

# On the Nature of Nominal Expressions and Tensed Nominals

Takashi IMAI

## 0. Introduction

The scientific research program on human language has profoundly been investigated since the advent of generative grammar (generative linguistics) by Noam Chomsky in 1950's. In Chomskyan (cognitive) revolution, linguists shed light on the nature of human language, asking "what is language?" Chomsky claims that linguistics is part of cognitive psychology, then, ultimately (human) biology in 1960's, and the science of language has well developed to be a super interdisciplinary field of sciences now called biolinguistics in 2000's. A biolinguistic minimalist program (MP), subfield of biolinguistics is a core research program of syntax with distributed morphology and highly theoretical orientation can contribute to the MP. At the same time descriptive studies on natural languages (and especially minority and endangered languages) have been investigated in depth such as cartography.

In this paper, we will overview the biolinguistic program and beyond in section 1. In section 2, we will focus attention to the nature of nouns in the MP. What is a status of nominals? Are nominal expressions parallel to clauses? We will especially consider tensed nominals. Section 3 further outlooks some prospects of linguistic research and conclusion.

## 1. Biolinguistics and Related Fields

Chomsky asserts that linguistics is part of (human) biology.<sup>1</sup> Thus, the Faculty of language (FL) constitutes an organic system in the brain neural cells. Since we understand that FL is biologically endowed, linguistic operations and expressions involved in syntactic, semantic and phonological processes among others would be similar or paralleled to other biological processes in human body.

Interdisciplinary approach to FL may reveal some unexpected outcomes as the discovery of spiral structures of DNA by biologist Watson and physicist Click in 1950's showed us an excellent example. The same thing is said for the Science of Language. There exist many questions and mysteries to be solved as to the origin and evolution of human language. Without cooperation with various fields of biology it is impossible for biolinguists to find answers to those questions and mysteries.

The ancestors of Homo Sapiens emerged in Africa some 2 million years ago, then according to Chomsky (2012), probably some 60,000 years ago language was there though

a complex symbolic system was there before 60,000—100,000 years ago. In the course of human evolution, FL was acquired in the sense of the Great Leap Forward, but not of gradual acquisition by Darwinian natural selection. At the time of FL acquisition, that language was uniquely one is obvious, let's call, the protolanguage. Then, a question arises. Why didn't language remain unique but rather it has proliferated in diversity? In the process of evolution and development (evo-devo), variations occurred across languages such as word order and speech sounds. Numbers of vowels and consonants vary language by language. Notice however that these variations would be found at Sensory-motor systems, just in the outside of human brain/mind, i.e. the Faculty of Language in Narrow Sense (FLN).<sup>2</sup> The investigation of FLN would shed light on the nature of human language, i.e. I-Language.

In the Biolinguistic Minimalist Program (BMP)<sup>3</sup>, the goals of the linguistic theory would be eventually the goals of the scientific inquiry, which constitute the investigation of optimal solutions to the organic systems. It is attested that the operations may produce maximal outcomes with the minimal effort conforming with the economy principle.<sup>4</sup> The system exists of any form consisting of various contents independently. These contents self-organize at the point when the system itself activates. The self organization of the subsystems may form the higher and larger system.

Taking the biological foundation of language faculty in human beings for granted, the faculty of language (FL) constitutes part of the organic system in the brain neural cells. Assuming FL is biologically endowed, linguistic operations involved in syntactic, semantic, phonological processes among others would be similar to or parallel to other biological processes in human body.

Brown (1999) cites that Chinque and his research group investigated the biological characteristics of language faculty in such instances as word order, position of adverbs among others which are invariant across languages in the result of word orders in languages.

The importance of considering natural scientific approaches to linguistics is crucial for the sake of the advancement of the linguistic science.<sup>5</sup> Uriagereka (1998) mentions that the mobile model of Kayne's (1994) antisymmetry. This implies the linguistic structure (syntactic, semantic and phonological ones) is three dimensional. Baker (2001) also suggests that tree diagrams be three dimensional. Klosek (2011) explicitly argues that by representing syntactic structure three-dimensionally, it will be possible to eliminate much of the complexity inherent in two-dimensional syntactic structures, and proposes the potential for universal syntactic representation of synonymous propositions expressed in any language. The observation that the syntactic structure is three dimensional seems to be quite on the right track since as Klosek argues, we live in the three dimensional world, and our brain is part of the same world. Unifying the preceding work by those linguists, I have proposed elsewhere that the linguistic structure could be explained if we set the basic unit as a three dimensional structure in which the head X is always in the z-axis in the sense of the conventional mathematical axes of y, and z. It is posited that fixing the viewpoint angle is parametrized. By fixing the viewpoint angle, the particular word order for a language is trivially derived. Cf. Imai (2014) for example.

We have important consequences in that the uniqueness of the default structure could be attributed to the left-handedness of the solar system.<sup>6</sup> The left-handedness could be a clue to explain why most of the movement operations are leftward and very few are rightward in classical generative grammar. This coincides that linguistic processing takes place from left to right, and is closely linked with the mental computation. The findings in physics and biology in a broad sense may well be useful for explanation in linguistics.

Note also that chemical structures, again three dimensional ones, could be a good model for associating linguistic structures. It follows that if the language processing in the brain is a case of molecular reaction at the cellular network in the brain, it is not so unnatural to assume that the linguistic structures could be somewhat similar to chemical structures. This could be important as to merging of categories and possibly the origin of word order variations.<sup>7,8</sup>

In Chomsky's classical classification of parts of speech in the Standard Theory of generative grammar ca. 1960s, there exist four major lexical categories based on feature specifications such as N [+N, -V], V [-N, +V], A [+N, +V], P [-N, -V]. It is taken for granted that almost universally those four categories exist in any language and their characteristics are identical, unless there are some variations of P, i.e. Prepositions vs Postpositions dependent on which language may take either one. In this paper we will consider some language particular variations of nouns derived from setting parameters of categorial features. Thus, all nominal expressions in the world languages differ from language to language in terms of their features.

## 2. What is a Noun?

The noun is referred to an item which ranges over various kinds including choices of such features as [ $\pm$  animate], [ $\pm$  static], [ $\pm$  proper][ $\pm$  countable], etc. These features are commonly conceived characteristics as nouns. There are approximately 6,000 languages in the world, some of which, as we admit, encounter crisis of extinction. Among them, there are richer features of categories than other languages. The evolution of human mind/brain made human beings perceive time duration which reflected a verb in languages with Tense feature either explicit or implicit. Understanding concept of intricate time is a trait unique to human beings.<sup>9</sup> Thus, it is taken for granted that every natural language possesses Tense in a sentence in terms of verb. Syntactically there exist two time distinctions: Present and Past. Semantically, there exist various expressive features of time including Future. Notice that Modern Chinese does not have explicit Tense expressions, but there are Aspectual items to express perfective expressions. On the contrary certain languages in the world have Tensed nouns, which mean a noun with Tense inflection or morpheme. Tensed nominals can be observed regardless of language families in the world.<sup>10</sup>

There are two types of Nominal Tense in tensed nominals (TN, hereafter). Nordlinger and Sadler (2003) claim that one type is called independent nominal tense, while the another one, propositional tense on dependent nominals. Independent nominal tense denotes that tense

information is intrinsic to the nominal, but not subject to the clausal tense. Notice however that in most cases, the nominal tense coincides with the clausal tense. Propositional nominal tense provides tense information for the whole proposition often with the tense of V. Hence, (1) illustrates two types of Nominal Tense as follows:

(1) a. Independent Nominal Tense

$$\begin{array}{ccccccc} [\text{TP} & \text{DP-Tns} & \text{T} & [\text{vP} & \text{v} & [\text{VP} & \text{V} & \text{DP-Tns} & \text{ }]] \\ & [\alpha \text{ Tns}] & & [\beta \text{ Tns}] & & & & [\gamma \text{ Tns}] & \end{array}$$

b. Propositional Nominal Tense

$$\begin{array}{ccccccc} [\text{TP} & \text{DP-Tns} & \text{T} & [\text{vP} & \text{v} & [\text{VP} & \text{V} & \text{DP-Tns} & \text{ }]] \\ & [\beta \text{ Tns}] & & [\beta \text{ Tns}] & & & & [\beta \text{ Tns}] & \end{array}$$

In (1a), Nominal Tense and Clausal Tense differs one another, while in (1b) Nominal Tense and Clausal Tense share the same Tense. Notice that most TN languages are agglutinative languages, in which affixation manifests grammatical and/or semantic functions. Here for the sake of expository purposes, I simply use Tns as affix which attached to DP, but, in actuality Tns may appear in-between as DP-Tns-Gen or DP-Tns-Loc for example among other combinations.<sup>11</sup>

In the case of INT, a nominal item and Tns merge apart from technical complexity. On the other hand, PNT creates Tense domain in which relevant tense of T can synchronize with Tns of nominals. This mechanism is compatible with feature sharing (agreement) in most languages which illustrated as in (2):

(2)

- a. They are students.  
3rd pro. pl. pl.
- b. une mignonne petite fille  
indef art f. cute f. little f. girl
- c. un mignon petit garçon  
indef art m. cute m. little m. boy

In (2a) the predicate nominal agrees with DP in plural forms. (2b and c) show that modifiers agree with the head feature [+f] in (2b) and [+m] in (2c) respectively of DP in French. Under the feature-based approach in MP, adjectives have  $\phi$ -features of [number, gender, Case...], dependent on choices of features subject to a language. This fact implies a significant consequence that Operation *Merge* may not apply randomly. Objects to be merged are under the feature matching conditions, i.e. Operation *Agree* applies first, then, *Merge* follows it.

The Propositional Nominal Tense is attached to dependent nominals. PNT involves a non-local interpretation of the tense. The nominal to which tense is attached is not interpreted in the nominal itself, but it is synchronized with the tense of higher clause to which the tensed nominal belongs by tense-feature checking.

A peculiar instance of this PNT intrigues us in that the tense of a nominal determines the temporal information of the clause in which the tensed nominal belongs, in Siriono, Tupí-Guaraní language family, Bolivia. Hence, the verb does not necessarily encode the tense information. It is striking that this system of tense is beyond our common sense knowledge of the fact that clauses have tense to determine Time of it. This is a variation of PNT, but the tense of nominal determines the tense of a whole clause, which is the opposite of the usual case that the clausal tense affects tensed nominals by manifestation of the same tense. Observe the following examples:

(3)

a. ési-ke            óso    ña    ii-ra  
 woman-PST    go    near    the water-to (Loc)  
 “The woman went near the water.”

b. evgytui-rv    báe    bukiacáa  
 tapir-PERF    thing    steal-not  
 “The tapir did not steal from others.”

[Nordlinger and Sadler (2004) 58 and 59]

In both cases, the clausal tense is licensed from the Nominal Tense of the subject noun. In (3a), “woman” with PAST tense c-commands T, which receives [+PAST] feature. In (3b), “the tapir” with PERFECTIVE tense c-commands T, which receives [+PAST]. The feature of PERFECTIVE has a feature specification [+PAST]. It is assumed that licensing Tense feature is based on the c-command relation between the tensed nominal and T of TP. Consequently, the tensed nominal in the object position does not license T, since it cannot c-command T. This prediction is correct in Halkomelen Salish, a North American language as illustrated as in (4):

(4) El-éliyemet-tsel-cha                            the-I            sí:l-á:lh  
 REDUP-dream about-1SG SUBJ-FUT    the (F)-my    grandparent-PST  
 “I’ll be dreaming of my late grandmother.”

[Nordlinger and Sadler (2004) 11]

In (4), amalgamation of V and a series of affixes of the first person singular pronominal item and Tense item indicates future tense, which determines the tense of the whole sentence. The crucial point is that the future tense affix does not attach to V, instead it merges with the first person singular pronominal affix. As a consequence, it must be an instance of a tensed pronominal one. N in the object position has past tense which is an INT. The N in the object position does not affect the clausal tense, as it cannot c-command T in the clause.

In sum, there are two types of tensed pronominals, one of which is independent tense, and another of which is propositional tense. In some languages, sentences without clausal tense, but rather the subject tensed nominal, though it seems that it is an instance of independent

tense, licenses T, by the Subject tensed nominal c-commanding. In this case, it is not the case that a clause does not have Tense, rather, T-head is saturated by c-commanding subject tensed nominal. Note that Guarani exhibits stacking of independent tense and propositional tense on nominal predicate. (5) illustrates tense stacking:

- (5) Che-róga-rã-ta  
 1SG-hous-Fut-Fut  
 “It will be my future house.”  
 [Nordlinger and Sadler (2004) 37]

In (5), “-rã” is independent tense of future, while “-ta”, propositional tense, which licenses T of clause using the same form attached to V.

### 3. CP vs. DP: Some Parallelism

The structural similarity of noun phrases (= nominal structures) and clauses (i.e. DP and CP) has been argued in generative linguistics. The classical work is Chomsky’s “Remarks on Nominalization,” date back to 1972. More recent developments on this topics include Abney (1987), Imai (1987, 1989), Koopman (2003), Laenzlinger (2005), Ogawa (2001) among others. Imai (1987) claims that both nominal structures (NPs) and clauses are derived from the same underlying structure to account for the unity of derivations. It is proposed that the nominal structures have INFL along the same line with Szabolcsi (1983). That tense is an inflectional category (including tense related features) of verbal items is assumed. It is proposed that parameterization of modal features (including tense features) could account for the variation of syntactic structures uniformly. (Cf. Imai (1987, 1989). As a consequence, a unique difference of nominal structures from clauses is having tense or not. As we have just observed earlier, there exist tensed nominals in languages vastly in the world. Consequently tensed nominals across languages may challenge linguistic theory. The difference should be minimal between nominal structures and clauses and is probably a clue to solve the question of why such similarity exists in view of the evolution of language, and economical and minimalist considerations. (Chomsky 2001, 2004). Lecarme (2004) summarizes the following characteristics of time on nominals in terms of semantics:

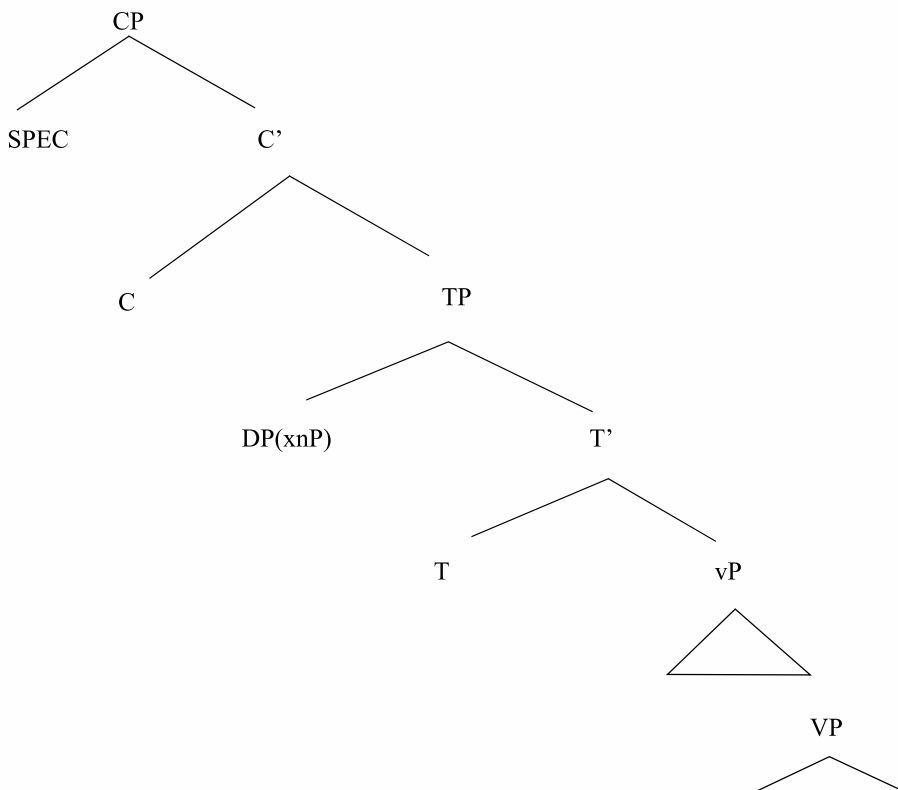
- (6)
- a. Determiners, like proper names or connectives, have the same extension at every point in time: it is then T, not D, that is the element responsible for the “time sensitivity” of noun phrases.
  - b. Time reference (C or D selecting T) is a universal property of language, independent of whether a given language has grammatical tense morphemes or not. Feature selection (a

grammar selecting [T] as a formal feature for use in the computational system) is the locus of parametric variation.

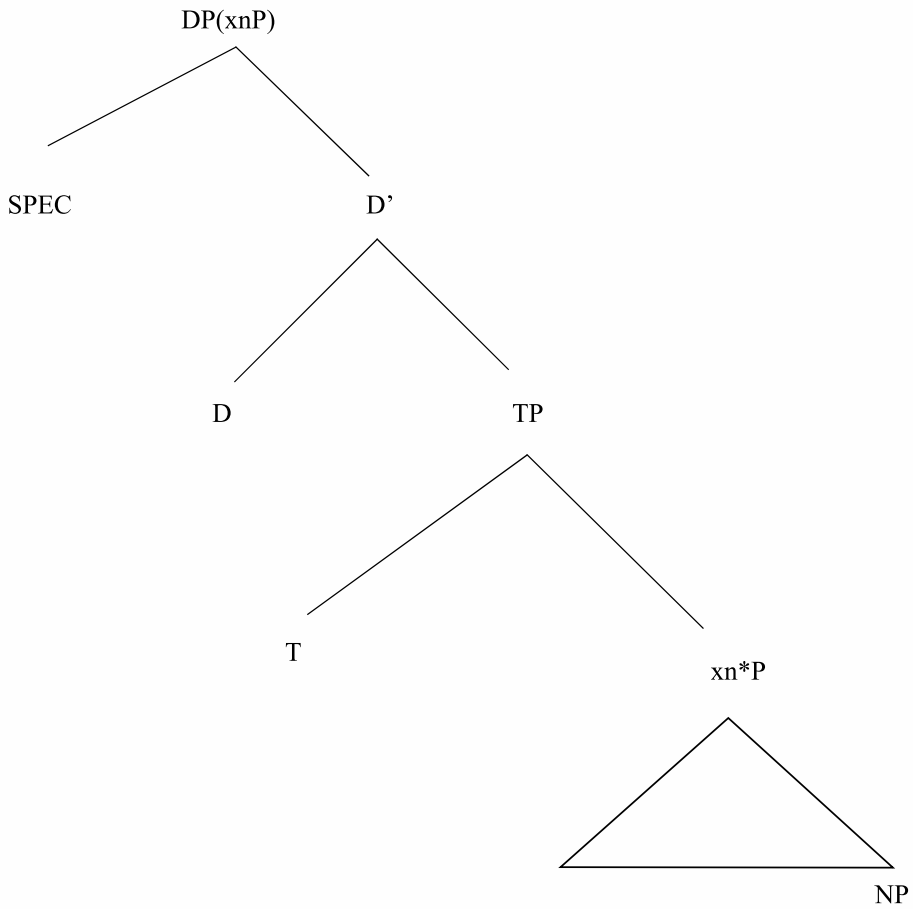
- c. DPs can introduce tense operators. The temporal interpretation of noun phrases is syntactically construed as the creation of a “tense chain” (Guéron and Hoekstra (1994) in which a tense operator in SPEC-DP binds the variable e-position. (Lecarme 2004:447)

We will however consider a syntactic approach to parallelism between CP and DP.<sup>12</sup> It is taken for granted that CP as well as vP is a phase. And the status of DP is unclear whether it is a phase or not. Notice that an immediate consequence of the tensed nominal structure is straightforward, i.e. DP is a phase as CP is a phase, and parallelism between CP and DP is attested. Note however that some languages exhibit characteristics of DP as a phase, while others do not fully exhibit characteristics of DP as a phase. Thus, it might be the case that selection of DP as phase would be parametric variation that we will not discuss here. Let us illustrate the structures of CP and DP in the standard X-bar trees for the sake of convenience, but in fact the structures are bare phrase structures.

(7) CP (Head order irrelevant)



(8) DP ( Head order irrelevant)



Note that TP externally merges with either C or D subject to a verbal feature or non verbal feature. Abstract structures as in (7)-(8) show the categorical relations, of which affixation is included in the case of agglutinative languages.

#### 4. Concluding Remarks

We have so far considered parallelism between nominal structures and clauses. We propose that CP and DP take TP inside and tensed nominal structures assure a universal property of natural language overtly or covertly. This fact leads us to the conclusion that DP is a phase.



## Notes

1. In the early generative grammar model, Chomsky asserted that linguistics is a subfield of cognitive psychology. In 1960's, Chomsky said that linguistics is part of human biology, influenced by Lenneberg. See Lenneberg (1968) in which "biolinguistics" was first mentioned.
2. FLN is restricted to human language, while the Faculty of Language in Broad Sense (FLB) includes communication in other species. See Hauser, Chomsky and Fitch (2002).
3. The BMP is an extension of the Minimalist Program, thus, it is a core of syntax.
4. See Lemons (1997) for further details.
5. See Fukui (2012) for arguing for the importance of grasping linguistics as natural science. Kuroda's article originally appeared in *Sophia Linguistica* in 2008 as an appendix to Fukui (2012) argues that mathematics is a useful tool for exploring mysteries of generative grammar (biolinguistics).
6. Gunter Blobel, a cellular and molecular biologist, won the 1999 Nobel Prize in medicine for discovering that proteins carry certain signals that may act as ZIP codes, assisting them find to move to their correct locations within the cell. See Heemel (1999). This resembles the Operation *Agree* under matching, which is a relation that holds a Probe P and a Goal G in MP. See Chomsky (1998b) for further details.
7. See Monroe, Meekhof, King, and Wineland (1996) for details.
8. For the sake of convenience, I use the conventional X-bar labeling, though bare phrase structures are assumed following Chomsky.
9. Scientists working on bonobos reported that they had understood some rudimentary time duration. Cf. NHK TV program on Kanzi. Whether or not other animals can understand time is unknown.
10. Cf. Nordlinger and Sadler (2004), Lecarme (2004).
11. Gen = Gender, i.e. Masculine, Feminine (and Neuter); Loc= Location affix.
12. DP is considered here as extended nominal projections.

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