

On the Relation between Memory and Language from a Cultural-historical Perspective in Neurolinguistics

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Abstract: In this essay, we reflect about the relationship between memory and language, conceiving both as complex functional systems, developed along the human history and strongly influenced by culture. We give special emphasis to the mediating role of signs, mainly based on the (neuro)psychological principles postulated by Vygotsky and Luria, but also in dialogue with several authors from the fields of Linguistics, Philosophy of Language and Semiotics, among which Mikhail Bakhtin, Aleida Assmann, Augusto Ponzio and Susan Petrilli. Two data are presented in order to contribute to our reflection – the first is extracted of a dialogical episode with a subject diagnosed with Alzheimer’s disease and the second episode with an aphasic individual. In sum, we argue that the cultural-historical approach may provide a better understanding of the interdependent and constitutive nature of the relationship between language and memory.

Key-words: Memory, Language, Historical-Cultural perspective, Neurolinguistics, Semiotics

Introduction

Life is not what One lived, but what One remembers and how One remembers it in order to recount it (Gabriel Garcia Marquez, 2002)

Before presenting the main topic of this article – concerning the relationship between memory and language – it is relevant to contextualize our discussion within the conceptual framework that guides our research at the Language Studies Institute (IEL), State University of Campinas (UNICAMP), in Brazil.

The first work developed in Neurolinguistics in Brazil, guided by the cultural-historical perspective was written by Coudry (1986/1988)[1], in her book *Diário de Narciso: discurso e afasia* (Narciso's diary: discourse and aphasia), where the author analyzes dialogical episodes produced by aphasic subjects in contexts of social use of language. Coudry based her reflections, on one hand, on the cultural-historical theories developed by Vygotsky and by modern neuropsychologists, with special reference to Luria. On the other hand, she was supported by discursive linguistic theories, especially those developed in the second half of the 20th century – such as Enunciate Semantics, Pragmatics and Discourse Analysis[2]. The theoretical and methodological principles, which gave birth to this perspective, also have guided the work done with aphasic subjects at the Centro de Convivência de Afásicos (CCA)[3] for almost thirty years.

In the first part of this article, we present some of the main principles of the so-called “historical approach”, among which we highlight two concepts, of great relevance for the development of our reflection: the first concerns the brain as a complex functional system and the second refers to its extra cortical organization.

We start the second part of the text presenting the concept of language as a “constitutive activity” (Franchi, 1977)[4] and emphasizing its role to the development of other complex functions, such as memory. Then, we reflect about memory and its semiology, with special

attention to the cultural approach developed by Vygotsky and Luria, but also in dialogue with several authors from the fields of Linguistics, Philosophy of Language and Semiotics. The discussion has the purpose of emphasizing that memory cannot be understood as a mechanical product of the brain activity – as storage – reduced to its mnemonic features, but as a complex function that results from the subjective work done by the subjects, mediated by signs.

Another issue we will address, in the third part of this article, is the role of narratives in the processes of “memorizing” and of “remembering”, which is synthesized by the great narrator Gabriel Garcia Marquez: “Life is not what One lived, but what One remembers and how One remembers it in order to recount it”. We could add to this brilliant statement by Marquez that retelling a story is a path to remember; a powerful activity to, somehow, revive what One has lived. To end the third part, we present two data from dialogical episodes in interactions with the individuals AC and SB, the former with the diagnosis of Alzheimer’s disease and the second with aphasia, to illustrate the theoretical and methodological principles of the cultural-historical approach and also because the qualitative analysis, of microgenetic nature, can give more visibility to some processes that result from the integrated work of memory and language.

1. The theoretical-methodological framework of a cultural-historical approach to higher mental functions

The social-cultural approach is “like a magnifying glass that broadens our view to the different aspects of reality in order to explain it, but also seeking ways to transform it” (Freitas, 2010: 8). Such assumption leads to the understanding that this perspective is another form (other than quantitative-statistical) of producing knowledge in Human Sciences, which allows us to focus on a phenomenon in its real context. The author bases her reflection on the

well-known distinction made by Bakhtin (1997) concerning the objects of study of both Sciences: Natural and Human. In the former, the object is mute; the researcher observes and talks about it; in the latter the focus is the talkative subject, himself, who cannot be taken as a mute object. In Human Sciences, says Freitas (2010), the researchers talk to the subject and establishes with him a dialogue.

Most researchers in the fields of Psychology and Neuropsychology, who are affiliated to cultural-historical approaches, were inspired by the work of Vygotsky, undoubtedly the most important reference in this perspective, who conceives man as a concrete subject, situated and marked by the culture that surrounds him. According to Vygotsky (1987), an individual can only be constituted in collaboration with other individuals, in social interactions made possible by language. He also emphasized the need to understand dynamic processes (not only products), their movements of transformation along the development of human activities, which is the reason his theory is known as “developmental psychology”. In this sense, a scientific enterprise should not only describe, but also explain a phenomenon, what is only possible when one finds its genesis and follows its development along a certain period, paying attention to each and every change or individual variation that may explain its singularity. By assuming the historical-cultural character of the object of study and of the knowledge itself as a construction that is generated among the subjects, this approach is able to confront the strict limits of objectivity. In other words, it characterizes a human vision of knowledge (Novaes-Pinto, 2012).

Our work, as already mentioned, is strongly based on theories developed by Vygotsky and Luria, two of the most important representatives of the so-called “cultural-historical” perspective. Luria has considered Vygotsky a genius, for his approach to the complex problems that involve the structure and organization of mental processes and, influenced by his theories, reaffirmed that higher mental functions are social in origin, complex and hierarchic in their structure, and based on a complex system of methods and means (Luria, 1973).

The systemic-dynamic approach to brain organization of higher mental functions, developed by Luria, according to Kotik-Friedgut (2006), is a logical development of Vygotsky's ideas, regarding his dialectic method to study psychological functions, which considers that the nature influences the human development, but also man, in turn, acts on nature creating new natural conditions for his own existence through the changes he promoted.

One of the most important concepts developed by Luria, well explored among neuroscientists, nowadays, is that of *Complex Functional System*. It presupposes that each higher psychological function – as perception, attention, language and memory – is conceived as a complex functional system. These functions are not located in narrow and circumscribed areas of the brain, but result from the participation of cerebral structures operating together, each giving its own particular contribution and adding to the organization of the functional system as a whole (Luria, 1986). Damasceno (1990) states that the lurian model of neuropsychological functioning presupposes a dynamic and plastic system, which resulted from the social and historical-cultural evolution and internalized social experiences of an individual[5].

According to Kotik-Friedgut (2006: 44), it is well established that culture has a considerable influence on the brain development and its functioning and it is extremely important in order to understand “how the environment and the activity within a specific environment influence the systemic–dynamic organization of higher psychological functions”. Some basic cognitive abilities and their corresponding brain mechanisms are universal and inherent, independently of language and environmental conditions. However, the author emphasizes that different mediators and means may be developed, and in fact are, in different cultures.

Concerning the role that external activities play in the internal organization of higher mental processes, Vygotsky postulated the principle of *extracortical organization*, later developed by Luria. This concept is particularly useful for understanding the cultural impact of historically formed devices (objects, symbols, signs) on the development of complex functions. They are essential to establish functional connections, turning individual parts of the brain into integrated components of a single functional system (Kotik-Friedgut, 2006). In other words,

functional connections in the brain can be modified by external factors – process also known as “epigenetic influence”, in neuropsychology. The most well known example of this semiotic relationship between an external sign and the act of remembering something, also mentioned by author such as Vygotsky and Luria, is the *knot* tied to a finger.

According to Vygotsky (2007: 34), such semiotic action modifies the simple and direct schema of elementary behavior established between stimulus and response, which corresponds to a “one-way” cause-effect relation. The use of signs led men to a much higher and specific form of behavior, which goes further beyond biological development and creates new forms of psychological processes rooted in the culture. It establishes, therefore, a complex, reverse action. Not only the individual acts on the environment, transforming it, but also the environment influences the human development. It is relevant to say that this theme has also being approached by the semioticians and, more specially, in the field of Semioethics.

Concerning this view, Petrilli (2010) stated that differently to other animals, the semiotic animal (human animal) is capable of producing “signs of signs”. Humans are capable of mediation, reflection and critical awareness. Semiotics must be open to the ethical or, in the terms proposed by Petrilli and Ponzio ‘semioethics’.

Given the main framework of the cultural-historical approach of our research, in the second session of this article, we will discuss the conceptions of language and of memory, highlighting the role of signs in the development of the higher mental functions.

2. The conceptions of *language* and *memory* from a cultural-historical perspective and their interdependent relationship

We start this session, emphasizing that language cannot be reduced to the structural rules of the system, the same way that memory cannot be understood only as the result of neurochemical processes and restricted to its biological counterpart. Both – language and memory – are complex systems that emerged in the human development, of semiotic nature, as we will see in the next sessions.

2.1. The conception of language as a *constitutive activity*

In accordance with the principles of the cultural-historical approach, previously presented, it is important to emphasize that language cannot be understood simply as an instrument of communication or of reasoning. According to Vygotsky, language shapes our understanding of the world. The author argues that there is no possibility of higher forms of mental activity without the close participation of language and no possibility of developing language without social interaction. In the words of Franchi (1997), language is a “constitutive activity”; it constitutes all the higher mental functions, the subject himself and also the language system (the *langue*). Geraldi (1991), based on the Bakhtinian theory, states that subjects continuously work on the material resources of language (phonemes, words, morphemes, grammar rules) to produce their discourses, within a determined social-historical-cultural background.

This broad conception led Coudry (1986/1988) to criticize neuropsychological approaches that reduce the complexity of language to the aspects of the system – the *langue* –, leaving aside all the variables related to its social use. We believe it is worth mentioning this issue, because also memory has been reduced, in neuropsychological assessment tests, to its mnemonic features[6].

The neurolinguistics we develop, of discursive orientation[7], attempts to account for both the structure and organization of the language system (the *langue*) as the discursive-pragmatic

-semantic rules governing the production of utterances – “real units of verbal communication – according with Bakhtin (1997).

2.2. Conception of memory as a semiotic process

Vygotsky and Luria (1996) provided a theory to explain how memory has developed from perception. Philogenetically, there would be a primary, undifferentiated cognitive stage, essentially related to the need of visually or literally reproduce an object or picture previously presented. This functional role of memory – in the absence of abstract and logical needs – was responsible for the extraordinary memory that primitive men had, according to the authors. As a biological device, memory had reached its apex, as stated in the following passage: “[...]the biological memory (organic), or the so-called mnemonic unit, whose background is steeped in the plasticity of our nervous system (in its capacity to store traces of outer stimuli and reproduce them), reaches its maximum development in primitive man” (Vygotsky and Luria, 1996: 136). Gradually, this function – memory – has changed in the history of evolution, mainly due to the use of instruments. As an example of such use, the authors mention the *knots* and other symbolic devices used as symbols, which correspond to an object or to an action:

When a human being ties a knot in her handkerchief as a reminder, she is, in essence, constructing the process of memorizing by forcing an external object to remind her of something; she transforms remembering into an external activity. This fact alone is enough to demonstrate the fundamental characteristic of the higher forms of behavior. In the elementary form something is remembered; in the higher form humans remember something. In the first case a temporary link is formed owing to the simultaneous occurrence of two stimuli that affect the organism; in the second case humans personally create a temporary link through an artificial combination of stimuli (Vygotsky, 2007: 49).

These symbolic instruments modified the psychological structure of memory. The development of human memory, thus, is due to its relation with signs; to the fact that men have learnt to create a link – of indirect and mediated character – between a sign and its meaning. This represents a transition, from a natural form to a cultural type of memory. As Sebeok (2001) points out, we are semiotic animals, living in a semiotic environment. As Ponzio (1990) states, memory is a continuous chain of interpretants and interpreted, which constitute one's story – an open and continuously process of (re) interpreting.

2.3. Concerning the semiology of memory

We would say that the semiology of memory in neuropsychological literature, nowadays, is mainly based on technical knowledge developed in the computational field, related to storage. Information is recorded in files, through distributed wiring. There is an input, which is processed in a working memory and afterwards recorded in a long-term memory. The process of “remembering” is often associated with retrieval[8].

Several authors have discussed the problems of terminology in the studies of memory. Semon (1921), for instance, believed that everyday terms commonly used to talk about memory had too many undesirable connotations to be of precise scientific value. Cytowic (1996) points to the “confusing” semiology in Neuropsychology, which is due, partially, to the complexity of the phenomena, but also to the fact that the terms themselves are very undetermined. According to him, Neuropsychology has not yet set a standard terminology to refer to the different roles of memory or to specific features of the process of memorizing. The author mentions, as examples, the common classification of memory as declarative, procedural, episodic, semantic, implicit, explicit and so forth.

Izquierdo (2011), on this matter, suggests that we should reserve the term “memory” to refer to the general capacity of the brain to acquire, keep and retrieve information, whereas the

word “memories” (in the plural form) could be used to refer to each, individualized information. Beilke (2009) and Novaes-Pinto (2010) have used the term “memories” to refer to “remembrances”, as suggested by Izquierdo.

According to Assmann (2011), being a transdisciplinary object of study, memory can be approached according to a variety of points of view and interests, and the studies are marked by the contradictions within each area. We can talk of an individual memory, a collective one, of an artificial memory, an imagistic memory; autobiographical memory and so on. It may also be related to other perceptive functions, as visual memory, auditory memory, gustative memory etc (when referring to specific remembrances related to specific features)[9]. The author makes a special distinction of memory: as *ars* – that is, as the art of memorizing, related to the mnemonic technique, and as *vis* – meaning “potency”. The first has to do with an imagistic and mental representation, which can be trained and improved. The second, however, refers to cultural acts, such as remembering or forgetting. We reproduce below the words of Assmann (2011), because she synthesized a reflection about the differences between these processes of storage and remembering:

The road to memory that I have signposted as *ars* may be called *storage*, by which I mean every mechanical process that aims at an identity between recording and retrieving.

Whenever the process has recourse to material aids, this goal appears self-evident – for instance, if we write a letter to someone, we can assume it arrives, all the words we wrote, and not just a percentage of them, will reach the addressee. The same applies to a book we buy or the data we call up on our computer: We expect that after an interval all the bytes will come back to us just as they were when we filed them. As the art of mnemotechnics proves, however, storage is possible even without technical apparatus. Indeed, it is a special function of human memory evinced by the recitation of such things as liturgical texts, poems, mathematical formulae, or historical facts. [...] All of this changes radically when we follow the sign marked *vis*. If Cicero was the patron of mnemotechnics, Nietzsche (...) was the patron of memory as a bestower of identity. Whereas storage is designed to rule out the problem of time, transience, and change in this form memory it becomes acute.

Mnemotechnics operate on the hypothesis that there can be an exact correspondence between input and output; the *vis* memory, however, brings out the difference. We must therefore distinguish between the “process of storage” and the “process of remembering”. Unlike memorizing and rote learning, very often remembering is not a deliberate act. One simply remembers something or does not. It might be more accurate to say: Something internalizes itself in us, and afterwards we become conscious of it. [...] Remembering is basically a reconstructive process; it always starts in the present, and so inevitably at the time when the memory is recalled, there will be shifting, distortion, reevaluation, reshaping (Assmann, 2011:33-34).

The dichotomy pointed out by Assmann (2011) is similar to that one developed by Ponzio (2007), when he reflects about memory from a semiotic and philosophical perspective. For this author, there are two instances of memory – one related to the act of memorizing and the other related to remembering. According to Ponzio (2007:71), the first (memory in the sense of memorizing – of mnemonical nature) belongs to the subject; that is, it exists according to his will; it is controlled by him, the individual deliberately “wants” to memorize something; he makes a voluntary effort to do so. “To remember”, on the other hand, does not depend on the subject’s control. The individual is involuntarily impelled to remember; it is somehow a passive “recalling”. While memorizing is strongly based on indicial procedures – by contiguity, symbolic or by cause-effect relations, the process of remembering would be based in similarity relations, by iconicity. It’s important to say that this point of view is greatly influenced by the thought of Bakhtin, especially regarding the role of Otherness. Remembering always comes from the Other – even if this Other is himself and never conceived as an abstract individual.

Having discussed, so far, some of the cultural features of both concepts – language and memory – and about their interdependency, which is explained by the semiotic nature of both, in the next session we will approach methodological issues, bringing two data taken from pathological contexts. As we have argued previously, we believe such data extracted from dialogic episodes can give more visibility to the constitutive nature of these processes.

3. Methodological issues: the contribution of qualitative analysis to the study of the relationship between memory and language

Adopting a qualitative methodology, according to Freitas (2010), is a natural demand posed by socio-cultural approaches to any kind of phenomenon that interests the Human Sciences, which privileges the need to understand how things happen, rather than just stating that they happen. Damico et al. (1999) recognize qualitative methodology as “intensive and laborious work”, because it demands more personal and intensive effort from the researcher, who has to examine the phenomenon of interest in great detail. The collected data must be transcribed and then carefully analyzed to discover singular features of underlying processes. It may take hours on the collection, transcription and analysis of an episode that might have only fifteen minutes in length. In general, the qualitative researcher must perform most of the required tasks and much of the labor cannot be assigned to an assistant (Novaes-Pinto, 2012).

Concerning qualitative approaches, Góes (2000) states that the microgenetic paradigm is the most appropriate to account for data that emerge in real interactions among individuals, socio-culturally and historically situated. The term “microgenetic” should not be related to short events, but to the need of searching for “indicial details”. According to the author, it is genetic because it focuses on the movements that take place during processes; because it seeks to relate singular events to other plans of culture, of social practice, of circulating discourses and institutional spaces.

3.1. The narrative gender as a privileged locus for qualitative analysis

The narratives constitute a privileged locus for the analysis of the impacts of brain injuries and degenerative diseases on language and on memory. They may enlighten their relationship, also revealing the role of “qualified interlocutors”[10] in dialogical processes. The narrative gender demands a complex work on the linguistic structures – the lexical choices, the use of chronological and space marks to refer to the past, besides subjective evaluations such as what is worth telling and who is the interlocutor. Our research has been showing that narrative is the most preserved gender in pathological conditions. It has been explored in therapeutic follow-ups of aphasic subjects because it helps them to (re) organize the language and also their “memories” (Beilke 2009; Novaes-Pinto and Beilke, 2010; Novaes-Pinto and Cazarotti-Pacheco, 2010; Cazarotti-Pacheco, 2012).

It is interesting to notice that, despite being an aphasic – who has the linguistic activities somehow impaired (episode 2) – or a person who is suffering a degenerative process, which impacts memory (episode 1), it is the active participation and involvement of the Other that makes it possible to narrate[11].

The first episode that we present is extracted from a dialogue between AC (to whom was given the diagnosis of “probable Alzheimer’s dementia”) and her sister SI (Beilke, 2009)[12]. AC had a very low score in standardized neuropsychological tests and evidenced a very severe memory loss. Beilke (2009) privileged the work with autobiographical narratives not only to evaluate her difficulties, but also to understand the processes, which helped her to remember. First we will present the dialogue and, afterwards, proceed to the analysis.

Context of production of the dialogue: AC is talking to HB (the speech therapist) and her sister SI, while evaluating her abilities to situate herself in space and time.

Turn	Inter-actants	Verbal-utterances	Non-verbal utterances
1	HB	For how many years have you been in this house?	
2	AC	Ah... It has been... How many years?	AC smiles and looks at her sister
3	AC	Well... Definitely... Definitely... it has been... about six [months...]	Produces some long pauses (...)
4	SI	[around fifteen years!	SI speaks at the same time with AC
5	SI	No, AC. Since Antonio died! You left home and came here...	She turned to HB when she said that her husband died
6	AC	[my husband died...	
7	AC	Then I came here. There is still the house in Sorocaba... and I stayed there.	She turned to HB and continued her narrative.
8	SI	Do you remember what happened with Antonio? That he died?	SI seemed surprised.

9	AC	<p>Antonio... it happened that... He liked to drive with the driving wheel.... almost here.... * Then, one day, going down the road...** Then, there was a bump... and something happened, like this, in this neck***</p> <p>And he got sick and needed to have a surgery and soon he died.</p>	<p>* She points to her chest</p> <p>** she made a gesture of “going down”.</p> <p>*** Makes another gesture indicating her neck</p>
10	SI	But, listen! , And weren't you with him?	
11	AC	No, he was alone, by himself.	
12	SI	<p>But... listen... Look at your hand... The right hand. **.</p>	AC looks at her left hand... and then looks to her right hand.
13	SI	<p>There is a <i>scar</i> in you hand. What happened?</p>	
14	AC	Ah. This was an accident!	
15	SI	Then, how was that accident?	

16	AC	Let me see if I remember... I don't remember anymore... But I know that after... He started going with the car over there and we jumped there.... With the car and then he died. Everything... The car turned upside down and I stayed with this hand down, and he died right way.
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The dialogical process, transcribed above, was essential to help AC to “remember” what had happened to her husband. Her sister (SI) did not contradict her, while she was telling the story, which was fundamental to keep AC in the process of narrating. SI helped her sister, recalling chronological details (when she moved to the house in Sorocaba and how long they had lived there (Turns 4-6). At first, when AC had been asked about her husband (Turn 8), she said he had an accident, fell ill, needed to have a surgery and soon died (Turn 9). Her sister went on, asking her: “But, listen! And weren’t you with him?” (Turn 10). AC kept saying that he was alone, (Turn 11) despite giving many details about what had happened. While she was speaking, she made many gestures, which enriched her narrative. Each gesture helped her to recompose the scenery of the accident.[13]

SI called AC’s attention to a scar that she had in her right hand and asked: “What happened?” (Turns 12 and 13). At the exact time when AC saw the scar, she remembered details that seemed forgotten. She said: “This... was an accident!” (Turn 14) and then many other details came up to her mind: “Let me see if I remember... I don’t remember anymore... But I know that after... He started going with the car over there and we jumped there.... With the car... And, then, he died. Everything... The car turned upside down and I stayed with this hand down, and he died right way” (Turn 16).

The scar was a sign, a link to reestablish a connection with the remembrances that were somehow “forgotten”. AC, despite being in a progressive pathological process of forgetting, did not focus her attention in the scar. She did not make any comment about it, nor changed the direction of her conversation. As we have argued before, this kind of datum gives visibility to the semiotic and inter-dependent relationship between language and memory. The scar, as a sign, brought back a whole different story about her husband’s death – a reinterpretation, despite her pathological condition. It is also very important to emphasize that the details – her memories – came up in a dialogical relationship with the Other (in the episode, her sister SI), what reminds us what Assmann has stated about the process of remembering: “Remembering is basically a reconstructive process; it always starts in the present, and so inevitably at the time when the memory is recalled, there will be shifting, distortion, reevaluation, reshaping” (Assmann, 2011:33-34).

Narratives are forged not directly from “real” facts; they result from the continuous work the individuals do, in the several spheres of their lives (individual or social), while they search for meanings. Such work involves, at the same time, an effort to “remember what One has lived” in the process of signifying.

The second episode that we present is extracted from a conversation between the subjects SB and MO, her speech therapist. One of the main features of SB’s aphasia is the difficulty of finding words during a conversation, which results in a feeling of great frustration[14]. She recurrently produces utterances such as: “Now I have this problem” or “It makes me feel like giving up talking”. She also often refers that the target-word is at “the tip of the tongue”. MO and SB had a familiar relationship and had known each other for a long time, before SB become aphasic. For this reason, there was a lot of shared-knowledge that made possible to SB achieve her “speech-will” (Bakhtin, 1997), as we can observe in the dialogue below.

Turn	Inter-actants	Verbal-utterances	Non-verbal utterances
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1	SB	You look like that man... That man is... That man with a beard.	After a long time without seeing MO, SB realizes that his beard has grown a lot..
2	MO	Who? That one? The musician?	MO assumes she's talking about the musician of the group <i>Los Hermanos</i>
3	SB	No... It's another one... It's almost here ... Okay here it is... Hum... That... You know? There... You known, right? I'll say the one I know and then you will know what I don't know.	Produces some long pauses (...) points to the tongue.
4	MO	Say it!	
5	SB	Fi...del Castro!	
6	MO	Ah ... I look like Che Guevara? What a nonsense!	They both laugh together.
7	SB	That! Yes!	

In the above episode, we notice that SB is completely sure that MO knows both Fidel Castro and Che Guevara. She also knows there is a strong relationship between these individuals – physically and ideologically. The first physical feature – of having a beard – explains why she

tried to compare MO with Che Guevara (Turn 2). Although she had not named “Che Guevara”, she referred that the word was “at the tip of the tongue” (Turn 3). Despite the fact that also Fidel Castro has a beard, it was probably the second similarity – in the ideological field (or perhaps both features combined), which helped her to name Fidel Castro (Turn 5), certain that MO would correctly name Che Guevara (Turn 6).

Thus, she uses a successful strategy, based on the shared-knowledge, to find the word she’s looking for. She reveals this process when she said “I’ll say the one I know and then you will know what I don’t know” (Turn 3). SB has not “forgotten” the network of relationships, which links both words. As Luria (1986) pointed, we choose a word among others when we speak (by phonological, semantic or emotional similarity features).

The phenomenon known in literature as “tip of the tongue” has puzzled researchers since the nineteenth century[15]. In 1890, William James described the sensation that occurs when we seek for a word, with the feeling of knowing it.

Despite the advances in the research of TOTs, they are usually studied by researches who define them either as a phenomenon of linguistic nature – more specifically of lexical retrieval – or related to metamemory. Oliveira (2013) and Oliveira and Novaes-Pinto (2014) have claimed that only theories that consider the relationship between language and memory can account for what happens when the individual is going through a TOT phenomenon.

The qualitative approach allows us to evaluate the interrelationship between aspects that belong to both domains – of language and of memory –, such as the categorization rules, which are developed by systematization (scholastic nature) and also from social experience.

4. Contributions from the Philosophy of Language and Semiotics to a historical-cultural approach

In his notes of 1950's (...) Bakhtin distinguishes between the 'small experience' and the 'great experience'. The small experience is reduced and partial and remains attached to the concrete, to the effective world, the world as it is, the small experience responds to contemporaneity, it is connected with interest, with utility, with knowledge functional to practical action, with the economy of memory that excludes, through oblivion, all that which results as distracting and dispersive, inconclusive with respect to logicity, simplicity and uniformity in programming, to the univocality of sense. Instead, "in the 'great experience', the world does not converge with itself (it is not that which is), it is not closed nor finalized. **In the world, memory flows and loses itself in the human depths of matter and unlimited life, the life experience of worlds and atoms. And for such memory, the history of each one of us begins much earlier than its cognitive acts (its knowable 'self')** (Ponzio, 2008/2009: 7).

We could not finish this article without mentioning the contributions given by the Philosophy of Language and by Semiotics to a historical-cultural approach. We refer, mainly, to the role that Philosophy always had in the development of "scientific knowledge". Among the innumerable citations we could choose to illustrate such contribution, we cited, above, a passage of Ponzio's (2008/2009) when the author refers to the bakhtinian theory and defines memory in relation to one's subjective experiences – small experiences – and to 'great experiences', where the individual history begins much "earlier than its cognitive acts (Ponzio, 2008/2009: 7).

The interest about these higher mental functions retrocedes to Antiquity and is registered in philosophic works. It is very interesting to know, for instance, that platonic and aristotelian philosophers had compared "memory" with a "block of wax", in which impressions could be left (Yates, 2007). The wax is not as fluid as water, nor as hard as iron. The first would not allow retaining the impressions and the second would not permit be marked. According to both visions, all men would have a "block of wax" in their souls (Smolka, 2010). Ideas or concepts that, at first, were described and explained through different metaphors, like the wax, which would seem impressionistic and non-scientific thoughts, have proven to be of

fundamental relevance to deepen research in all fields of science. It is even more amazing to realize how such a metaphor somehow “predicted” or got very close to the scientific definition of a key-concept in contemporary studies of memory: the *engram*, a term coined by Richard Semon, in 1921, which refers to “the enduring, though primarily latent modification in the irritable substance produced by a stimulus” (Semon, 1921: 12). In other words, engrams are impressions – of neurochemical nature – made physically in neural tissues of the brain by any mental stimulus.

The dilemma of how much should be attributed to biological functioning and to cultural (epigenetic influence) was pointed by authors like Luria, who criticized the fact that most contemporary research focuses on the organic nature of engrams. However, if we understand that engrams are neurochemical processes that occur in the brain, but strongly influenced by external relations, we will be able to link the knowledge acquired by contemporary neurosciences to a social-cultural concept as that of “extracortical”, postulated by Vygotsky and later developed by Luria.

In both fields – Philosophy of Language and Semiotics – but also in the area we have been naming “Discursive Neurolinguistics” (Coudry, 2002; Novaes-Pinto, 2012), there has been a strong criticism about the weight that quantitative, statistical analysis of experimental tasks have, in order to claim scientific status. Bakhtin (1997) had already criticized abstract models, as the linguistic structuralism. According to him, when a model aims to explain the *real functioning of language* the result is *scientific fiction*. In order to illustrate this criticism in the field of Semiotics, we cite a passage of Welby (1896), where the author approaches this theme and talks about a “divorce” between the models and what they aim to represent, which “must come fatal to the welfare of human society”: “For in what we now know as science, each step is verified as it has never yet been verified; each hypothesis tested as it has never been, never yet could be tested. The result is thus a divorce between the intellect and the emotions, between knowledge and feeling, between light and live, which if it is to go on, must come fatal to the welfare of human society” (Welby, 1896, in Petrilli 2009: 262). This idea is also shared by Petrilli, when the author states that Semioethics “must start

from an analysis of contemporaneity, from where we stand today, historically and socially, with a rigorous and precise analysis of today's communication-production relations" (Petrilli, 2008/2009: 96).

Novaes-Pinto (2013:03) has reflected about these questions, relating them to the works of Bakhtin and Ponzio, in an attempt to make evident the contribution of philosophy to the field of Neurolinguistics:

Our works, along the research line we call *discursive*, have been sometimes criticized in some academic circles for lacking *scientificity*, because they are loaded with emotions and feelings and because our unit of analysis is the *utterance* (Bakhtin, 1997) produced in dialogical episodes. We do not follow the standardized assessment tests, nor the quantitative approaches to isolated units of language – the *dead cells* of language – as referred by Ponzio when contrasting them to the *live word*, the unique utterance (Ponzio, 2010a, 2010b; Novaes-Pinto, 2012). This assertion reminds us also of Bakhtin (1997), when he says language is not learnt in dictionaries and grammars, but in real utterances we listen and produce with the real individuals who surround us.

We expect that the reflections made in this article may contribute to present the historical-cultural framework that guides our research in the field of Discursive Neurolinguistics. This approach challenges us and does not let us accommodate when facing contemporary scientific paradigms. Nowadays, we turn towards Philosophy and, more recently, to the Semiotics – and especially concepts developed within the area called Semioethics –, to better understand the role that historical and cultural factors have on the human development (phylogenetic and ontogenetic), in order to understand complex functions as language and memory as well as their relationship.

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[1] We always refer to both years in Coudry's work (1986), of her doctoral thesis when the work was published as a book (1988).

[2]The first research developed by Coudry (1986/1988) aimed to confront traditional and hegemonic Aphasiology with a linguistic perspective. She criticized the methodology used for language evaluation and the therapeutic follow-up oriented by a narrow conception of language. She argued that most neuropsychological approaches reduce the complexity of language to the linguistic system (the *langue*), what is completely inadequate to account for the social and constitutive nature of this activity.

[3] CCA was created in 1989, as a result of a partnership between the Department of Linguistics, at the Instituto de Estudos da Linguagem (IEL) and the Faculdade de Ciências Médicas (FCM), Universidade Estadual de Campinas (UNICAMP) [Language Studies Institute and the Department of Neurology of the Medical Sciences Institute, from the State

University of Campinas]. The work developed aims to help subjects to face the new conditions imposed by aphasia, mainly through interactive activities among aphasics and non-aphasics (researchers, professors, families, therapists, under-graduate and post-graduate students). Since the beginning, it has been a locus for academic research in the field of Neurolinguistics.

[4] Carlos Franchi, the linguist who supervised Coudry's doctoral work, of 1986, has been a very important theoretical reference to the Neurolinguistics developed at IEL.

[5] With the advent of the World War II, Luria was assigned head of Neurosurgical rehabilitation in Kissegatch for brain-injured subjects and treated over 3,000 soldiers. He discovered that although damaged brain tissue could not be regenerated, general brain function often remained highly adaptable. Luria demonstrated that functions could be improved or even restored either by "de-inhibition" of neural pathways or by establishing new neural pathways through reorganization.

[6] Both in language and memory assessments tests, any failure is interpreted as a loss or a deficit and transformed into a symptom. Even worse, the results of those evaluations usually guide therapeutic follow-ups, based on mechanical tasks, such as lists of objects to be named and words to be repeated and memorized.

[7] Among discursive features, we mention, for instance, who the speakers are, their social classes and roles, the degrees of formality of a given interaction, the presence of inferential processes and shared-knowledge, the discursive topics and their speech genres.

[8] The terminology is closely influenced by the conception of "science" or of "scientific knowledge" that has guided research since the nineteenth century. Phenomena related to mind have been subdivided into smaller and individual components, in order to be studied. Concerning this methodology, Cytowic (1996) has pointed out that the main problem of this scientific enterprise is that, after breaking down a complex phenomenon into smaller parts,

researchers often forget to put the parts back into a whole, what leads to a very dangerous fragmentation.

[9] This is more evident when, for instance, we feel a smell or taste something and remember a whole scene lived in the past.

[10] *Qualified interlocutor* is an expression used by Beike (2009) and Novaes-Pinto and Beilke (2010) to refer to those interlocutors who actively participate in the dialogical process, and help the Other to reach his/her speech-will. They are the “verbal communication partners”, as states Bakhtin (1997), who give finalizations to all the utterances, even when the utterances are severely impacted by neurologic episodes.

[11] All dialogical episodes that emerge in interactional contexts at CCA – both in individual and group meetings – are video-recorded and the utterances are afterwards transcribed. Non-verbal utterances (mimics, facial expression, gestures, drawings) are described in the context of their production, with all the available details. The transcriptions are made discursively or phonetically, according to the needs of a specific research, but also depending on the type of aphasia. In severe production aphasia, the verbal communication is usually very impacted. In some cases, it might be restricted to non-verbal resources.

[12] This episode has first been already analyzed in the works developed by Beilke (2009) and by Novaes-Pinto and Beilke (2010).

[13] These data could be also explored in relation to psychical functioning, concerning the traumatic event of having survived an accident in which her husband died. We will not be able to address this theme, although we recognize it is of great value to understand some of the relations between remembering and forgetting.

[14] Our experience has shown that TOTs may cause annoyance, embarrassment or even suffering, depending on the context and frequency of occurrence. In most cases, when it

happens it impacts the fluency and may even interrupt the dialogue. In such cases the help of the “qualified interlocutor” is essential to help the aphasic to reach his/her speech will.

[15] This phenomenon has been mainly or exclusively studied by quantitative methods, since that first article written by Brown and MacNeill (1966). Such authors were pioneers in presenting a methodology to develop the study of TOTs in laboratories, in order to ensure, through a method of elicitation, to control certain variables and also to predict the repeatability of the phenomenon.