TWO PRINCIPLES, ONE PATH: RELATIONSHIPS BETWEEN UNIDIRECTIONALITY AND ICONICITY IN LINGUISTIC PROCESSING

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Introduction

In the last few years, linguists have been tackling issues whose solution would represent a true advance in Linguistics Science since this Science appeared in the first half of the 20th century. In the second half of the 20th century, scientific production grew enormously, contributions spread worldwide, and Brazilian descriptions based on empirical data followed and developed studies made in Europe. Brazil became a laboratory for observing diversity and hosted a number of scientists from all over the world.

At the end of the 20th century, however, functionalist studies went through a series of crises: if, on the one hand, a few phenomena of change sailed on the calm waters of unidirectionality, others, on the other hand, sank amidst stormy debates and questionings; if, on the one hand, the principle of iconicity seemed to become established, on the other, the data related to it behaved erratically. A major impasse appeared, urging functionalists to take a drastic decision.

It is to this very scenario that this text intends to contribute, in order to develop further thinking on the key functionalist advances. Here I analyze the action of unidirectionality and iconicity on linguistic phenomena and argue in favor of one common base of motivation upon which to propose these principles.

1. The principle of unidirectionality

All theories or theoretical postulates are based on axioms which originally determine the direction of reasoning. In the core of the theory of grammaticalization (which is not synonymous with *lato sensu* change, but with a very specific type of change), the principle of categorial unidirectionality is regarded by most linguists who deal with the product (not with the process) as a premise for acknowledging the occurrence of the process.

The *primitive >derived* categorial ordering is also seen as one of the axioms that support this theory through the principle of unidirectionality. Thus, assuming that elements submitted to the process of grammaticalization undergo changes, such changes must necessarily transform

them from a 'less grammatical' to a 'more grammatical' unit (HEINE; CLAUDI; HÜNNEMEYER, 1991:4); this process cannot occur in the opposite direction.

In other words, the process can be described as a gradual transformation from a lexical element into a grammatical one, thus being an escape valve for lexical items of the linguistic system, as Cabrera (1998:214) proposes:

> I. it is a "syntactotelic " process;
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> I. it affects lexical items (lexicogenic process);
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> II. it is supported by the hierarchy of metaphorical abstractization; and
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> III. it feeds syntax and depletes lexis.

This would be equivalent to stating that lexicon slides into syntax; then lexical items acquire coded functions via syntax, which would be the means by which various functions are developed. In this process, lexicon is the source of all functions developed: it incorporates the beginning of the change process, switching almost unnoticeably (sometimes, it actually is unnoticeable) from a more concrete to a more abstract functional pole. From this perspective, it represents a dynamic process that follows just one direction of change.

There has been a great deal of discussion on whether unidirectionality is a determinant principle of grammaticalization in languages. A large number of studies ratify unidirectionality, but there does not seem to be a consensus among them as to what type of category this single direction of change refers. Hopper and Traugott (1993), for example, speak about slidings between verbal categories[1] (word classes); Hünnemeyer (1985, *apud* HEINE and KUTEVA, 2002), upon studying the word *ná* (give) of the Ewe language, shows that slidings can be explained by semantic categories (benefactive morpheme > dactive morpheme [2]); and Haspelmath (1997, *apud* HEINE and KUTEVA, 2002) explains the sliding of the Chinese word *hou* (behind) from a spatial to a temporal localizer, through cognitive categories (space > time).

Among the many papers in favor of the single, linear direction of development of the functions of words in languages are Bybee, Perkins and Pagliuca (1994), Heine, Claudi and Hünnemeyer (1991), and Traugott and Heine (1991). Such unidirectionality had already been considered by Sapir in terms of a tendency labeled as "drift", which Mattoso Câmara Jr.

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[1] Hopper & Traugott (1993) study the slidings from larger categories (nouns and verbs) to middle ones (adjectives and adverbs) and, from these, to smaller ones (conjunctions, prepositions, auxiliary verbs, and so on).
[2] To Hünnemeyer, such sliding may be explained on the basis of the desemantization resulting from the erosion of a semantic component in the basic expression "do something on behalf of someone".

(1989:198) interpreted in terms of a sliding in the form of phonetics>grammar. Nonetheless, the sliding described by Sapir does not affect the system globally or as a universal factor in languages[3], as does grammaticalization:

> There is a tendency or, in Sapir's nomenclature, a drift in this direction, which articulates with the phonetic drift to reach a grammatical structuring.

Certain linguists, however, have questioned this principle as a *sine qua non* condition for grammaticalization. Some have expressed this in a blander way, pointing to parts of the change in which the principle must be rethought (FRAJZYNGIER, 1996; ZIEGELER, 2002; EVERS-VERMEUL, 2002); others have done so more radically, referring to it as a tautology (JANDA, 2001 *apud* LINDSTRÖM, 2002; CAMPBELL, 2001; CAMPBELL and JANDA, 2001)

Even with such cautions, it is difficult to keep one's work exempt from a previous orientation. If, for example, modality is the object of interest in the investigation, the hypotheses will naturally lead the researcher to the mobilization of non-strictly grammatical categories. This was done by Ziegeler (2002) who, while reviewing previous studies, remarked that unidirectionality was seen both as a collateral phenomenon of grammaticalization and as an independent entity. Therefore, speaking about the principle of unidirectionality as blindly linked to the process of grammaticalization may give rise to a mistake that is highly predictable even in the initial orientation of the study[4].

Another study that discusses unidirectionality on the basis of the results of data analysis is that of Evers-Vermeul (2002), who wondered how certain markers of temporal relationships could evolve as contrastives while others would do so through markers of causal relationships (cf. KORTMANN, 1997). To answer this question, he analyzed diachronic data, on the basis of which he showed that different interactions between grammatical and conceptual factors evolved in a process of grammaticalization of temporal connectives by various paths of change. If this were true, any argument based on the full unidirectionality of the process

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[3] According to Gonçalves, in personal contact, "The concept of *cline* is fundamental when one speaks about grammaticalization. From the point of view of change, forms do not go abruptly from one category to another, but through a gradual series of transitions which tend to be similar in various languages. A) historical perspective: a *cline* is a path along which forms are developed, a type of "slippery linguistic cline" that determines development; B) synchronic perspective: a *cline* is a *continuum*; an arrangement of forms along an imaginary line. At one end there is a fuller form, considered lexical; at the other lies the reduced, compact form, maybe "grammatical". *Cline* and *continuum*: both metaphors must be understood as having certain focal points where the phenomenon can occur. A *cline's points* (eg, the labels 'preposition' and 'affix') are somehow arbitrary. Linguists may not agree on which points to place on a *cline* or on how to define a *cline* in a given example. They also may not agree on whether a certain form must be placed in, for instance, the lexical or the grammatical area of the *cline*. But there is less disagreement as to the *cline* itself. For example, a number of linguists would agree on the existence of a "grammaticality *cline*" like: Content item > grammatical word > clitic > inflectional affix. Each item on the right is more clearly grammatical and less lexical than that on the left." As it is difficult to establish definitively the borders between the categories represented in a *cline*, Hopper and Traugott (1993) prefer, in a synchronic analysis paper, to deal with those labels as metaphors through which linguists place data on an imaginary line.

[4] To avoid such a mistake, Hopper and Traugott (1993), for example, prefer to speak about a unidirectionality hypothesis.

would prove wrong. Anyhow, in Evers-Vermeul's analysis, this principle was important to show the orientation of parts of the process of grammaticalization, which would not be enough to earn it the status of a principle.

If, on the one hand, a number of counterexamples to this principle have been provided by researchers, on the other, those who ratify it do not present substantive arguments that enable its full validity: some arguments are circular (and often unsupported by data), and are founded on the premise (which happens to be a prejudgment, too) that unidirectionality may apparently be broken off if the analysis is poorly done or biased.

This is why in studies that present the results of the analysis of empirical data and whose conclusions sometimes imply a classical direction but at others imply the denial of this direction, the possibility of flaws in the interpretation of the data is predictable (HEINE, CLAUDI and HÜNNEMEYER, 1991); at times, there may even be tentative explanations through the functional effect generated, something which may be expressed as competing motivations (DU BOIS, 1984).

This animated debate came to a climax of discord at a congress on grammaticalization in Holland, during which Lindström (2002) defended the idea that unidirectionality had not always been linked to grammaticalization. According to him, long ago, various processes such as the *cyclicity or spirality of the change* were emphasized by linguists such as Meillet (1912) and Kurylowicz (1975). Lindström states that, unlike the latter, who includes this factor that determines the direction [5] (from least to most grammatical, and from lexis to grammar), the former does not specify one single direction. By doing so, Lindström intended to start a polemical discussion that would result in those involved taking a position.

Notwithstanding the discussions on the phenomenon of unidirectionality, there remain some doubts which, in order to be clarified, require answers to the following questions. Is the label "unidirectionality" being applied to evaluate the same categories on each side of the discussion? To which unidirectionality do these authors refer? Would the diachronically measured unidirectionality appear as such in synchrony? Could this impasse be resolved through a study based on real usage to observe the path of categorial slidings?

To deal with these questions, I will proceed by starting with a brief review of the knowledge accumulated on the theme, followed by looking into the effect on meaning of functional slidings from the standpoint of reception (interlocutor), and then attempting to unfold the

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[5] He calls the opposite process lexicalization.

cognitive processing underlying the linguistic slidings explicable in the light of grammaticalization .

The label *continuum* is used by certain authors to deal with slidings between classes of words. Traugott (1988), for example, remarks that it is possible to follow, on a given *continuum,* the development of adverbs or prepositions into clause connectives, or of temporal into concession connectors. Traugott (1980) also highlights the sliding of demonstratives into definite articles in English, which also occurs in Hungarian (Tompa, 1972). A similar path is followed by the verb "go", which slides from a future morpheme in Portuguese and other languages such as English (Pérez, 1990) and Tamil (Lehmann, 1989).

Other authors believe that the *continuum* represents the slidings performed by semantic categories such as the passage from a temporal to a causal function (Traugott and König, 1991) or from a volition function to that of futurity (Hopper and Traugott, 1993) or, still, from a modal to a comparative value (Bisang, 1998).

In a number of papers, more than one category is mobilized in order to explain a linear sliding, as happens in the partial trajectory of the word *tipo (typo)* in Brazilian Portuguese (Lima-Hernandes, 2005): the oldest examples, which are also the most accepted by the standard norm, associate the word *tipo (type)* to [+human, +animate] features, as in (1) to (3); and to [-human, -animate] features, as in (4) to (6).

(1) *Esse tipo vem   a este bar assiduamente.*
   This *type* comes to this bar frequently.
   This *guy* comes to this bar very often.

(2) *Que   tipinho mais esquisito esse menino!*
   What *little type* more weird   this guy!
   What *a* weird *type of* guy!

(3) Ele é um tipão[6]
   He is a   very type.
   He is really handsome!

(4) *O tipo   utilizado neste formulário é diferente.*
   The *type* used   on this form   is different.
   The *printed letter* used on this form is different.

(5) *Gosto desse tipo de perfume.*
   I like this *type* of perfume.
   I like this *kind* of perfume.

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[6] *tipão*: superlative of *tipo.*

(6) *Comprei   pulseiras, colares   e   coisas desse tipo.*
   I bought bracelets, necklaces and things of this *type*.
   I have bought bracelets, necklaces, and other things of that *type*.

There are clear differences between both sets of examples as well as between each component of each set, but nothing comparable to the most abstract usages, of a more grammatical or discursive nature, appearing in other examples such as:

(7) *Viajei   as férias todas, tipo ... esqueci que trabalho existe.*
   I traveled the vacation all, type… I forgot that   work exists.
   I traveled the all through my vacation, like... I totally forgot about work.

(8) *Ricardo come tipo um elefante.*
   Ricardo eats   type an elephant.
   Ricardo eats   like an elephant.

(9) Nessas feirinhas se vende tipo o quê?
   In these little markets it is sold type of what?
   What kind of thing is sold in such street markets?

In a few of these slidings, there is a more evident abstractization of grammatical categories forming a name > joining word trajectory; in other usages, "*tipo" (*type) acquires functions in the conversational organization and hierarchies.

More frequent are studies that mobilize cognitive categories on a *continuum* to explain the functional slidings of words/structures.

Heine, Claudi and Hünnemeyer (1991a) present the following ordering of conceptual categories, through which it is possible to observe an abstractization process: person > object > process > space > time > quality. Hierarchy and unidirectionality imply that changes always take place from left to right and, in this case, from cognitive categories that are closer to the individual [+concrete] to those more distant [-concrete].

An example that is usually cited to ratify unidirectionality is the development of locatives originating in terms related to parts of the body (HEINE, CLAUDI and HÜNNEMEYER, 1991; SVOROU, 2002; VOTRE, 1996), whose trajectory alludes to body > object > process > space > time > quality. Such originating terms might also be associated with parts of the body in order to identify geographical regions in a physical space (e.g., the Atlantic Coast[7]). Moreover, parts of the body are mentioned to mark the hierarchical position in a chain, such as in *head >*

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[7] This example does not refer to the phenomenon of grammaticalization. In Portuguese, *costa (coast)* resembles "costas" (a person´s back).

boss, *right arm > direct aide*, and other complex expressions like *fulano é meus pés e mãos* (so and so is my hands and feet). In addition, words that indicate direction are mobilized to express time: *go ahead* with your project, will arrive ahead of them. It should be noted that, here, the trajectory shown reflects the ordering of cognitive categories.

In the area of phonology, there is evidence that unidirectionality may be perceived in latter stages of grammaticalization of a source item (BYBEE, PERKINS and PAGLIUCA, 1994). In the process of grammaticalization, a large number of studies point to the reduction or erosion of phonic segments of the items in the process of grammaticalization. Often, in their initial stages, the loss of phonetic material is shown by a stronger dependence on another form present in the syntagmatic chain, behaving as a clitic. This is observed, for example, in the grammaticalization of the pronoun *a gente* ("the people", meaning "we" or "one") in which the determiner attaches itself to the noun, blocking the option of determiners and even the placement of elements between the determiner and the noun, fusing with the syntagmatic nucleus in such a way that speakers with little familiarity with the standard norm of the written language write it as a morphic word, undermining the borders of words.

A confirmation of the action of unidirectionality would comfort many researchers, should it really account for all phenomena. However, it cannot always be ratified. Heine, Claudi and Hünnemeyer (1991:48) state that not much should be expected from this *continuum* because if, on the one hand, metaphor, as a cognitive strategy, can help us open up for some explanations, it does not, on the other, provide the necessary explanation for grammaticalization or for grammatical behavior, since it operates at the semantic level.

Concerning this point, Heine, Claudi and Hünnemeyer (1991) warn that this unidirectionality is hardly broken off, a fact that would not make its use invalid [8]. Such ideas are echoed by Sweetser (1990:9):

> Even more crucially, the historical order in which senses are added to polysemous words tells us something about the directional relationships between senses; it affects our understanding of cognitive structures to know that spatial vocabulary universally acquires temporal meanings rather than the opposite.

Such cases led Frajzyngier (1996) to propose the hypothesis of grammaticalization bidirectionality. Analyzing time and conditional clauses of the Chadic languages, he presented evidence of two *continua*: clauses developed from condition to time, and also time clauses developing into conditional ones. Considering that, for Frajzyngier, in cognitive terms, time is

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[8] There exist certain examples that contradict the unidirectionality principle (p. 51)

a more basic category than condition, then, at least in such terms, there is a reversal from the expected direction, in the case of the second phenomenon.

For Hopper and Traugott (1993:7), cognitive processes correlate with change according to the unidirectional scale; in this sense, cognitive categories would favor the morphosyntactic explanation as a tool to clarify the routine of structural moving of the language, even though there may actually not exist a miracle formula for determining the degrees of grammaticalization of all elements in movement in the language. Along this line one also finds the arguments of Heine, Claudi and Hünnemeyer (1991:156), who suggest a linear ordering for the observation of linguistic phenomena:

a) a category is more grammaticalized if it is etymologically derived;

b) space is less grammaticalized;

c) human participation is less grammaticalized than inanimate participation;

d) a category that refers to a concept with potentially three physical dimensions is more grammaticalized than that referring to a single one;

e) reality is less grammaticalized than textual reference;

f) the less inclusive, the less grammaticalized; the more inclusive, the more grammaticalized;

g) spatial concepts are more basic than others; conceptual entities of person [+ agent] are less basic than instrumental/dative/possessive, which, in turn, are less basic than time.

The result is an unassembled puzzle for those expecting to find a ready-made *continuum* to guide them. Therefore, the path for the necessary organization can only be reached by data analysis, a task that will enable interesting discoveries to be made such as the interlacing between the various categories discussed (grammatical, semantic and cognitive). One of them, however, may be considered primitive due to its pre-verbal nature: cognitive categories.

2. Cognitive categories–mental processing clues

Until the middle of the last century, the *mind* and the *brain* were regarded as one whole entity; only much later did they begin to be perceived as distinct elements. The idea that both shared constant space became valid until tests, assays and reasoning led scientists to state that the brain was a kind of "machine", of whose functioning the mind might or not be a part. From that point on, the brain and the mind became separate. Such perception enabled great

advances in computing science and robotics. The brain (the *hardware*) would work with simple programs, with responses based on "yes" or "no", and the mind (the *software*) would result from the involvement of various parts of the brain engaged in the solution of more complex problems, as those based on "maybe":

> The mind, by nature, functions by calling to action and solving (using a dynamic rule and a "calling to action" code); it is not a static structure that may be designed *a priori* to deal with the problem 'x' or 'y' (DEL NERO, 1997:67).

Del Nero (1997:110) states that the simplest tasks performed by the brain are far from conscience, unlike those requiring thought. He believes that the brain is the mold *in which mental forms and contents fit into each other. Without this mold, forms do not fit together, nor is there any harmony of contents.* Consciousness would be one of the functions involved in solving more complex problems[9]. Thus, consciousness is not mobilized for such exclusive brain functions as breathing, in physical-motor terms, though that may sometimes take place. On the other hand, consciousness is necessary for a function such as memory; hence, its mental nature. Without intention and consciousness, one cannot solve the problem of, for example, 'recalling what one was wearing the day before while buying a pen at the stationery store '.

> ...what is at stake here is the possibility that the mind is a kind of function that appears when we need to abort, inhibit, select and modulate motor actions. In those cases, motor actions are replaced by mental ones. (p.326)

It is up to the mind to analyze the truthfulness or falsity of sentences and the validity of arguments. Thus, when we produce a sentence, we are, *a priori*, establishing a relationship between the concepts linked to the sentence and the argument. These mental operations, which involve the complex operations of evaluation and judgment, are mediated by perception and inference.

All processing takes place inside the mind, which is inaccessible to the Other. It is accessible only to the subject in introspection, but it is affected by public contact upon its exteriorization, since it relies on precise language to communicate (DEL NERO, 1997:325). Hence, the environment (here lies the necessary parallel with the theoretical support of sociolinguistics) "shapes behavior, but the brain itself acquires an active function in relation to the environment".

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[13] For Mithen (2002), the various components required for constituting the various intelligences are called *modularization*. Unlike Del Nero, he proposes the action of independent modules for mental actions.

Therefore, one can say that language is one of the necessary clues of the mental activity performed. Just as a motor activity such as raising one's arm to be allowed to ask a question is a reflex of a previous mental operation of incomprehension and willingness to know, language and, more accurately, linguistic usages, may be read as "footprints" of a mental movement likely to be checked. [10]

According to Fodor (*apud* MITHEN 2002:89), the intriguing traits of the mind ("its non-encapsulation, its holism, and its passion for the analogical") interest cognitive science, which arose in reaction to *behaviorism* (a school that focused on behavior and external actions rather than on the mind, the core of intelligent thinking in mental life, as it had no means to assess it). By late 20th century, the focus of interest became the mind and such primitive symbols of the brain such as intentionality, expressed by intentional objects and modes (beliefs, desires, intentions, fears, and so on). And, if, as Del Nero says, these primitive symbols are replicated in human manifestations, then it is not absurd to look for the linguistic codification for each intentional mode.

Other mental functions are crucial in linguistic studies. One of them is attention, one of the most critical functions of the human brain. Supposedly, the role of attention is to examine the incoming information so that the individual can focus attention on what may be of interest to him. Likewise, in a dialogical situation, focusing on what must be observed by the interlocutor is a critical function of the mind, codified linguistically by the strategies of order, intonation, and so on.

It is clear that the dialogue between Linguistics and Cognitive Science has long been established by means of its various currents of thought. Here there is a prominence, determined by one's intention to focus on certain aspects and not on others, of functionalistic presuppositions, as it is possible to perceive the full integration of elements of the cognitive base in functional grammar, such as the flow of attention and point of view, information weight, focalization, and modality.

And what is the implication of these ideas for unidirectionality, which we are discussing in this article? This is elementary. Classical science took for granted the idea of stability and determinism, and this axiomatic idea restricted the possibilities of interpretation of results observable in laboratories. This idea was disseminated, surpassing the borders of pure science

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[16] Since raising one's arm may also be an action devoid of will and intention and, hence, have a purely cerebral nature, Del Nero distinguishes between a conscious and an unconscious act; the criterion for fitting in an act is the checking of the very act: If it is likely to be explained in terms of the acting subject's motives, then we have an act that occurred in the conscious part, containing intention and will.

and reaching the remaining areas, such as Linguistics. Indeed, nowadays we accept instability, deal with dynamicity and, invariably, notice bifurcations in the processes. Since we grew aware of this, we have constantly been under the impression that the whole theory is being constructed and that all analyses are restrictively valid. Such apparent chaos has, according to Prigogine (*apud* PESSIS-PASTERNAK, 1993:45), resulted from human awareness of the paradox of time, something depicted in the idea that "the time in which we live is essentially irreversible, while in simple physical objects such as a pendulum or the planetary system, one does not see that arrow of time", a fact that would lead to the impression that we live an illusion.

In linguistics, too, the basis of Darwinian theory has been appropriated, and speaking about the evolution of language and its irreversibility has become an accepted and unquestionable idea. Current science, however, is mainly concerned with understanding the instability of dynamic systems such as language in its synchronic state. The bases of this new trend are founded on the realization that dynamics is not deterministic and that the notion of trajectory is lost in time. This idea is supported by the premise that a system is constructed on the basis of relationships between objects, not of isolated objects.

Transported to the linguistic system, this idea implies that language is not made up of isolated words, but results from the relationships established between words in interactive situations. This contact or relationship would open up space for behavioral radiation, thus being non-unilinear and non-deterministic.

My argument, on the basis of the considerations above, is that the attempt to apprehend the functional slidings of linguistic words/structures by means of cognitive categories leads to the principle of iconicity, as a univocal motivating relationship between the mental activities developed and their reflexes manifested in linguistic updating.

The knowledge accumulated on how these principles act enables such a postulation. This is what I perceive, for example, in relation to the principle of iconicity, which proposes a univocal motivating relationship between form and function, being that the former always determines the latter, never vice-versa. To certain linguists (VOTRE, 1982), among whom I include myself, encapsulating in this definition what iconicity is reflects a radicalized view which would hinder the recognition of other manifestations.

3. The principle of iconicity

The iconic sign is a product of Peircean terminology and has survived invariably linked to the area of semiotics; nonetheless, its role is, if not critical, at least active in Sociolinguistics and Functional Grammar.

In Peirce's view, it is necessary to consider the difference between the relationships "sign vs object" represented by three elements: icon, index, and symbol. The icon represents, originally, the similarity relationship established between the sign and external reality; the index, the contiguity relationship; and the symbol, the conventional relationship.

Since the iconic sign, unlike the Saussurean, contains a motivated relationship, functionalists and sociolinguists have made use of the concept of iconicity beyond the domains of the sign. It now appears related both to smaller elements than the sign, as happens with morphemes, and to larger ones, as is the case with complex sentences. Thus, there is a contrast between image (semiotic) and diagrammatic (linguistic) iconicity, the latter shifting the axis of lexis to grammatical relationships.

Greenberg (1966, *apud* DIK, 1997:133) expresses the basic notion of the principle of linguistic iconicity just as functionalists currently do. In this article, Greenberg states that the order of the elements in the language is a result of the organization of knowledge acquired through physical experience.

According to Dik (1997), certain psycholinguists attribute such parallelism between linguistic structure and the ordering of facts in the real world to a principle called "order of mention", justifying that the comprehension of 3 to 5-year-old children would be conditioned to this principle. Therefore, it is a basic presupposition of this principle that linear ordering respects the order of facts.

Undoubtedly, these psycholinguists are referring to the same principle of iconicity dealt with by linguists, which would determine even the syntactic ordering of clauses. Thus, *clauses must preferably be ordered according to concept or temporal relationships, derived from the facts or states of that which they designate* (DIK 1997:134). A good example of this logical ordering would be to place a cause clause before this indicating effect.

For Haiman (1983:782-3), iconicity is motivated on the basis of the following statements:

a) the linguistic distance between expressions corresponds to the conceptual distance between them;
b) the linguistic separation of an expression corresponds to the conceptual independence of the object or fact it represents;

c) the social distance between interlocutors corresponds to the extension of the message with an equal referential content.

The first type of iconicity, that of conceptual distance, would operate in categories such as cause, ordering, transitivity, and possession, all of which would present formal parallelism between conceptual and formal distance. The second type, iconicity due to individuation, is reflected by the parallelism between conceptual and formal independence. The third one, iconicity originating from social distance, is shown through physical distance and its parallel relationships with social distance, which is both instrumental and referential.

Being a general principle, iconicity appears as a partial explanation for a large number of linguistic phenomena, as happens with discourse topic continuity (GIVÓN, 1983:18), which is particularly linked to the type of motivation expressed in alternative *c*, above:

the more disruptive, surprising, discontinuous or hard to process a topic, the more coding material must be assigned to it.

In the literature on linguistics from the end of the 20th century, the articles of Votre (1992), Neves (1997) and Votre *et alii* (1999) clearly summarize the various manifestations of iconicity, which may be found under the label of "subprinciples" (the case of the first and third articles), as well as under that of typology (the case of the second). As this study does not aim to discuss terminology, I will limit my analysis to focalization of iconicity in linguistic structures.

For Votre (1992) and Votre *et alii* (1999), the following subprinciples may manifest iconicity: *quantity, spatial-temporal proximity,* and *spatial-temporal ordering*. Under the action of the first, the subprinciple of quantity, the larger form would be triggered by a greater amount of information, its unpredictability, and its importance for thematic continuity. Under the action of the second, the subprinciple of proximity, there would exist a strong relationship between expressions in the phrase chain or textual units larger than a phrase, so that one could observe the degree of morphosynctatic integration and freedom among its constituents. Under that of the third, the linear ordering subprinciple, the information that is most important, predictable and crucial for ensuring the chain would appear in the first place.

a) quantity: the more information, the larger the form;

b) distance or proximity: the greater the conceptual distance, the greater the linguistic distance between expressions;

c) independence: linguistic separation of expression → conceptual independence;

d) ordering: the degree of importance determines the order;

e) complexity: plural larger than the singular (form);

f) categorization: subjects are mostly agents and objects, patients.

These types of iconicity would be equivalent to the codification clues left as a result of a mental processing carried out. The last one (categorization) is more evidently closer to the linear ordering proposed for the slidings explainable by grammaticalization. Would it then be possible to speak about cognitive iconicity?

Neves (1997) concludes that arguing in favor of iconicity is not a simple task because the structure analyzed (meaning) is always one to be established. His argument is a counterexample also presented by Haiman: the non-iconic and economical synonymic forms.

It is, thus, possible to make a comparison between both authors' interpretations of the principle of iconicity and its action. As a result of this comparison, I have drawn a table that shows a few points of disagreement, at least as far as the area of more specific action of certain subprinciples.

Subprinciple	Votre (1999)	Neves (1997)
Categorization		Subject:[+agent] Object:[+patient]
Complexity		Plural is longer than the singular form. The superlative is longer than the normal form.
Independence		Conceptual separation is expressed linguistically by the separation between expressions.
Ordering	Information that is most predictable and important for the chain comes first.	The degree of importance determines the order.
Proximity or distance	Higher degree of morphosyntactic integration. Freedom among constituents.	The greater the conceptual distance, the greater the linguistic distance.
Quantity	Longer form, unpredictability of information and importance in thematic continuity: longer form.	The more information, the longer the form.

Unlike Neves (1997), Votre *et alii* (1999) do not consider the subprinciples *categorization*, *complexity* and *independence* autonomous, probably because the subprinciple of *proximity* already includes the idea of word categorization; that of independence is reflected by freedom among constituents; and the subprinciple of complexity is observable through the degree of integration between words and sentences.

The tasks of applying and recognizing these subprinciples in linguistic structures are certainly not mechanical because there are forces that may act together with iconic motivation, resulting in a paradox. This is how, for example, less predictable, important and accessible information may, differently to what was expected, appear first, in case the topic chain presents that feature [+contrast].

However, this idea is not new. Similar information may be observed in Francis (1998:412):

> Structure-discourse iconicity appears in any utterance where it is found; it is the result of the interaction of multiple factors. At the very least, these factors must include conventional semantic content of individual linguistic elements and discourse-functional pressures.

This type of iconicity would be very close to the aspects that would be treated as pragmatic, considered varied and with still little consolidated categories. Anyway, upon dealing with larger structures whose interpretation is likely to cause ambiguity, which is the classical case of gerund phrases, one should wonder whether the clauses being analyzed are really ambiguous or whether one is dealing with different types of clauses. Moreover, would departing from form and ignoring the univocal relationship between form and function be a functionalist path?

In fact, it would. Haiman's arguments eliminate any possible doubt: even if the ideal were a form for each function, in practice this would be unfeasible, as there would be a high number of forms, requiring considerable memorizing from the speaker/listener. This is why Haiman (1983) speaks about a relationship motivated by form/function, that is, the action of certain subprinciples may determine iconicity between content and expression, as would be the case with linguistic distancing caused by conceptual distancing.

This is the point where every linguist asks him or herself: in the linguistic world, would syntactic constructions be determined by real world principles? Not for Saussure; partially, for Du Bois (1984); in certain motivated cases, for Haiman (1980); and completely, for Givón.

Hence, we have both a form performing various functions and a meaning found under various forms. A number of recent functionalist studies on Brazilian Portuguese have showed how this works (e.g., NEVES and BRAGA, 1998; LIMA-HERNANDES, 1998; GALVÃO, 1999; GONÇALVES, 2003).

It is, therefore, crucial that the fact just mentioned be meticulously analyzed in theoretical terms, considering the existence of a principle which, by definition, must be [+general], [+abstract], [+autonomous], but which, in its interface with the discourse-pragmatic domain,

presents other characteristics originating in the context: [-general], [-abstract] and [-autonomous].

4. Attempts to understand mental processings: would these be real linguistic principles?

As far as I can tell, it seems that, with unidirectionality, one returns to the theme of iconicity, even if by different paths. By aiming at iconicity and unidirectionality, linguists are seeking to reestablish the order about the true and only criteria already established in linguistic science, the valuing of tradition and of the guarantee that all knowledge that has been accumulated must be maintained.

It so happens that, with the new discoveries, with the advances of cognitive science and its applications in robotics and mechatronics, with the results that are virtually palpable in the newest types of equipment, and with the discovery of the cerebral *locus* of the language, one can no longer properly speak about the soul or the spirit to analyze language, as used to be the case in the early 1900s:

> ... there is no solution other than accepting language as a complete functionalist system that belongs to man's psychic or "spiritual" constitution (SAPIR, 1980[1920]).

It is now mandatory to understand the process of sharing knowledge and information; I must, therefore, return to the ideas on iconicity in linguistic science, mainly in the scope of the functionalist approach.

When Traugott (1982), also concerned about establishing the general features of grammaticalization, focuses on aspects associated with the meaning of words in a usage situation, she aims to examine "types of semantic-pragmatic links occurring in the process of grammaticalization" (p.247) and establish a typology of such changes. To do so, she employs three semantic–functional components of language: *propositional, textual* and *expressive*. The first comprises the basic resources of a language that are used to refer to a given situation, including the value of truth and misrepresentation. The second mirrors an instance that deals with aspects related to the development of speech acts other than the cohesive elements which provide discourse coherence (connectors, anaphora, and cataphora). Finally, the expressive component includes linguistic elements that show personal attitudes toward the topic or other participants (discourse markers or turn-taking). From this perspective, motivation for grammaticalization would result from semantic and syntactic relationships developed during the speech acts, and interaction would trigger the process. Would Traugott be seeking a

trajectory that runs parallel to mental activities? Would she be identifying clues of a previous processing taking place prior to linguistic coding?

Sweetser (1988), who discusses this process as a metaphorical projection of a "domain (the source) onto another one (the target) and in which there is also the acquisition of a "new meaning" (NEVES, 1997:127), employs the label 'bleaching'[11] to refer to losses during the process, something also treated by Lehmann (1982) and Bybee and Pagliuca (1985). However, other linguists, such as Traugott, have questioned the idea of loss, arguing that gains and maintenance of traits might occur as well. Although having chosen a label which is indicative of a possible loss, Sweetser later explained that underlying her idea was the assumption that motivation centers around the necessity[12] for new meanings, on account of the 'abandonment' (not loss, subtraction or disappearance) of other meanings. Thus, to start the process of grammaticalization, the functionality of the systems would be at stake, always pursuing balance as "losses" would be compensated for by "gains"[13] : *I have also suggested that there is a sense in which grammaticalization involves loss of meaning, and another sense in which it does not* (SWEETSER, 1988:400). If metaphorical projection is a mental task, would such gains and losses of 'meanings' occur previously in a cognitive sphere? This is very likely to be the case, not automatically, as when one turns off the light, but as a slow process permeated by ambiguous usages [14] .

Ambiguity is, thus, an effect of meaning provoked by functional slidings. It is manifested as a universal tendency of languages, which demonstrates its importance in linguistic studies. However, it is also one of the most dangerous objects of investigation, given its limited objectivity, which disquiets researchers.

In terms of ambiguity as a semantic phenomenon, Linguistics is still engaged in the eternal discussion aiming at identifying the difference between cases of polysemy and homonymy. A large number of authors have been examining this without coming to a single satisfactory answer other than the tenuous and reticent remark that there is a strong relationship between synchronic polysemy and pragmatic ambiguity.

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[11] Hopper (1996:226) states that this idea had been formulated in the nineteenth century by Bopp (1816) and Gabelentz (1891), being revived later by Givón (1979).

[12] In certain cases, this necessity represents a group identification, as may have happened with the word *tipo (*type) and expressions derived from it ("like, a type of [tipo assim]", for example), which are rejected by older and more educated speakers .

[13] Heine, Claudi e Hünnemeyer (1991:110) labels this model of investigation of grammaticalization "loss-and-gain model".

[14] Ambiguity, according to good writing manuals, is a bad and negative aspect to be avoided in a text, like all other language vices. According to style manuals, it is a resource that may be employed in literary texts. In linguistics, it is seen as the result of a still obscure stage of an ongoing linguistic change.

At the pragmatic level, Horn (1985 *apud* SWEETSER, 1990:76) defines ambiguity as the semantic interpretations of one single item, interpretations that are correlated with different modes, according to the context. This is noticeable in the exclamative sentence "You have extrapolated! ", which, depending on the context, may express joy and surprise as in "Oh, how thoughtful of you!" or, when uttered with resentment, show disappointment as in "You've gone way too far!". An identical resource is used in "I'm hungry; let's go to DB", where DB is interpreted as the place where the speakers will have a meal.

And since not all is a bed of roses in the linguistics world, the sliding processes operate in a pretty complex network which simultaneously involves various linguistic components. Thus, when we use a sentence in which the modal verbs "must" and "can" are included, we are also codifying something beyond pure information, as in "You must go to the dance tonight"/ "You can go to the dance tonight". In addition to learning that "someone is going to the dance tonight", one is aware of the use of verbs that are not being employed in their full verbal function, acting in an epistemic domain whose function is to grammaticalize the intention and strength of authority of the speaker when s/he syntactically codifies the information[15]

Hopper (1998), who regards a linguistic structure as something mobile and unstable showing usages in constant emergency, formulates five principles through which one could grasp the typical gradualism of the process of change identified as grammaticalization: stratification, divergence, specialization, persistence, and decategorization. *Stratification* would show the coexistence of forms with identical functions resulting from the continuous emergence of new layers beside the old forms. *Divergence* would imply the permanence of the source unit as an autonomous form, subject to any change that is pertinent to its class. With *specialization*, options would be funneled, which would individualize a form for a grammatical function. According to this principle, the use of a form starts to become mandatory, and the possibility of choosing disappears. *Persistence* would be expressed by the maintenance of certain semantic traits of lexical origin in the new form/function, despite the alterations undergone. Finally, *decategorization* represents the point in the process in which there would be loss of syntactic marks and peculiarities of the full forms, causing "a reduction of the categorial status of the grammaticalized items, and the consequent appearance of hybrid forms" (NEVES, 1997:125).

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[15] Apparently, the alteration of certain aspects such as the grammatical person and intonation may interfere in the interpretation result.

When Hopper organizes these principles, might he be thinking of social or cognitive emersion? Apparently, the mental base of the processing is very strong. Where are the words before they get stratified? What would the *locus* of divergence be? Would there be a social trigger for specialization? What, in an individual's apparatus, would be able to recognize the persistence of features?

It should be noted that the presence of a social context enables the strengthening of pre-verbal operations, and this is sufficient to prove that the manifested directionality is expressed by an attempt to apprehend the reflected iconicity.

Conclusion

In order that the considerable functionalist impasse be resolved and that there occur a major leap in linguistic research, it is necessary that each researcher start by disengaging him or herself from the paths pre-established by classical theories; it is necessary that axioms be removed from the scientific bases.

With the new scientific discoveries, through which one can notice a true *thánatos* to axioms, the next step is hesitant for it carries the insecurity of irreversibility. Nonetheless, the pieces of the puzzle are already available; it only takes courage and willingness to assemble them and review all that must be reviewed.

On the basis of the reasoning developed in this article, directionality and iconicity may represent much more than linguistic principles; they may consist in safe clues for the mental functioning that articulates language. Mental processing may also not be unilinear, and this may be positive. It may even be the case that this means that the various ramifications, the various links, the various synapses are not unilinear.

Functional slidings would, thus, be simply 'footprints' of a movement initiated long ago which is slowly manifesting itself in language. If this is so, language may, in itself, be an iconic element for representing, producing the traits, and even resembling what was previously processed in the mind.

Communicative conventions throughout the history of the human species and even during each individual's development (from conception to the maturing of his or her brain and mind) depend on the action of other elements: a special physical apparatus (the brain in a stable arrangement to enable the formation of the mental functions); a particular arrangement of

functions that is specific to each of us (individual instances lived through which have been engraved on our biographical experience); a stable arrangement of a higher level (the values of the community in which we live); and a hidden convention that permeates the history of the human species ("the thousands of years that ensure that the internal representation of each mental fact is almost equivalent to the usage of an expression of the language that communicates it to the other human beings", according to DEL NERO, 1997:108).

The mind integrates this interplay of codification that is necessary to communication; this is why it "acts simultaneously on the set of categories existing in these systems: the lexical, discourse, semantic and grammatical categories" (CASTILHO, 2004:2).

There remains a great deal to be studied on these ideas by using Portuguese language data; yet, should their validity be established, the pillars resting on linguistic determinism will need to be revised. Maybe, then, we will be able to assume that, as Castilho (2004b:3) proposes, the speaker *activates*, *reactivates* and *deactivates* information on the basis of lexis, which, in turn, "is governed by a social-cognitive device of a pre-verbal nature". And that such processings would function as synchronized circuits in a mental system. There may appear functional novelties, but none will be able to affect the stability of these systems.

It is possible to infer that there are two motivations (one, internal; the other, external) for starting off the process of functional sliding or linguistic emergence: The internal one, as we have already stated, refers to creativity/economy purposes, since the person is seeking to innovate through the formula "old forms/new meanings", which are also governed by intimacy, age, and social rules laws. However, if the mind also manifests itself by means of language, it is undeniable that the very linguistic system motivates the process that maintains the intrinsic dynamicity of language.

One could question internal motivation. Nevertheless, if one considers that no individual means to innovate in any direction or to behave by contradicting the laws of the system, then one easily understands that what drives linguistic functioning also feeds this possibility in the individual. In fact, the motivation for the process of sliding comes from two poles ingrained in its roots: a language and its speaker.

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