AN APPROACH TO LANGUAGE AS A COMPLEX SYSTEM. NEW ISSUES IN HISTORICAL LINGUISTICS

ATALIBA TEXEIRA DE CASTILHO*
Universidad de Sao Paulo

Resumen: Los siguientes puntos articulan este trabajo: (1) El punto de vista funcionalista relacionado al cambio lingüístico pasa por una crisis que se debe a su ambivalente perspectiva sobre la lengua. La literatura combina dos percepciones distintas acerca del lenguaje, el punto de vista clásico y un punto de vista todavía poco claro según el cual la lengua es un conjunto de procesos. (2) Se necesita la construcción de una teoría de la lengua como un conjunto de sistemas complejos y dinámicos, independientes los unos de los otros, gobernados por principios basados en las conversaciones espontáneas. (3) De acuerdo con esa propuesta, debe organizarse una nueva agenda en la lingüística histórica que tome en cuenta procesos y productos dispuestos en cuatro sistemas: lexicalización y léxico, semantización y semántica, discursivización y discurso, gramaticalización y gramática.

PALABRAS CLAVE: DISCURSIVIZACIÓN, DISCURSO, GRAMÁTICA, GRAMATICALIZACIÓN, LEXICALIZACIÓN, LÉXICO, SEMÁNTICA, SEMANTIZACIÓN

Abstract: *In this paper I argue that: (1) The functionalist approach to language change presently undergoes a crisis possibly due to its ambivalent perspective on language. In fact, the literature combines both the classical approach to language as a set of products together with a still unclear approach of language as a set of processes. (2) The construction of a theory on language as a complex and dynamic set of dependency-free systems is needed to overcome the crisis. Principles governing conversation will be seen as also governing such systems. (3) According to my proposal, a new agenda on language history can be organized, focusing on processes and products arranged in four systems: lexicalization and Lexicon, semantization and Semantics, discursivization and Discourse, grammaticalization and Grammar.*

This text is structured in 5 sections: (1) The crisis in the functionalist approach to language change. (2) Classical science versus complex systems science. (3) View of language as a complex and dynamic set of systems. (4) Sociocognitive principles governing language as a complex system. (5) An agenda for a multisystemic linguistics.

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THE CRISIS IN THE FUNCTIONALIST APPROACH TO LANGUAGE CHANGE: THE ISSUE OF GRAMMATICALIZATION

Grammaticalization has ever been the functionalist *pièce de resistence* regarding language change. From the nineties on several Brazilian linguists took for

granted that grammaticalization is a good way to understand how languages change as well as how they are built.

Grammaticalization is usually said to be a set of alterations undergone by a lexical item during which (1) it gains new syntactic, morphological, phonological and semantic features, (2) it becomes a bound form, (3) it may even disappear as a consequence of its extreme crystallization. It is important to keep in mind that in this process a cognitive source domain *A* provides ground for a cognitive goal domain *B*, acting together with pragmatics as triggers of the process.

An exegesis of grammaticalization studies shows that researchers seem to perceive language as a heteroclite and static entity, sensitive to a linear representation where categories are placed one after another, in such way that derivations may be established between them. Besides, such categories come from fields as disparate as Lexicon, Semantics, Discourse and Grammar: Castilho (2003a and b). According to this, grammaticalization is admitted to be an epiphenomenon.

Although "grammaticalizers" do not say it clearly, the following assertions capture their perceptions on language:

(1) *Natural languages are linear sets of signs and its modifications occur unidirectionally.*

According to Hopper and Traugott (1993/2003: 100) "The basic assumption is that there is a relationship between two stages A and B, such that A occurs before B, but not vice versa. This is what is meant by unidirectionality". Each stage corresponds to a point in the language-line in such way that a relation of sequentiality may be established between them.

Grammaticalization has been firstly proposed by Antoine Meillet. According to Mattos e Silva (2002, 2003), the neogrammarian theory of language has been kept intact by present day researchers on grammaticalization.

(2) *Language products go from Lexicon to Grammar, in such way that grammatical categories derive from lexical ones.*

Generally speaking, "grammaticalization is a semantic process, whereby an item with a full lexical meaning comes to acquire a more abstract, functional, grammatical meaning" Lightfoot (1999: n. 108). According to Bybee (to appear), *"grammaticalization is the process by which constructions arise in languages and the lexical items in them become grammatical morphemes"*. Approximately the same definition may be found in Meillet (1912), Bybee, Perkins and Pagliuca (1994), Heine, Claudi and Hünnemeyer (1991), Hopper and Traugott (2003) and others.

It is clearly stated in the literature that lexical categories stored in the "language-line" give birth to grammatical categories, and the latter advance to more grammatical ones, a process best known as the "x to affix cline": Heine, Claudi and Hünnemeyer (1991).

But if we assume that Lexicon and Grammar belong to different language domains, each one holding its own categories (otherwise such fields would converge to a single system), how to derive a grammatical category from a lexical category? Why not assume that each domain has its own rhythm, acting without determining one another? I argue that language linearization produced here an unexpected by-product, i.e., the configuration of a cline such as Lexicon > Grammar, taking Lexicon as a kind of primitive field.

(3) *Phonetics, syntax, semantics and discourse are language domains connected by derivations.*

The understanding of grammaticalization as an epiphenomenon drove authors to locate in the same perspective phenomena as disparate as phonetic erosion, decategorization, recategorization, broadening of syntactic uses, semantic bleaching, not to mention discursive pressures over the grammatical system. Functionalist people have been lead to implicitly understand Discourse, Grammar and Semantics as a "(c)line" —allow me to reinterpret the word *cline* as *cline + line*— taking for granted that there is a hierarchy between them and that derivations may be admitted ranging from Discourse to Semantics and from Semantics to Grammar. According to this view, at the moment of linguistic creativity our mind operates through sequential impulses, going from one linguistic domain to another. Functionalist theories differ among them just by the domain they take as point of departure. Actually statement (3) is an enhancement of statements (1) and (2).

In short, we can see that studies on grammaticalization postulate languages as a static and linear combination of items from separable domains, although grammaticalization is commonly admitted to be the study of a process. As a consequence a theory of language as a dynamic phenomenon needs to be sketched.

Other debates on grammaticalization have been gathered by Campbell and Janda (2001), aiming to answer the following questions: (1) What mechanisms underline grammaticalization? (2) Is grammaticalization unidirectional? (3) Does grammaticalization have explanatory value? (4) Does grammaticalization have any independent status of its own, or is it totally derivative? (5) Is grammaticalization necessary? Does it have a heuristic role to play? (6) What is the proper role of "semantic bleaching" and "phonetic reduction" vis-à-vis each other in grammaticalization phenomena, and how is it to be explained? (7) What are "degrammaticalization" and "lexicalization", and how is it (are they) to be explained? (8) Is grammaticalization a process? (9) Is grammaticalization continuous, and if so, what explains this? (10) Are claims about grammaticalization viciously circular, and, if so, to what extent? (11) How does external socio-cultural history affect grammaticalization? (12) Is grammaticalization best seen as *lexical > grammatical* and *less grammatical > more grammatical* (…) or as constituting "grammar" in general? (13) What will the future of grammaticalization theory be? What should it be?

I will discuss in the following sections several topics from above.

CLASSICAL SCIENCE *VERSUS* SCIENCE OF COMPLEX SYSTEMS

The aim of this section is to give statements from section (1) a proper epistemological frame. A kind of oscillation between language as products and language as processes may be found in the literature.

Two ways of doing science are represented here. Its identification will help to understand the crisis' roots and possibly the way out of it.

Let us take for granted that classical sciences preferred the study of products and sciences of complex systems preferred the study of ongoing dynamic processes which originated such products.

Classical sciences

The following assertions describe classical science:

(1) *Nature phenomena are orderless and confuse, hiding its regularity.*

The task of science is to unveil the hidden regularity beneath its apparent disorder. Imperfections and messy stuff are merely reflections of perfect archetypes, as Plato would have it. Once identified the system discloses the harmony, consistency and beauty intrinsic to the phenomena, which turns out to be predictable. Irregular data not explained by the models have no importance and must be disregarded as aberrant and anomalous stuff. "In the centuries since Galileo and Newton, the search for regularity in experiment has been fundamental" Gleick (1988: 41, 68, 157).

(2) *To assure some results and conclusions we have to consider data in its stativity.*

The empiric object must be idealized, even frozen throughout some theoretical device, limited in its extension, no matter if it becomes divorced from real world. The forms of Euclidian geometry, for instance, take into account only static data as lines, planes, spheres, triangles and cones. As a result, the classical approach led to an enormous fragmentation of fields, showing the leaves but not the forest. Structuralists and generativists used to "pasteurize" their data, segregating it from the social reality amidst which they came to life. Syntactic nests began to be preferred instead of full texts of real linguistic uses, and language became the field for an endless *theoria gratia theoriae.*

(3) *Systems identified by classical approach show a great conceptual elegance and analytic simplicity.*

According to classical sciences, systems are linear and within them the whole equals the part. From a structuralist view, phonemes, morphemes and phrases are orderly units, and deterministic relations may be established between them. The features of phonemes specify the features of morphemes,

going from here up to phrases and to sentences.[1] A relation of cause and effect is recognizable between these categories according to the classical approach.

(4) *The pathway to scientific discovery is mainly deductive. Each situation is translated into mathematical terms, a model is built, and from now on the utterances will be explained according to the model.*

Mathematical modeling is one of the most recognized procedures of classical approach.

Summing up it is quite clear that classical approach prefer phenomena which reached a kind of completion, like crystallized products occupying clear spaces inside natural languages. Classical scientists understand the world as a reality in equilibrium. Usually they do not ask questions about dynamic phenomena, the ones still in its way. When applied to spoken language let us recognize that such ideas have not been successful (Castilho, 1994).

Sciences of complex systems

To consider phenomena in its dynamicity it will be necessary to take another route, integrating Linguistics among sciences which presently debate a set of phenomena such as the circulation of fluids, the weather forecast, the oscillations of economic cycles, the rhythm of population growth, the proteins as systems in movement and so forth.

These phenomena do not fit in the usual scientific reasoning, retrieving what happened in its time to the case of the camel to Aristotle, the rhinoceros for Marco Polo and the platypus to the 18th century biology (Eco 2000). As we do know, natural languages will easily put other animals in this line.

Such phenomena do not reveal the order, the symmetry and the elegance they were supposed to. They are better understood as creative processes often called "chaos" or "complex systems" (Gleick, 1988: 43).

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[1] Usual metaphors as "top down" or "bottom up" ways of analyses show additional perceptions of language linearity.

A new approach has been set up to face facts that do not fit in the comfortable patterns identified so far. Its first steps took place in the seventies, partly opposing the classic approach aiming to broaden the scientific field. According to Gleick (1988), Waldrop (1993) and Cilliers (2000) sciences of complex systems took for granted the following assertions:

(1) *Components of complex systems show a kind of order without periodicity but in continuous flow, in permanent movement, as Heraclites would have it.*

Data should be considered in its dynamism, which encompass vital forces and flux shaping to phenomena changing from time to time. Here we find Heraclites crouched at his riverfront, meditating that *pánta rei kai oudèn ménei,* "everything goes and nothing stays".

Complex systems never reach the stability, oscillating from a point to another, like pendulums.[2]

Moraes de Castilho (2005) verified the oscillation between syntactical configurationality and non configurationality in the history of Portuguese.

Besides, in Linguistics, assertion (1) makes meaningless statements like "linguistic era of maximum development", "period of decadence", "linguistic improvement", and so on.

(2) *Systems are neither linear, nor orderly, nor even steady. They are dynamic, showing an irregular and unpredictable behavior in which the* "same material goes around and around in endless combinations" (Waldrop, 1993: 335).

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[2] Neogrammarians identified examples of nasalization living together with denasalizations, palatalizations closely related to depalatalizations and so forth, but curiously enough this caused no problem to its theoretical foundations. Taking another direction, Lightfoot (1999) showed that "grammatical change is more contingent than is often thought" (19), "chaotic in the technical sense" (259), "a grammar changes like a billiard ball on an undulating surface" (206), "the notion that there was a directionality to change […] collapsed in its own circularity" (208).

Complex systems match stability to chaos (Gleick, 1988: 68, 79).[3] Authors quoted by Waldrop (1993: 11, 145-185) acknowledged that a system is complex "in the sense that a great many independent agents are interacting with each other in a great many ways". These agents are unpredictable, chaotic, acting in parallel, simultaneously, not step by step. It is not possible to identify one single agent which could determine or act over other agents. Neurologists say that "there is no master neuron in the brain". What does occur is a polyfunctionalism among agents. Perception of hierarchically organized systems disappears when the object is a process, because hierarchy is good only when we are dealing with crystallized products. As a consequence complex systems cannot be grasped simply through the analysis of its components. It will be necessary instead to observe and describe the interaction among them. In other words, "in 'cutting up' a system, the analytical method destroys what it seeks to understand" (Cilliers, 2000: 2). Objects as complex as the brain and everyday language make no room for strictly analytical descriptions (Cilliers, 2000: 5).[4] Components of complex systems are not definable by themselves, but through the relationship established among them. Memory, for instance, does not live in a single neuron, but in their relationships. Meaning is determined by dynamic relations between system components. Saussurean assertions about "la langue" as a system "où tout se tient" as well as "dans la langue il n'y a que des différences" regain all its force (Cilliers, 2000: 34-47).[5]

Natural languages display the same behavior if we take a transcription of spoken language as an example. When applied to spoken language, classical

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[3] Confronted with a nonlinear system, scientists would have to substitute linear approximations or find another uncertain backdoor approach […] Nonlinear systems with real chaos were rarely taught and rarely learned. When people stumbled across such things —and people did— all their training argued for dismissing them as aberrations. Only a few were able to remember that the solvable, orderly, linear system were the aberrations (Gleick, 1988: 68).

[4] *The success of the analytical method has created the illusion that all phenomena are governed by a set of laws or rules that could be made explicit. The mercenary use of Occam's razor, often early in an investigation, in an indication of this belief* (Cilliers, 2000: 9, 11).

[5] Same author adds that "In this sense, neural networks are structural rather than post-structural, and can be described quite adequately in Saussurian terms".

descriptions retain no more than residues and some static structures which do not represent the tremendous dynamism orality is made of.

Language scientists often work inductively, taking fragmentary facts and moving forward to an applicable internal model. Induction will allow scientist "to survive in a messy, unpredictable, and often incomprehensible world" (Waldrop, 1993: 253). According to this view, the essence of science is not the prediction, but the understanding and the explanation.

(3) *Elements from complex systems show simultaneous relationships. They are not built step by step, linearly. They are adaptive and self-organized. Its agents earn experience and constantly revise its actuation.*

A. Stuart Kaufmann, quoted by Waldrop (1993: 107), shows that genes in a cell allow an example for this assertion: "The fact that a single genome can have many stable patterns of activation might be what allows it to give rise to many different cell types during development".

Biologists emphasized the value of processes known as self regulation. According to Cilliers (2000: 89), "the main burden of the argument will be to show that internal structure can evolve without the intervention of an external designer or the presence of some centralized form of internal control".[6]

The property of self regulation underlines the importance of history if we intend to understand complex systems. Since these systems are continually transformed by the environment and by themselves, only the traces of history remain, distributed through the system (Cillers, 2000: 108).

(4) *Anomalies identified by classical approach exemplify vital phenomena for the understanding of the problem.*

Anomalous events should not be discarded as aberrant. Science should try to understand such phenomena better than making predictions (Waldrop, 1993: 43, quoting William Brian Arthur).

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[6] Another example of self-organizing systems is that of language. In order to enable communications, language must have a recognizable structure. To be able to maintain its function in vastly different circumstances, the structure must be able to adjust —especially as far as meaning is concerned— (Cilliers, 2000: 91).

(5) *Competition among systems is more important than its consistency.*

Consistency is a chimera, because in such complicated world there are no guarantees that even scientific experiments can be consistent. Syntactic tests for instance interphere sometimes in the phenomenon under analysis, creating other realities.

(6) *A new topology of vagueness, of the approximate, will be proposed.*

Euclidian geometry does not allow us to understand complexity, since clouds are no spheres, mountains are not cones, and the light does not travel in a straight line. As Gleick (1988: 94) points out *"The new geometry mirrors a universe that is rough, not rounded, scabrous, and not smooth. It is geometry of the pitted, pocked and broken up, the twisted, tangled and intertwined".*

In the linguistic domain, the Euclidean view is good only as a point of departure to the study of locative adverbials, prepositions and other subjects. It has been seen that this view is quickly altered by image schemas, mental spaces mapping and other cognitive processes: Ilari, Castilho *et al.* (2008, in printing).

Other repercussions of such position in linguistic studies may be found in the Theory of Prototypes (Lakoff, 1975, 1982). Lakoff (1975: 234) proposed the word "hedges" to designate expressions "whose job is to make things fuzzier or less fuzzy", like "kind of, sort of, more or less, relatively" among others. Hedge adverbials in Portuguese like "tipo, mais ou menos, quase, uma espécie de", jeopardize the prototipicity of its scope (Moraes de Castilho, 1991; Lima-Hernandes, 2005). The topology of the vague has been formulated in Cognitive Semantics by Talmy (2001: 31 and passim), among others.

(7) *Finally, when dealing with complex phenomena, no single method will yield the whole truth* (Cilliers, 2000: VIII-IX, 23).

Labels to apprehend the science of complex systems begin to appear, picturing sometimes the whole (Non-linear science, Cognitive sciences, Theory of dynamic systems), or a field of application (Molecular Biology, Artificial life, etcetera). Definitively, this is not a field for those who used to prefer problems clearly defined. Instead, for those interested in ongoing data

complex systems offer an interesting field, even if you have to define them metaphorically.

The scientific compartimentation we witnessed in the past century will possibly be changed. The present century seems to point out to a transdisciplinary science (not a simple interdisciplinary one) much more pressing because it will require from scientists more than one single subject and the ability to detect connections.

Such high degree of requirements already existed in Historical Linguistics, clearly enlarged in the current century as underlined by Lightfoot (2006: 11): "a modern historical linguist needs to be a generalist and to understand many different subfields —grammatical theory, variation, acquisition, the use of grammars and discourse analysis, parsing and speech comprehension, textual analysis, and the history of languages".

This quotation leads us to the following question: what place will Linguistics occupy in this new scientific field?

Although linguists had not appeared so far in the Santa Fe Institute, as far as I know, they made several steps toward the above statements, either facing the impact produced in available theories by the studies on spoken language, or developing theories sheltered by the label "Cognitive Linguistics". New questions has been raised. New ways have been envisaged. In the following section I submit to criticism a proposal concerning natural languages as complex systems.

LANGUAGE AS A SET OF DYNAMIC AND COMPLEX SYSTEMS

Before elaborating this section, it is worth recognizing that the assumption of language as a dynamic and complex set of systems is often mentioned in the literature. I do not intend to review this exhaustively. Instead I will focus my attention on a few authors clearly unhappy with previous theoretical approaches.

Morris (1938: 14) admitted language as a semiotic system combining three areas: Syntax, Semantics and Pragmatics. Syntax deals with signs in its combinations with other signs according to formation and transformation rules. Semantics deals with the relations between signs and its *designata*. Pragmatics deals with relations between signs and users. According to Morris, Rhetoric

may be seen as a primitive and limited form of Pragmatics (Morris, 1938: 35). Morris' ideas would be taken later on by Franchi (1976, 1991), who asserted that no rules of determination should be proposed among Syntax, Semantics and Pragmatics.

As founding fathers of Conversational Analysis, Sacks, Schegloff and Jefferson (1974: 722) set up the basis for an interactional syntax claiming that

> […] it seems productive to assume that, given conversation as a major, if not THE major, *locus* of a language's use, other aspects of language structure will be designed for conversation and use and, pari-passu, for turn-taking contingencies. The interaction of syntactic and turn-taking structures, however, awaits serious investigation.

It is well known that Ono, Thompson (1994) and associates captured and developed this new field of investigation, exploring an interesting way to study syntax as a complex domain.

Prior to this program, Franck (1981: 14) studied double bind structures, asking about them:

> What type of objects should be taken as sentences in order to make compatible its definition with the assumptions of Conversation Analysis? Instead of analyzing sentences as completed products from a post-factum perspective, it seems more acceptable to study them as processes which unfold in time, i.e., like dynamic entities.

Curiously enough, at that same time Sornicola (1981: 79) wrote the first extensive analysis of a spoken Romance language recognizing that the "tied syntax" considered by Bally was absent from transcriptions. She proposed that spoken constituents would be better analyzed like informative autonomous blocks, syntactically independent, tied together by a principle of semantic cohesiveness. Later on she stated that

> La mia impressione è che in effetti questo quadro teorico […] possa essere estremamente fruttuoso negli studi sul parlato spontaneo. Le oscillazioni e fluttuazioni, talora impercettibili all'orecchio umano, talora di grande entità, che caratterizzano il parlato spontaneo, possono essere meglio

comprese all'interno di un quadro concettuale incentrato sulla complessità e sul non determinismo. (Sornicola, 1994: 120).

From 1988 on, researchers affiliated to the "Project of the Spoken Brazilian Portuguese Grammar" began to discuss the properties of orality. Nascimento (1993) identified the following shared perceptions, taking as arguments a grammar of competence compared to a grammar of use:

A) A conception of language as activity, as a form of action –the verbal action– which cannot be studied away from its conditions of effectuation. B) The presumption that communicative competence of speakers and interlocutors displays in the production and reception of texts some regularities based upon a system of linguistic execution made of subsystems. C) The presumption that such subsystems (discursive, semantic, morphosyntactic, phonologic) are characterized through regularities definable by its nature. D) The presumption that a computational subsystem definable in terms of rules and principles integrates such subsystems, organizing utterances interconnected to produce texts. E) The presumption that Text is the place where we may identify the clues of regularities common to the system of linguistic execution.

I underline some expressions from the above quotations, like "interaction 'syntactic structures —structure of turn-taking'", "processes analysis instead of product analysis", "complexity", "non-determinism", "language as activity", etcetera. What are linguists talking about? To find an answer I will return to the classical sciences *vs.* sciences of complexity approaches.

It seems to me that both approaches probably operate in complementary distribution: for simplicity sake, we may recognize that classical science deals with language-as-a-product and complex sciences deal with language-as-a-process. There is no gain if we discard one position in favor of the other.

The dichotomy "production-product" has passed among linguistic ideas since Humboldt ([1836], 1990: 65), when he asserts that "la lengua misma no es una obra (*érgon*) sino una actividad (*enérgeia*)". According to Saussure ([1917], 1972: 27, 16-17, 272)

[…] l'étude du langage a deux parties: l'une, essentiel, prend pour object la langue, qui est social dans son essence même et independente de l'individu; cet étude est uniquement psychique; l'autre, secondaire, prend por object la partie individuelle de la langue, la parole, et inclus la phonation, étant psycophysique.

Although not dealing with language as a product, Chomsky distinguishes I-language from E-language:

[…] I-language, where "I" is to suggest "internalized" (in the mind/brain) and "intensional" (a specific characterization, in intension, of a certain function that enumerates (generates) sctructural descriptions) […] [which] is distinguished from what we call "E-language", where "E" is to suggest "externalized" and "extensional"; the E-language is a set of expressions given a privileged status in some manner that has always been obscure" (Chomsky, 1991: 9); see previously Chomsky (1986: 20-22).

After these distinctions, language theoreticians usually make their choice: Humboldt prefers language-*enérgeia*, Saussure the *langue* and Chomsky the *I-languaje*.

I think the present state of questioning imperils such choices. Perhaps it will better to begin the researches from product categories of Lexical, Discourse, Semantics and Grammar —because they are more visible— assuming from here hidden processes to be postulated in these domains, going dialectally back to product categories. Of course several skills will be required for the development of such plan, impossible to be mastered by a single researcher. Collective researches will be mandatory if this point is accepted.

The assumption of language as a complex system is based on the acceptance of the following statements:

(1) *From the angle of production language is definable as a set of mental, pre-verbal processes organizable in an operational multisystem.*

Processes which organize languages as dynamic entities operate (1) simultaneously, not sequentially, (2) dynamically (they are not static entities), (3) multilinearly (they are not unilinear entities).

Such processes may be reasonably articulated in four domains: (1) Lexicalization, (2) Discursivization, (3) Semantization and (4) Grammaticalization.

Studies on grammaticalization timidly unveiled language-as-a-process. It remains to fit them among other processes of language creativity, discarding its current epiphenomenal approach.

(2)   *From the angle of products language will be postulated as a set of   categories organized in a multissystem way as well.*

Language -as-a-product is a set of categories grouped together at the same time in four systems: (1) Lexicon, (2) Discourse, (3) Semantics and (4) Grammar.

Such systems are assumed to be autonomous, they do not derive one from the other. There is no hierarchy among them, which means that no system will be considered central. No matter what linguistic expression we consider, all of them show lexical, discursive, semantic and grammatical features.

To assure its efficiency, such systems will be admitted as sharing some properties, and this takes us to the next section.

SOCIOCOGNITIVE PRINCIPLES TO ARTICULATE PROCESSES AND ITS PRODUCTS

Although there is no interdependency between Lexicon, Semantics, Discourse and Grammar, it is quite clear that they share some sociocognitive processes, based on cognitive categories and conversational strategies, which tied them together. My motivations behind this assertion come from previous researches and from the debate among classical and non-classical way of doing science.

I argue that three sociocognitive principles articulate language processes and products: activation, deactivation and reactivation of properties.

They are cognitive for they shape natural languages operating through cognitive categories such as VISION, OBJECT, SPACE, TIME, MOTION, EVENT, etcetera. From VISION we may derive subcategories such as *figure*, *reference point*, *perspective*, etcetera. From SPACE, *position in space*, *distance*, *container*, etcetera. The semantic features are built from these subcategories, such as /countable/ from OBJECT, /telicity/ from EVENT, and so forth.

These principles are "social", for they are grounded on continuous analysis of speech acts. They manage linguistic systems assuring their integration for the purposes of linguistic efficient uses.

According to these principles, the speaker/hearer activates, reactivates and deactivates lexical, discursive, semantic and grammatical properties at the very moment of enunciation. The expressions are shaped this way before "being put in the air".

Conversation Analysis and essays produced by the "Grammar of Brazilian Spoken Portuguese" provided ground for sociocognitive principles here postulated. Both researches are empirically oriented and take spoken language as its object of study, which is more revealing about language creativity and language change than written language. This means that the principles are empirically based, and cannot be seen as a kind of a priori *raisonné*.

I briefly present now the *sociocognitive principles* shared by all systems, recalling that sociocognitive principles act through accumulations of impulses.

PRINCIPLE OF ACTIVATION, OR PRINCIPLE OF PRAGMATIC PROJECTION

When we talk, we usually try to predict the addressee's verbal movements, that is, whether he has completed his intervention, whether it is still in progress, whether we should take the floor in advance, etcetera. In order to account for such conversation maintenance mechanism, Sacks, Schegloff and Jefferson (1974: 702) have suggested a "*turn-taking construction component*", whose units-type (words, phrases and sentences), "*project the next unit-type*", in a sort of anticipation of the addressee's verbal act. I will consider that these statements comprise the principle of pragmatic projection, responsible for the expressions activation. We activate expressions in order to give validity to the Cooperative Principle conceived in Grice's well-known article "Logic and Conversation" (1975/1982).

Activation thus is the mental moment of selecting categories which will be gathered in expressions.

Principle of reactivation, or principle of correction

During a conversation, we often have to change its course by either repairing our own interventions (self-repair), or repairing the addressee's intervention (hetero-repair). The system of conversational repair aims at eliminating the planning errors/mistakes. The interaction pragmatic repair will imply speech reactivation, strategy on which the repair principle is based.

Reactivation is shaped from here. Through this device we activate again categories already selected.

Principle of deactivation or principle of ellipsis

Deactivation is the movement that causes the refusal or abandonment of properties that were being activated.

Abandonment movements or deactivation of strategies are also observed in conversation, *rejections strategies* being brought about, according to Marcuschi (1983). The "rejection" strategy consists of verbalizing what is not expected, breaking the principle of pragmatic projection. This happens when we answer a question with another question, when we turn down an invitation, etcetera. In these cases, a pragmatic emptiness is yielded in conversation.

It is important to bear in mind that these principles work *at the same time*, rather than in sequence, which has already been pointed out by Lakoff (1987). Thus, deactivation occurs simultaneously with activation, the latter with reactivation, which compromises the principle of unidirectionality. The sociocognitive device works by the gathering of impulses, and this is a possible way one can account for the extraordinary language complexity. In this view, it is hard to agree with those who proposed "semantic bleaching" or "phonetic erosion", for language unveils/displays a continuous process of gains and losses. It would be more suitable to bring forward language change in the frame of "complex non-linear thought", discussed, for example, in Carvalho/ Mendonça (2004).

It is worth noticing that researchers on neural network reached approximately the same conclusion, worded this way by Cilliers (2000: 67):

A neural network consists of a large collection of interconnected nodes or 'neurons'. Each neuron receives inputs from many others. Every connection has a certain 'strength' associated with it, called the 'weight' of that connection. *These weights have real values that can be either positive (excitatory), negative (inhibitory) or zero (implying that the two respective neurons are not connected).* (Emphasis added)

Accordingly, we set forth a proposal for a multisystemic linguistics.

A NEW AGENDA FOR A MULTISYSTEMIC LINGUISTICS: LANGUAGE HISTORY AND DESCRIPTION REVISITED

To configure a multisystemic Linguistics let me first recall some previous arguments:

- Four systems organize natural languages systems: Lexicon, Discourse, Semantics and Grammar. They are partly independent from each other, none is central, thus one does not derive from the other.
- Each system is tied up together by shared sociocognitive principles.
- Each system is constituted by a set of dynamic categories. Such categories do not succeed each other, and every linguistic expression lives together and operates in all these categories.
- Once again, it is not possible to derive lexical, discursive, semantic and grammatical categories one from the other, for they live together and actuate in self-dynamic subsystems. There is no unidirectionality in their relationships since this principle is helpful only to explain changes inside the systems.

With such underlying concepts, four research programs will be taken into account to describe languages and to study linguistic change: lexicalization, discursivization, semantization and grammaticalization. The latter is thus deprived of its current centrality.

Our adopting this perspective implies a definite commitment to transdisciplinarity, whereby a collective science-doing is essential, for no scholar can be equally skilful in those four areas.

There follows my brief characterization of the agenda.

Lexicalization and Lexicon

Lexicalization refers to Lexicon making; usually, lexicalization follows three ways: etymology, derivation and lexical borrowing.

Lexicon is the product of lexicalization. Words will be realized as these lexical categories: noun, verb, adjective, adverb, article, conjunction and preposition. Admittedly, each of these categories corresponds to a certain features matrix, discarding the idea of an Adverb coming from a Noun, or a Preposition from an Adverb, and so forth, as suggested in grammaticalization studies.

Lexical activation (lexicalization itself) is the gathering of cognitive categories and associated features and their mysterious expression through words. If we take as an example the Portuguese Preposition *ante* "before", we may see that the category SPACE, and the subcategory ANTERIOR TRANS-VERSAL SPACE, had already been etymologically concentrated on this item in Latin Adverb ante "ahead, in front, first" which "derives from *Indo-European* *ant-'forehead, façade, frontispiece'": Viaro (1994: 178). Etymon gave origin in Latin to three lexical categories, exemplifying the phenomenon of polylexicalization: (1) As locative and temporal adverbials, the word usually meant a scene located in front of our eyes, grammaticalized as Preposition, for instance, in "innumerabiles supra, infra, ante, post mundos esse", or anterior time, in "tertio anno ante". (2) As preposition, *ante* was used with accusative, like "ante oculos ponere", or "ante Romam conditam": Gaffiot (1957, *s.v. ante*). (3) An associative process explains why this expression turned out to mean "comparison", as in *ante…quam*.

Lexical reactivation (relexicalization) is the mental movement through which we rearrange cognitive features inside words, changing its category. Taking the same example, *ante* in Vulgar Latin had been relexicalized as in *abante, deante, exante, inante*: Ernout and Meillet (1932, 1967, 2001, *s.v. ante*). Portuguese kept almost all these items, which act as (1) Adverb *antes*, with

paragogical-s, and derived *antes-de-ontem*, *anteontem*, *antemanhã*), (2) Verb (Old Portuguese: *avantar*, Modern Portuguese: *antevir*, *avançar* [<* *abantiare*]): Machado (1956/1977, *s.v. antè*), (3) Relexicalized prepositions *avante*, *diante* [< *de+in+ante*], *adiante* [< *ad+de+in= ante*], (4) Preffix *ante-*as in Nouns (*antanho*, *antecipação*, *antebraço*, *avanguarda/ vanguarda*, etcetera).

Deactivation raises *delexicalization* in Lexicon, that is, the death of words. Crystal (2000: 22) showed that lexical loss is bigger in certain semantic fields than others, affecting first those words denoting parts of the human body. Some authors grant that the following Prepositions undergo a process of delexicalization in Brazilian Portuguese: *a* dies and is replaced by *em* or *para* (*Vou à casa* >*Vou na casa/Vou para casa* "I am going home"), *ni* replaces *em*, etcetera.

DISCURSIVIZATION AND DISCOURSE

According to Schiffrin (1994: 6), Linguistic Analysis of Discourse covers vast areas such as (1) Speech act theory, (2) Interactional sociolinguistics, (3) Ethnography of communication, (4) Pragmatics, (5) Conversational analysis and (6) Variation analysis. For the purposes of this proposal, Discourse covers both (4) and (5). Kabatek (2005) showed the importance of Discourse Traditions in the study of language change.

Discursivization is a set of processes that constitute the text and its categorization in discourse genres. According to researchers affiliated to the "Grammar of Spoken Brazilian Portuguese", the following textually-organized categories constitute the Discourse:[7] (1) Discourse units (2) Topic chart, (3) Topic chart reformulations (repetition, correction, paraphrasing), (4) Topic discontinuity (hesitation, interruption, parenthetization) and (5) Textual connectivity (discourse markers, textual conjunctions).

The large amount of discursivization studies in present-day Brazilian Linguistics shows that there is some discomfort at regarding the topics mentioned above as cases of grammaticalization, for it would coalesce varied processes into the same dimension: Castilho (1997: 60), Bittencourt (1999),

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[7] Such categories have been previously discussed by Castilho (1989 and 1998: chapter III). A fuller analysis appears in Jubran and Koch (2006).

Gorski, Gibbon, Valle, Rost and Mago (2003), Braga, Silva and Soares (2001), Braga and Paiva (2003), Jubran and Koch (2006).

In the Discourse system, the principle of activation (*discursivization*) yields the topic selection and its hierarchyzation, the construction of discourse units and their connection, etcetera: Castilho (1989), Jubran (2006a), Risso, Silva and Urbano (2006), Risso (2006) and Urbano (2006).

The principle of reactivation (*rediscursivization*) opens door to utterances repetition and paraphrases, which usually change the argumentative axis, to keep text going, etcetera: Hilgert (1989, 2006), Marcuschi (1992, 1996, 2006 a and b) and Fávero, Andrade, Aquino (2006).

Deactivation in the Discourse system (*dediscursivization*) yields the change in topic hierarchy, leading participants to maneuvers such as parentheses and digressions: Jubran (1993, 1996a, 1999 and 2006a) and Andrade (1995, 2001).

SEMANTIZATION AND SEMANTICS

Semantization is the process of meaning creativity and its alterations. The result of semantization is the meanings of words (Lexical Semantics), the compositional meanings of multi-word expressions (Syntactic Semantics), and the inferred/presupposed meanings (Pragmatic Semantics).

Semantics is the linguistic system that creates changes and categorizes meaning. Predication, referentiation, deixis, phoricity and connectivity constitute *semantic categories*.[8]

Activation of semantic features (*semantization*) results in the semantic categories cited above. Still on the examples of portuguese prepositions *ante, perante,* both predicate their complement by preserving the prototypical meaning when REFERENCE POINT is lexicalyzed as OBJECT, be it /+Concrete/, as in "foi condenável seu comportamento *ante* o tribunal" ("his behavior in front of the court [= concerning] have been condemnable"), be it /+Abstract/, as in "não poderemos ficar mudos *ante* o espetáculo de quebra

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[8] Heine, Claudi and Hünnemeyer (1991a) propose an interesting framework that captures meaning transfer from basic cognitive categories. Their ideas will be taken into account here.

de ética em nosso parlamento" ("we cannot stay mute in front of the Ethics-violation spectacle in our congress").[9]

In Semantics, reactivation yields *resemantizations*, and their adequacy being repaired for the representation of OBJECTS, EVENTS, and so forth. Firstly resemantization of *ante* occurs when we move from ANTERIOR SPACE TO ANTERIOR TIME, or past. When the sociocognitive principle deactivates the prototypical meaning of ANTERIOR SPACE in the complex prepositional phrase *antes de* it simultaneously activates the meaning of ANTERIOR TIME attributed to FIGURE. The path SPACE > TIME co-occurs with cognitive category MOTION. This means that the past tense of FIGURE locates before REFERENCE POINT in the future tense, as in "dois corretores andaram dias *antes das* eleições de casa em casa pedindo votos" ("days before elections two brokers went house by house asking for votes", *i. e*, "days" are located in past time, and "elections" are located in the future). I recognize that *ante* (and *antes de*) were resemantized, going from SPACE to TIME. A new resemantization occurs when REFERENCE POINT is lexicalized by an EVENT, like "o espírito de partido quebrou suas furias *ante* as considerações do bem publico" ("the party spirit broke down its furies because of the consideration of public interest"). To understand how the meaning of cause "because of considerations" had been mapped from locative meaning "in front of considerations" is a big challenge. Alteration probably involves the notion of TIME held in the EVENT "consideration", put imagetically in front of "break down its furies". If the time of the EVENT-POINT OF REFERENCE imagetically occupies a rank in the hierarchy higher than EVENT-FIGURE, which it started to govern, it follows that "considerations" assumes a causal role, and "break down its furies" assumes a role of being caused. In other words, the metaphor of event TIME has triggered the metaphor of CAUSE, as Heine *et al.* (1991) already pointed up. According to Fauconnier and Turner (2002), mental space "event located in time" mapped a new space, "causal event".

Deactivation (*desemantization*) is responsible for changes caused by metaphors, metonyms, specialization and generalization. We "silence" previous meanings and simultaneously we activate new meanings. This process has been presented in the literature under the label "semantic bleaching". In the examples given so far, we have been dealing with the cline [SPACE >

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[9] Literal translations.

TIME > CAUSE]. If we look closer at Pronoun-Adverbials created from the same etymology of Preposition *ante*, it will be possible to add MOOD to this cline. In "*antes* você não tivesse vindo a São Paulo!" ("Wish you hadn't come to Sao Paulo!")*,* the volitive modal feature is implicit in the feature/comparison/already documented in Latin. The positive evaluation of SPACE located in front of the speaker, often mentioned in the literature, drove *antes* to imply a choice and to make explicit a will. The implicit comparison is quite clear in "come to Sao Paulo" / "not coming to Sao Paulo". The explicit choice is clear as well in "not coming to Sao Paulo", or "I wish you not come to Sao Paulo". Thus, *antes* desemantizes, loosing its spacial meaning, and resemantizes, acquiring a new modal meaning. And language keeps unfolding its permanent processes of gains and losses.

Grammaticalization and Grammar

Among the four processes of language organization, grammaticalization is by far the most comprehensively studied. It is perceived as the alterations a lexical item undergoes, by which (1) Its syntactical, morphological and phonological features are modified, (2) It changes its grammatical word class, (3) It is no longer a free form, and (4) It might even disappear as a result of extreme crystallization. The course concerned might happen synchronically or diachronically.

Grammar is the system composed of more or less crystallized structures or those in crystallization process, displayed in three subsystems: Phonology, which is concerned with phonological structures, Morphology, which deals with the word structure, and Syntax, which deals with the phrase and functional structures of the sentence. The results (or *products*) of Grammar are the following *grammatical categories*: phoneme, syllable, morpheme, word, phrase and sentence.

According to my proposal, grammaticalization will be circumscribed to three processes, losing its epiphenomenal nature: phonologization (changes in sounds, reductions, assimilations, etcetera), morphologization (changes that affect the stem and affixes), and syntacticization (changes that affect phrasal arrangements, function assignment in sentences, clause combining, syntactical boundaries, etcetera).

The activation of grammatical features (*grammaticalization*) is responsible for building phrases and sentences, placement of constituents, agreement, arrangements of argument structure, etcetera. Case and thematic roles[10] assignment arises from the principle of projection (="transitivity", "syntactical regimen", "valence"). From the phonologization angle, preposition *ante* studied so far underwent an –*s* paragogis in Adverb *antes,* prothesis of *a-* and reduction of *ns* in *ad+trans* > *atrás,* as a result of regrammaticalizion of *trans.* Same transformation occurred in *post*, which became *depois* (<*de+post*). A rephonologization of *depois* is in its way. This explains non-standard Brazilian Portuguese *adispois*. From the syntactization angle, preposition *ante* usually introduces internal and oblique argument, and also time, place and quality adverbial adjunts: Castilho (2003a, 2007).

Reactivation governs the *regrammaticalization* of constructions, perceived in the literature as *poligrammaticalization* and *reanalysis*. Reanalysis, admitted in the literature as one of the grammaticalization principles, occurs when phrases and sentences have their boundaries changed. Word repetition to build syntactic structures also exemplifies regrammaticalization, as examined in Castilho (1997a and b, 2002a, 2005).

The principle of deactivation (*degrammaticalization*) is responsible for loss of phonemes, syllable omission, etcetera, (Phonology); loss of morphological inflection (Morphology); and ellipsis of sentence constituents (=empty category or zero anaphora in Syntax). Another example of degrammaticalization is the rupture of strict adjacency quite common in Brazilian Portuguese sentences, as shown by Tarallo, Kato, Oliveira, Callou, Braga, Rocha and Berlinck (1990), Tarallo and Kato (1992), Tarallo (1993) and Silva, Tarallo and Braga (1996).

Concluding remarks

To foster the study of language as a multisystem more text data have to be gathered, interpretations of results have to be developed in order to refine this proposal.

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[10] Thematic roles are commonly understood as semantic acquired features, different from the inherent semantic features, which are intensional.

This would be followed by more attention to discursivization based on the study of Portuguese Prepositions, for instance.

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