COGNITION IN NANOSYNTAX

COGNIÇÃO EM NANOSSINTAXE

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RESUMO: Este trabalho pretende investigar o pressuposto cognitivista citado esparsamente em trabalhos filiados na (ou derivados da) Nanossintaxe, o que acontece igualmente em estudos da literatura em sintaxe e/ou semântica. Nos estudos que se baseiam numa f-seq universal, com forte pressuposto cartográfico (SCENONIOUS e RAMCHAND, 2013; RAMCHAND, 2017), a hipótese é a de que a primeira zona de derivação sintática, a dos eventos, é o lugar em que os falantes arranjam uma estrutura linguística em resposta à maneira como conceptualizam o mundo. Para fundamentar a estrutura de evento, Ramchand (2008) propõe a sequência [InitP, ProcP, ResultP], e Pancheva (2009), [PathP, SourceP, GoalP, PlaceP], que fundamentam os arranjos submorfêmicos verbais e preposicionais, respectivamente. Defendemos aqui a hipótese de que essas estruturas advêm do pressuposto cognitivo de *causa* e *localismo*, presentes da semântica cognitiva (TALMY, 2001, 2011). Nesse sentido, contrariamente a Ramchand (2013), em verbos leves, gramaticalizados, mantêm a estrutura [InitP, ProcP, ResultP], de base cognitiva, e não apenas sintática.
PALAVRAS-CHAVE: cognição, causa, localismo.

ABSTRACT: This paper is about the cognitivist assumption mentioned sparsely in works affiliated with (or derived from) Nanosyntax, and also in studies on syntax and/or semantics. In studies based on a universal f-seq, with a strong cartographic postulate (SVENONIOUS e RAMCHAND, 2013; RAMCHAND, 2017), the hypothesis is that the first syntactic derivation zone, that of events, is the place where speakers arrange a linguistic structure in response to the way they conceptualize the world. To support the event structure, Ramchand (2008) proposes the sequence [InitP, ProcP, ResultP], and Pantcheva (2009), [PathP, SourceP, GoalP, PlaceP], which underlie the verbal and prepositional submorphemic arrangements, respectively. Here we defend the hypothesis that these structures come from the cognitive assumption of *cause* and *localism*, present in cognitive semantics (TALMY, 2001, 2011). In this sense, contrary to Ramchand (2013), in light, grammaticalized verbs, the structure [InitP, ProcP, ResultP] persists on a cognitive basis, and not just a syntactic basis.
KEYWORDS: cognition, cause, localism.

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INTRODUCTION

Formal linguistic studies, positioned in syntax and/or semantics, frequently refer presupposed mental content to the observable phenomena of natural languages. Klein (1994), when presenting an essentially linguistic reinterpretation of Reichenbach (1947) for the temporal systemin English, begins his study with an emblematic sentence: "Time and space are the basic categories of our experience and our *cognition*, and without effective communication that takes them into account, no coordinated collective action, and therefore no human society, would be possible" (p. 1, emphasis added).

Smith (1997), likewise, in her basic work on aspect in different languages, defends the cognitive assumption in the treatment of linguistic phenomena, including a precious and recurrent semantic comparison of massive vs. count nouns:

> I assume that the aspectual categories are not language dependent but are based on human cognitive abilities. People distinguish basic types of situations on the basis of their perceptual and cognitive faculties, just as they distinguish countable and noncountable entities to which countable and massive names refer (p. xv).

In the current trend of searching for semantic universals, motivated by empirical translinguistic studies, there are also suggestive hints of the cognitive assumption. Von Fintel and Mathewson (2008), when proposing the derivational syntactic structure of three large blocks for semantic places (from bottom to top: lexicon □ functional categories □ pragmatics), assume that there is a tendency to lexicalize semantic contents into categories N, V and A, in the first derivational block, and that this "has to do with general *cognition* and language acquisition" (p. 153).

One last piece of data from this reclaim for cognition in literature comes from the experimentalist tendency in linguistics, and science in general, as we are in the same empirical epistemological compass of the end of the 20th century and the beginning of the 21st century. Krifka (2011), in the project of systematizing a methodological orientation for experiments in semantics, adds the caveat that, despite the visible arbitrariness of lexical meanings (Quine, 1960, *apud* Krifka, 2011), there is a current trend parallel to assuming some generalization – through cognition: "it is commonly assumed today that language is built on broad *cognitive* similarities about entities and classes." (p. 248).

The big question that arises from the frequent reference to the cognitivist assumption is, after all: what is this cognition that enters languages? Alongside the reference to cognition, the literature also raises the question of *how* cognition does it, as it is common sense to assume that all meanings are subject to lexicalization, codification or even verbalization in linguistic expressions (Von FINTEL and MATHEWSON, 2008: 143). These are effectively questions that underlie these readings, but are not deepened.

This paper, which outlines the presence of cognition in Nanosyntax, has two objectives: one, to investigate the cognitivist assumption in work affiliated with and/or adjacent to the proposal of Nanosyntax models (section 1), and the other, to propose a relationship of dependence or connection between the general and the abstract concepts of the causal chain, which articulates the information arising from the perception of space (TALMY, 2001, v. I). This involves both the tendency of verbal lexicalization (RAMCHAND, 2008) and the tendency of prepositional lexicalization (PANTCHEVA, 2009) (section 2). Three linguistic phenomena will support our hypothesis of interrelationship between cause and linguistic expressions: particles, from satellite-framing languages, such as German and English (*eat the cake up*), which lexicalize the result of the causal chain (TALMY, 2001, v. II); the causativization of intransitive verbs (*I walked the dog through the park*), which modulate *cause* in systemically monoargumental verbs (FERREIRA, 2017); the phenomenon of voices (causative, medial, anti-passive, etc.), which tells the arrangement of participants in an event and gains generalization through *cause* (SHIBATANI, 2006).

1 THE CAMOUFLAGED COGNITIVE ASSUMPTION

In Nanosyntax, at first, we can observe three major theoretical trends that touch on the theme of cognition and its possible relationship with linguistic structures: 1) studies that aim to prove an f-seq with universal ordering, under a strong cartographic assumption (SVENONIOUS and RAMCHAND, 2013 and much of the empirical studies by BAUNAZ et. al., 2018); 2) studies of derivational structures that arrive at pragmatic issues, such as auxiliary temporal and modal verbs (RAMCHAND, 2017); and 3) studies of lexicalization, following the Superset Principle, in which a lexical item can be greater (or equal) in terms of features than

the syntactic position it will occupy (STARKE, 2009). These later studies are deployed in the verbal structure (RAMCHAND, 2008, 2014) and in the prepositional structure (PANTCHEVA, 2009). In Ramchand (2014), a cognitive issue explicitly arises, which we will go into more carefully in the next section.

In the proposal to systematize a hierarchy for auxiliary verbs, both modal, temporal and aspectual, Svenonius and Ramchand (2013) defend a derivation initially divided into three large zones: the lower zone, events, the intermediate zone, situations, and the highest zone, of the propositions:
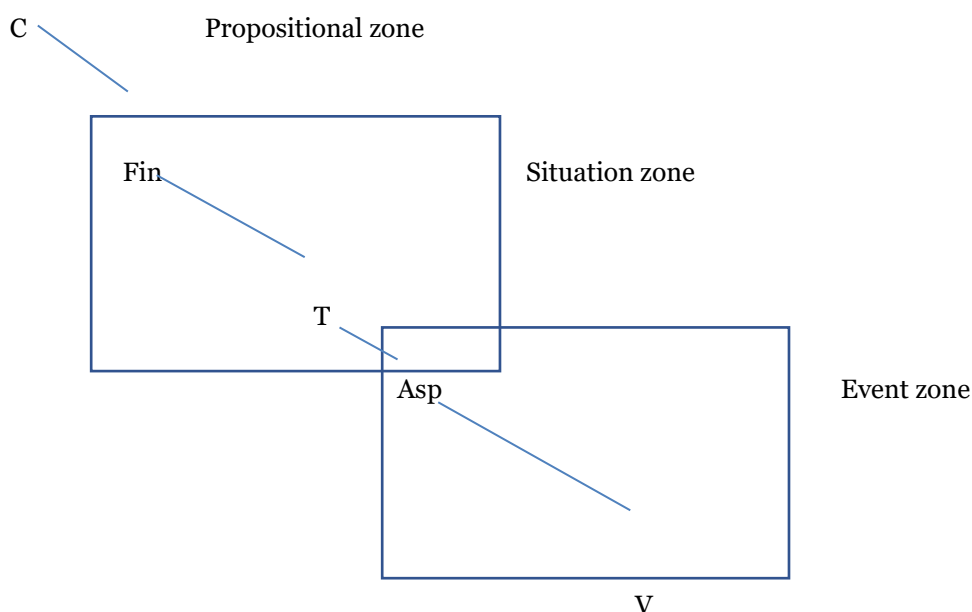

Figure 1: The syntactic derivation zones, adapted from Svenonious and Ramchand (2013: 21)

The aspect (Asp) and finite (Fin) operator act in a kind of transitional place between the event zone and the situation zone, and between the situation and proposition zone. It is a proposal similar to the hierarchy of semantic universals places, by Von Fintel and Mathewson (2008), and it has a direct dialogue with the hypothesis of functional universals, from the intermediate zone, by Wiltschko (2014). But the aim of the authors is to empirically test a hierarchy of auxiliary positions, starting initially from data in English, as in *He could have been interviewed*, which roughly makes explicit the order {T, Mod} > Perf > Prog > Pass > V (SVENONIOUS and RAMCHAND, 2013: 5).

Every so often, the hierarchy is related to innate factors, as a cognitive subdomain, which suggests its inclusion in universal grammar (UG) (SVENONIOUS and RAMCHAND, p. 2). This is a cartographic assumption, which, of course, is associated with Generative Syntax. But the relationship with cognition does not stop there. In the first zone of derivation, that of events, the authors assume that the interpretation of the actors' roles in the event depends on a notion of 'macroevent', which in turn depends on causal interpretation, the "most basic of all " (SVENONIOUS and RAMCHAND, p. 24). This is extended to the conclusion that there is an underlying cognition: "The most important source we have identified is grounded, we argue, in extralinguistic *cognition*: a *cognitive* tendency to perceive our experiences in terms of events, situations and propositions." (ibid., p. 33, 34, emphasis added). Inevitably, the questions that hang in the balance here are the following: Beyond the assumed mentalism of UG, where does the cognitively sustained causal interpretation come from? Can the perception of the three great zones of derivation be treated cognitively? How?

In Ramchand (2017), a bolder study for the order of auxiliaries, the author assumes a basic difference between the event zone - the conceptual content of the lexicon - and the functional category zone – Aspect > Time > Mode - and predicts specific derivational implications in the transition from one zone to another. Events, in this sense, are particular entities not yet instantiated in time and space - a possible world - and contain cognitive abstractions that give shape and meaning to their properties. It is clear that the bottom zone, with its syntactically structured events, derives from cognitive perception and modulation, and that the intermediate zone, from temporal and modal operations, will instantiate events in specific situations: their study offers "a system that will be able to connect more systematically with the syntax, on the one hand, and with the units of *cognition* and language processing, on the other" (RAMCHAND, 2017, p. 14). Again, there are compelling questions about the cognitive nature of events: What mental system would be at work to articulate the distinct properties of events? If there are homogeneous events, such as activities (*running, pushing*), in the Vendlerian tradition, and complex events, such as accomplishments (*reading the book, repairing the computer*), would there be a cognitive subsystem responsible for this productive articulation of properties?

It is in this space of conceptualization of the event – the lowest zone of syntactic derivation – that Nanosyntax presents its studies focused on lexicalization processes.

Ramchand's (2008) inaugural work applies nanosyntactic structure to the analysis of verbs, outlining a theoretical generalization between theories traditionally approached separately: thematic role theories (FILLMORE, 1968; DOWTY, 1991) and event structure theories, or aktionsart (VENDLER, 1967; DOWTY, 1979). The proposal is a generic structure that gives syntactic modulation to the philosophical (and also cognitive) notion of *cause*, in a sequence of three subevents represented by three syntactic projections: [InitP, ProcP, ResultP]. It is, in the author's terms, the syntax of the first phase:
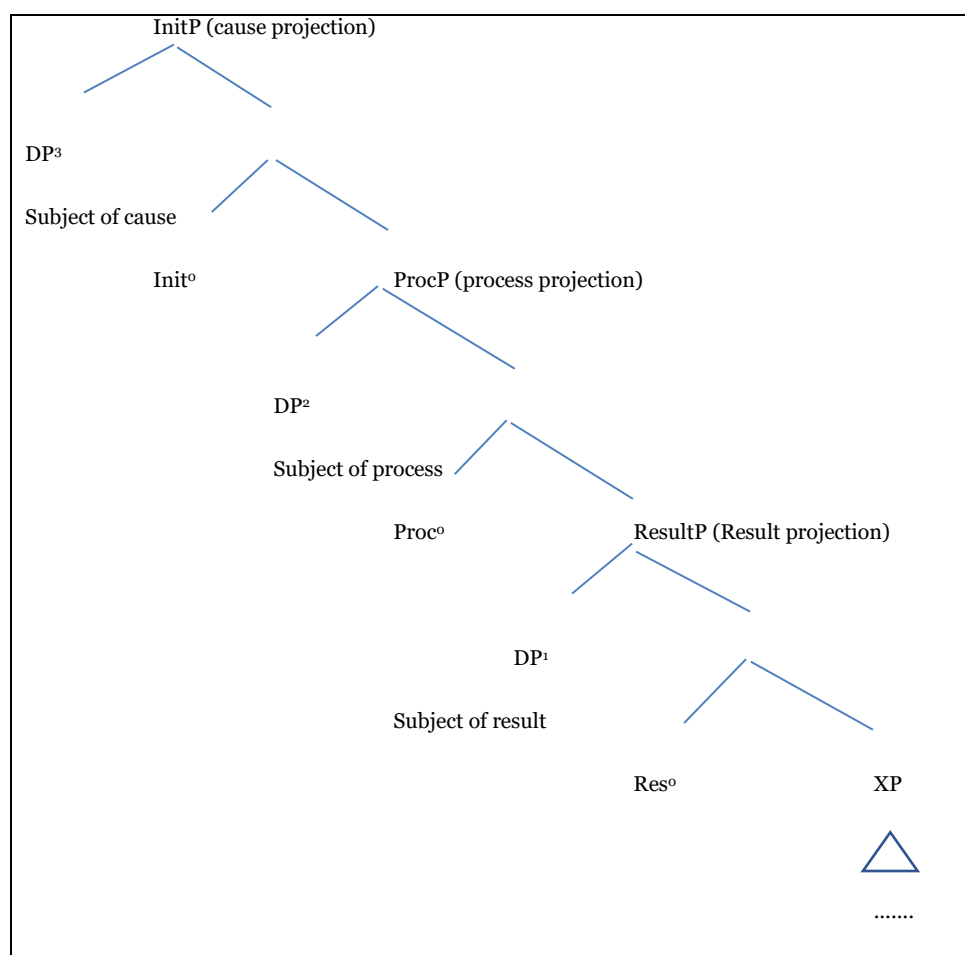

Figure 2: The first-phase syntax (RAMCHAND, 2008, p. 39)

Thus, the lexicalization arrangements of nodes, plus the notation of the (co)indexation of the subjects of these nodes, derive what the author calls "natural classes of verbs" (p. 108, 109). An intransitive activity verb, such as *run*, for example,

encodes or lexicalizes the first two nodes, having the subjects coindexed: [InitP$_i$, ProcP$_i$]. A transitive achievement verb, on the other hand, such as *throw*, lexicalizes the three nodes of the general structure, coindexing the subjects of the last two: [InitP, ProcP$_i$, ResultP$_i$].

As in Svenonious & Ramchand (2014), Ramchand's (2008) robust verb description also brings the mental nature of the syntactic sequence available to the lexicalization of verbs, but the connection between syntax and cognition is not developed.

However, when exploring the semantic content of verbal complements, represented in Figure 2 by XP, or rhematic material (p. 46), Ramchand makes use of the FIGURE and GROUND basic notions to explain the link between perception and cognition,retrieving again Talmy (1985). She associates the structure [InitP, ProcP, ResultP] to the notion of FIGURE, and the lower complements of the structure to the notion of GROUND.

Transitive verbs traditionally treated as accomplishments, such as *eating, reading*, or *painting*, lexicalize the structure [InitP, PathP]; transitive locative verbs such as *enter* or *sit* lexicalize the structure [InitPi, ProcPi, ResultP-LOC]. Furthermore, prepositional complements below the structure [InitP, ProcP, ResultP] now are considered in terms of the notions of place, in PlaceP, and trajectory, in PathP: [PathP, PlaceP, DPGROUND]. Thus, a locative prepositional complement such as *in the house* lexicalizes [PlaceP], a complement such as *into the house* lexicalizes a bounded [PathP], and *towards the house*, an unbounded [PathP].

Now, despite derivational issues, which certainly trigger basic principles of the genesis of Nanosyntax, such as the Matching Principle (STARKE, 2009), to support various lexicalization processes, we have here more questions motivated by conceptual primitives (JACKENDOFF, 1990, 2010): What is PATH for incremental verbs? Is the primitive PLACE, implied in the concept of PATH, lexicalized in locative verbs? Inevitably, questions of localistic nature (GRUBER, 1968; JACKENDOFF, 1990, 2010) emerge from these prepositional structures. Localism, as we will see later, is an ontological principle in cognitive theories.

In this sense, Pantcheva (2009) brings an equally generalizing nanosyntactic response, now to the prepositional structure. From the analysis of locative prepositional expressions from several languages, the author derives a hierarchy of prepositional content, granulating the primitive concept PATH, structured as follows:

[PathP[SourceP[GoalP[PlaceP]]]]. The prepositional hierarchy in Figure 3 would replace the XP complement, outlined in Figure 2:
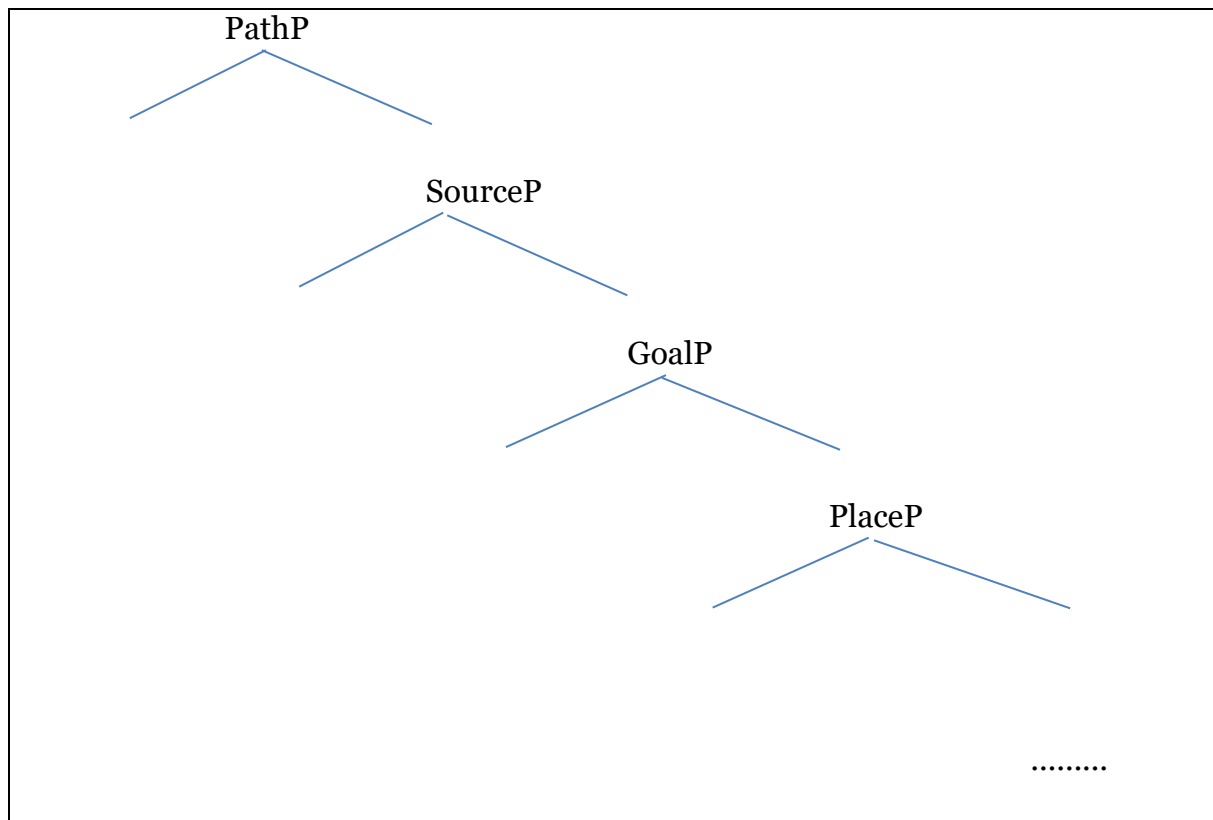

Figure 3: adaptation of the prepositional structure of Pantcheva (2009: 14).

Thus, sentences such as (1) to (3), by the author herself (p. 9), trigger notions of place, directionality and trajectory that need a refined structure:

(1) Mary ran into the house.
(2) Mary ran out of the house.
(3) Mary ran past the house.

In these sentences, it is not the verb *run* that brings these notions, but its complementation system through the prepositions *into, out of* and, in the case of the third, the prepositioned expression *past*. Hence, the first lexicalizes GoalP, the second SourceP, and the third PathP.

Although Pantcheva proposes to analyze the essentially linguistic spatial systems of natural languages, focusing on lexicalization trends in prepositions (from English) or in case systems (from Finnish), the author also comments on the verbal

lexicalization patterns defended by Talmy (2001). Thus, it is relevant to note that localistic primitives, such as trajectory, source, goal, place, do not always fall - among natural languages - into the same linguistic structures. This timidly evidences a linguistic indeterminacy (CULIOLI, 1968; FRANCHI, 1976), in which a prelinguistic or mental level is supposed to project the linguistic level non-isomorphically.

But the localistic assumption is evident in Pantcheva's breath-taking analysis; it is the same assumption of a conceptual semantics along the lines of Jackendoff; and it is the same of a cognitive semantics of Langacker (1990, 2008) or Talmy (2001, 2011), reviewed by Batoréo (2017). So, a final question: Would it be possible to relate the cognition of space and the lexicalization of PathP and its subfeatures?

Obviously, this last question is rhetorical, as the answer can only be 'yes'.

This is what we will develop in the next section, in Talmy's (2001) reclaiming of cognitive subsystems. The immediate motivation of the cognitivist foundation was derived from Ramchand (2014), who proposes a cognitivist-based discussion, but which could gain argumentative amplitude through the notion of *causal chain*.

2 CAUSAL CHAIN AND EVENT STRUCTURE

Ramchand (2014) proposes an account for light verbs, not only from English but also from Persian and Bengali, arguing that their nanosyntactic structure [InitP, ProcP, ResultP], from 2008, is the one that persists in the grammaticalization process – in the historical path between full verb and light verb. Thus, the author argues that what persists is of a syntactic nature, and the features that remain in the semantics of the full verb are of a cognitive nature – of conceptual or encyclopedic content.

In this section, we would like to assume an inverse hypothesis: what persists in the grammaticalized verb is cognitive in nature, since the verbal structure [InitP, ProcP, ResultP] represents the morphosyntactic counterpart of cause or causal chain, a basic and central element in theories cognitive. And what remains in the semantics of the full verb is encyclopedic in nature (which can also be considered a level of cognitive meaning).

But this distinction carries a broader theoretical issue: the difference between syntactic-semantic structural meaning and encyclopedic meaning, of contextual world knowledge. Traditionally, the literature names these two levels of meaning using different terminologies, but with converging criteria: 'semantic form' and

'semantic content' (WUNDERLICH, 1997), 'semantic structure' and 'conceptual structure' (SAEED, 2003), or still 'SMS' and encyclopedic knowledge (STARKE, 2009). The first components of meaning are those that enter grammar, the second are less relevant and constitute the conceptual content of meaning. Jackendoff (2011: 689) breaks this distinction in favor of a conceptual semantics that is comprehensive and does not take literal meaning.

A group of authors, typified in Levin and Rappaport Hovav (1995), argues that the two types of meanings come from cognition, and foresee an intermediary module, between cognition and language, the LCS (Lexical Conceptual Structure). Another theoretical perspective, typified in Ramchand (2008), argues that this distinction is in the language, with syntax being responsible for generating meaning.

Roughly speaking, the structural meaning is in syntactic-semantic form and is metaphorically called 'skeleton', and the conceptual meaning, the encyclopedic one, comes from the world and gets the name 'flesh'. Lieber (2004, p. 10) even suggests a comparison of the variation in the skeleton/meat lexicon with closed/open word classes. While the skeleton is compared to closed classes, it doesn't change. Metaphorically, we can change our body, losing weight or gaining weight, but we cannot change skeletons.

For Ramchand (2014), the structural meaning is of type A, and the encyclopedic is of type B. She defends a less common option: the meaning of type A is encoded in the syntax, and that of type B is represented in the conceptual system - intentional of the mind/brain (p. 208). Now the term 'intensional', as used here, is dangerous. At least ambiguous: would intensional be what is not referential or extensional, which denotes properties of sets of individuals, as in Montague tradition? Or does intensional meaning have no relevance to morphosyntactic constraints? The text implies that it is the second option. But here, in fact, we are faced with an 'overwhelming' terminology.

The big question is not exactly the generic distinction between meanings A and B, as it is persistently recurrent in the literature, but which features of meaning are in category A and which are in category B. Ramchand argues that the nanosyntactic structure of the representation for the verbal meaning - [InitP, ProcP, ResultP] (2008), is the relevant set of features for the meaning A (the skeleton), and that information like MOVEMENT and CONTACT, for example, would be in the module B, from the encyclopedic conceptual content.

With respect to verbs, the A-features would persist in the grammaticalized form of the light verb, while B-features are stuck to the full form. In (4), the full verb *gave* still carries the feature MOVEMENT; in (5), MOVEMENT and CONTACT; but in (6), with a light verb, the MOTION and CONTACT features are lost, and the structure [InitP$_i$, ProcP$_j$, ResultP$_k$] remains, with non-coindexed subjects, typical of bi-transitive verbs:

(4) John gave Mary a book.
(5) John gave Mary a kiss.
(6) John gave a shudder.

Alongside these classic features of structure, whose combination and indexing result in different 'natural' classes of verbs, there seem to be other features that 'escape' from the B meaning, such as deixis reading, in which the resulting state is directed away from the initiator, as in (4) and (5), and the experiencer reading of the initiator, as in (6). These type B features, which escape from full form to light form, evidence specific semantic interpretations of light verbs. However, the author argues that what will differentiate the border, sometimes fuzzy, between world A and world B of meanings, is an empirical question (p. 213). The tentative answer is that light verb features are a subset of B features (p. 218). Now, what about intensionality?

By posing the central question of which features are relevant and which are not, Ramchand recovers Talmy (1985) in his seminal work on the conflation of features, which says a lot about linguistic typology. Something similar to the principle of complementarity between MANNER and PATH (RAPPAPORT and LEVIN, 2019), about languages with satellites vs. languages without satellites (TALMY, 2001).

At this point, there is an articulation to rethink the theoretical aspects defended by the author. Talmy (1985) proposes, rather, a semantic analysis of verbs according to the primitive features they combinatorially encode: FIGURE, MOTION, PATH, GROUND, MANNER. Languages, in this sense, would differ according to combinatorial patterns of features. English (and satellite languages) tend to lexicalize MOTION + MANNER in verbs, and PATH in some particle or preposition outside the verb (7). Spanish and Romance languages, on the other hand, tend to lexicalize MOTION + PATH in verbs, and MANNER in expressions outside the verb (8):

(7) He ran[Motion, Manner] out[Path] of the house.

(8) Salió[Motion, Path] de la casa corriendo[Manner].

('She left the house running')

This complementary distribution between MANNER and PATH is taken up in numerous later studies on conceptual semantics (LEVI and RAPPAPORT-HOVAV, 2019; BARON and HERSLUND, 2005, among others), which inaugurated a line of studies on typology of languages based on places in which semantic features are lexicalized.

But Talmy needs to justify where these semantic features that distinguish languages come from. These are not exclusive features of linguistic expressions: they come from cognition – or from cognitive subsystems relevant to the structuring of language, theoretically supported by cognitive semantics. It would make no sense for these features to be linguistic properties, as they do not exhibit fixed patterns of lexicalization, which we have named above as "linguistic indeterminacy". A feature such as PATH, for example, can 'fall' into various linguistic places. In Brazilian Portuguese, at least, in the root of the verb (*sair, entrar*), in the preposition (*para, até*), in the prefixes (<u>trans</u>*correr,* <u>per</u>*passar*). Other features arising from cognition exhibit the same indeterminacy. The iterative aspectual value, in one more example, can 'fall' into an infix (*salt<u>it</u>ar, apedr<u>ej</u>ar*), the verb root (*aplaudir*), an adverb (*várias vezes*), or a prefix (<u>re</u>*considerar*).

Finally, here we signal a first advantage of the conceptual-cognitive approach to semantics: the syntactic-semantic indeterminacy of the relevant primitive features gains an explanatory output. It is not, therefore, referential semantics, of logical proposition (JACKENDOFF, 2011), but perhaps it has very interesting theoretical relationships within the derivational semantic representation, in whose compositional nodes the cognitive categories can be represented.

Talmy's (2001) Cognitive Semantics presents a systematization of mental subsystems that act in the construction of language grammars. With strong perceptual-gestaltic argument from Psychology, Cognitive Semantics is dissociating itself, in this sense, from a mental treatment based on recursion, from Generative Grammar, on the one hand, and from a naive psychological treatment of categories such as perception, memory, frames or attention (p. 2). What the author seeks, in a third way, are patterns of conceptual content organization that unfold in the

grammar of languages. Intuitively, they are also basic mental categories that structure language, such as *space and time, events, entities and processes, movement and location, force* and *causation.*

Now, they are eminently localistic concepts, which speak of concrete referential situations located in space (GRUBER, 1968, FILLMORE, 1976, JACKENDOFF, 1990, 2010), which licenses some Talminian studies to name their Cognitive Semantics as "space semantics" (BATORÉO, 2017). Abstract language perspectives would enter a higher level of perspectivization, or fictional movement (p. 99), but would operate under the same grammar (JACKENDOFF, 2010: 123, 147).

The course of language activity goes from perception of the world to cognition, and from its relevant subsystems to language and, finally, to the structuring of grammar. Simply put: PERCEPTION □ COGNITION □ LANGUAGE. Before *spell-out* in a concrete speech, therefore, minds act in specific cognitive processes to the organization of sentences. The cognitive subsystems at work here are at least five:

1) figure/background,
2) space/time,
3) attention/cause,
4) perspective,
5) nesting.

For what interests us here, which is to relate cognitive semantics to Nanosyntax, the focus will be on the first three subsystems.

Initially, in the perceptual domain, we look at the world and select a FIGURE element, the prominent or salient element (LANGACKER, 1993), in relation to another element associated with the figure, the BACKGROUND, the less salient one, in relation to which the figure may or may not move:

(9) The pen[FIGURE] fell on the floor[BACKGROUND].
(10) The pen[FIGURE] is on the table[BACKGROUND].
(11) João threw the paint[FIGURE] on the wall[BACKGROUND].

These elements are concrete entities with specific semantic features: they can be massive or countable (*ink/pen*), singular or plural (*the pen/the pens*), limited or

not (*the pen/pen package*), human or non-human (*John/pen*). The literature sees them as semantic universals (±COUNT (DOETJES, 2011; BUNT, 2003); ±SPECIFIC, ±CONCRETE; ±ANIMATE, etc.), strongly relevant to the grammatical behavior of natural languages.

However, these two notions of FIGURE and BACKGROUND – abstract – can coact in other subsystems. A relationship of subordination, or embedding, for example, articulates the role of figure to the main clause, and the role of background to the subordinate clause: *João fell ﹐figure because he became dizzy ﹐background*.

Talmy proposes a representational isomorphism between space and time; thus, the temporal interpretation of a verb can also be massive or countable (*running* and *falling*, respectively); and the aspectual interpretation of a sentence can be limited or unlimited (*swam, swimming*):

Continuing in the perceptual-cognitive phase, the FIGURE may or may not move in relation to a BACKGROUND. When moving, the perceived event can lead to a result, or change of state. Then, another cognitive subsystem is activated, that of the distribution of attention, which structures the causal relationship. The best known notion of this subsystem is the *causal chain*, which comprises five subevents:

[1]	[2]	[3]	[4]	[5]
agent's act of volition that activates bodly movement	agent's movement (bodily and partial/total) that initiates the physical causal chain	intermediary subevents causally linked	penultimate subevent = immediate cause of the final result	subevent final result = agent's aim within scope of intent

Figure 4: representation of the causal chain, based on Talmy (2001), p. 272.

The linguistic implications of the causal chain are numerous, but we will highlight three here. Next, we will be able to enter Nanosyntax with the cognitive notion of *cause*.

Initially, the causal chain can shed light on the feature lexicalization patterns between languages, as we saw in the examples in (7) and (8), repeated below in (12) and (13):

(12) He ran[Motion, Manner] out[Path] of the house.

(13) Salió[Motion, Path] de la casa corriendo[Manner].

('She left the house running')

If we assume active cognitive subsystems for the structuring of languages, the distribution of attention here modulates the behavior of satellite-framing languages (English, German) - (12) -, which tend to lexicalize the features of the subevent [2] in the verb root, as MOTION and MANNER, and subevent features [5] on particles, or satellites, as PATH. The subevents of the causal chain, therefore, choose different linguistic places, depending on their translinguistic pattern. This is what Langacker (1993) named as world conceptualization patterns, variables between languages.

Languages that do not exhibit productive particle behavior, such as Spanish and Brazilian Portuguese, lexicalize these subevents in alternative places, as a gerundive secondary predication (13): the MOTION feature, from step [2], and the PATH feature, from [5], lexicalizes in the verb, but a subfeature of [2], MANNER, lexicalizes in the secondary clause .

Another linguistic phenomenon that evidences the operation in the causal chain is the causativization of intransitive, inergative (14) and unaccusative (15) verbs, a deviant behavior in Brazilian Portuguese (FERREIRA, 2017):

(14) João nadou o boneco na piscina.

('John swam the doll in the pool')

(15) João nasceu a filha num hospital fora da cidade.

('John born his daughter in a hospital outside the city')

In these sentences, the intuitive interpretation is that there is no relationship of direct cause, but rather a dynamic relationship of forces in which two agents are foreseen: the agonist (who makes the force) and the antagonist (who reacts or suffers the force), as shown in paraphrases (16) and (17), derived from (14) and (15). The force dynamics, as a specific situation of the causal configuration (WOLFF, 2017), is commonly used in sentences with verbs such as *do, make, provoke, command*, which encode the indirect cause (SOARES DA SILVA, 2005):

(16) João fez o boneco nadar na piscina.

('João made the doll swim in the pool')

(17) João fez a filha nascer num hospital fora da cidade.

('João made his daughter be born in a hospital outside the city')

But what is at stake in the causativization of intransitives, from the point of view of cognitive semantics, is a mental structure - *cause* - that selects non-standard lexical items, in certain languages, such as Brazilian Portuguese, to operate on linguistic innovations, or grammatical creativity. *Swim* is conventionally intransitive, an activity, but it can (by philosophical presupposition of language!) lexicalize the entire causal chain to operate polysemically. The same happens with *born*, and with countless data on children in the language acquisition phase, sometimes facilitated by locative expressions (WACHOWICZ, 2019):

(18) Me corre! (B.3;3)

('Run me!')

(19) Vou nascer a plantinha no vaso. (M.4;7)

('I'm going to grow the plant in the pot')

A third linguistic phenomenon explained by the mental operation of the causal chain is voice, in which verbal alternations are also located. Shibatani (2006) argues that verbal voices concern "the way event participants are involved in actions, and with the communicative value, or discourse relevance pertaining to event participants from the nature of this involvement." (p. 219). This intuitive notion replaces the attempts at morphological and/or syntactic explanation, usually not very comprehensive among translinguistic accounts, towards conceptual bases rooted in the human cognition of actions. The author brings the structure of actions proposed by Langacker (1990), quite similar to the representation of causal chain by Talmy (2001), which also figures as a mental representation. The structure – absurdly simple – predicts the phases of *origin, development* and *termination*. And the voices would be a consequence of mental operations that attribute greater relevance to one phase than another. Thus, a causative form (20) makes the first phase (of origin) relevant; an inchoative form (21) makes the third phase (of termination) relevant; a middle voice (22), the intermediate phase:

(20) John broke the vase.

(21) The vase has broken.

(22) This vase breaks easily.

Logically, the morphosyntactic consequences would be operating differently depending on the language. But what is proposed is a cognitive treatment to explain a universal phenomenon – of verbal voices - which is the result of the conceptual choices that speakers use to verbalize events in the world. Its perceptual and cognitive operations provide the mental apparatus for these choices.

Returning to Nanosyntax, the basic work of Ramchand (2008), by proposing a generic structure of syntactic projections internal to verbal items ([InitP, ProcP, ResultP]), ended up formalizing in the submorphemic structure of the verb the very causal chain of Talmy, or Langacker's structure of actions.

Even the spatial domain defended by Pantcheva (2009), [PathP, SourceP, GoalP, PlaceP], which would be in place of the rhematic complement of the verb, is treated here in cognitive semantics, as it develops in configurations of the space occupied by the BACKGROUND element. An example: the indigenous language Atsugewi, from California/USA, presents a system of verbal suffixes that lexicalize almost 50 geometries and trajectories related to the BACKGROUND. Some examples (TALMY, 2001, v.I, p. 193):

-ićt = into a liquid

-cis = into a fire

-mić = down into (or onto) the ground ('down into the ground')

One more evidence of linguistic indetermination of places of the semantic conceptual primitives: the geometries of the background space are encoded in suffixes, in Atsugewi, but preferentially in prepositions, in BP.

The most urgent question here, now, is to rethink the semantic question posed by Ramchand (2014: 06): What components of meaning are in fact relevant to the grammars of languages, those that are part of their skeleton (type A)? Unlike Ramchand (2014), who attributes type A meanings to syntax structure ([InitP, ProcP,

ResultP]), and type B meanings to cognition, since they are 'encyclopedic', we bring here the hypothesis that we have cognitive components of both types.

If, concerning light verbs, there is a conservative persistence of the features [InitP, ProcP, ResultP] in their historical grammaticalization process, it is because they are, before syntactic structure, a highly relevant cognitive structure to languages: the causal chain, configuration of the distribution of attention subsystem. Therefore, type A meanings are cognitive; perhaps more relevant than those of type B, arising from subproperties of the central elements in the figure/background, space/time, attention/cause subsystems, which are essential to the structuring of language. Other subproperties, of type B, are considered irrelevant: CONTACT and WAY, COLOR and VOLUME are also semantic information that do not enter the structuring of language, according to Talmy. Are they cognitive features associated with culture, and therefore knowledge of the world, or encyclopedic? We do not have space here in this paper to further discuss this issue. But we had space to cover a theory in cognitive semantics that can strengthen the explanation for lexicalization processes in the verbal and prepositional domain, especially in Ramchand (2008) and Pantcheva (2009).

If the implicitness of cognition runs through many texts in semantics of time, aspect, universals and derivational phases, and also enters as an underlying presence in discussions of Nanosyntax, we believe that there is a way for more coherent justification for its role in languages.

CONCLUSION

This paper aimed to investigate the cognitive assumption present in several studies on (or derivatives of) Nanosyntax. The hypothesis that the first syntactic derivation zone, that of events, is the place where speakers arrange a linguistic structure in response to the way they conceptualize the world, seemed recurrent. Languages are as creative as the possibilities of relations between cognitive subsystems. The structure [InitP, ProcP, ResultP], by Ramchand (2008), and the structure [PathP, SourceP, GoalP, PlaceP], by Pantcheva (2009), which underlie the submorphemic verbal and prepositional arrangements, respectively, come from the cognitive assumption of *cause* and *localism*.

However, in addition to the mapping of cognitive treatment in Nanosyntax, some extremely relevant issues were considered here, but they deserve much more in-depth discussion.

The first of these concerns work on linguistic typologies, based on the conceptual or cognitive line of semantics (Talmy, 2001, Levin and Rappaport-Hovav, 2019, Baron & Herslund, 2005). If we go deeper into this investigation, we may find more clues to grammars of languages than with the intuitive notions of 'frames' and/or 'world conceptualization'. In the current state of literature, we already have strong evidence that the feature ±COUNT, which is directly related to ±TELIC, more than an instrument for categorizing linguistic expressions, is a way of organizing the cognitive subsystem of space/time – which distinguish behaviors among languages.

Another strong concept that remained unresolved: the famous meaning of encyclopedic content. After all, is it a product of the history of cultures, or does it contain traces that spill over into grammar? The term 'encyclopedic' itself seems quite bizarre. It even suggests something at the epistemological level: the set of human knowledge constructed historically. WAY and CONTACT, for example, so relevant in Beth Levin and Malka Rappaport-Hovav research: are they simply encyclopedic features or are they features causing linguistic restrictions in monovalent (*running, walking, swimming*) and polyvalent (*giving, splashing, filling*) verbal categories, respectively? Jackendoff (2011) values these features, especially to break the traditional view of literal meaning (p. 689).

But perhaps the most interesting discussion, given that it is part of the philosophy of language, concerns the hypothesis of linguistic indeterminacy sparsely defended in this work. In the strong empirical tendency of current Linguistics, research on grammar of languages other than English or others on the Europe-US axis has provoked strong investigation into semantic universals. This is what we find in Mathewson (2006), about tenseless languages with very particular modal systems, in Smith (1997, 2012), about aspect universals, and Shibatani (2006), about the phenomenon of voices – verified in all languages. With this epistemological movement, it became clear that the data reveals more than a general rule of syntactic nature. The cognitive argument, in this sense, provides some encouragement, or at least an alternative to generalizations. It is the same argument that can be inferred from studies on Nanosyntax, and that we tried to map in the present paper.

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