ASMI SANTA MARIA YOGYAKARTA

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SALAM REDAKSI

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Macam-macam topik tulisan sesuai perhatian, minat, permasalahan sosial yang dilihat penulis masih mewarnai isi jurnal ini. 4 (empat) tulisan dalam edisi ini merupakan hasil penelitian, dan 6 (enam) tulisan lainnya merupakan kajian permasalahan yang mendorong penulis berpikir mencari solusi, yang dapat menjadi dasar solusi praktis dan dasar pengembangan kebijakan dan praktik kehidupan untuk kemajuan sosial, organisasi, kantor, dan pendidikan.

Pemikiran kecil atas berbagai masalah sosial ini kiranya dapat menjadi nyala lilin yang bermanfaat sebagai alat penerang pula. Semoga.

Salam,

Redaksi CPS

DAFTAR ISI

ENGLISH COMPLEX NOUN PHRASES:
A STUDY OF NOMINALIZATION IN ENGLISH
SCIENTIFIC TEXT

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Intisari

Paper ini bertujuan untuk mendeskripsikan dan menunjukkan bahwa nominalisasi, yakni pembentukan frasa nominal kompleks yang diturunkan secara gramatikal dari struktur bahasa yang lebih tinggi (klausa/kalimat), merupakan fenomena gramatikal kebahasaan yang umum terjadi pada semua bahasa terutama pada teks-teks yang bersifat ilmiah dan akademik. Berdasarkan jenisnya, nominalisasi dapat dikelompokkan berdasarkan kehadiran unsur argumen kalimat/klausa sumber yaitu subjek, objek, dan verba yang merupakan unsur pokok untuk proses nominalisasi. Dari pengamatan pada teks-teks ilmiah dan akademik diperoleh gambaran bahwa nominalisasi bertipe subjektif (Subjective Nom NP), objektif (Objective NP) sangat mendominasi, di samping juga nominalisasi bertipe Zero-Modifier.

Kata kunci: *complex noun phrase (frasa benda kompleks), nominalization (nominalisasi), scientific/academic text (teks ilmiah/akademik).*

A. Introduction

Noun phrases (NP) play important roles in English sentences. They typically function as elements of a sentence: subject, object, and complement (Quirk, 1972). Stucturally, they can be simple in their structure, consisting of a subject-pronoun *she* and *my sister* as the nominal predicate as in *She is my sister*. Meanwhile, when the heads have already been modified by either a premodifier or a postmodifier or both of them, they may be called complex noun phrases as in *The pretty girls who is standing in the corner is my sister*. The subject NP in the sentence consists of a premodifier (an adjective), a head, and a postmodifier (relative clause). Such NP is familiar to us where the head (*girls*) is a common noun, the premodifier (pretty) is a 'common' adjective, and a postmodifying relative clause (*who is standing in the corner*). Among the various kinds of NPs in English, certain types of complex NPs that are composed of heads (verbal nouns), premodifiers (nominal, adjectives, or nouns), or postmodifier (prepositional phrases) are frequently

found. The following are examples of NPs that can be found in a scientific text:

(1) a. *the observation*
   b. *this study*
(2) a. *preamplifier application*
   b. *electrooptical application*
   c. *the application of an optical amplifier*
(3) a. *spectrum analizer*
   c. *the analysis of the number of elements*
(4) a. *soliton existence*
   b. *the existance of soliton*

The head of each NP in the above examples is a noun that corresponds to its verb (*observation-observe, study-study, application-apply, analyzer-analysis-analyze,* and *existence-exist*). Quirk calls the nouns that corresponding to their verb as verbal nouns. The above examples show that each verbal-noun head is modified by (a) modifier(s) in the form of a determiner (*the, this*) as in (1), of a noun as in (2a), (3a), (4a), and nominal adjective as in (2b) which functions as premodifier and prepositional phrase which functions as postmodifiers as in (2c), (3b), and (4b).

In generative grammar, such NPs are considered as the result of applying nominalization transformation, i.e., the derivation of a noun phrase from an underlying clause/ sentence (Crystal, 1985). Thus the mentioned NPs are simply resulted

from the following underlying stuctures:

(5)a. ## X observe Y##
   b. ## X study Y ##
(6)a. ## X apply preamplifier ##
   b. ## X apply electrooptic ##
   c.## X apply an optical amplifier ##
(7)a. ## X analize spectrum ##
   b. ## X analyze number of elements ##
(8)a. ## Soliton exist ##
   b. ## Soliton exist ##

B. Limits of Study

1. This study is limited to find Complex Noun Phrases derived by means of deverbal nominalization. Thus, de-adjectival nominalization is excluded from the discussion.
2. Data samples of Nominalization NPs (Nom NPs) are taken from five English Scientific/Academic Texts:
   a. *Emerging Infectious Diseases*
   b. *Cardiovascular Disease Risk Factors in Relation to Smoking Behaviour and History*
   c. *Photonic Technology Letters*
   d. *A Study on Academic Achievement and Personality of Secondary School Students*
   e. *Existence and Stability of Solitons for The Nonlinear Schrodinger Equation on Hyperbolic Space*

C. Research Method

This study aims at investigating complex noun phrases derived by means of nominalization in

scientific/academic text entitled *"Photonic Technology Letters (PTL)"*, *"Cardiovascular Disease Disease Risk Factors in Relation to Smoking Behaviour and History (CDRF)"*, *"Emerging Infectious Diseases (EID)"* and *"A Study on Academic Achievement and Personality of Secondary School Students"(SAA)*. For the purpose of explanation, some other data are also taken from some grammar books to show some types of nominalization which are absent in the academic text during the observation.

Data are investigated by analyzing sentences to identify the existence of complex noun phrases which are suspected to be resulted from verbal nominalization process. Data of adjectival nominalizations are out of discussion.The data obtained are then analyzed according to the possible syntactic source (clauses/sentences) of the NP elements: the head (de-verbal nominalization) and its existing modifiers   (subjective modifier and/or objective modifier).

D. Theory Background
1. Concept of Nominalization

David Crystal (1985) proposes two typical definitions of Nominalization. The first refers to the process of forming a noun from another wordclass by adding *noun suffixes* at the base word. Adjectives like *red* becomes a noun *redness* and the verbs like *derive* becomes *derivation*. The first pair is called adjective-noun

conversion (*red-redness*) and verb-noun conversion (*derive-derivation)*. With regards to classification of nominalization, Halliday (2004) mentions two types of nominalization: verbal nominalization (*press– pressure*) and adjectival nominalization (*hot – heat*). Mouton (2010) refers the first as 'deverbal' nominalization and the later as 'deadjectival' nominalization. According to Hartnett in Vinh (2013), nominalization can be classified into five kinds based on morphological endings:

(1) called non-zero derived de-verbal nouns (e.g., *to plan - plan*)
(2) gerunds (e.g., *to run - running),*
(3) adding a suffix to the verb (e.g., *to engage - engagement),*
(4) nominalization from adjectives (e.g., *beautiful - beauty*),
(5) verb and noun having different meanings (e.g., *to birth - birthday*)

In generative grammar, Crystal (1985) defines Nominalization as the derivation of a noun phrase from an underlying clause/sentence. Based on the syntactic source (underlying clause/sentence), nominalization can be categorized into two, namely, Verbal Nominalization if its syntactic source has a verbal predicate and Adjectival Nominalization if its syntactic clause has an adjectival predicate.

An example of verbal nominalization is an NP of *John's leaving* which is derived from an underlying clause/sentence *John is leaving*. The head *leaving* is lexically derived from

the predicate element (*is leaving*) of the clause/sentence. The NP is then embedded in *It satisfies me* (the so-called matrix sentence) and replaces one of its element *It,* and resulting a complex sentence *John's leaving satisfies me.* On the other hand, an adjectival nominalization can be found in a complex sentence *I was impressed by her civility* where *her civility* is considered as derived from an underlying sentence of *She was civil.* Bloor and Bloor (in Vinh: 2013) notes that nominalization allows such a process, in which a verb turns out to be realised as a noun (head), arguments to be modifiers (premodifier or postmodifier) of its corresponding head. In a further process, the nominalization NP comes to be a participant (embedded) in the matrix sentence.

The process of nominalization can be represented in the following diagram.

```
┌────────┐        ┌──────┐        ┌──────┐
│ DS/US  │        │  SS  │        │  MS  │
└────────┘ Nomina └──────┘ Embed- └──────┘
           -lization        ding
```
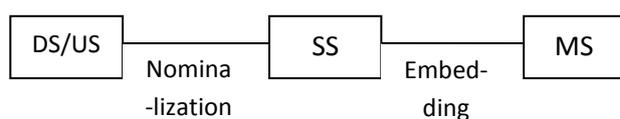
DS/US : Deep Structure/Underlying
        Structure (Sentence/clause)
SS   : Surface Structure (NPs/Nom
        NPs)
MS   : Matrix Sentence

2. Types of Nominalizations

Levi (1978) proposes two ways of classifying nominalizations. The first is based on the meaning of the source of the head noun. First, Act Nominalizations contain 'act/agent meaning' as in *parental refusal* (act of 'parents refusing') and *dream analysis* (act of 'analyzing dream'). Second, Product Nominalizations represent nouns as the results of a specific actions/event, such as *clerical errors* ('those which are produced by the act of *clerks erring*') and *musical critique* (that which is produced/resulted from the act of *criticizing music*). Third, Agent Nominalizations which refer to '*actor* or *doer*' as in *city planner* (X such that X plans city) and *financial analysis* (X such that X analyze finance). Forth, Patient Nominalizations refer in some sense to the 'product' of a certain act, but they must sistematically be distinguished from Product Nominalizations on the fundamental semantic grounds such as *presidential appointee* (Y such that presidents appoint Y) and *college employee* (Y such that *college employs* Y).

The second classification is based on the categories determined by the sources of the prenominal modifiers. Levi (1978) Nom NPs may be classified according to the syntactic source of their prenominal modifier(s). the prenominal modifiers are those which are derived from the subjet and direct object of the nominalised verb. Thus, Nom NPs can be classified into three major categories, namely Subjective Nom NPs, Objective Nom NPs, and Multi-modifier Nom NPs.

A Subjective Nom NP is an NP whose prenominal modifier is derived from the underlying subject of the nominalized verb. Based on the distribution of the nominal modifiers, there are two types of Nom NPs, i.e., SV type such as *parental refusal, royal order,* and *cellular decomposition,* and VS type such as *the shooting of the hunters* and *arrival of the train.*

An Objective Nom NP is an NP whose head is modified by a nominal modifier derived from the underlying direct object of the nominalized verb. Objective Nom NPs are subclassified into two types, i.e., VO type and OV type. In an Objective Nom NP of VO type, the object of the nominalized verb is placed after the head (nominalized verb), such as *destruction of the city, monitoring of hearts,* and *control of vehicles.* On the contrary, in an Objective Nom of OV type, the direct object is placed in front of the nominalized verb, such as *the rural (city's) destruction* and *city planner.*

Multi-Modifier Non NPs are NPs whose heads (nominalized verb) is modified by nominal modifiers which are derived from both subject and object of the nominalized verb. According to the distribution of the modifiers, Nom NPs are subclassified into five types, namely SVO, SOV, OVS, VOS, and VSO. The examples of each NP can be seen as follows.

Types	Nominal NPs
SVO	*John's criticism of the book, students evaluation of the course, industrial pollution of water*
SOV	*Students' course evaluation, parental child abuse, city land acquisition*
OVS	*Industial investigation by/ of senators, water pollution by industry*
VOS	*Evaluation of courses by students, the destruction of the city by the enemy*
VSO	*Pollution by industry of water*

3. Nominalization and Scientific/ Academic Discourse

According to Halliday and Martin (in Vinh: 2013), scientific discourse demands high degree of nominalization for two main reasons, namely, the structure of scientific argument and the structure of scientific knowledge. Nominalization allows a process (verb or event) to be transformed into a more abstract phenomenon (noun). They suggest the following example.

The weather is constantly changing, but <u>it's changes</u> have a definite pattern.

The clause of '*it's changes have a definite pattern*' contains a nominalization of '*it's changes*' which is syntactically transformed

from a clause of '*the weather is constantly changing*'. The further process is embedding the nominalization and replacing the argument '*they*' of the clause of "*They have a definite pattern*," yielding *Its changes have a definite pattern.*

In addition, Halliday and Martin argue that nominalization is the most powerful device to enable an information to be dense. 'Conciseness' is one of scientific discourse. To support this statement they quote the following pairs of sentential structure and its corresponding nominalization.

Sentential structure	Nominalization
Is impaired by alcohol	*alcohol impairment*
They allocate an extra packer	*the allocation of an extra packer*
Technology is getting better	*advances in technology*

Halliday and Martin (1993) state that in science, nominalization is strongly associated with definitions that function to accumulate meanings so that a technical term can be defined. In other word, nominalization allows new concepts with multiple meanings to be expressed in a concise way.

E. Discussion of Findings

This study focuses on investigating Nom NPs by using the third

Levi's classification of nominalizations. Henceforth, all data are classified according to the syntactic source of its modifier(s), Nominalization can be classified into three major types: Subjective Nom NP, Objective Nom NP, Multi-modifier Nom NP, and Zero-modifier Nom NP. According to the distribution of its modifier(s) each type can be subgrouped into, respectively:

1. Subjective Nom NPs: SV type and VS type
2. Objective Nom NPs: VO type and OV type
3. Multi-modifier Nom NPs : SVO type, SOV type, OVS type, VOS type, and VSO type
4. Zero-modifier Nom NP: V type

4. Subjective Nom NPs

Subjective Nom NPs are NPs of which head (nominalized verb) is modified by a nominal modifier derived from the Subject (argument) of the verb. According to the distribution of the nominal modifier, they are subgrouped into SV type where the subject argument appears as a premodifier of the nominalized verb and VS type where the subject argument appears as a postmodifier.

a. Nom SV Type

A Nom NP of SV type is composed of a premodifier and a head noun (nominalized verb). The premodifier which is derived from the subject argument may take the form

of genitive noun (*king's*), de-adjectival noun (*royal, avian*), or noun (*cell, bird*).

(1) His useful discussion

*## He DISCUSS Y ## (*where *His (*posessive nominal) functions as a subject and *DISCUSS is a verb)*

(2) Our application

*## We APPLY Y ## (*where *We* a subject and APPLY *is a verb)*

(3) his helpful comment

*## He COMMENT ## (*where *He* is an agent that functions as subject and *COMMENT* is a verb)*

(4) (the) frequency behaviour

*## Frequency BEHAVE## (*where *frequency* is an agent that that functions as *subject* and *BEHAVE* is a verb)*

(5)soliton existence

*##Soliton EXIST## (*where Soliton is the subject of the verb EXIST)*

The head *discussion, application, comment* and *behaviour* are nominalization forms of the verbs of the underlying structures (sentence). The premodifiers *his, our,* and *frequency* are subjects of the verbs. Some premodifiers may appear in the form of genitive (*our* and *his)* or noun (*frequency).*

b. Nom VS Type

A subjective Nom NP of VS type is composed of a head noun (nominalized verb) and postnominal modifier which is derived from the underlying subject. The post nominal modifier takes the form of a prepositional phrase.

(1) thickening of the arterial wall and intima media

The arterial wall and intima media THICKEN## where *The arterial wall and intima media* is the subject of the verb THINKEN.

(2) the influence of DX factors

DX factors INFLUENCE Y ## (where *DX factors* is the subject of the verb INFLUENCE and Y is unspecified object)

(3)the circulation of influenza D virus

Influenza D Virus CIRCULATE## (where Influenza D virus is the subject of the verb CIRCULATE)

(4)the existence of solitons

*## Solitons EXIST ## (*where *Solitons* is the subject of the verb *EXIST)*

The subject case marker *of* can commonly be replaced by the subject case marker *by* if the nominalization is derived from a transitive verb. Thus *the influence of DX factors* may take the form of *the influence by DX factors.* The use of preposition *by* instead of *of* as a subject case marker is useful to avoid an ambiguity. Let's take another example of Nom NP *the shooting of the hunters.* This nominal is ambiguous since it can be interpreted as either *the hunters* SHOT Y (where *Y* is the object of *SHOT)* or *X SHOT the hunters* (where X is the Subject/agent of SHOT).

5. Objective Nom NP

Objective Nom NPs are NPs of which head (nominalized verb) is modified by a nominal modifier derived from the underlying direct object. According to the distribution of the modifier, they can be grouped into OV (Object-Verb) Type and VO (Verb-Object) Type.

a. VO Type

Nom NPs of VO type take nominalized verb as the head and a postmodifier which is derived from the underlying direct object and enters into a structure of a prepositional phrase (*of-phrase*).

(1) analysis of covariance,
*## X ANALYZE covariance## (*where X is unspecified agent (subject) and *covariance* is the direct object of the verb ANALYZE)

(2) limitations of the study
X LIMIT the study ## (where X is unspecified agent (subject) and *the study* is the direct object of the verb LIMIT)

(3) Selection of the study sample
X SELECT the study sample ## (where X is unspecified agent (subject) and *the study sample* is the direct object of the verb LIMIT)

(4) The interpretation of the word Personality
X INTERPRET the word Personality## (where *X* is unspecified agent and *the word Personality* is an object)

(5) a collection of traits

X COLLECT traits ## (where *X* is unspecified agent/subject and *traits* is an object)

(6) the setting of hyperbolic solitons
X SET hyperbolic solitons## (where *X* is unspecified agent/subject and *hyperbolic solitons* is an object)

b. OV Type

Nominals of OV type place the direct object in front of the nominalized verb as a premodifier. It may appear in the form of genitive, deadjectival noun, and of a noun.

(1)   *virus detection*
      ## X DETECT virus## (where *X* is an unspecified subject /instrument and *virus* is the direct object of the verb *DETECT*)

(2)   *CVD prevention*
      ## X PREVENT CVD ## (where *X* is an unspecified subject and *CVD* 'Cardio-Vascular Disease) is the direct object of the verb *PREVENT*).

(3)   *data collection*
      ## X COLLECT data ## (where *X* is an unspecified subject and *data* is the direct object of the verb *COLLECT*).

(4)   *alcohol consumption*
      ## X CONSUME Alcohol ## (where *X* is an unspecified subject and *alcohol* is the direct object of the verb *CONSUME*).

6. Multi-Modifier Nom NPs

Multi-modifier Nom NPs are composed of a head noun (nominalized verb) and two modifiers which are derived from both underlying subject and direct object of the nominalized verb. The modifiers may take the form of premodifier or postmodifier. According to the distribution of both modifiers, these Nom NP can be grouped into SVO type, SOV type, OVS type, VOS type, and VSO type. During investigation through the text observed, this Multi-Modifier Nom NPs type is not present, but to give clear understanding, some examples taken from several English Grammar Books are presented here.

a. SVO Type

In an NP of SVO type, the head (nominalized verb) is modified by a premodifier (subject) and postmodifier (direct object). The premodifier can possibly be in the forms of genitive, deadjectival noun, and noun. On the other hand, the postmodifier (object) appears in a prepositional phrase structure. Levi (1978) offers the following examples.

(1) *Students' evaluation of the courses/student evaluation of courses*
*## Students EVALUATE courses ## (*where *students* is an agent that functions as a Subject and *courses* is a direct object*)*

(2) *Industrial pollution of water*
*## Industries POLLUTE water ## (*where *Industries* is an agent that functions as a subject and *water* is a direct object)*

b. SOV Type

A multi-Modifier Nom NP of SOV type is composed of a prenominal modifier (subject), a postmodifier (object) and a nominalization verb.

(1) *Students' course evaluation*
*## Students EVALUATE courses## (*where *Students* is an agent/subject and *courses* is a direct object*)*

(2) *Industrial water pollution*
*## Industries POLLUTE water ## (*where *Industries* is a subject and water is an object)*

(3) *City land acquisition*
*## City ACQUIRE land ## (*where *City* is a subject and *land* is an object)*

c. OVS Type

A multi-modifier Nom NPs of OVS type is composed of premodifier (object), a nominalised noun (head) and a post-modifier (subject). The nominal premodifier may appear in the form of a genitive, nominal adjective, and a noun. The postmodifier (subject) appears in a prepositional phrase with a subject marker *by.*

(1) *Water pollution by industries*
*## Water BE POLLUTED by industries ## (*where *Water* is*

a agent/subject and *courses* is a direct object*)*

(2) *Industrial water pollution*
Industries POLLUTE water ## (where *Industries* is a subject and water is an object)

(3) *City land acquisition*
City ACQUIRE land ## (where *City* is a subject and *land* is an object)

d. VOS Type

Nominalization of VOS type is made up of a head (action/event) and modified by both arguments (subject and object). Sintactically, the presence of both arguments in the NP demands prepositions of *of* for the object argument and ***by*** for the subject.

(1) *Evaluation **of** courses **by** students*
Students EVALUATE courses ## *(*where *Students* is an agent/subject and *courses* is a direct object*)*

(2) *Pollution of water by Industries*
Industries POLLUTE water ## (where *Industries* is a subject and water is an object)

(3) *Acquisition of land by City*
City ACQUIRE land ## (where *City* is a subject and *land* is an object)

e. VSO Type

Nominalizations of VSO type are rarely found since it may arise ambiguity.

(1) *the proof of Joan of the theorem of Pythagoras*
John PROVE the theorem of Pythagoras ## *(*where *John* is an agent/subject and *the theorem of Pythagoras* is a direct object*)*

(2) *Pollution of industries of water/ Pollution by industries of water (*)*
Industries POLLUTE water ## (where *Industries* is a subject and water is an object)
Industries of water POLLUTE Y ## (where *Industries of water* is a subject and *Y* is an unspecified object##

Example (1) is acceptable as it can only be interpreted of being derived from an underlying sentence/ clause of *John PROVE the theorem of Pythagoras.* On the contrary, example (2) may be misinterpreted of being derived from either *Industries THAT POLLUTE water* or *Industries of Water THAT POLLUTE Y.*

7. Zero-Modifier Nominalization

This typical nominalizations can be frequently found in most scientific, academic and even in any type of written text in the forms of concepts and technical terms. The nominalization process annihilates the presence of arguments since only the 'actions' become the focus. In observation, Zero-Modifier Nominalizations usually exist with or without

articles like *the, this,* and *adjectives* that may correspond to adverbs of the verbs. Some examples of zero-

modifier Nom NPs can be seen in the following list.

Verbs	Nominalizations	Verbs	Nominalizations
associate	*the association*	*achieve in academic*	*academic achievement*
examine	*the examinations.*	*relate positively*	*positive relationship*
study	*this study, the present study*	*define*	*these definitions*
increase	*the increase*	*(possibly) explain*	*possible explanations*
find	*Findings*	*medicate*	*Medications*
measure	*Measurements*	*analise*	*the analysis*

F. Conclusion

From the discussion on nominalization, some conclusions can be drawn as follows.

1. In lexical sense, nominalization is a process of deriving a noun from other word classes, namely verbs or adjectives.
2. In generative grammar, the term of nominalization refers to the process of deriving a noun phrase from an underlying clause/sentence.
3. Theoretically, nominalization derivation which is based on the syntactic underlying sources can be classified into Subjective, Objective, Multimodifier, and Zero-Modifier, but during the observation of four scientific and academic texts, it can be seen that the major types of Nom NPs found are Subjective Nom NP, Objective NP and Zero-Modifer NP.

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