都留文科大学大学院紀要　第20集（2016年３月）
THE TSURU UNIVERSITY GRADUATE SCHOOL REVIEW,
No.20（March, 2016）

On the Nature of Nouns

Takashi IMAI

Abstract

We will propose that Merge is not freely applicable. Its application is strictly restricted regarding selectional restriction, i.e. feature matching. In this article, it will be shown that a category, C strictly finds a suitable partner in the process of operation: Merge. In its application, Tensed nominals can be considered which are observed across language families in the world. That implies that the phenomenon seems to stem from a mechanism universally. We will find some characteristics of Tensed nominals. Then, we will argue that a parallelism between nominal structures and clauses is attested.

Keywords: Three-Dimensional Structures, Fibonacci numbers, Select, Merge, Tensed nominals.

0. Introduction

The major categories are defined in the generative tradition as follows:

(1) a. Noun [+ N, -V]
b. Verb [-N, +V]
c. Adjective/Adverb [+N, +V]
d. Pre-/Postposition [-N, -V]

A recent feature-based approach to the lexicon in the Minimalist Program (MP) depicts that in the lexicon, a word has a bundle of features whose selection may be subject to selecting necessary features for a language. Thus, words are different across languages available to choices of features for a language.

In the MP, the ultimate goal of the linguistic theory would eventually seek an approach similar to the theory of everything in physics. The scientific inquiry constitutes the investigation of optimal solutions to the organic systems. It is attested that the operations may produce

ultimate outcomes with the minimal effort conforming with the economy principle.[1] The system exists in any form consisting of various contents independently. These contents optimally self-organize at the point when the system itself activates. The self-organization of the subsystems may create the higher and larger system. This kind of optimization in Nature is attributed partly to the Fibonacci Numbers (Add the present term and the previous term recursively as in the case: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, etc.) In Nature, we can find numbers of leaves, and flower petals, animal fingers, and legs from an octopus, insects to human beings. An octopus has eight legs; insects such as grasshoppers have a pair of 3 legs totaling six feet in both sides; humans have five fingers. We also have two hands and two feet, and a finger consists of two joints in a thumb and three joints in other four fingers. All attribute to the Fibonacci Numbers. We can find instances of the Fibonacci Numbers in languages, too. Cf. Johansson (2013). The minimal numbers of vowels are three. Eg. Pirahã. Japanese has five vowels, and so on. Tree representations of clauses and phrases may be projected based on the Fibonacci Numbers. Also, the golden ratio is due to the Fibonacci Numbers.

1. Three-Dimensional Structures

The natural scientific approaches to linguistics are crucial for the sake of the advancement of the linguistic science.[2] Uriagereka (1998) mentions that the free movable model of Kayne's (1994) antisymmetry. The language structures (syntactic, semantic and phonological ones) are three-dimensional proposed in Imai (2013, 2014). 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 thus, he 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 setting the viewpoint angle, the particular word order for a language is trivially derived from rendering a 3D structure into a 2D flat one in the SM system. Cf. Imai (2014).

Word order is trivial since it is an outcome of linearization of the objects in the SM system undetermined in the core syntax before Spell-Out. Chomsky (2013) claims that "(T) order and other arrangements are a peripheral part of language, related solely to externalization at the SM interface. If (T) generally holds as a principle of UG, then, Aristotle's dictum should be modified: language is not sound with meaning, but rather meaning with sound (36)."

Chomsky (2016) along the similar line posits that "what reaches the mind lacks order, while what reaches the ear is ordered. Linear order, then, should not enter into the syntactic-semantic computation. Rather, it is imposed by externalization, presumably as a reflex of properties of the SM system, which requires linearization (11)."

2. Feature Specification of Nouns

Merge may not be freely applicable. It is constrained regarding selectional restriction, i.e. feature matching. In this article, it will be shown that a category, C strictly finds a suitable partner in the process of operation: Merge.

A lexical category selects a functional one iff an LC requires an FC by operation: Merge. Note that not all of the natural languages use determiners, for example, Japanese, Chinese, Korean among others lack the determiner system, while most of the Indo-European languages require determiners in composition of noun phrases. Basically and ideally SO is composed of a core part, which is an LC, and a periphery that is an FC covering a core part. External Merge consists of Select and Project. Thus, at first, Select applies to an LC, say, a nominal such as "book" that actually Selects an appropriate determiner, say, "a" or "the" as a target item to be merged. This choice is straightforward since a selectional feature of "book" probes to find out an appropriate FC, that is, "a" or "the" and matchs the collocational features of "book" and "a" or "the." In other words, we will say that a determiner feature consists of [+/- Indef], where [+ Indef] is fixed. Then, the unpronounced functional category, D with [+Indef] and an LC can be merged, and then, this SO is sent to the SM system, in which either "a" or "an" is to be selected to pronounce the unpronounced (silent) FC.

Note that all of the Japanese nouns are considered mass nouns, or, at least, have underspecification of some nominal features. Thus, determiners are not necessary for that language and similar languages. Nominal expressions do not merge any FC objects since they are mass nouns or nouns with underspecified features in Japanese. Fukui (1986) argues that Japanese lacks active functional categories. Since the advent of Fukui (1986), the existence of D, hence its projection has not been assumed in Japanese, arguing that Japanese (and other East Asian languages) may not have a category fundamentally corresponding to D of English. This characteristic is, of course, different from English type nouns that require determiners. (Fukui and Takano (2000), Fukui and Sakai (2003).

Let us consider a Number feature in N which selects D with which it merges. In this case, N is a merger while D is a mergee in this language. Many European languages are of this type. We will define Operation: Select in such a way that a merger finds a target category with the same feature that it contains. Then, next, two items are to be merged. In other words, Operation:

Merge cannot freely apply independently. Instead, Select first applies to find an appropriate syntactic object; second, Merge applies to two items to be merged by matching the same features in both two items. Thus, we will eliminate such illicit outcomes by Operation: Merge:

(2) a. *an book
b. *a orange.
c. *many apple
d. *eat a desk
e. *go a hamburger

Examples (2a-b) violate mismatching of phonological feature imposed on nominal expressions. (2c) is a violation of Number feature matching. (2d-e) are impossible combinations of violating transitive-intransitive feature. All seem to be straightforward as we predict such ill-formed results regarding strict subcategorization in Chomsky (1965).

3. Tensed Nominal Structures

Some languages in the world have Tensed nouns. That means a noun with a Tense inflection or a morpheme in the SM system. Tensed nominals can be observed regardless of language families in the world.[3] That implies that the phenomenon seems to stem from a universal principle.

There are two types of Nominal Tense in tensed nominals (TN, hereafter). Nordlinger and Sadler (2003) claim that one type is called the independent nominal tense, while the another one, the propositional tense on dependent nominals. The 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. The nominal propositional tense provides tense information for the whole proposition often with the tense of V. Hence, (3) illustrates two types of Nominal Tense as follows:

(3) a. Independent Nominal Tense
[$_{TP}$ DP-Tns T [$_{vP}$ v [$_{VP}$ V DP-Tns]]]
[α Tns] [β Tns] [γ Tns]

b. Propositional Nominal Tense
[$_{TP}$ DP-Tns T [$_{vP}$ v [$_{VP}$ V DP-Tns]]]
[α Tns] [α Tns] [α Tns]

In (3a), 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 semantic functions. Here for the sake of expository purposes, I simply use Tns as affix that attached to DP, but, in actuality Tns may appear in-between as DP-Tns-Gen or DP-Tns-Loc for example among other combinations.[4]

In the case of INT, a nominal item and Tns are merged 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 matching (sharing) in most languages that illustrated as in (4):

(4)

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 (4a) the predicate nominal agrees with DP in plural forms. (4b-c) show that modifiers agree with the head feature [+ f] in (4b) and [+m] in (4c) respectively of DP in French. Under the feature-based approach in MP discussed in section 1, adjectives have ϕ-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 optionally as argued earlier in this article. Objects to be merged are under the feature matching conditions, i.e. Operation: Select applies first, then, Operation: 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 a 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 de-termines the temporal information of the clause in which the tensed nominal belongs, for instances, in Siriano, Tupi-Guarani 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. It 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:

(5)

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

b. evgvtui-rv　bae　bukiacaa
tapir-PERF　thing　steal-not
"The tapir did not steal from others."

[Nordilinger and Sadler (2004) 58 and 59]

In both cases, the clausal tense is licensed from the Nominal Tense of the subject noun. In (5a), "woman" with PAST tense c-commands T, which receives [+PAST] feature. In (5b), "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 (6):

(6) El-éliyemet-tsel-cha　　the-l　　si:l-a: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 (6), 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 that is an INT. The N in the object position does not affect the clausal tense, as it cannot c-command T in the clause.

Note that Guarani exhibits stacking of independent tense and propositional tense on nominal predicate. (7) illustrates tense stacking:

(7)　Che-roga-ra-ta
1SG-house-Fut-Fut
"It will be my future house."
[Nordlinger and Sadler (2004) 37]

In (7), "-ra" is independent tense of future, while "-ta", propositional tense, which licenses T of clause using the same form attached to V.

Extending the idea of feature based Merge operation to Tensed nominals, we could account for Tensed nominal expressions observed cross-linguistically as seen in the previous section. The structural similarity of noun phrases 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. The difference should be minimal between nominal structures and clauses. Why does such a similarity exist given the evolution of language? Answering this question will challenge our knowledge of the faculty of language. (Chomsky 2001, 2004).

4. Concluding Remarks

Merge is not a single operation and a pair application of Select and Merge, in fact, applies to merge two items. Certain features of a word would be responsible for triggering Merge after Select. We then, have considered Tensed nominals and argued the parallelism between nominals and clauses as we observed Tensed nominals across languages.

It is taken for granted that CP, as well as vP, is a phase. Then, how about DP? 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.

Notes

1. See Lemons (1997) for further details.
2. See Fukui (2012) for arguing for the importance of grasping linguistics as natural science. Kuroda (2008), which originally appeared in *Sophia Linguistica* as an appendix to Fukui (2012), argues that mathematics is a useful tool for exploring mysteries of generative grammar (biolinguistics). For the origin and evolution of the faculty of language based on biology, see Hauser, Chomsky and Fitch (2002).
3. See Imai (2006).
4. Cf. Nordlinger and Sadler (2004), Lecarme (2004).

References

Abney, S. (1987) *The English Noun Phrase in its Sentential Aspect,* Ph. D. dissertation, MIT.

Baker, M. C. (2001) *The Atoms of Language,* New York: Basic Books.

Chomsky, N. (1965) *Aspects of the Theory of Syntax,* Cambridge, MASS: The MIT Press.

Chomsky, N. (1995) *The Minimalist Program,* Cambridge, MA: The MIT Press.

Chomsky, N. (1972) “Remarks on Nominalization,” in *Studies on Semantics in Generative Grammar,* The Hague: Mouton.

Chomsky, N. (2001) “Derivation by Phase,” In M. Kenstowicz ends. *Ken Hale: A Life in Language,* Cambridge, MA: the MIT Press, 1-52.

Chomsky N. (2004) “Three Factors in Language Design,” *Linguistic Inquiry, 36*:, 1-22.

Chomsky, N. (2013) “The Problems of Projection,” *Lingua* 130, 33-49.

Chomsky, N. (2016) “Minimal Computation and the Architecture of Language,” *Tsuru University Graduate School Review,* No. 20, 7-17.

Fukui, N. (1986) *A Theory of Category Projection and its Applications* Ph.D. dissertation, MIT.

Fukui, N. & H. Sakai (2003) “The Visibility Guideline for Functional Categories: Verb Raising in Japanese and Related Issues,” *Lingua* 113: 321-375.

Fukui, N. & Y. Takano (2000) “Nominal Structure: an Extension of the Symmetry Principle. In P. Svenonius ed. *The Derivation of VO and OV.* Amsterdam: John Benjamins.

Fukui, N. (2012) *Shin-Shizen Kagaku toshiteno Gengogaku* (*Linguistics as Natural Science: New Version,* Tokyo: Chikuma Shobo.

Hauser, M., N. Chomsky, and T. Fitch (2002) “The Faculty of Language: What Is It Who Has It, and How Did It Evolve?” *Science,* 298: 1569- 1579.

Imai, T. (1987) “On Phrase Structures and X-bar Theory,” *The Tsuru University Review,* No. 26, 61-67.

Imai, T. (1989) “Parameters, INFL and X-bar Theory,” *The Tsuru University Review,* No. 30, 107-14.

Imai, T. (2006) “Nominal Tense and Clausal Tense: Toward a Theory of Tense in the Minimalist Program,” In Yoshimura, Koji ed. *The Essence of Language, Culture, and Education: Essays in*

Honor of Prof. Reiichi Horii's Eightieth Birthday, Osaka: Osaka Kyoiku Tosho, 31-45.

Imai, T. (2013) "Some Thoughts on the Biolinguistic Program," *Tsuru Studies in English Linguistics and Literature,* No. 41, 1-12.

Imai, T. (2014) "Merge and Three-Dimensional Structures," In the Editorial Committee for the Research Papers Celebrating the 50th Anniversary of the Foundation of the Department of English, Tsuru University ed. *Linguistics, Literature, and Beyond: A Collection of Research Papers Celebrating the 50th Anniversary of the Foundation of the Department of English, Tsuru University,* Tokyo: Hituzi Shobo Publishing. 29-41.

Johansson, S. (2013) "Biolinguistics or Physiolinguistics? Is the Third Factor Helpful or Harmful in Explaining Language?" *Biolinguistics* 7, 249-275.

Kayne, R. (1994) *The Antisymmetry of Syntax, Cambridge,* MA: The MIT Press.

Klosek, J. (2011) "Three-Dimensional Syntax," LingBuzz. http://ling.auf.netllingbuzz/001327

Koopman, H. (2003) "On the Parallelism of DPs and Clauses: Evidence from Kisongo Maasai," A draft version dated 9/12/03.

Kuroda, S-Y. 2008 "Suugaku to Seisei Bumpo (Mathematics and Generative Grammar)," in Fukui 2012.

Laenzlinger, C. (2005) "Some Notes on DP-internal Movement," *CC@G (Generative Grammar in Geneva)* 4. 224-260.

Lecarme, J. (2004) "Tense in Nominals," In J. Guéron and J. Lecarme eds. *The Syntax of Time,* Cambridge, MA: the MIT Press, 440-475.

Lemon, D. S. (1997) *Perfect Form,* Princeton, NJ: Princeton UP.

Lenneberg, E. (1968) *Biological Foundation of Language.* New York: John Wiley and Son.

Nordlinger, R., and l. Sadler (2003) "Finite Noun Phrases, unpublished ms. University of Melbourne and University of Essex.

Nordlinger, R. and L. Sadler (2004) "Tense beyond the Verb: Encoding Clausal Tense/ Aspect Mood on Nominal Dependents," *Natural Language and Linguistic Theory,* 22: 597-641.

Ogawa, Y. (2001) *A Unified Theory of Verbal and Nominal Projections*. Oxford: Oxford University Press.

Uriagereka, J. (1998) *Rhyme and Reason: An Introduction to Minimalist Syntax,* Cambridge, MA: The MIT Press.

Received:December 04, 2015
Accepted:December 04, 2015