second cognitive shift propose (and investigate) knowledge *through* language (Cuyckens & Geeraerts, 2007 p. 6). What they all have in common is that they do not consider language as an autonomous system in the mind, but rather as functioning within the general cognitive capacity. Moreover, they bring language back firstly into the social context, and secondly into the body of a speaking individual.

3.4. The myth of objectivism

The most obvious critique of the epistemological approach to date was formulated in the work of Lakoff and Johnson (see Lakoff & Johnson, 1980; Lakoff, 1987; Johnson, 1987). When they place metaphor at the centre of human understanding and meaning, it is to challenge "the objectivist tradition" within which metaphor is seen as a figurative and subjective element of language, thus irrelevant to linguistic enquiry *per se*. By objectivists they mean the philosophical tradition of the logical positivists, of Frege and of Husserl, and the linguistic "neorationalism" of Chomsky (Lakoff & Johnson, 2003 [1980] p. 196). For Lakoff and Johnson, Chomsky epitomises this epistemology by claiming that grammar is a matter of pure form, and is therefore independent from meaning and understanding.[47] In this view, linguistic expressions are objects with inherent properties, a building-block structure, and fixed relations between the objects:

> Assuming that the world is this way and that we have such a language, we can, using the syntax of this language, construct sentences that can correspond directly to any situation in the world. The meaning of the whole sentence will be its truth conditions, that is, the conditions under which the sentence can be fitted to some situation. The meaning of the whole sentence will depend entirely on the meanings of its parts and how they fit together. The meanings of the parts will specify what names can pick out what objects and what predicates can pick out what properties and relations. [...] Moreover, every sentence of the language must contain all of the necessary building blocks so that, together with

[47] Lakoff (1987 pp. 58, 181–182) claims that the very idea that language is a "formal system" (maintained by metaphor GRAMMAR IS A FORMAL SYSTEM) requires the assumption that language is independent of cognition. Daddesio (1995 pp. 96–98) makes a similar criticism of the approach that treats the mind as a formal system (a computer).

> the syntax, nothing more is needed to provide the truth conditions of the sentence. The "something more" that is ruled out is any kind of human understanding. (ibid. p. 204)

Objective meaning, then, depends on no one because it transcends the structures of bodily experience. Furthermore, if one maintains that the symbol can only get its meaning through conventional correspondence with entities in the world, then the symbol system is nothing but a representation of reality, in other words, a mirror of nature. Therefore, the mind attains real knowledge only when it can represent what is in the world (see Lakoff, 1987 p. 162–163; Johnson, 1987 p. x).[48] This is also why the imaginative aspects such as metaphor, metonymy, etc. are excluded:

> If these were to enter into our concepts which we use to represent knowledge, then we could not ever be sure of having accurate representation of knowledge, our conceptual system, which must be capable of correctly mirroring the world, must by definition be free of metaphor, metonymy, and other such aspects of human cognition. (Lakoff, 1987 p. 165)

Linguistics is far from the only field under the spell of objectivism. Lakoff (1987) emphasises the role of mathematics (and logic) in this paradigm, both of which have been used to justify an objectivist approach in cognitive science, linguistics or philosophy of language. He points out that it was primarily the formalist programme in which the separation of syntax and semantics was proposed, along with the mathematisation of logic (by Frege[49] or Russell), however, with the idea of an uninterpreted formal language being at odds with natural languages. Yet, due to the prestige of mathematics and the fact that it was taught in universities by objectivist philosophers, British and American philosophers adopted the objectivist equivalence of reason with mathematical logic – along with the idea that natural languages also exhibit a separation between syntax and semantics. Lakoff argues that this is an alien and empirically inadequate notion for human language and thought (see Lakoff, 1987 p. 219–227).[50]

[48] Cf. Richard Rorty, Philosophy and the Mirror of Nature (1979).
[49] Frege's impact is similarly emphasised in Johnson (1987 pp. xxx–xxxi), mainly his separation of the sense (*Sinn*) and reference (*Bedeutung*) of a sign from any ideas that are held to be subjective, and thus completely irrelevant to the meaning and reference (see Frege, 1892).
[50] However, Lakoff (1987 p. 228) points out that such a definition of grammar is not a consequence of mathematical logic, but rather an imposition of a metaphorical definition of grammar mentioned above.

Lakoff himself challenges objectivism through the theory of prototypes (see Rosch, 1978).[51] He claims that classical theory, which goes hand in hand with disembodied objectivism, assumes that categories are represented by sets, which in turn are defined by the properties their members share. Since symbol-to-object correspondence exists independently of the mind and the body, it follows that symbol-to-category correspondence also shares this quality:

> To accomplish this, categories must be seen as existing in the world independent of people and defined only by the characteristics of their members and not in terms of any characteristics of the human. The classical theory is just what is needed, since it defines categories only in terms of shared properties of the members and not in terms of the peculiarities of human understanding. (Lakoff, 1987 p. 180)

The contemporary prototype theory[52], on the other hand, states that categorisation is a matter of human experience, perception, motor skills, and culture, as well as metaphor, metonymy, and mental imagery (ibid. p. 339–351). Incidentally, this also applies to linguistic categories. Although generative grammar is based on the classical theory that asserts sets of sentences or rules, they too show the prototype effects (ibid. p. 180). Lakoff argues as follows:

> It is bizarre to assume that language ignores general cognitive apparatus, especially when it comes to something as basic as categorization. Considering that categorization enters fundamentally into every aspect of language, it would be very strange to assume that the mind in general used one kind of categorization and that language used an entirely different one. But strange as such an assumption is, it is a standard assumption behind mainstream contemporary linguistics. (ibid. p. 182)

Both Lakoff (1987) and Johnson (1987) also refer to Hilary Putnam (1975), along with Marvin Minsky (1975). Putnam's stereotype theory[53], while still largely objectivist, moves away from the assumption of objectivist cognition in that the concepts do not have to correspond to entities in the world (see Lakoff, 1987 p. 169; Johnson, 1987 p. xi-xiii).

[51] However, Lakoff (1987 p. 182) point out that although the results of Rosch (prototype theory, 1978) or Wittgenstein (family resemblances, 1953) were well-known, generative linguistics with its performance-competence distinction could claim any experimental result to be in the realm of mere performance and thus be ignored.
[52] Prototype theory claims that there is a graded degree of belonging to a conceptual category, i.e., there are some members that are more central than others.
[53] A stereotype for Putnam is an idealized mental representation of a normal case, which may not fully represent the real-world occurrence. It is similar to Minsky's frames and default values.

Moreover, Lakoff concedes that the Minsky-Putnam proposals may account for the same range of prototype effects as his propositional ICMs (described below):

> What was right about the Putnam-Minsky approaches was that they used cognitive models. Their problem was that their concept of a cognitive model was too restricted in that it was limited to propositional models. (Lakoff, 1987 p. 117)

It is important to note, however, that this critique of objectivism, which both authors also emphasise in their 1987 books, does not mean that they are advocating a subjectivist position. On the contrary, they contradict the latter's claim that human understanding is unconstrained in its character and suggest their own position, called "experiential realism"[54], which proposes the basic elements of understanding, i.e., interactional properties, experiential gestalts, and metaphorical concepts. As such, it declares that a meaning is always a meaning *for* a person, as well as explaining how significancy is constructed, and proposing that imagination is the primary resource of understanding and that natural languages and their conceptual structures are metaphorical in nature:

> Meaning, therefore, is never dis-embodied or objective and is always grounded in the acquisition and use of a conceptual system. Moreover, truth is always given relative to a conceptual system and the metaphors that structure it. Truth is therefore not absolute or objective but is based on understanding. Thus, sentences do not have inherent, objectively given meanings, and communication cannot be merely the transmission of such meanings. (Lakoff & Johnson, 2003 [1980] p. 198)

As Geeraerts (2010 p. 204) points out, *Methaphors We Live By* became an "eye-opener for a new generation of linguists" after the demise of generative semantics and it brought semantics back into research interest.

3.5. Dethronement of language within cognition

As mentioned above, the scholars of the second cognitive shift use language and linguistic evidence more as a tool using which it is possible to investigate human reason and understanding. Along with the Chomskyan nativist assertion of universal grammar, it was

[54] It is a reference to Putnam's "internal realism" by which he proposed critique of what he calls metaphysical realism (generalised version of what Lakoff and Johnson call objectivist semantics). In *Reason, Truth, and History* (Putnam, 1981) he criticised the view that language is separated from its interpretation which treats natural language (or language of thought) as being like formal language (see Lakoff, 1987 p. 255).

assumed that language is a human-unique faculty with which the human infant is born. One of the significant inputs that challenged the Chomskyan view of a system that is dissimilar to other aspects of cognition was Jean Piaget's theory of cognitive development,[55] which was translated into English in the 1960s. However, as Elizabeth Bates (1979 pp. 2–4) points out, within TGG, the model proposing emergence of language from a nonlinguistic development was not well accepted. On the other hand, she marks three important notions that helped to change the scientific atmosphere during the 1970s. First, there was an upswell of research arguing against the autonomous syntax approach to child language and proposing that the first clues in child language acquisition are nonlinguistic. Second, interest was also supported by research on language acquisition in nonhuman primates, which challenged the view of the uniqueness of human language. Thirdly, promising results were also generated in the field of neurolinguistics from the study of language pathology, showing, for example, that autistic and aphasic children cannot acquire speech but can acquire American Sign Language.

No longer considering language as a unique capacity of the mind does not mean that cognition or thinking are inseparable from language. On the contrary, Bates proposes an interdependence of different systems ("linguistic", "cognitive", "social"). Moreover, she suggests that these systems are not separated programmes but rather share the same structural principles. In her research, she focused on the emergence of symbols in healthy infants between 9 and 13 months by comparing linguistic and nonlinguistic developments. Based on the results, she proposes two groups of "behaviours" – the Gestural Complex (e.g., showing, communicative pointing etc.) and the Language Complex (comprehension and both referential and nonreferential production). Bates maintains that the former does not cause the latter, but that they both rely on some "underlying capacity for communication via conventional signals" (Bates, 1979 pp. 127–128). Her findings have also had implications for the phylogenetic character of language and its evolution. Although Bates does not completely deny the role of human genetic predisposition, she questions the discontinuity of nativist claims and, with support from then recent theories and discoveries, argues that

[55] Piaget's theory is based on the idea that children's intellectual capacity arises primarily from their interactions with objects in the environment and that they transform these experiences into cognitive models that help them deal more effectively with upcoming experiences. He distinguished four stages: the sensorimotor stage, the preoperational stage, the concrete-operational stage, and the stage of formal operations. The last stage is similar to adult thinking (see Piaget, 1954).

symbolic capacity emerged from cognitive-social capacities that were originally preadapted in the service of other functions, that is, through small and continuous changes in the genetic substrate (Bates, 1979 p. 25). Remarkably, in addition to Piaget's theory of development, Bates also refers to Wittgenstein's theory of language game[56], which was strongly rejected within the dominant Chomskyan model, and to Peirce's typology of signs in order to emphasise the role of iconicity and indexicality in the language (or symbol) acquisition.[57]

Emphasis on more general and nonlinguistic capacities (which nevertheless have a crucial influence on linguistic behaviour) is evident in the work of all the scholars who can be considered as part of the second shift. Ronald Langacker (1987) argues against a specific language module or faculty, primarily because there is no convincing evidence for this uniqueness and no valid reason to distinguish linguistic abilities from other cognitive processing:

> Even if the blueprints for language are wired genetically into the human organism, their elaboration into a fully specified linguistic system during language acquisition, and their implementation in everyday language use, are clearly dependent on experiential factors and inextricably bound up with psychological phenomena that are not specifically linguistic in character. (Langacker, 1987 p. 13)

His cognitive grammar therefore asserts a linguistic structure that is characterised in the context of a broader account of cognitive functioning. In his view, it is the speaker who puts together novel expressions, not the grammar (ibid. p. 65). Furthermore, Langacker proposes that this language creativity operates within the problem-solving activity.[58]

Lakoff and Johnson also take the position that language is embodied in (and based on) more abstract capacities such as imagination, categorisation, or conceptualisation. Johnson (1987), for example, explicitly emphasises the role of imagination and imaginative understanding and proposes two key imaginative structures: image schema and metaphorical projections. In line with Langacker and Johnson, Lakoff (1987) proposes the so-called idealised cognitive

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[56] Concept elaborated in *Philosophical Investigations* (Wittgenstein, 1953)
[57] For interpretation of Peirce in the context of development see also Donna E. West (2013; 2015; 2016).
[58] "Creating a novel expression is not necessarily different in fundamental character from problem-solving activity in general, and the speaker's knowledge of linguistic convention is but one of the many resources he brings to bear in finding a solution; others include memory, the capacity to plan an organize, the ability to compare two structures and judge their degree of similarity, and so forth." (Langacker, 1987 p. 65)

models (ICMs), i.e., structures in which knowledge is organised in the mental space. Furthermore, Lakoff (1987 p. 282) points out that in contrast to the objectivist relation between symbols and objects in the world, mental spaces are conceptual in nature, i.e., have no ontological status outside the mind. Most importantly, Lakoff and Johnson both propose that human cognition contains schemata that are of nonpropositional structure (cf. Fodor, 1975) and that they underlie propositional content. Therefore, meaning in language cannot be reduced to literal concepts and propositions, as emphasised within the objectivist stance (described above):

> [S]tructure of rationality is much richer than any set of abstract logical patterns completely independent of the patterns of our physical interactions in and with our environment. (Johnson, 1987 p. 5)

As Johnson (ibid. p. 12) puts it, what is also essential to the notion of meaning and reason is a schematic structure of experiences and figurative projections. And these structures, Lakoff and Johnson as well as Langacker agree, arise from the fact that we have bodies through which we interact with our environment.

3.6. Body in the mind

Both Johnson and Lakoff place meaning at the centre of their enquiry and propose that it automatically emerges from the embodiment of thought, reason and/or mind:

> We have bodies that are acted upon by "external" and "internal" forces such as gravity, light, heat, wind, bodily processes, and the obtrusion of other physical objects. Such interactions constitute our first encounters with forces, and they reveal patterned recurring relations between ourselves and our environment. Such patterns develop as meaning structures through which our world begins to exhibit a measure of coherence, regularity, and intelligibility. (Johnson, 1987 p. 13)

The term "body" is used as an umbrella term for the origins of imaginative structures of understanding to emphasise their nonpropositional character (i.e., they are not abstract subject-predicate structures specifying truth conditions or other conditions of satisfaction) and to highlight their link to experience. The term "experience" is also meant in the broad sense of interaction with the environment, including perceptual, motor-program, emotional, historical, social, and linguistic dimensions (ibid. p. xv-xvi). It is this preconceptual experience on which the conceptual structure of reason is inherently

built. (Lakoff, 1987 p. 267; Johnson, 1987 p. 104) This means that understanding is not merely a reflection on previous experiences. Rather, it is the means by which we attain them in the first place.

While they stress the nonpropositional, preconceptual or prelinguistic character of bodily experience, both Johnson (1987) and Lakoff (1987) deny that our bodily experience with the environment is chaotic and incomprehensible. Instead, it emerges in recurring patterns, so-called image schemata[59], which are few in number and not propositional, but they have an internal structure or basic logic (i.e., gestalt structure)[60] that allows them to generate entailments (e.g., through metaphor)[61] and constrain inferences (e.g., PATH schema, CONTAINER schema, kinesthetic schemata) (see Johnson, 1987 p. 22; Lakoff, 1987 p. xiv). As Lakoff (1987 p. 270) claims, the gestalt nature and intermediate status of the concepts is the reason why they cannot be considered as elementary atomic building blocks within a building-block approach. Moreover, they do not remain private to the person experiencing them, but become interpreted, codified, and shared cultural modes (Johnson, 1987 p. 14).

As mentioned above, both Johnson and Lakoff argue against the objectivist stance that views the mind as an independent, thus disembodied, phenomena. This also applies to the "mind-as-machine view", which, as mentioned in the previous chapter, also functions as a metaphor within cognitive science and retains the traditional mind-body distinction. Although Lakoff (1987 p. 348) does not deny the important insights that computational approaches bring to the study of mind, he argues that the necessity of the meaningfulness of symbols has been lost on many AI researchers simply because their models do not step out from objectivist account in that they do not include account of what makes the symbols meaningful for the entity whose thinking is being modelled.

[59] "Schemata", "embodied schemata", or "image schemata" are used interchangeably.
[60] "Typical schemata will have parts and relations. The parts might consist of a set of entities (such as people, props, events, states, sources, goals). The relations might include causal relations, temporal sequences, part-whole patterns, relative locations, agent-patient structures, or instrumental relations." (Johnson, 1987 p. 28)
[61] "Through metaphor, we make use of patterns that obtain in our physical experience to organize our more abstract understanding. Understanding via metaphorical projection from the concrete to the abstract makes use of physical experience in two ways. First, our bodily movements and interactions in various physical domains of experience are structured (as we saw with image schemata), and that structure can be projected by metaphor onto abstract domains. Second, metaphorical understanding is not merely a matter of arbitrary fanciful projection from anything to anything with no constraints. Concrete bodily experience not only constrains the 'input' to the metaphorical projections but also the nature of the projections themselves, that is, the kinds of mappings that can occur across domains." (Johnson, 1987 p. xv)

Within their experiential realism (and cognitive semantics in particular), both Lakoff and Johnson emphasise the notion of embodied understanding:

> We are never separated from our bodies and from forces and energies acting upon us to give rise to our understanding (as our "being-in-the-world"). The world is always with us, to a greater or lesser degree, to the extent that we have been able to function more or less successfully in our environment, and have found theories, schemes, and paradigms that make partial sense of our world. (Johnson, 1987 p. 205)

Although in their sense meaning goes beyond linguistic meaning, they treat linguistic meaning as a specific case of meaning in a broader sense (or as evidence). Moreover, it is Langacker's work in cognitive grammar (acknowledged by Johnson) that supports the interdependence of language and cognition, claiming that our general cognitive and experiential mechanisms and processing capacities can be specified to the language task.

Cognitive linguistics in general has opened up many topics within cognitive science that remain of keen interest to researchers today. Although cognitive semiotics, which I discuss in the following chapter, does not follow the second wave of cognitivism in the same way that cognitive linguists followed generative grammars, this continuity cannot be considered purely coincidental; not only because some cognitive semioticians started within the field of cognitive linguistics (such as Jordan Zlatev), but also because the same phenomenon remains of interest to them: namely, meaning. Moreover, much of the work yet to be discussed explicitly builds on the theoretical framework of the second wave, albeit largely in a negative sense.

4. From language to sign

4.1. Study of signs over study of ideas

The previous two chapters mapped the development of cognitivism in the second half of the 20th century, and have shown that anti-mentalism was gradually rejected, as cognitivism was formed by a gradual shift away from the formalist (Chomskyan) tradition and towards a paradigm that emphasises above all the relationship between mind, body, environment, and experience, on the basis of which individuals conceptualise their understanding of the world. This shift influenced social sciences as well as philosophy, but, as Daddesio (1995 p. 17) writes, "nothing similar has taken place within semiotics".

Daddesio emphasises that the reason lies primarily in the modern tradition of the discipline, which was strongly shaped by two semiotic scholars: Charles S. Peirce and Charles W. Morris. The general development of the antimentalist stance within the broad linguistic turn, and its consequences for philosophy and for psychology, which became predominantly behaviourist, was elaborated in the first chapter. The same influences that motivated turn-of-the-century scholars, including behaviourists, also apply to these two American semioticians. However, since semiotics was not part of the cognitivist trend that followed, it is necessary to follow Daddesio's example, return to the beginning of the century and explain what Daddesio considers to be the antimentalist tradition of semiotics, the continuation of which lies outside the general trend of social sciences, such as linguistics or cognitive science, which I have described in the previous chapters.

It is important to point out that it would be misleading to regard Charles S. Peirce as a pure antimentalist in the same way that other representatives of linguistic turn were. Daddesio points out that some of Peirce's positions are openly dismissive of cognition, while elsewhere he uses mentalistic terms that are compatible with a cognitivist approach (cf. CP 5.264-317).

Daddesio's interpretation of Peirce goes as follows:

> Despite the appearances that he championed an early version of cognitive semiotics, my reading of Peirce is that to the extent that he made use of mentalistic terminology, he did so primarily in order to make his notions understood to contemporaries familiar with that

> idiom. Peirce was faced with the problem of any thinker who seeks to set forth a radically new view of the world: the only vocabulary that could be used to articulate this new view was that of the old framework. (Daddesio, 1995 p. 30)

According to Daddesio, Peirce, like many of his contemporaries, opposed the Cartesian principles of introspection and intuition and aimed to replace the old, mentalistic framework with a semiotic one and make the mentalistic terms unnecessary. Papers in which he formulates this strategy[62] are also what leads Daddesio to label Peirce's view of mental units as reductive. Peirce writes as follows:

> If we seek the light of external facts, the only cases of thought which we can find are of thought in signs. Plainly, no other thought can be evidenced by external facts. But we have seen that only by external facts can thought be known at all. The only thought, then, which can possibly be cognized is thought in signs. But thought which cannot be cognized does not exist. All thought, therefore, must necessarily be in signs. (CP 5.251)

Refusing the direct access to thought, Peirce argues that the only evidence for knowledge of our thoughts comes from the observation of its effects, that is, through signs. Therefore, it is possible to substitute thoughts or ideas with signs and conceptualise the cognition in semiotic terms. Moreover, Daddesio argues that once Peirce formulates the traditional concerns about mind in these terms, they cease to be problematic:

> Instead of making room for cognition within the theory of signs, Peirce's move constitutes a displacement of the role mental states played within prior conceptions of the self and knowledge and their replacement by a semiotic conception. (Daddesio, 1995 p. 32)

Daddesio further supports his interpretation by referring to Peirce's notion of the pragmatic maxim (CP 5.394-402), identifying meaningfulness with observable effects of proposition, and its consequences for mentalism. By rejecting private ideas at the expense of visible effects, Peirce joins a trend that is characteristic of the entire linguistic turn, namely the replacement of private entities by public ones. The reductive attitude of Peirce's approach, according to Daddesio, lies primarily in the fact that Peirce claimed that the examination of mental entities will not provide us with anything that we have not already gained from the observation of behaviour, i.e., signs (Daddesio, 1995 p. 33). Therefore, Daddesio argues that

[62] *Questions concerning certain faculties claimed for man* (CP 5.264-317); *Some consequences of four incapacities* (CP 5.264-317); *How to make our ideas clear* (CP 5.388-410)

while Peirce on the one hand preserved all that was worth preserving from the mentalist tradition, on the other hand, he made the study of mental entities useless. However, it is noteworthy that Daddesio's interpretation is not the only possibility. On the contrary, as he himself also acknowledges, Peirce's theory is by some scholars perceived as a theory of cognitive semiotics (see Oehler, 1979; Eco, 1999; Paolucci, 2021). For the purpose of this thesis, it is not essential to resolve these disputes; Daddesio himself takes the position that Peirce's general theory of signs does not necessarily preclude any additional postulates that are needed to account for specific types of semiosis (Daddesio, 1995 p. 37).

The position of Charles W. Morris is much more eliminative, even though neither he can fully deny the existence of mental categories. His position stems mainly from two factors: the first is the prevailing doctrine of behaviourism, which Morris was also influenced by. And the second is the obtaining of scientific status for the field of semiotics. It is the distinction between science and nonscience which leads to the general position that since mentalistic terms are something that cannot be reliably checked by observation, they should not appear in any science. Moreover, as Morris (1971 p. 103) argues:

> the fact that the theory of signs has for thousands of years been couched in such terms without attaining a scientific status should raise strong doubts about their continued use as primitive terms for semiotic.

Daddesio (1995 p. 29) also points out that Morris's position is related to Peirce's pragmatic maxim, since Morris also argues that the mentalist approach reveals nothing new; nothing which had not been already gained from the behaviourist perspective. As Morris (1971 p. 128) suggests:

> it is more promising to start with an objective approach and then to correlate if possible results so obtained with the reports of self-observation concerning the presence of concepts.

The semiotic foundations made by Peirce and Morris therefore declare the reference to mental units to be, if not incorrect, then at least superfluous. Daddesio (1995 p. 35) argues that although contemporary semioticians are aware of the mentalistic leaning, they have jettisoned all reference to the mind in order to establish semiotics as an autonomous discipline.

He continues as follows:

> Given that modern semiotics came into existence at just that moment in our intellectual history when the mentalistic doctrines of Descartes and Locke were being decisively refuted, it is understandable that an antimentalistic sentiment would be deeply embedded within contemporary conceptions of the sign. However, this very fact raises the possibility that the rejection of mentalism in contemporary semiotics is an accident of its historical development rather than an essential characteristic of the discipline. (ibid. p. 25)

4.2. Emergence of cognitivism within semiotics

As was mentioned in the introduction, Daddesio's book is not intended to discuss the history of the cognitivist paradigm within semiotics, but rather to argue for the necessity of such a paradigm. At the time of the publication of his book it was not possible to speak of any cognitive semiotics, but this does not mean that cognitivism within semiotics did not appear before the 1990s. The one "who has taken the most decisive steps toward a cognitive approach to signs" (Daddesio, 1995 pp. 40–41) is said to be John Deely. Deely writes that:

> As such, cognition not only can be considered from a semiotic point of view, but must be so considered if we are to arrive at an adequate understanding of what is proper to it, insomuch as it is equivalent to a process of communication by signs, or semiosis (Deely, 1982 p. 94).

Deely elaborates on the character of the relationship between cognition and semiosis as having different forms at different levels of cognition, i.e., sensation, perception, and understanding (ibid. p. 94–105). Defining important entities involved in semiosis as linguistic expression (X), the object (O) and intraorganismic factor (C), Deely claims that C is crucial. To him, it is the intraorganismic factor, i.e., the organism's understanding of (X), that holds the key to the analysis of meaning. Moreover, he acknowledges that both cultural conventions that link X, O, and C, and the behaviour of the organism that is prompted by the decoding of X, have value for the semiotic enquiry (ibid. p. 133). Daddesio argues that this is an important point and many scholars tended to restrictively choose one or the other. However, he stresses that while community has its part in determining the meaning of signs, one must also look to cognitive capabilities of individuals to understand how they are able to participate within the community (Daddesio, 1995 p. 42).

Daddesio points out that one of the important influences on Deely was the work of Jacob von Uexküll, namely his notions of *Umwelt* and *Innenwelt* (Thure von Uexküll, 1987). When Deely argues that for a thing to become a sign it must be grasped within experience of animals (including a human subject) he makes two presuppositions. First, that there is some awareness on the side of the animal. Second, that there exists a web of relationships that link the world and the subject, creating "a world meaningful to animal" (Deely, 2009 p. 43). Using this web, the subject can structure the experience according to the (positive/negative/neutral) relationship with the objects in the environment. Moreover, these relationships are formed depending on the cognition, thus the cognitive capacity of the animal has a fundamental role in the conceptualisation of its world. Deely's objective world, which consists of the experience that the animal creates depending on its perceptual and cognitive mechanisms, is what Uexküll refers to by the term *Umwelt*. *Innenwelt*, on the other hand, is the internal representation of the subject, constructed from its interaction with the environment (ibid. p. 42–43). For Daddesio, both notions serve mainly for the purpose of advocation the contribution of cognition to semiosis:

> [...] I believe that if we accept the relevance of the notion of the *Umwelt* to the study of signs, we commit ourselves to examining the contributions of cognition to semiosis. [...] When I advocate the exploration of the contribution of cognition to semiosis, I am advocating the exploration of the *Innenwelt*. (Daddesio, 1995 p. 43)

It is important to note that it would be misleading and reductive to describe the development of cognitivism within semiotics solely on the basis of the work of scholars who explicitly consider themselves semioticians. Moreover, the semiotic framework is more than evident within cognitive science. Thomas Sebeok argues that "the currently fashionable tag cognitive science [...] seems to be, at best, a stylistic and methodological variant for semiotics" (Sebeok, 1991b p. 2) He points out that both are concerned with internal representation or abstract symbol structures. Especially in the previous chapter, this affinity was shown within work of Lakoff and Johnson (1980), Lakoff (1987), Johnson (1987) or Langacker (1987). Also Nöth (1994) elaborates on the relationship between semiotics and cognitive sciences, claiming that both were once envisioned as providing a unifying point of view to the sciences. He points to the claim that with the emergence of cognitive paradigm, the semiotic metalanguage, i.e., terms such as "representation", "image", "information, code", "computation", substitutes the physicalist one. Moreover, it is accompanied with

a shift from a logic of dyadic relations, which are basic in classical physics (e.g., cause-effect, stimulus-response), to triadic relations, which underlie processes of semiotics. The account of cognition based on the dissociation between the world and the mind is thus replaced by the triadic theory, which assigns the role of mediator to cognition (ibid. p. 9).

The presence of the semiotic framework within the cognitive sciences, including cognitive linguistics, is more than evident, especially if one recalls again the terminological and conceptual similarities of the representatives of the second cognitive shift with the triadic conception of semiotics, based on Peirce's definition of the sign and semiosis in general, but also with the claims raised by Deely (1982). It is noteworthy that the perception of Peirce was supported during the 1970s and 1980s, when *Peirce Edition Project* was created at Indiana University-Purdue University at Indianapolis by Max H. Fisch and Edward Moore, and a chronological edition of selected works of Peirce began to be published. I have pointed out that Bates (1987) based her theory of language development on Peirce's distinction between icon, index, and symbol. Emphasising the imaginative character of thought, both Lakoff and Johnson (1980, but also in separate works) also refer to this typology, namely the iconic semiosis. And all the representatives emphasise the crucial relation between mind, body, and environment.

Although semiotics as a discipline appears and develops partly independently, I consider the development of the cognitive paradigm in the relationship between language and mind – as defined, for example, within cognitive linguistics – to be a key precursor for establishing the cognitive dimension of the field. What is more, once cognition, thought, reason, and the role of language are described in more nuanced and semiotic terms, the need to move away from purely linguistic paradigms seems inevitable. In other words, once we accept language as only one manifestation of semiosis and cognition as a mediator of signs of different natures, cognitive semiotics emerges as a necessary approach to deepening our knowledge into the nature of these phenomena.

Despite Göran Sonesson's assertion that cognitive semiotics "has been invented many times over during the last few decades" (Sonesson, 2012 p. 208), the field of cognitive semiotics as such can only be addressed at the turn of the century. However, the 1990s are crucial for its establishment, and Daddesio's work is not the only one that can be seen as a precursor to this development (Daddesio himself already formulates his own cognitive semiotic theory

of symbols). Yet, even the authors of many of these works cannot be described as semioticians. However, as with Lakoff and Johnson, their treatment of semiotic terms and concepts clearly indicates that they are cognitive-semiotic works. Since it is not within the scope of this thesis to cover all of these works, I will now mention the most important ones, which both support the theses of cognitive semiotics and have directly contributed to (or inspired) the formation of this field.

In a lineage that, following the example of Lakoff, Johnson, and other representatives of the second cognitive shift, emphasises the embodiment of cognition, and thus the interconnectedness of mind, body, and environment from which our experience of the world is shaped, one might include works such as *The Embodied Mind* (Varela & Thompson & Rosch, 1991). This book is particularly noteworthy for its explicit grounding in the phenomenology of Merleau-Ponty, which turns out to be one of the fundamental aspects of cognitive semiotics, especially that of Lund. Similar emphasis on embodied and environmentally embedded agents (although maintained from a different perspective) is held by Andy Clark in *Being There: Putting Brain, Body, and World Together Again* (1998).

Another key input for cognitive semiotics is conducted within semiotics, specifically the so-called biosemiotics. The work that belongs to this field is particularly important because it points to the necessary incompleteness of a semiotic model that is based solely on language. Thomas A. Sebeok elaborates his critique towards such an approach as follows:

> In my view, what vitiates this design is that it is not catholic enough by far; in particular, it fails to take into account the several fundamental divisions of biosemiotics or biocommunication […], such as endosemiotics […], zoosemiotics […], phytosemiotics […], and so forth, in none of which does language-an exclusively genus-specific propensity of *Homo* play any role whatsoever. […] If semiotics is indeed to remain "the science of communicative sign systems," its immense responsibility for synthesizing linguistics with "research on animal behavior, particularly signaling systems, and much more" […] is forfeited. (Sebeok, 1991a pp. 64–65)

This is particularly relevant for phylogenetic research of human language. Regarding the question of the evolution of language (or of communication in general), the Chomskyan doctrine is based on the belief that language is a uniquely human faculty that distinguishes it from the rest of the animal kingdom, and what is more, that man is born with this faculty.

Chomsky began to address this question intensively in the 1990s in particular.[63] But the semioticians have criticised his approach, based partly on Darwinian preadaptation and partly on a sudden change in evolution that has made our communication system so different in its complexity from other forms of animal communication. Biosemioticians such as Sebeok (1991a), for example, emphasise the role of nonverbal sign systems that preceded and began to cooperate with verbal ones:

> This reliance on two independent but subtly intertwined semiotic modes sometimes dubbed zoosemiotic and anthroposemiotic is what is distinctively human, rather than the mere language propensity characteristic of our species. (Sebeok, 1991a p. 65)

A different, but no less remarkable attempt is formulated in the work of the biosemiotician and neuro-anthropologist Terrence W. Deacon (1997). Deacon criticises the theorists of language origin (including Chomsky) who see the animal nonability to use language as a matter of complexity and claim that there was some prior change in the brain which allowed our ancestors to overcome this impediment, such as increase of intelligence, streamlining of auditory and oral abilities, an evolution of built-in grammar etc. He argues that they created a "hopeful monster" theory, i.e., one that explains better-equipped organism (language faculty with the universal grammar) in terms of some sudden freak mutation. Deacon explains the appeal of such a theory as follows:

> An accidental language organ requires no adaptive explanation for the structure of language. If this hypothetical organ was plugged into the brain in a single accident of prehistory, rather than evolving bit by bit with respect to its functional consequences, then no functional explanations would be necessary. If it was just an accident, any utility would be entirely accidental as well, discovered after the fact. (Deacon, 1997 p. 37)

However, such account serves only to eliminate many troublesome questions, and thus fails to discover a satisfactory explanation (ibid.). Deacon further elaborates on this, claiming that the crucial step does not lie in greater intelligence, facile articulatory abilities, or grammatical predisposition of children, but rather in the emergence of symbolic capacities, because language is not merely a mode of communication, but also of expressing thought, i.e., symbolic representation. "The everyday miracle of word meaning and reference" is for

[63] For general framework of Chomsky account see Chomsky, et al. (2001); Chomsky, et al. (2002a); Chomsky, et al. (2002b).

him the only crucial difference between nonlanguage and language communication (ibid. p. 43). Deacon uses the term "symbolic reference" to describe the human mode of communication – how words refer to things – and the term "nonsymbolic reference" for all nonhuman communication (such as indexical signals). In his view, language is its own prime mover, hence the evolution of the brain was a response to it and progressively made the symbolic threshold easier to overcome, which opened the door for evolution of language complexity. As mentioned before, his point of view stems from a different perspective, but similar claims are part of the general trend in which language ceases to dominate to questions of ontogeny and phylogeny.

Finally, works that are explicitly formulated as cognitive-semiotic should be mentioned. The first one is the already repeatedly referenced Daddesio's book. Until now, the referenced passages have been mainly about the historical development of the cognitive paradigm, but Daddesio formulates his own cognitive-semiotic theory of symbols, which in many ways coincides with the works already mentioned (e.g., Sebeok, 1991a). His central claim is that concepts which mediate symbols are derived from sensorimotor schemas by gaining a functional autonomy, that is, by freeing up from their tight link to perception, action, and emotions (Daddesio, 1995 pp. 145–178). I elaborate more on this topic in the next part.

The last thinker I will mention, not only because he is relevant to the topics under discussion, but especially because his work directly contributed to the establishment of one particular branch of cognitive semiotics, is Umberto Eco. It is noteworthy that in his early semiotic writings (Eco, 1976), Eco falls more into advocating a position of pure semiotics, formulated as independent of mediational processes and concerned only with the internal structure of the sign. However, as Daddesio points out, despite Eco's intention to construct an "abstract theory of the pure competence of an ideal sign-producer" (Eco, 1976 p. 28), the notion of socially recognized correlation, i.e., cultural code, is as much of an extrasemiotic entity as mental categories are (Daddesio, 1995 pp. 21–24).[64] Moreover, Eco (1999) himself admits that he followed:

[64] This is a crucial theoretical move for Daddesio because Eco suggests that there is something that is not part of the internal structure of the sign that grant each sign its unique nature and its meaning. Although Eco's cultural codes are more readily available to observation than are mental processes, Daddesio argues that they must be inferred from behaviour in essentially the same fashion as mental processes (Daddesio, 1995 pp. 24–25).

> the development of semiosis as a sequence of interpretants—interpretants being a collective, public, observable product laid down in the course of cultural processes, even though one does not presume the existence of a mind that admits of, uses, or develops them. This led to what I have written on the problem of signification, the text and intertextuality, narrativity, and the elaboration and limits of interpretation (ibid. p. 3).

However, he continues that "it is precisely the problem of the limits of interpretation that set me to wondering whether those limits are only cultural and textual or something that lies concealed at greater depths" (ibid. p. 3–4).

Claudio Paolucci, student of Umberto Eco and contemporary scholar of cognitive semiotics in Bologna, emphasises that in *Kant and Platypus* (Italian 1997, English 1999), Eco attempted to bring together two important semiotic traditions, one based on Peirce's idea of sign and the second based on the notion of the semiotic system, which has been a crucial concept in both linguistics and the enactivist tradition of cognitive science, on which (not only) Paolucci's cognitive semiotics is based. Moreover, Paolucci argues that Eco's notion of semiotics as a logic of culture (thus considering, for example, zoosemiotics as the lower limit of semiotics) needed to be reassessed in favour of his other notion: of semiotics as a theory of lie (both in Eco, 1975). Paolucci claims that "if there is a system capable of lying, then it is a semiotic system" (2021 p. 3), and this does not necessarily mean that such a system is cultural or conventional (e.g., the fireflies imitating mating signals). For Paolucci, the theory of lie is the key programme of cognitive semiotics, which aims to abandon the misleading distinction between culture and nature (ibid. p. 1–5).

In *Kant and the Platypus*, Eco characterises his research as cognitive semantics, blending semantics and pragmatics in order to develop a notion of "contractual realism" that accounts for cultural view of semiosis, together with our cognitive experiential schemata (ibid. p. 5). Based on his reinterpretation of Peirce (see Švantner, 2018) as well as Kant, he builds a model of the so-called Cognitive Type, i.e., a schema of perceptual processes that allow for the mediation between the concept and the manifold of the intuition, and thus the identification of an object (Eco, 1999 p. 130). The identification is based on a sum of characteristic (multimodal) features that are then intersubjectively (thus publicly) clarified as the Nuclear Content. Features that provide a broader range of knowledge defines the Molar Content (see Eco, 1999 p. 123–223). This Cognitive Type is strictly dependent on disposition, as well as experience and knowledge of the individuals, which means it

cannot be some entity common to all of them. As this shared competence is constantly being negotiated (through the NC), Cognitive Type is more of a procedure (ibid. p. 179). This negotiation through NC is also what makes the individual CT a public matter, since Nuclear Content provides instruction on how to create CT, and thus the CT is subjected to public/social control (ibid. p. 221).

If Chomsky's formalist approach neglected meaning and treated language not only as a communicative system (based mainly on syntax) but also, and above all, as a kind of autonomous faculty of the mind, and if the second wave of cognitivism treated meaning as the centre of cognition, the nature of which language merely reflects, then the 1990s represent multiple expansions of the thematic framework in this respect. These expansions were dominated by continued embodiment, enactivism, and a general emphasis on the relationship between the human being, human cognitive faculties, and the environment in which one finds themselves; an environment that is meaningful and meaning-making for the individual. On the other hand, these theories in their multiplicity did not form a unified framework, but rather frameworks with different terminologies, methodologies, and other nuances. In a way, it is almost natural that an attempt to unify them had to follow in order to create a cohesive and coherent account of meaning. This is also how cognitive semiotics can be viewed.

4.3. Cognitive semiotics on an international scale

All the works and scholars mentioned above can be consider examples of cognitive semiotics, although they never use (perhaps with the exception of Daddesio) this label.[65] For this reason, it would be misleading to regard cognitive semiotics as a brand-new discipline. The underlying attempt of this field is rather to bridge the gaps that have been created by the separation of different sciences that deal with the same overarching theme: meaning and meaning-making. As Jordan Zlatev claims:

> The fact that similar ideas—and even the term "cognitive semiotics" itself—have emerged in different places over the past decades is hardly a coincidence. At some risk

[65] I will use the label "cognitive semiotics" (uncapitalised) to talk about the general framework, and the label "Cognitive Semiotics" (CogSem) to talk about its particular form.

> of exaggeration, CogSem can be seen as called for by historical needs [...] (Zlatev, 2015 p. 1063).

In 1995, at the same time when Daddesio made an explicit attempt to connect cognitive approach with semiotics, Per Aage Brandt founded *The Centre for Semiotics* at Aarhus University, and shortly after a MA programme in Cognitive Semiotics. After that, at the beginning of the millennium, Brandt moved to Caste Western Reserve University, where he established, together with Todd Oakley, *The Centre for Cognition and Culture*. And most notably, they were instrumental in founding the journal *Cognitive Semiotics*, which began publication in 2007 (in new form since 2014).[66] In 2006, *The Swedish Association for Language and Cognition* was formed. In 2007, *Centre for Language, Cognition, and Mentality* was established by another Danish interdisciplinary group at the Copenhagen Business School, directed by Per Durst-Andersen. Two years later, in 2009 a 6-year program *The Centre for Cognitive Semiotics* started at Lund University, with research director Göran Sonesson. And last but surely not least, *The International Association for Cognitive Semiotics* was established in 2013, confirming the official status of the discipline. However, new institutions are still emerging, for example, Claudio Paolucci founded a Cognitive Semiotics unit within *The Research Centre for Knowledge and Cognition* in 2019 and together with Shaun Gallagher, Daniel D. Hutto and others, they established *The International Centre for Enactivism and Cognitive Semiotics*.

It is important to emphasise that despite all the similarities, the different "schools" differ in their methodology, epistemological background and the topics discussed. On the other hand, it would be wrong to strictly separate these schools from each other as competing perspectives on identical topics. Although they do not overlap, they are not to be seen as contradictory or competitive, since one of the general pillars of this discipline is to promote international as well as interdisciplinary dialogue and to answer questions that cannot be satisfactorily explained by the narrow view of individual disciplines. In general, it can be said that the possible nuances arise from the fact that each of the cognitive semiotic schools has been formulated on the basis of the tradition that prevailed in the respective place (i.e., Bologna, Aarhus, Lund, etc.).

[66] The editor-in-chief is Peer F. Bundgaard.

For example, scholars in Bologna such as Patrizia Violi[67] or Claudio Paolucci base their work mainly on Umberto Eco, hence entering the field mainly from semiotics. Aarhus school, represented by Kristian Tylén, Line Brandt and others, on the other hand, enter cognitive semiotics from cognitive science[68] as well as Hjelmslev's structural linguistics and Greimas' structural semantics. In Lund, it emerged as a cooperation between cognitive linguistics (e.g., Jordan Zlatev) and semiotics (e.g., Göran Sonesson), with cognitive science being added later (e.g., Tomas Persson).

One important note, which is shared by all cognitive semioticians, is that cognitive semiotics is not a special kind of semiotics, "as it involves linguistics and cognitive science no less than semiotics" (Zlatev, 2015 p. 1043; also in Paolucci, 2021). Zlatev (2015 p. 1044), for example, points out that despite the overlap between cognitive semiotics and cognitive science, cognitive semiotics is more pluralist in its ontological and methodological commitments, and despite the influence of cognitive linguistics (or cognitive semantics), it goes well beyond purely linguistic concerns. The exact definition of the discipline differs depending on the particular school. Brandt puts it as follows:

> If semiotics studies meaning, and cognitive science studies the mind, then cognitive semiotics is the study of mind and meaning — the way meaning exists and works in human minds (and ideally, in animal minds in general). (Brandt, 2011 p. 49)

Claudio Paolucci, on the other hand, characterises cognitive semiotics thus:

> If the word "cognitive" refers to the question of "how we come to know the world", and if only through signs, meanings, texts and languages are we able to "give account of that which is" or to "construct that which is not", then the object of cognitive semiotics is the way in which semiotic systems represent the background of our perception of the world and define the conditions under which cognition and knowledge are possible. (Paolucci, 2021 p. v)

Paolucci (2021 p. vi) also argues that in order to define what cognitive semiotics should be, it is necessary to suggest a strong theoretical proposal, only then can cognitive semiotics take a stand in the current debate and give researchers a reference point. Such an attempt has

[67] Patrizia Violi and Umberto Eco created *The Centre for Semiotic and Cognitive Studies* at the University of San Marino in 1988.
[68] Including linguistics, semantics, poetics (Brandt, 2020 p. 1).

been made by all three mentioned "schools" through publications that offer cognitive semiotic framework, including philosophical grounding, main concepts, and contribution in more particular fields (see Paolucci, 2021; Brandt, 2020; Zlatev, et al., 2016) To fully develop such a framework, I consider it appropriate to focus on only one of these schools, so as to avoid possible vagueness in defining terms and characterising method or specific topics. I have chosen the Lund "school" for my purpose, firstly because it is the most appropriate when building on the topics already discussed in this thesis, and secondly because it has a relatively comprehensive framework. Admittedly, also because I have personally attended a seminar at Lund University. However, I emphasise again that it would be inappropriate and contrary to the purpose of cognitive semiotics to view the different schools in isolation, given that bringing together researchers from different research centres, as well as disciplines, is its epistemological imperative.

4.4. Cognitive Semiotics in Lund

Cognitive Semiotics (CogSem) in Lund emerged from joint projects between years 2001 and 2010 together with primatologists, discourse psychologists, or cognitive scientists (Kadavá & Zlatev, 2020). As mentioned above, *The Centre for Cognitive Semiotics* at Lund University was founded in 2009. Nowadays, there is also an MA as well as a PhD programme.

I have already mentioned the strong attempt to bridge gaps, and this can be seen in each of constitutive features of CogSem. First, the discipline is built upon a belief that researchers need to work in a comparative way to properly understand the phenomena under study. Therefore, CogSem both integrates already existing fields and transcend them; primarily (cognitive) linguistics, cognitive science, and semiotics, but also psychology, anthropology, or philosophy. This is rather a natural result of previous cooperation and development of respective fields and research of scholars who were concerned with meaning from different perspectives, such as cognitive semantics, gestures, semiotic development, biocultural evolution, or embodied mind, even though they did not consider themselves cognitive semioticians. "After all, we are all participants in ongoing processes of dynamic transformations of society, technology, and attitudes towards knowledge." (Zlatev, 2015 p. 1062)

Zlatev (ibid.) also points out that despite the similarities with emergence of cognitive science in 1960s, this synthesis is made of theories that are rather antagonistic to the ones that contributed to the establishment of cognitive sciences (e.g., cognitive linguistics versus generative linguistics). On the other hand, he admits that ("with some good will") cognitive semiotics could be seen as the fourth phase of cognitive science,[69] which is also in accordance with the development described in this thesis. For the interdisciplinary approach of CogSem, it is, however, better to use term "transdisciplinary", which indicates a higher degree of cooperation in order to provide a coherent world-view, uniting science and humanities.

This also relates to another methodological feature, called conceptual-empirical loop. Such methodological construct serves to create a feedback cycle between conceptual issues and empirical investigation. On the one hand, CogSem attempts to analyse concepts and explicate their features, structure, or typology, and on the other hand, such phenomena need to be studied scientifically, using experimental methods whose results are then to be integrated to the conceptual side, in order to reinvigorate/redefine the studied concept.[70] The same is true in reverse; empirical research often needs to include conceptual what- or how- questions (ibid.).

Bridging the gap between the conceptual and the empirical is necessarily accompanied with blurring the distinction between the objective and the (inter)subjective method, or rather, integrating them into a whole where these methods are combined. This is ensured by the methodological triangulation of first-, second- and third-person perspective. First-person perspective stands for the conceptual analysis, phenomenological methods and systematic intuition of the analyst or the participant; third-person perspective represents the detached, often quantifiable observation and experimentation; and second-person perspective unites them and stresses the communication between the subjects involved (Zlatev, et al., 2016 pp. 3–4). Zlatev (2015 p. 1059) argues that by methodological triangulation, CogSem aims to acknowledge legitimacy of all methods within their respective fields as well as the epistemological priority of subjectivity and intersubjectivity in the study of meaning. Consequently, it can contribute to overcoming the gap between

[69] The previous three are cognitivism, connectionism, and enactivism, as defined by Varela, et al. (1991).
[70] Cf. circularity of research in Brandt (2020 pp. 9–10).

science and the humanities, which had emerged from the classical tradition of humanities being dismissive towards distorting objectivist methods in the study of the cultural world, as well as from empirical dogmatism of natural sciences.

This recognition of first- and second-person perspectives as valid research methods relates to, and stems from, the strong roots of Cognitive Semiotics in phenomenology. Varela et al. (2017 [1991] p. xiii), while building their account of embodied mind upon Merleau-Ponty's notions of life-world (*Lebenswelt*) of human experience, point out that phenomenology remains a relatively uninfluential philosophical school despite its many heirs and continuous activity, especially in North America. With the development in cognitive technology, which is essential for the study of the mind as well as emergence of further interdisciplinarity, this is no longer true in the contemporary science, and Varela's contribution to such situation cannot be neglected. Among those who have begun to integrate the phenomenological paradigm into the enquiry of the mind, and who have reappraised the work of Husserl, we can mention Dan Zahavi (2003), Evan Thompson (2007), Shaun Gallagher (2005), or the collective work of Zahavi and Gallagher (2008).

Zlatev describes the phenomenological approach as follows:

> [P]henomenology aims to place science in perspective: objectivity is possible, but only on the basis of "the observations and experiences of individuals" and "a community of experiencing subjects" [...] Everything that we know is given to us through experience, and the best we can do is to make the investigation of this experience and its intentional objects as systematic as possible. (Zlatev, 2016 p. 567)

One might suggest that CogSem shares the phenomenological grounding in experience with what Lakoff and Johnson called experiential realism (Lakoff & Johnson, 1980; Lakoff, 1987; Johnson, 1987). While experience is an evident part of their framework, Johnson, for example, points out that he does not intend to align himself with any phenomenological programme, although some of his claims might seem so (Johnson, 1987 p. xxxvii). Moreover, Zlatev (2009a pp. 10–15) argues that the similarities are rather superficial, and their experientialism is incoherent with phenomenology, since it lacks socio-cultural perspective and concepts which are central for phenomenology, such as normativity, representation, and intentionality. While Zlatev claims that there are other, less prototypical representatives of CL such as Esa Itkonen (2003) or Zlatev himself, since his work overlaps

with phenomenology, he (2009a p. 15) points out that the gap between the mainstream CogLing (e.g., Lakoff and Johnson) and phenomenology has been still[71] widening. This is due to its bio-physical attitude and subjective account of linguistic meaning, which is regarded as a private, mental phenomenon residing in conceptualisation, which is a bias, as Zlatev (ibid. p. 20) argues, inherited from the Chomskyan tradition. However, Zlatev also suggests that this problem can be solved precisely through a phenomenological reconstruction of the basic concepts (see below).[72]

As for cognitive semiotics in general, phenomenology is to some extent considered a part of it, but Lund CogSem highlights it the most, which is evident in all the methodological aspects mentioned so far. For one thing, it is a kind of binder between all the seemingly contradictory poles, such as humanities–science, or empirical–conceptual, subjective–objective. Zlatev (2015 p. 1060) points out that the same challenge that led Husserl to develop phenomenology as a possible resolution to the straddle between extremes of positivism and relativism, as described in *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy* (Husserl, 1936), stands also behind cognitive semiotics. The phenomenological aspect is also present in the methodological triangulation, sometimes referred to as pheno-methodological triangulation within the notion of perspectivity. Three perspectives serve not only as methodological means, but also as a reminder that we live in a life-world that is co-constituted through our perceptions and actions, and therefore no knowledge is independent of a subject.

Such a key role of phenomenology within CogSem can be attributed in particular to Göran Sonesson, who began to crossbreed phenomenology and semiotics already in his earlier work (see Sonesson, 1989). He describes the risk of cognitive semiotics as follows:

> If we are going to bring together so many different strands, the task of clarifying our concepts, and the corresponding terms, becomes even more urgent than is ordinarily the case, at least because we stand an even greater risk of getting into theoretical muddles which may even result in empirical confusions. (Sonesson, 2012 p. 209)

[71] Written in 2009.
[72] Although Zlatev now fully acknowledges the importance of phenomenology, as he points out, in the 1980s and 1990s he considered Husserl a "hopeless idealist" (Kadavá & Zlatev, 2020).

The phenomenological method can offer a useful starting point in this respect, because, as Sonesson argues, it brings together theories and results of semiotics and cognitive science. Interestingly, as Sonesson (ibid.) points out, it was Charles S. Peirce who argued that to make ideas clear, one should use phenomenology (later renamed to "phaneroscopy"), i.e., study "the kinds of elements universally present in the phenomenon, meaning by the phenomenon whatever is present at any time to the mind in any way" (Peirce, 1998 p. 259). As Sonesson (2012 p. 209) notes, this is also what Edmund Husserl called phenomenology, although the Peircean version is only one of many variants of Husserlian phenomenology. On the other hand, in terms of key influences, it is much more the Husserlian tradition, continued by Merleau-Ponty, from which Lund CogSem draws. That can be illustrated, for example, on Sonesson's re-conception of sign, or iconicity in particular. It makes use of Peirce typology of icon, index and symbol, with special emphasise of semiotic ground, however, it is grounded in the work of Edmund Husserl, as developed by, for example, Aron Gurwitsch, Alfred Schütz, and Maurice Marleau-Ponty, and also in the work of "unavowed phenomenologist" Jean Piaget (see Sonesson, 1989; 2009; 2010).

The last feature is that of the dynamism of meaning. CogSem defines meaning not as a structure or a static object – since these terms are insufficient regarding the relational, subject-relative, and interpretive character of semiosis – but rather as a dynamic process. [73] Such process can be regarded both in different forms, and on various time scales. In the first "vertical" sense, CogSem distinguishes meaning on a level from perception to language, or other forms of cultural representation (e.g., music, film). In the second "horizontal" sense, the time scale goes from microseconds (moment-to-moment experience of meaning such as speech) to millennia (phylogenesis) (Zlatev, 2015 p. 1061). This level-based approach is evident in many topics discussed within the CogSem framework.

One particularly relevant topic is The Semiotic Hierarchy.[74] This hierarchy is based on meaning defined as a value-based relationship between the subject and the world, identical with the phenomenological notion of intentionality as "the openness to the world through which both entities in the world and the subject become co-constituted" (Zlatev, 2018 p. 3).[75]

[73] The dynamic character of meaning is formulated also within concepts such as sense making (Thompson, 2007), meaning construction (Oakley, 2009), or languaging (Maturana, 1988). Zlatev (2015 p. 1061) also points out that CfS scholars used the term "dynamic semiotics" prior to adopting "cognitive semiotics".
[74] Originally formulated in Zlatev (2009b), then updated in Zlatev (2018).
[75] Antecedents of this notion can be seen in *Umwelt* (Uexküll, 1987), or *autopoiesis* (Maturana & Varela, 1980).

Moreover, intentionality presupposes a kind of normativity that provides the subject with standards by which certain situations are evaluated for risk and opportunity, from habits to social conventions or the normative structure *per se*, i.e., language (ibid. p. 4). However, the interrelatedness of the different levels is what is important. Zlatev (ibid. p. 5) argues that levels in semiotic hierarchy cannot be regarded as ontologically divided, since we live in a single human life-world. Therefore, the relationship between levels must be conceived as dynamic, bidirectional relationship with lower level providing the ground for the higher, and at the same time being sublimated by it, as it is described by Merleau-Ponty's term *Fundierung*.[76] Besides that, there is another parallel dialectic relation, running in each level: that of spontaneity and sedimentation, which exists between stable normative structure and more dynamic process, and where the former arises from the latter and constrains it without determination (ibid. p. 6). The sedimentation is particularly crucial, because the norms emerge through sedimented structures of countless acts of meaning making, moreover, the norms are precondition for the transition across the levels from "minimal experiential self" to "an intersubjective and ethical human being" (ibid. p. 15).[77] The levels of meaning are life, subjectivity, intersubjectivity, sign function, and language; each of them having its own form of intentionality and normativity as well as characteristic acts of meaning making. Figure 1 describes The Semiotic Hierarchy with all these crucial features.

Meaning level	Intentionality	Normative structure	Meaning making act
LANGUAGE	Symbolic	Symbols, syntax	Symbolic expression, linguistic expression
SIGN FUNCTION	Signitive	Signs	Sign use
INTERSUBJECTIVITY	Shared	Empathy, conventions, communicative intent	Bodily communication, imitation
SUBJECTIVITY	Perceptual, Inner time consciousness	Emotions, the lived body	Feelings, actions perceptions
LIFE	Operative and driven	Body schema, habits, affects	Movements, sensing

Fundierung

Spontaneity — **Sedimentation**

Figure 1: The Phenomenological Semiotic Hierarchy (based on Zlatev, 2018)

[76] In *Phenomenology of Perception* (1962 p. 458)

[77] Sedimentation can be understood as the converse of experiential grounding (Lakoff & Johnson, 1980): "X grounds Y if Y is sedimented upon X. What phenomenology helps with is to see both the continuity and discontinuity between X and Y. The major difference is that grounding structures are in general perceptual and analogue while the sedimented upon are signitive and categorical." (Zlatev, 2016 p. 566)

Such a model not only captures the dynamic character of meaning but it includes its various forms, overcoming possible reductionism that can emerge from privileging one of its dimensions, i.e., biological, mental, social, or linguistic. Within this thesis I have been following meaning, from a neglected phenomenon to the central part of linguistics (where language was considered the most useful tool for observation of meaning-making). In this respect, CogSem, by stressing phenomenological pluralism, goes beyond linguistic semantics in general, regarding meaning as a value-based relationship between a subject and the world of experience; a relationship that is bidirectional in the Merleau-Ponty's sense that subject is not only the one who creates such a world but is also being co-constituted in this process.[78]

Moreover, it can be said that The Phenomenological Semiotic Hierarchy represents a theoretical construct whose features are characteristic for many (if not all) CogSem models. Similar level-based and dynamic approach is evident, for example, in the reconceptualization of metaphor analysis. While acknowledging the conceptual metaphor theory of Lakoff and Johnson (1980), Zlatev, et al. (2009 p. 6) admit that the framework must go beyond the cross-domain mapping and focus more on factors such as language use and culture. The Motivation & Sedimentation Model (see Devylder & Zlatev 2020) represents such an account, defining metaphors as iconic signs (rather than mappings) in which the resemblance is between target content and source content. Moreover, the model postulates three levels, i.e., situated, sedimented, and embodied, which stand for different grounding of metaphoric expression: dynamic emergence in conversation, conventional structures, and pan-human structures and processes of embodied (inter)subjectivity (ibid. p. 274). The dynamicity in this model is also represented by interrelatedness of the levels: while there is a downward-driven sedimentation (from spontaneous metaphor to conventional), the upward relation motivates higher levels (embodied experience motivates situated use).

[78] "The world is inseparable from the subject, but from a subject which is nothing but a project of the world, and the subject is inseparable from the world, but from a world which the subject itself projects. The subject is a being-in-the-world [*être au monde*]." (Merleau-Ponty, 1962 pp. 499–500)

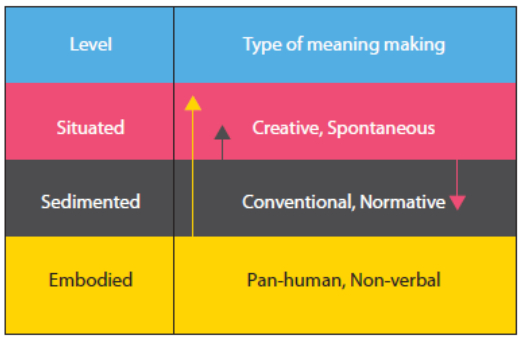

Figure 2: The Motivation & Sedimentation Model (from Devylder & Zlatev, 2020 p. 273)

Sedimentation and motivation are also crucial for resolving the cognitive-linguistic dilemma about the nature of meaning, in other words, whether this phenomenon is an individual, bodily grounded experience, or a social experience grounded in language use. As Zlatev (2016 pp. 563–564) points out, the linguistic experience does not necessarily always have to be social, and correspondingly, the prelinguistic experience is to a considerable extent intersubjective, rather than private. Nevertheless, he emphasises that individual and social experience are not two different ontological worlds, and that there is a degree of continuity between perception, prelinguistic consciousness, and language: while a linguistic expression is sedimented upon experiences, the prelinguistic experience motivates the use of linguistic expression (instead of being private mental image).[79]

Last topic I would like to briefly mention is the question of language development, on both ontogenetic, and phylogenetic scales. It is precisely the pluralistic account of meaning, as declared, for example, in The Phenomenological Semiotic Hierarchy postulating that language is preceded by lower levels of intentionality, especially intersubjectivity. Together with Sonesson's reinterpretation of iconicity (Sonesson, 2010), this seems to underlie CogSem approach to children's cognitive development as being closely interrelated with semiotic development, i.e., "the progressive use of communicative and meaning-making resources in intersubjectivity, play, imitation, gestures, pictorial representations, and language" (Zlatev & McCune, 2014 p. 59).

[79] For such a re-analysis of Langacker's construals for actual and non-actual motion see Blomberg & Zlatev (2014).

Despite the volume of contemporary research on children's development, researchers have been usually focusing on a specific topic, i.e., pictures, narratives, interpersonal relations etc. Zlatev and McCune describe the situation as follows:

> [T]here is currently much less work in exploring the parallel and interactive development of several different semiotic resources, along with domain-general developmental processes and structures, as in the classical comprehensive theories of Piaget […] and Werner and Kaplan […]. Bates, Benigni, Bretherton, Camaioni, and Volterra […] as well as McCune […] pioneered this approach in considering cognition-language relationships in early development, but the decades that followed were dominated by the ideology of "modularity" […]. (Zlatev & McCune, 2014 p. 60)

There have been numerous models of semiotic development within CogSem, especially in the work of Jordan Zlatev which are focused on the interactions between imitation, intersubjectivity, and gestural communication, inspired by Merlin Donald's notion of bodily mimesis, i.e., the use of the body as a representational device (see Donald, 1991).[80] To unify the notion of bodily mimesis with intersubjectivity, Zlatev has developed The Mimesis Hierarchy (Zlatev, 2013), where the latter is intimately linked with the former (followed by integrated model, see Zlatev & McCune, 2014).

Consequently, bodily mimesis plays a pivotal role in the emergence of the use of signs in hominin evolution. Previous attempts to explain how the language has developed from our ancestors usually worked with the notion of language as a human-unique system, or with the notion of simple language (Deacon, 1997) or protolanguage (Bickerton, 1990). On the contrary, Zlatev, et al. (2020) argue that the first communicative system was pantomime, emerging from bodily mimesis that served not only as motor-cognitive adaptation, but also as a social-cognitive one, including skill rehearsal, advanced imitation, or cultural learning. Moreover, Zlatev points out that an approach unifying sensorimotor cognition with language:

> can provide the "missing link" between them, since it offers the basis for forming iconic, bodily representations, which can furthermore be the bases for establishing conventions

80 Bodily mimesis can be defined as 1) involving cross-modal mapping between exteroception (e.g., vision) and proprioception (e.g., *kinesthesia*); 2) being under conscious control and being perceived by the subject to be similar to some other action, object or event; 3) intentional; 4) not fully conventional; 5) not divided into meaningful acts (as in grammar). (Zlatev, 2013 p. 51)

> since they are based on overtly observable and imitable and covertly experienced structures which can be shared between the members of a community. Assuming that language arose from such structures, one would expect exactly the kind findings of "embodied meaning" and gesture-language integration that recent research has established, given that language did not substitute for, but build on top of them. In claiming that language is "grounded" in bodily mimesis […], however, one should also emphasize how it is different from it, since language is social, normative and systematic in a way which transcends mimesis, and even more so actions. (Zlatev, 2008a p. 148)

Therefore, while the dominant role in transmitting information was played by iconic gestures, accompanied by vocalizations, and facial expressions, language is considered essentially post-mimetic, in both ontogenetic, and phylogenetic respects. Nevertheless, even though such a conventional system is different from mimetic, it has mimetic roots, and as such, it is regarded as a collective product of mimetic expressive culture. It is precisely mimesis what provided the basis for emergence of conventions as well as intentional communication, developing into communicative, shared representations (Zlatev, 2013 p. 66).

Instead of emphasising the symbolic communication *per se*, CogSem, by considering prelinguistic experience, and hence other semiotic resources, postulates intersubjectivity as one of the essential characteristics of the human mind,[81] empathetic perception being a precursor for mimesis (ibid.), and hence for any signitive communication system in general. Moreover, by postulating resemblance-based precursors of language, cognitive semiotic approach not only offers new consideration of controversial questions, such as development, but it also re-opens and questions notions such as arbitrariness, focusing on the dialectics of convention and iconicity.[82]

[81] Piaget, on the other hand, "devoted little attention to emotion and is often accused of neglecting subjectivity and especially emotions" (Zlatev, et al., 2014 p. 65).
[82] See, for example, paper on vocal iconicity (Johansson, et al., 2021) or sound symbolism (Ahlner, et al., 2010).

Conclusion

In this thesis I have traced the birth and development of the cognitive paradigm in both natural sciences and humanities, as well as how the account of the mind and human cognitive abilities in relation to language, meaning, and communication in general has been defined and treated. First, it is important to note that the schema of two phases of the cognitive shift, and further development towards cognitive semiotics does not intend to represent these three stages as having strict boundaries. One phase does not end when the other begins; on the contrary, Chomsky updated his model several times during the second half of the last century and is still active, as are many representatives of the second phase.

With the establishment of linguistics in North America as a field of psychology, thus exploring the nature of the mind and the linguistic intuition, and the Chomskyan dominant doctrine of generative grammar, language has acquired a truly scientific status, since it was believed that enquiry into language can reveal the nature of mind itself. However, it has been shown that the formalist approach of Chomsky and his followers led to several fallacies, or rather misconceptions, that neglected the social and dynamic nature of language. Moreover, a perspective largely narrowed to language which sees it in some sense as a concept substitutable for the mind (postulating, for example, language faculty) or as a prescriptive for the mind (as represented by language of thought) is inevitably reductive, downplaying notions such as meaning (regarded merely as truth-value phenomenon) or language use.

The second phase, on the other hand, fully acknowledged the primacy of meaning in linguistic enquiry, as well as the role of nonlinguistic phenomena, and regarded language as a system that merely reflects the nonpropositional structure of mind. However, despite the experiential approach, stressing the phenomena of imagination or embodiment, respective scholars did not avoid a kind of conceptualisation trap: while postulating prelinguistic experiential mental schemata (e.g., image schema), they disregarded the intersubjective, or social, character of meaning in the sense of prelinguistic experience. On the other hand, just as Chomsky opened up a new field of inquiry and influenced (albeit also negatively) subsequent researchers, cognitive linguists and other representatives of the second phase have largely promoted the study of meaning and meaning-making, and in turn their

relationship to humans and the environments they inhabit, bringing up notions such as embodiment, imagination, and later enactivism.

At the same time, individual theoretical frameworks began to multiply, with terminology and other aspects differing in many ways, even though they focused on the same topics. This does not mean that the goal of scientific knowledge should be a unified view of the phenomena that surround us. On the contrary, their multiple layers and complexity can hardly be (sufficiently) explained through a view that operates only with a fragment of this reality. The problem, however, lies in the somewhat artificial boundaries between the various disciplines, in this case, for example, between cognitive science, linguistics, and semiotics. Zlatev describes this situation as follows:

> In the last ten to fifteen years, we experience a large gap between the three disciplines. But this is a gap that would be natural to try to fill in, by going back into history before the boundaries were made. We could say that right now we are capturing a moment where there is a centripetal force, after the centrifugal forces of specialization have gone too far. It is time again to "come together". (Kadavá & Zlatev, 2020)

This is what, in my opinion, best characterizes the emergence of cognitive semiotics in general and cognitive semiotic scholars explicitly express the attempt to formulate an interdisciplinary account whose "ontological basis" (Brandt, 2020 p. 9) is meaning. It would be misleading to view cognitive semiotics as a unified doctrine, since not all aspects of the various "schools" overlap completely. Nonetheless, it is beyond the scope of this thesis to identify and describe these differences, therefore, I have narrowed my examination to one of the cognitive semiotics schools, that of Lund. On the other hand, cognitive semiotics is an international project, united by, for example, an association or a journal, and thus the different schools cannot be seen as contradictory or competing against each other.

The main features of CogSem have been described as 1) transdisciplinarity; 2) conceptual-empirical feedback loop; 3) pheno-methodological triangulation; 4) phenomenological background; and 5) meaning dynamism. All of these features, albeit to varying degrees, can be traced in all of CogSem work. A notion particularly relevant to this thesis is the perspective that although language is a key semiotic resource, "other resources should not be underestimated" (Zlatev, 2013 p. 48). Considering language merely a part of semiotic enquiry and simply as one of the possible outcomes of semiosis, CogSem goes beyond

linguistic meaning and meaning-making. Moreover, it provides compelling theories that complement existing "controversial" topics, such as language development in children, and the human species in general, with "missing links". However, the fact that this happens due to the "dethronement of language" is crucial. If the second cognitive shift can be characterized as an attempt to dethrone language within cognition, CogSem is said to dethrone language within semiotic systems (or communication). This is not to say that language does not play a key role in society, but it would not keep this position if it were not for other uniquely human cognitive capacities, chief among which is bodily mimesis together with intersubjectivity. As Zlatev (2008b p. 237) asserts, it is the species-general capacity for empathy, expressed by mutual attention or awareness of others' feelings, that has possibly developed through bodily mimesis in the highly social Homo sapiens.

This continuous dethronement of language-dominant perspectives within language- and mind-related science was the main focus of this thesis. As much as I am aware that many of the themes of each phase have been treated rather superficially, my intention was to outline the epistemological approaches of each phase (and their reflection in specific themes) in order to bring this historical tendency to light.

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List of Figures

Figure 1: The Phenomenological Semiotic Hierarchy 63

Figure 2: The Motivation & Sedimentation Model 65