Language Production
Part 2

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ABSTRACT

In Part I, we have analyzed various aspects that condition the production of conventional language. For this purpose, we have described the biological elements that intervene the production of the word and then stop at the psychological aspects of production, something we did through an approach to one of the most critical pragma-linguistic manifestations: '(dis)politeness.' In this Part II, we will analyze one of the most known production models of those proposed by Psycholinguistics, which, that considers the processes involved in the production of language are of the psychological/cognitive type, something that also supports Cognitive Psychology. We will conclude this study with the proposal of a model of conventional language production from their 'junction' with natural language, that is, how one 'transforms' into the other; a transformation that is possible given series of bio-psychic processes and mechanisms.

Keyword: Conventional language, natural language, models of language production, Psycholinguistics, Transcurssive Logic.

CITATION:

Salatino, D. R. (2018). "Language production – Part 2" *Inter. J. Res. Methodol. Soc. Sci.*, Vol., 4, No. 1: pp. 5–17. (Jan. – Mar. 2018); ISSN: 2415-0371.

1.0 INTRODUCTION

The linguistic production concentrates the concurrence of several proposals. Any of the approaches show a typical pattern that has been proposed since the last quarter of the previous century on. For this reason, we will base our analysis explaining the aspects that all the proposed models 'solve' in a conventional manner and with this I mean, based on the empirical evidence and contrasting it with some *ad hoc* computational model.

Psychology with cognitive orientation and psycholinguistics consider that the processes that intervene in the production of language are of three types: psychological/cognitive, linguistic/grammatical and communicative/instrumental (Belinchón, 1996, p. 536)

In this Part II, we will deal primarily with the first. Based on the assumption that the use of language implies, on the part of the speaking subject, that a selection of the content of their messages from a series of representations that would be stored in memory accompanied by general and specific processes that would involve both their attention, and their voluntary motivation. At the same time, this selection would include the realization of a not very precise series of 'mental operations' on these representations.

2.0 PRODUCTION MODELS

To address the psychological/cognitive processes that would intervene in the production of language, we will take as a point of reference the cognitive model of Willem J. M. Levelt. (1999)

This model proposes that three phases or stages of processing would be involved in the task of language production, namely: 1) A planning or conceptualization phase: which would allow the selection of the content of the message to communicate. As a result of this stage, we would obtain the prelinguistic message that is the product of a gadget called a conceptualizer. 2) A phase of linguistic coding or formulation: in which translate the prelinguistic message into the linguistic format, which implies the progressive (incremental) specification of structural units that will intervene in the speech to configure a phonetic plan or ordered representation of units linguistics that make up a sentence. The result of this stage is the phonetic plan or internal speech; and 3) Peripheral or articulation processes: using which the phonetic plan is translated into a code or motor plan that triggers the sequence of muscular movements that produce speech.

We will analyze this model in detail and to do so we will base ourselves on the work of Levelt et al. : 'A theory of lexical access in speech production' of 1999.

In this work, the authors propose a series of mechanisms involved in the linguistic production and suggest, also, some of the supposed cognitive processes that underlie this production, which we will now consider.

In a particular ontogenetic introduction, the work describes how an infant manages to produce its first significant words. Acquiring, on the one hand, the notions of acting, interacting, the causal and temporal structure of events and the location/permanence of objects which would give the child the ability to create the first lexical concepts indicated by a verbal label. This label would initially be exclusively auditory patterns taken from the environment.

On the other hand, a series of bubbles appear with their articulatory gestures, which, by repetition and concatenation, increasingly resemble the real expression they are listening. In this way, it is constituted a repository of speech patterns, although still devoid of meaning.

According to this proposal, the real word begins when the child manages to connect a particular babble to a specific lexical concept, that is when it occurs the coupling of a conceptual system and a motor articulation system. This system grows until a phoneme process separates the gestures of the words, converting the latter into a concatenation of phonetic segments.

Phonetic coding would become a phonological coding system, origin of the adult, phonemic and metric patterns, respectively. The more abstract representation guided by phonetic coding would create the appropriate articulatory gestures.

The conceptual root, in the first instance, allows the creation of sentences of several words, whose order is only semantic, that is, where relations established between lexical concepts prevail. As the authors see it, a precise genetic mechanism drives a restructuring of the conceptual system, giving rise to a process of syntactization.

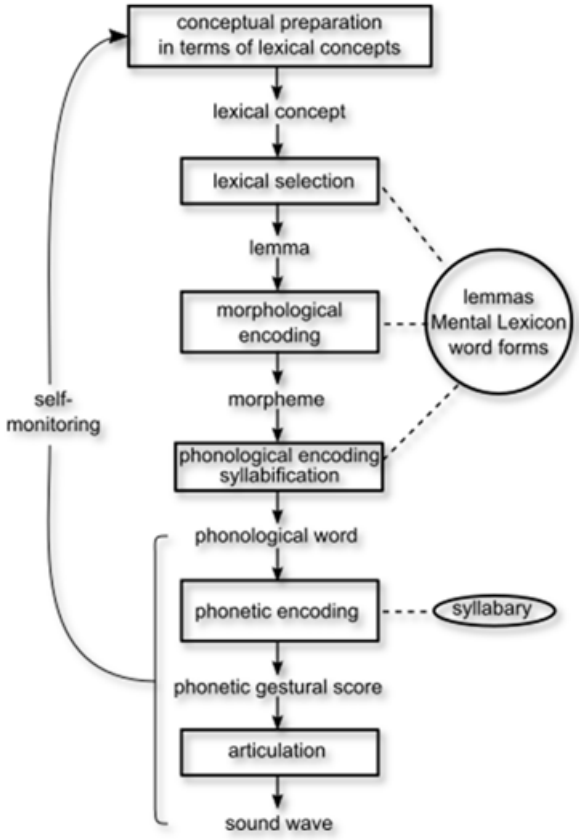
All of the above allows lexical concepts to acquire a specific syntactic category. Thus, the verbs acquire the specifications of the way in which the semantic arguments are projected on the syntactic relations; nouns acquire their properties of syntactic correspondence, etc. Technically speaking, the child develops a system of slogans, that is, a package of syntactic information for each lexical concept.

At the same time, the child quickly acquires a relatively small set of frequently used functional words, which mostly serve syntactic functions given the poor relationship they have with lexical concepts. This system of *lemmas* constitutes a large part of the operation of the system at the age of four years. From then on, the production of a word always implies the selection of the appropriate *lemma*.

Finally, the original double system becomes a four-level processing device: 1) activation of lexical concepts, 2) selection of *lemmas*, 3) morphological and phonological coding of a word in its prosodic context and 4) phonetic coding of the word.

In Figure 1 we can see the different operational levels proposed by this theory and their respective products. But also, in a very succinct way, are outlined those cognitive processes that are supposed to underlie this mechanism and that determine the understanding of the language.

Figure 1: Theoretical delineation of word production in parallel with the self-monitoring of the normal mechanism of speech comprehension. (extracted and modified from Levelt, 1999)



Before analyzing in any detail the different levels, I want to dwell on two terms that have a special psycholinguistic relevance; I refer to the concept of the *lemma* on which an essential part of

the theory of language acquisition and *mental lexicon* is based, the common factor to all cognitive approaches.

2.1. Lemmas

The concept of lemma was introduced by Kempen and Hoenkamp in 1987, within the framework of the proposal of a sentence construction mechanism, which they called incremental procedural grammar (IPG), to which they assign a specific psychological and linguistic plausibility. According to these authors, a speaker can construct a syntactically coherent statement from a series of syntactic fragments that contribute with their meaning to the general purpose of enunciation. This increase in significance, from left to right, as a way of producing sentences, is the nuclear capacity of the presented incremental grammar.

The psychological plausibility of this artifact is based on the fact that this grammar seems compatible, at a satisfactory level of linguistic plausibility, as accepted by current theories of grammar, with this way of structurally forming judgments.

The essential design characteristic of IPG, which gives rise to its psychological and linguistic 'properties', is the concept 'Procedure + Stack.' Phrases are constructed, not by a central processing, but by a set of syntactic procedures (modules) that work in parallel, in small parts of the sentence, so they have only a limited vision of being their only means of communication, a battery.

The IPG includes object-complement constructions, interrogatives and the order of the words in the main and subordinate clauses. It deals with dependencies and coherence between grammatical elements, as well as self-correction and elliptic responses to questions.

The IPG was implemented as a generator of incremental sentences in Dutch, written in LISP, the second oldest high-level computer programming language and the basis for the first language used in artificial intelligence. LISP comes from the acronym: LISt Processing. Chained lists are one of the critical structures in this language, and in fact, their source code itself is composed of lists. This language was also used in artificial intelligence in its native form.

Next, the authors describe the cognitive processes that underlie the production of a sentence, saying that they are usually grouped under the categories: content, form, and sound. They then state that a group of activities is devoted to the conceptual (semantic) planning of the content of the expressions of the language. A series of conceptual structures that are 'understandable, interesting and non-redundant' for the listener are selected to be verbalized. This linear conceptual structure can be divided into a sequence of messages, where each can express a complete or partial sentence.

These and other annexed activities can be called *conceptualization*. The second group of processes is responsible for translating the meaningful content in the form of a phrase, a process that they call *formulation*. Finally, the syntactic and morphological structures constructed by the *formulator system* are passed on to the *mechanisms of expression* for their final articulation.

In this apparatus designed to construct sentences that express an intention of a supposed speaker, the mechanisms of the lexical-syntactic stage are privileged. These tools have to do with a syntactic processor, a device widely used in cognitive linguistics and psycholinguistics, which can operate both on the format of grammar rules, and on the structure-function, hence the appellation of procedural.

The authors adduce that all the procedural grammars that existed until the appearance of their article had been developed in ‘non-psychological contexts.’ It is unlike their proposal that when contemplating a ‘computational simultaneity’ to be treated in parallel, through active procedures or modules the different branches of a syntactic tree, such as those taught by Chomsky (1957). Then, each process is constituted, in an ‘expert’ specialized in assembling different types of syntactic elements, admitting in this, a high degree of psychological plausibility.

Without going into much detail, two types of syntactic procedures are distinguished: categorical and functional. The categories, in turn, differ in two varieties: framing and lexical. With this base, a system of lexicalization has the mission to inspect the conceptual structures to look for the words or expressions in the mental lexicon, that represent the intention of the speaker. This

lexicalizador is the one that initiates the process of formation of the trees. From here, the 'conceptual structures' are only used for inflection calculations or the insertion of function words.

The process of lexicalization consists, definitively, in recovering 'lexical entries' that are procedural, that is, they include a list of one or more calls to specific syntactic processes. The authors denote such entries with the term: lemma (form), to distinguish them from lexemes (lexical meaning).

From here the 'psychological aspects' managed by this computer program are detailed, among which are: conceptual evolution achieved through an iteration process, treatment of interrupted syntactic units (repair) and ellipsis, speech errors, etc.

Finally, we must pay attention to the fact that, from the IPG, the syntactic analysis (syntactic parsing), as part of the process of perception of language, is markedly similar to the syntactic formulation, as part of the process of language production.

Because it is relevant when highlighting the firm adherence of all these proposals to the computational metaphor, I will list such coincidences: (1) The lexicon manages both the analysis and the syntactic formulation, that is, they operate by syntactic information stored with the individual words in the lexicon. (2) Both processes use this information to build a syntactic tree, with those words as terminal elements and (3) Both have facilities to 'grow' syntactic trees from left to right. The analyzer needs them to add new words to the syntactic tree analyzed, the formulator to compute next (incremental production). The origin of the words is different: they come from the speech recognition in the case of the analyzer and the lexicalization in the case of the formulator.

2.2 Mental Lexicon

Almost an as something natural, it is assumed that words cannot be randomly stacked in mind and this for two obvious reasons: first, because of the significant amount of them and secondly, how could we find them in a second fraction? The cognitive psychologists accept this kind of Vulgate who has 'demonstrated' that human memory is flexible and extensible, as long as the information is structured, which supposedly proves the existence of a highly organized mental lexicon (or dictionary), much bigger and more complex than an ordinary dictionary.

The psycholinguistics has few tools to build a model of the mental lexicon, other than the intelligence of the researcher and a heterogeneous collection of clues. We can identify at least four: (a) the search for lost words and the *lapsus linguae* of the regular speakers, (b) the effort of the search of words in people with speech disorders, (c) psycholinguistic experiments and (d) the findings of theoretical linguistics.

2.2.1 Lost Words

The importance assigned to this clue lies in a presumed neighborhood between the words, either because they are 'stored' near or because being far from each other, there are high bonds that bind them, as Freud suggested in "Psychopathology of everyday life" of 1901. The information provided by this clue needs more convincing evidence.

2.2.1.1 Lapse Linguae

This involuntary error in spontaneous speech has been considered as one of how are revealed a series of speech mechanisms that remain hidden.

Lapsus can be classified into two types: assembly errors and selection errors. Of the former, it is considered that they contribute little on the structure of the lexicon, but not the latter, which suggests that the error occurs when selecting a term from the 'store of mental words.'

This is privilege selection errors because it is assumed that if one makes this type of errors is because he accidentally selects a word that is 'close' to the word sought or 'white.' Freud thought that these mistakes revealed thoughts involuntarily suppressed, making their way to the surface; psycholinguists, however, consider that they are less secret thoughts than information about the mental lexicon.

Selection errors can occur between similar meanings, sound similarity or both. The data provided by this track are not categorical, much less, since it is complicated to distinguish if it was produced by having wrongly chosen the word in question or by ignoring it directly and it cannot be ruled out that the speaker is suffering from a disorder of the speaks.

> "The paraphasia (misuse of words) observed in aphasic patients [conduction aphasias] does not differ from the misuse and distortion of words that normal people can see in themselves in a state of fatigue or division of consciousness. attention or under the influence of disturbing emotions." (Freud, 1891, p. 29).

2.2.2 Without Words

Aphasia is a severe speech difficulty that usually arises as a result of a stroke, severe brain trauma or a specific psychopathology. Psycholinguists study aphasias because they assume that the appearance of their symptoms would not be possible if the healthy cognitive system were not organized in a certain way. The existence of patients who show selective alterations such as, for example, remembering verbs but not names, could indicate, they argue, that these syntactic elements are organized in different subsystems of the lexicon.

There are two crucial drawbacks with aphasics. The first and most obvious is that the damaged brain or psyche may not be representative of its normal counterparts. The second and not least has to do with the wide variety of underlying causes, which may conspire so that the same evidence can be produced for different reasons.

2.2.3 Psycholinguistic Experiments

Derived from both experimental psychology and the field of theoretical linguistics, these experiments, whether based on the measurement of time or the investigation of a particular combination of words, suffer from almost insurmountable difficulties. Such as the fact of having that to pose a very reduced and highly improbable situation to be able to have an absolute control of the considered variables or to privilege the manipulation of combinations of words to obtain a meaning, instead of the words themselves.

All the elements considered previously make the task of elaborating a mental lexicon model difficult. So it ends up proposing 'mental maps' based metaphorically in a library or a computer, where are administered by convenient subdivisions. In a word, from its syntactic aspects to the pragmatic circumstances that concern it, passing through its possible meanings, absolutely biasing, in this way, the implication that this type of constructions may have on the psychic structure/function.

2.2.4 Findings of the Theoretical Linguistics

Returning to the stages contemplated by Levelt in the process of producing words, we see that characterizes them from conceptual preparation to the initiation of the articulation, pointing out in each one, their output representations. That is to say: lexical concepts, lemmas, morphemes, phonological words and the phonetic-gestural results that are executed during the articulation, although without resolving if these stages overlap in time or if they are strictly sequential.

Without being exhaustive, we will give some details of each of the stages:

- *Conceptual preparation*: refers to the different forms of activation of the lexical concept of a word. This activation is justified assuming that, like all open words and most of the closed words are significant, the intentional production of a meaningful word "always" involves this conceptual activation. That sometimes includes a problem of verbalization, that is, discerning the communicative intention from a message that not only represents a concept but a real conceptual structure. This stage of the theory was modeled by a conceptual network, which consists of a series of linked 'concept nodes,' which are conveniently labeled to indicate the character of the link.

- *Lexical selection*: allows to retrieve a word or better a lemma from the mental lexicon, before the expression of a lexical concept. The model achieves this by linking a layer of lemma nodes to the conceptual network, assigning a lemma node to each lexical concept. An 'activated lexical concept,' disseminates its activation to its slogan nodes through a 'statistical mechanism' that favors the selection of the most activated slogans. Although this is the most important selection mechanism, in the case of function words, it is driven by the syntax and not by its conceptual value. In this way, selecting from the slogans creates a suitable syntactic environment for the chosen word. This mechanism is intended to simulate also something similar to what Slobin (1987) called 'Thinking for Speaking,' that is, to achieve the necessary grammatical agreement and the temporal relevance of an expression from the conceptual representation.

- *Morphological and syllabic coding*: after having selected the word syntactic or lemma, the speaker is about to cross the boundary that separates the conceptual/syntactic domain from the phonological/articulatory. This task consists in preparing the appropriate articulatory gestures for the selected word, in its prosodic context. First, it proceeds to recover the phonological form of the word in question, from the mental lexicon. According to the theory, access to the phonological structure involves activating three types of information: (a) the morphological distribution, (b) the metric form and (c) it's segmental distribution, leading to the syllabification process, making it not stored in the lexicon mental. This process was modeled assuming that the segments of a morpheme or phoneme are available at the same time, linked using appropriate links to indicate their correct order.

- *Phonetic coding*: this theory gives a partial solution to this aspect. The general objective is to indicate how the gestural results of a phonological word are computed. In the computational model that supports the theory, this coding was simulated by activating the syllabic effects. Derived from the segments of the phonological syllables, assuming that the speaker must have direct access to frequently used results, thus ensuring greater coherence intersyllabic In this way, it is assured that the articulation of the phonological word begins as soon as all of its syllabic results have been recovered. It is recognized that this procedure does not cover all alternatives.

- *Articulation*: the gestural results of the phonological word are finally executed by the articulatory system, although the operation of this system exceeds this theory.

- *Self-monitoring*: the first thing we hear, when speaking, is our voice, so we can control the appearance of problems in our speech, in addition to our interlocutor, which implies the normality of our perceptual system. Although the theory does not go beyond the initiation of the articulation, it does suggest a management of the self-correction of the 'internal speech,' that is, it can control some internal representations that occur during the coding of speech. Levelt proposes that 'internal speech' is a representation of phonetic coding, therefore, accessible from the analysis of the syllable.

After making a detailed analysis of the stages involved in the production of the word, the authors make a precise detail of the computational model that allowed to 'corroborate' the theory. On which, we have highlighted some of its characteristics when describing each one of the stages, so we are not going to abound in details. Suffice it to say that it is based on a network that shows a propagation of its forward activation, that is, no is applied an output of a node to the input of a preceding node, with the possibility of inhibiting certain nodes as needed. The computational model achieved was baptized as "WEAVER" and is ingeniously programmed so that, using the contribution of a series of suitably structured data, it complies with the different stages proposed by the theory. Adjust the data provided according to the results of various psycholinguistic experiments, such as, for example, the 'asynchronous start stimulus,' in the analysis of the influence of distractors on semantic facilitation and inhibition, to demarcate conceptual interferences or possible interactions between semantic and orthographic factors.

Finally, the authors offer two types of evidence that in some way try to prove the plausibility of the proposed theory. This evidence is those referred, on the one hand, to the reproduction with enough approximation of the empirical times obtained in experiments that suppose an exploration of each one of the suggested stages. On the other hand, those based on capturing functional brain

images, such as Event-Related Potentials and Magnetoencephalography, simultaneously with the operation of a detailed model of cognitive processing with data obtained from the experimental task.

By way of summary, we can say that this theory proposes, on the one hand, a system governed by concepts whose objective is to select those words (*lemma*) from the 'mental lexicon' that more adequately express specific intention of the speaker. On the other hand, a system that prepares the articulatory gestures for the selected words in the context of the enunciation. Both systems are linked in a somewhat lax way. It provides a computational model that simulates each of the stages proposed in theory, which yields results that are empirically tested, which, according to the authors, shows that the theory reaches a reasonable level of congruence and plausibility.

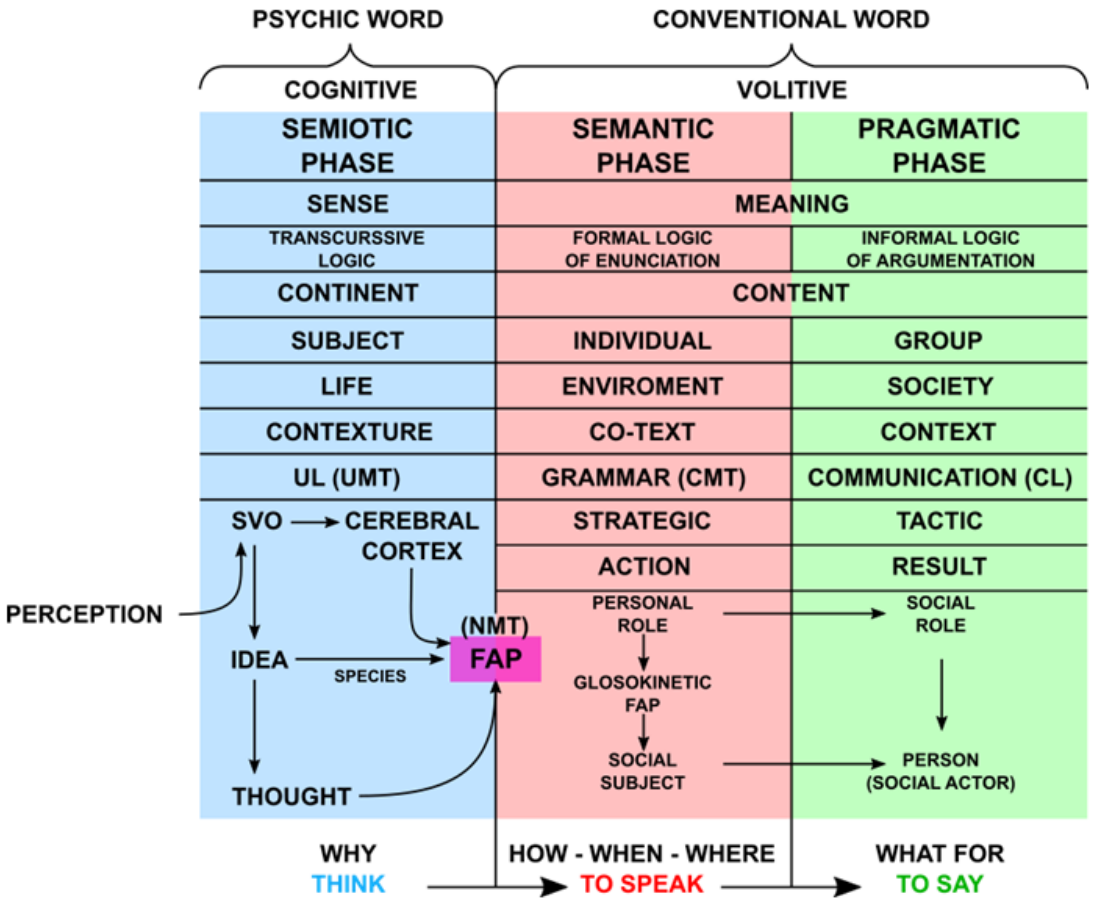
3.0 PROPOSAL OF A PRODUCTION MODEL

Although, as we already anticipated, unlike conventional language, there is no production as such of natural human language. At this section and a counterpart to the model previously analyzed we will suggest a model of conventional language production at the point of departure of the 'junction' with natural language, that is, how one is 'transformed' into the other.

From the beginning, I want to highlight, on the one hand, the psychobiological nature of this connection and on the other, that it is represented by a fixed action pattern (FAP), see Appendix. Figure 2 shows an overview of the model.

Figure 2: A Production Model

References: UL: universal language - UMT: universal maternal tongue; CMT: conventional maternal tongue - CL = everyday language; SVO: subjectivon - NMT: natural maternal tongue - FAP = fixed action pattern.



We can observe in the previous figure that the proposed model covers two well-differentiated aspects. On the one hand, it deals with the domain of the word psychic, that is, the cognitive and therefore of a mostly unconscious nature; and on the other, with the realm of the ordinary word, where the conscious will prevails.

On the other hand, the model can be divided into three specific phases: (1) *Semiotic phase* or sense, which covers the cognitive domain in its entirety. The volitional domain, or meaning, in turn, is divided into: (2) *Semantic phase* or that of the literal meaning or that of which it is spoken; and (3) *Pragmatic phase* or the real meaning or what we want to say.

The semiotic phase is conditioned by the transcurssive logic, while the semantic phase is conditioned by the formal logic of the enunciation; finally, the pragmatic phase conforms to the designs of the informal logic of argumentation. These logical ties make the semiotic phase act as a continent of the other two, which constitute their occasional content in the face of a specific communicative situation.

The only resident in the semiotic phase is the subject. The semantic phase is inhabited by the individual and the pragmatic phase by the group. Therefore, the objective to be controlled by the semiotic phase is life (biological, psychic and social); the semantic phase is in charge of the relations of the individual with the environment, remaining for the pragmatic phase, the control of the relationships with the others, that is, with society.

The semiotic phase is contexture dependent. However, the semantic phase is dependent on the co-text or linguistic context, while the pragmatic phase is dependent context.

The universal maternal tongue, the one that derives from the universal language, is the rector of the semiotic phase. Grammar, represented by the conventional maternal tongue, dictates the rules of 'good speech' that institutionalize the semantic phase and the communicational norms, put into evidence by everyday language, in its various genres, governing the pragmatic phase.

The model shows how the word is elaborated (semiotic phase) and once elaborated, how it is projected in a strategic action (semantic phase) to obtain a tactical result. In other words, what needs to be done to live together, that is, to stay alive socially through the recognition of others. Although it depends on our behavior, it is strongly conditioned by how we communicate with the other, something that as we saw, it is wholly expressed, for example, in politeness.

The specific mechanism proposed in this model begins with the perception of an act of emission made by another, to which we have to answer, or the perception of a communicative situation that requires our intervention as speakers. This perception that is restricted by the subjectivon (See Appendix) inherited from our mother. That is, by its way of ‘seeing’ the subjective reality, that generates, in the first place, a psychic structure according to and adjusted to chronological time, represented by an idea, and second, it gives rise to the constitution of an essential cognitive structure: the species (Salatino, 2014, p. 93).

The species, under the strict surveillance of the universal maternal tongue, represented by the subjectivon, allows the elaboration of the natural maternal tongue. On the other hand, the idea, the structural, is functionalized giving rise to thought, which by adjusting to what is established by the natural maternal tongue, converges on the cortical structures, to leave created the refined mechanism that will allow preparing everything necessary for the emission of the word. This mechanism, once adequate to the desired emission, is semi-automated so that it can be used when similar words have to be used regarding their meaning, that which we acquired by imitating our elders. We have called this mechanism Glosokinetic FAP.

The name of glossokinetic assigned to the FAP that serves as a link between the natural maternal tongue and the conventional maternal tongue is quasi-inappropriate since the etymological meaning refers to the movements of the tongue and the truth is that less than 10% of the communication is words. Almost 40% is transmitted through the inflections of the voice, and around 50%, through body language (Mehrabian, 1971) which includes: postures, gestures, movements of the hands, eyes and even movements respiratory. For the above reasons, here, the

term glossokinetic consists of all of the above and thus may represent the link of the social subject (the individual) within its personal role, which indicates: how, when and where to speak, fulfilling the function of the semantic phase of this model.

Finally, entering the pragmatic phase, the person or social actor adopting its social role, adapts its communication, according to a particular intention that has as a purpose to achieve a specific effect on its interlocutor, that is, a justification for what to say.

4.0 CONCLUSION

The first criticism that should be made to the Levelt model is that to demonstrate that the speaker is a highly sophisticated information processor. That is capable of transforming intentions, thoughts, feelings, into articulate fluid speech, it uses a real information processor to which it assigns as a fundamental task, to execute all the cognitive processes that are involved in the production of speech, as proposed by the theoretical model.

A second criticism has to do with the means used to corroborate the plausibility of the model. On the one hand, to adjust the model are used empirical data obtained in experiments designed on restrictive basal conditions and very oriented to what is intended to achieve. Then, using a series of computer gadgets, it manages to produce results that adjust quite well to the experimental results, especially those that have to do with the times involved in each of the supposed stages through which the production process has to pass. On the other hand, the use as a method of recording the cognitive activity of a variety of evoked potentials called Event-Related Potentials (ERP) which according to the authors allows them to corroborate in live performance, three essential aspects of the model. Such as 1) studying the temporal sequence of the different phases of the process, as well as analyzing the separate 'time windows' within each stage that occurs in the preparation of the various responses. 2) obtain the spatiotemporal course of cerebral cortical activation during lexical coding and thus compare it with the temporal stratification proposed by the model and 3) be able to study an isolated process. The above is based on suitably designed experiments that showed that could isolate a variable that affects only one component of the process, for example, in this theory, the variable that controls the frequency of the words, just affects the duration of the morphological coding. Then, any concomitant variation in the space-time course of the brain activation 'must' correspond to the functioning of only one of the components of the processing.

The contributions of the ERP, from the medical point of view, are still under discussion, including those of Cognitive Evoked Potentials, such as P300, used to analyze tasks involving intentional discrimination, and which is accepted as a valid index of processing of central information engaged during decision making related to a given function.

The discussion about the validity assigned to these methods arises from the lack of their neural correlates. So, they are a standard option for psychological tests and even for the measurement of cognitive function, merely because they are easily reproducible, but not because they allow adequate temporal-spatial discrimination of cortical functions. Its lack of perception is because it is an aggregate record (a post-potential) that arises from a large number of neurons and that supposedly implies, when evoked, some form of consciously making a situation or making a decision. The anatomical substrates of the P300 have not been clarified, nor the origin of their component waves, nor even how are generated the evoked potentials, that is if they are induced by the incoming stimulus or produced by the reaction of a neuronal population that focuses its firing patterns based on a stimulus. On the other hand, it is not possible to discriminate the influence of contextual information, so the results are further diluted. In conclusion, the ERPs are a sensitive but very unspecific tool.

Finally, a third criticism derives from two core issues when dealing with aspects related to cognition. I refer, on the one hand, to the use of semantic projections originated in the syntax as if they were valid concepts, if not, definitions taken from a mental lexicon, in replacement of real meanings. And on the other hand and much more critical, to the arbitrary configuration of the so-

called cognitive processes, such as subroutines of a computer program (WEAVER) where the solution is given, only by finding the right algorithm so that this routine can achieve a previously chosen result; thus, transforming itself into the description, not of the complex mechanisms that the psyche implements to produce speech, but of the twists and turns that the systems analyst and the computer programmer have to overcome to solve the problems that the programming language elected to develop the model.

This last difficulty is unavoidable because usually, the models used to endorse the theoretical proposals, are simulators and not emulators. Simulating means obtaining results similar to those sought, that is, imitating the operation of the studied system, without taking into account the underlying processes that produce it. To emulate, on the other hand, is to obtain results as a consequence of accurately modeling the functioning of a series of coordinated processes that seek to mimic natural processes. When in an emulation, the results thrown by the model are similar to the empirical data, it is then legitimate to extrapolate, and be able to say that 'possibly' the mechanisms involved in the natural process resemble those proposed; Doing this with a simulation is not correct. The production model presented by us is closer to emulation than a simulation.

The provenance of the presented model is corroborated, beyond its solid neurobiological basis, if we bear in mind that we can support Plato's suggestion. It asserts in other terms, that it is not the same to have something to say, that to have to say something. With this model, it is possible both. To define the 'have something to say' as a product of a strategic-tactical integration of the said, like the unfounded saying, which arises spontaneously without any intentionality, and all this without having to appeal to implications or ‘implicatures’ that lack support in subjective reality.

APPENDIX

GLOSSARY

Conventional Maternal Tongue (CMT): is the socio-cultural support of the language that is acquired by imitation, after 18 months of life (everyday language). Represents 'how is the subjective reality' from the social point of view.

Fixed action pattern: (FAP) (Llinás, 2003) Behavioral expressions that arise from the operation of modules of motor activity and that show, both aspects of an automatic nature that have a strategic purpose, as well as tactical aspects of a voluntary nature. In this work they are considered the basis of the generation of habits and they are divided into three types: a) innate, b) modifiable by experience and c) acquired. Each of these categories is operated at different levels of brain complexity according to phylogenesis of the nervous system.

Natural Maternal Tongue (NMT): is the biological support of language acquired in the first 18 months of life (natural human language). Represents ‘how is seen the subjective reality’ from the biological point of view.

Subjectivon (universal linguistic pattern): is in each of the domains in which is structured the subjective reality and represents the basis of the different ways of 'seeing reality.' His biological equivalent is in the mitochondria, and like it, has as we saw a circular double-stranded DNA structure on two complementary strands or chains, a heavy or external (the nucleoid) and one lightweight or internal (the gamete). It also has some organelles that are designed to 'sustain' aspects of the universal language, and of the future natural language, screened in the conventional language, once acquired. The possible nucleoids of a subjectivon are just 6, and represent all combinations without repetition of the subject (S), the object (O), and the change (V). That is dextrorotatory variants: SVO, OSV, VOS; and the levorotatory variants: OVS, VSO, SOV.

Universal Maternal Tongue (UMT): is the mode of behavior of a given subjectivon. The tendency to externalize a specific form becomes manifest in the order of the elements in its nucleus. Represents 'how is seen the subjective reality’ from the psychical point of view.

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