'Arguments' and 'PRO' of Nominalizations: A View from Cognitive Grammar*

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1. Introduction

Generative linguists have attempted to analyze English nominalizations, postulating a(rgument)-structure as an independent syntactic representation. The a-structure of a lexical item has been assumed to record only skeletal information on the arguments it takes. It has been believed that a number of grammatical phenomena like passives are captured at the level of a-structure. Grimshaw (1990) supposes that nominalization is such a phenomenon.

Grimshaw (1990) proposes that derived nouns take arguments, as do verbs. The internal arguments of both (transitive) nouns and verbs are given the same status, that is, they are syntactically obligatory. Nouns differ from verbs in that their external arguments are suppressed and no longer obligatory elements. This paper argues against Grimshaw's view that derived nouns take arguments, in her sense. I will present an alternative analysis within the cognitive grammar (CG) framework proposed in Langacker's series of studies (1982, 1987a, 1987b, 1991a, 1991b, among others).

This paper is organized as follows. Section 2 will begin by summarizing Grimshaw's (1990) points. In sections 2.2 and 2.3 I will point out problems with Grimshaw. First, it is doubtful that nouns take arguments. If the noun derived from a transitive verb takes an argument, as Grimshaw claims, then her theory confronts a problem. There is a case where the 'object' argument is not realized. Observe:

(1) a. The destruction was caused by an earthquake.
    b. The catching and the destroying shall be, in time, sure.

A second problem comes up concerning Grimshaw's assumption that thematic information is invisible to a-structure. The difference in acceptability between (2a) and (2b) resides in whether the subject is an agent (2a) or an instrument (2b).

(2) a. John's opening of the door
    b. ?? the magic key's opening of the door

Grimshaw's assumption leads to a wrong prediction that the a-structures assigned to the respective nouns in (2) would be identical, contrary to fact.

Section 3 introduces basic assumptions I will make in this paper. Based on the

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assumptions, we can account for examples (1)-(2) with no difficulty. In the case of (1) we should recognize that the 'object' argument of nominalizations is not a syntactic argument. In section 3.2 I will explore why instrument subjects are incompatible with nominalizations.

In section 4 I will discuss the phenomena that have been explained by a syntactic, invisible element called PRO. It has been assumed in the government and binding (GB) framework that the nominalizations in (3) have PRO in them.

(3) a. The poor are susceptible to constant exploitation by the rich.
b. Political dissidents in the ex-USSR were under constant surveillance by the KGB. (Law (1997:43))

PRO is understood as the 'object' of the derived noun in this case. Its referent is identified with the clausal subject. CG denies PRO, however, because of the symbolic nature of syntax. I will demonstrate how the clausal subject is linked to the nominal 'object' without recourse to PRO.

The points this paper will be making are summarized as the following three questions: (i) Do nominalizations take arguments like verbs, in the sense of Grimshaw (1990)? (ii) Does a-structure capture every syntactic behavior of nominalizations? (iii) Does the grammar need a special apparatus like PRO?

2. Grimshaw (1990)

A-structure is a level of representation which intervenes between lexical conceptual structure (LCS) and syntactic structure (specifically, d-structure). LCS specifies in a verb's lexical meaning the number of participants and the type of role that each participant plays; d-structure is the level at which the participants are realized in syntactic positions such as the subject and object positions. A-structure is subject to syntactically relevant information, and is blind to the participants' thematic or semantic contents. For example, the verb *open* can take either Agent or Instrument as its subject, as exemplified in (4):

(4) a. John opened the window with the magic key.
b. The magic key opened the window.
[*John*=Agent; *The magic key*=Instrument]

If projection from a-structure were based on thematic contents, the system would be a vast repository of information about linking of arguments to syntactic positions. To account for the linking of *John* and *the magic key* to the subject position and the *with*-phrase in (4), the following rule would be necessary: map Instrument onto a *with*-phrase if Agent occupies the subject position, otherwise, map it onto the subject position.

To eliminate this complexity from the system, Grimshaw assumes that a-structure

deals with prominence relations among arguments. The prominence relations are determined by a version of the thematic hierarchy in which the most prominent is Agent and the least is Theme (or Patient). The relation of relative prominence between Agent, Instrument and Theme is as follows: Agent⊳Instrument⊳Theme.[1] Since a-structure is blind to thematic contents, the resulting a-structure for *open* is as follows:

(5) *open* (x(y))

How the arguments are mapped onto certain syntactic positions is straightforward: the external argument *x* occupies the external argument (i.e. subject) position and the internal argument *y* occupies the internal argument (i.e. object) position.

2.1 A-Structure of Derived Nouns

It has been pointed out in the literature that there are syntactic and semantic similarities between verbs and their corresponding derived nominals, but deverbal nominals do not inherit all characteristics of the base verbs. Grimshaw observes on the basis of the data for nominals derived from transitive verbs that the subject position of the sentence must be filled while nominalizations do not impose such a requirement on the 'subject'.[2] (6a) is ungrammatical because the subject is missing. On the other hand, the occurrence of the 'subject' as a possessive NP (or a *by*-phrase) is not obligatory in the nominal counterpart of (6a), as in (6b):

(6) a. *Destroyed the city.

b. the (enemy's) destruction of the city

While the subject has an adjunct status rather than an argument status in nominalizations, derived nominals always require the 'object', as do transitive verbs. The lack of an *of*-phrase in (7b) renders the nominalization unacceptable.

(7) a. The enemy destroyed *(the city)

b. *The enemy's destruction was awful to watch.

Further examples are given in (8):

(8) a. the expression *(of aggressive feelings) by patients

b. the destruction *(of the city) by the enemy

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[1] Grimshaw does not mention the role of Instrument in her monograph. *The magic key* in (4b) may be a variant of Agent, or may be assigned the Instrument role. To choose either of the two alternatives will however cause a problem. If *the magic key* is assigned the Instrument role, it follows that the role can be either an argument or an (a-)adjunct. It counts as an argument when it is mapped onto the subject position; it is regarded as an adjunct if it occurs with the preposition *with*. On the other hand, suppose that *the magic key* in (4b) is an Agent, then a-structure cannot make a subtle distinction between *the magic key* and *John*, which is mirrored in the contrast between (2a) and (2b). The peculiarities of individual examples are abstracted away at the level of a-structure. Alternatively, it is possible for Grimshaw's system to refer to the thematic difference between *the magic key* and *John*. This alternative would produce a theoretical problem. See section 2.2.

[2] With the nominal derived from a typical transitive verb, the external argument occurs in the *by*-phrase and the internal argument in the *of*-phrase. Besides, both arguments can be realized as possessive NPs. I will leave aside the case where the internal argument is in the possessive NP.

In order to accommodate such asymmetry between the 'subject' and the 'object' of nominalizations, Grimshaw proposes that the external argument of verbs undergoes 'suppression' for nominals. By suppression arguments are demoted to syntactically optional elements. Unlike pure adjuncts, however, suppressed arguments provide information about the subject argument of verbs, just as do non-suppressed arguments. They are hence licensed at the level of a-structure. Since they exhibit properties both of arguments and of adjuncts, Grimshaw calls them a(rgument)-adjuncts.

The derived noun *destruction*, for instance, bears the a-structure in (9a). Compare it with the a-structure of the base verb *destroy*:

(9) a. *destruction* (Ev (x-ø (y)))

b. *destroy* (x (y))

In (9a) the suppressed argument is marked with ø. The argument *Ev* is added to the outmost position of the verb's a-structure and the subject argument *x* is thereby internalized.[3] Consequently the subject argument of the noun is realized *internal* to the maximal projection of the N. (The subject argument of the verb is called an external argument because it is realized *external* to the VP.) Strictly, the newly added argument has to be identified as the external argument of the noun. For the sake of simplicity, I will ignore *Ev* in this paper.

To sum up, derived nouns are similar to verbs in respect of their internal arguments. On the other hand, they are different in that the external arguments of derived nouns are no longer regarded as arguments.

2.2 *Problems with Grimshaw (1990)*

There are several problems with Grimshaw's view. First, if derived nominals have at least one argument in their a-structures, as Grimshaw claims, then the following examples are problematic.

(10) a. The destruction was caused by an earthquake.

b. The catching and the destroying shall be, in time, sure.

Given that the derived noun in (10a) is assigned the a-structure given in (9a), we expect the internal argument to be realized.[4] We cannot categorically deny the possibility of the head noun not being an argument-taking noun (i.e. it being a simple event noun, in Grimshaw's term, such as *event* and *trip*), but it is unlikely. For the thing destroyed is easily understood from contexts. (I will argue this point in section 4.3.) To make matters worse, according to Grimshaw's theory, deverbal nouns with *-ing* such as those in (10b) are unambiguously argument-taking nouns. However, they are natural even though internal arguments are left unexpressed.

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[3] *Ev* is a variant of *E*, which designates an event position which Higginbotham (1985) introduces into the argument structure of a verb.

[4] To be fair to Grimshaw, she can settle the first problem by postulating PRO. See section 4.

Law (1997) makes a similar point on the basis of the data in (3), repeated here as (11), and concludes that the *of*-phrase of deverbal nouns is not an argument but an adjunct.

(11) a. The poor are susceptible to constant exploitation by the rich.
b. Political dissidents in the ex-USSR were under constant surveillance by the KGB.

In these examples the derived noun's internal arguments are not realized, contrary to Grimshaw's theory. Note that we should not deal with (10) and (11) in the same way. The semantic nature of (10), I will argue in section 4.3 is subtly different from that of (11).

A second problem stems from the blindness of a-structure to thematic contents. Recall that a-structure is subject only to thematic prominence relations among participants. Thus, the *open's* in (4), repeated as (12), are assigned the same a-structure (cf. (5)), the thematic difference between Agent and Instrument being buried at the levels of a-structure and syntax. If so, (12a) and (12b) would be expected to behave the same in terms of a-structure. Now, observe the nominalizations in (13), which correspond to the respective examples in (12):

(12) a. John opened the window.
b. The magic key opened the window.

(13) a. John's opening of the door
b. ?? the magic key's opening of the door

The nominal with the instrument subject in (13b) degrades in acceptability, compared with the nominals with the agent subject in (13a). The a-structure analysis cannot explain this acceptability difference.[5]

It might be objected that LCS can distinguish between (13a) and (13b) (or (12a) and (12b)). It is possible, but such an objection might render untenable the hypothesis that a-structure is an independent level of syntactic representation. The a-structure theory supposes that the formal characteristics of a-structure alone can explain "syntactic behavior of a lexical item" such as adjectival and verbal passives, among others. Consequently operations defined over a-structure like suppression dispense with thematic roles. If the system needs to refer back to the information of LCS to account for the contrast between (13a) and (13b), it will be difficult to find an advantage in

[5] Grimshaw (1990:138-142) argues that *by*-phrases in nominals are semantically restricted, compared with ones in passives. An argument-taking nominal does not allow a *by*-phrase to correspond to its Experiencer argument (e.g. ***dislike of flying by many people***). In order to account for this fact, she assumes two types of *by*. One corresponds to any external argument; the other only to an Agent. She concludes that nominals can take only the latter type of *by* while passives can take both types. This difference is attributed to the difference between the a-structures of nominals and passives. That is, the suppressed argument of a noun is not external whereas the argument which undergoes suppression for passives remains external. Yet she states that "possessives occur freely in nominals" (p.142).

postulating the a-structure level.

I have pointed out a couple of problems with Grimshaw. First, there is a case where internal 'arguments' of derived nouns are not realized. Another problem occurs on the contrast in acceptability between agentive and instrumental subjects in nominalizations.

3. Semantic Structure of Nominalizations

The first part of this section introduces some basic assumptions made by Langacker (1987a, 1987b, 1991a, 1991b, among others). He gives semantic (though schematic) characterizations of grammatical categories like noun and verb. Relying on his theory, I would like to clarify the syntactic status of *of*- and *by*-phrases of nominalizations. The point I will make is that *of*-phrases as well as *by*-phrases are not syntactic arguments, in Grimshaw's (1990) sense.

In the second part I explore why instrument subjects cannot enter into nominalizations, as we have observed in the previous section. I will argue that instruments are not seen as ultimate causes. The conception of instruments implies their potential users. This is the reason why instruments cannot carry out the subject function of nominalizations.

3.1 Some Basic Assumptions

3.1.1 "Nominal" vs. "Relational" Predications

Syntax is assumed to be symbolic and to associate phonological structures with semantic structures in the CG framework. Based on this assumption, CG gives semantic definitions of 'syntactic' categories like noun and verb, which have been traditionally believed to be syntactic primitives (cf. Newmeyer (1983:9-11)).

Langacker assumes that the meanings of linguistic expressions divide basically into two broad classes: "nominal" vs. "relational" predications (i.e. semantic structures). This basic division does not depend on their conceptual contents, but rather on how the contents are construed and profiled. He states:

> A nominal predication presupposes the interconnections among a set of conceived entities, and profiles the region thus established. By contrast, a relational predication presupposes a set of entities, and it profiles the interconnections among these entities. (Langacker (1987b:68))

Let us compare *together* with *group*, both of which are assumed to share the essential conceptual content. The former, as a relational predicate, profiles spatial relations between entities; the corresponding nominal predicate presupposes that entities are related by spatial contiguity, and profiles the region comprising the related entities. (See Langacker (1987b:69) for a detailed discussion.)

Relational entities divide into two classes: those which designate a relation through

time (i.e. a process) and those which profile a relation without reference to its instantiation in time (i.e. an atemporal relation). The category of verb is identified with the former class. Other grammatical categories (except noun) belong in the latter class.

3.1.2 Of-Phrases and By-Phrases as Syntactic Adjuncts

The semantic characterization of noun and verb can give a straightforward account of the semantic difference between verbs and their corresponding nominalizations. Let us compare these two examples:

(14) a. Something exploded.
b. There was an explosion.

These two expressions might describe the same objective situation. Yet they impose different construals on the situation. The verb *explode* has to refer to both the participant(s) in the event and the time when it occurred. Hence the subject is obligatory and the verb must be marked for tense. It has been widely accepted in the generative framework that arguments are obligatory in syntax. Such a syntactic property of arguments is read to be a reflection of participants being profiled in the scope of predication. On the other hand, the noun *explosion* does not focus on the participant(s) and the temporal setting. It is possible to use *explosion* without explicit reference to what exploded or when the explosion occurred. To put it more formally, the noun presupposes a series of component states such that something burst with a loud noise and broke into small pieces, and it portrays this whole series of component states as a single, abstract region. The noun does not designate the internal structure of this event, not putting the participant(s) in its profile. It follows from this that participants are syntactically optional elements in nominalizations, contrary to Grimshaw's theory.

CG's analysis of nominalizations is entirely plausible. Let us consider again the examples in (10), repeated here as (15):

(15) a. The destruction was caused by an earthquake.
b. The catching and the destroying shall be, in time, sure.

The derived nouns' 'internal arguments' are not realized in these examples. These examples suggest that the understood 'object' entities are not syntactic arguments. Grimshaw is wrong in assuming that derived nouns bear syntactic arguments.[6]

3.1.3 Autonomous Core Construal

Just because participants in an event are not profiled in the predication of a nominalization, it does not follow that they cannot be overtly expressed. They can be spelt out by means of periphrastic expressions such as *of-* and *by-*phrases and possessive nominals.

If we say that the periphrastic expressions, especially *of*-phrases, are not arguments,

[6] Taking into consideration what we have observed so far, Grimshaw would have to say that the arguments of a verb are all suppressed when the verb undergoes nominalization.

the examples in (16), cited above in (7b) and (8), need explanation.

(16) a. *The enemy's destruction was awful to watch.
b. the expression *(of aggressive feelings) by patients
c. the destruction *(of the city) by the enemy

Why do the 'subject' NPs (i.e. the possessive NP in (16a) and the *by*-phrases in (16b, c)) render the 'object' *of*-phrases obligatory? What Taylor (1996:250) calls an "autonomous core construal" furnishes the key to this question.

The autonomous core construal depends on how we conceptualize a situation. Let us take the sentence *Floyd broke the glass* for instance. The situation described in this sentence includes an energetic interaction between *Floyd* and *the glass*. The act of breaking on the part of Floyd brought about a change in the glass. In other words, the former transferred energy to the latter. The notion of an action chain is introduced in Langacker's framework to describe such an interactive relationship between participants. The relationship between *Floyd* and *the glass* is diagrammed in (17):

(17) [Floyd]====>[the glass]

A possible conceptualization of this event is done by isolating a conceptually autonomous component of the event. In (17), the glass's change of state is more autonomous than Floyd performing an act, in the sense that it is not necessary to refer to the causing event (i.e. the act of breaking on the part of Floyd) to conceive of the caused event (i.e. the glass breaking). Evidence that the caused event is autonomous can be derived from the fact that the sentence *The glass broke* works. The causing event, in contrast, is conceptually dependent on the caused event. The conceptualization of the former necessarily invokes the latter. The sentence **Floyd broke* does not make sense because it is conceptually incomplete.[7]

In the case of Floyd breaking the glass the autonomous core is the notion of the glass breaking. This core can be expanded by adding the causing event to form the more complex notion of Floyd breaking the glass. (Needless to say, the complex notion is also conceptually autonomous.) This view of the event has to do with our conceptualization of the world. Taylor (1996:251) states:

> People can, and do, talk about events as self-contained, conceptually autonomous segments of a vast chain of events, with little consideration of their ultimate, or

[7] With a transitive eventuality described by, say, *destroy*, it is not clear what the autonomous core component is. The event type may fall into the same class as *break*. The verb *destroy*, unlike *break*, cannot form an ergative expression (**The city destroyed.* vs. *The glass broke.*) nor an middle expression (?*The city won't destroy.* vs. *The glass breaks easily.*). Taylor (1996:252-253) suggests that they share features of autonomous core construal but further independent requirements such as "responsibility" (cf. van Oosten (1977)) are imposed on the expressions. One might make the case that the autonomous core component of *destroy* includes not only the energy sink but also the energy source. Indeed, the energy source is not expressed in the expression *the destruction of the city*, but we might implicitly assume something that transmits energy to another thing in understanding the expression.

even their immediate cause, nor of their immediate or ultimate effect. It is from this perspective that we can say that a glass breaking is conceptually autonomous.

On the autonomous core construal the conceptualizer follows a mental path that starts with the tail of an action chain and moves upstream to the head. It implies that the conception of the action-chain head makes inherent reference to the tail. This conceptualization underlies the distributional pattern of *of*- and *by*-phrases, as observed in (16). The subject entity is regarded as an ultimate cause (i.e. the action-chain heads) of an event. Since the head is conceptually dependent vis-à-vis the tail, the 'subject' NP renders the 'object' NP obligatory.

3.2 Instrument Subject and Transitivity

Now we consider in terms of transitivity why instruments do not qualify as the 'subject' of nominalizations. It has been argued in the literature that transitivity is a category which reflects prototype effects (cf. Hopper and Thompson (1980), Rice (1987), Langacker (1991b), among others). Given that a canonical transitive event model includes an energetic interaction between two participants, a prototypical instance of the transitive category describes an event that contains all the features of the model. The category of subject is characterized as well with respect to the model. Although subjects manifest an abundant variety of semantic roles, one hardly risks controversy in saying that a prototypical subject is a volitional agent. I will claim in this section that instrument subjects are marginal members of the subject category.

Before moving on to the main point, it is desirable to see the category of direct object in terms of transitivity and its relatedness to nominalizations. In Ueda (1997:136-138) I argued that nominalizations are more sensitive to transitivity than sentences. The verb *enter*, for example, has a 'direct object', as in (18a). Its nominalization takes on the syntactic property of those derived from typical intransitive verbs. The 'subject' argument appears in the *of*-phrase; the 'object' cannot be marked with *of*.

(18) a. The toreador entered the arena.

b. *the jubilant entrance of the arena by the toreador

c. the jubilant entrance of the toreador into the arena (Nunes (1993:336))

I attribute the intransitive-like behavior of *entrance* to the low transitivity of its base verb. It is widely assumed that the failure of a verb to passivize is taken as evidence for its low transitivity. In fact, the verb *enter* do not passivize unless special attention is paid to its object.

(19) a. The two customers entered the store.

b. *The store was entered by the two customers. (Bolinger (1974:72))

It is concluded that *enter*'s post-verbal NP is a marginal member of the direct-object category.

I will expand this argument into the category of subject. Though there is not enough linguistic evidence, I propose that instrument subjects deviate a little from the central members of the subject category with respect to 'agency'. Instruments are often regarded as energy transmitters, with the consequence that we can express instruments as clausal subjects (e.g. *The magic key opened the door*). Just because an instrument can function as the subject, it does not follow that it is high in agency. Generally, instruments cannot serve their function without their human users. In this respect they are not prototypical subjects, and hence the odd example ??*the magic key's opening of the door*. (For a detailed discussion, see Ueda (1998).)

Note in passing that agency varies among instruments. A missile is identified as an instrument, since it may be in the *with*-phrase (e.g., *The city was destroyed with the missile by the army* (Lasnik (1988:4))). Unlike a key, it can play the subject role in a nominalization. Observe:

(20) a. ?? the magic key's opening of the door (=(13b))
b. the missile's destruction of the city (Lasnik (1988:7))

The missile has to be launched by humans, to be sure, but humans are not capable of directly affecting its target. The key is viewed as an extension of the body whereas the missile does not count as such. Once it is launched, the missile can be seen as if it is in full control of subsequent events.

We can hypothesize a continuum of agency whose ends are prototypical agents and instruments. A missile certainly stands towards the agent end of the continuum.

4. Understood Objects

We have analyzed the *by*- and the *of*-phrase, and the possessive NP of a (transitive) nominalization as 'syntactic adjuncts'. Under this analysis their distributional pattern needs explanation, since syntactic adjuncts have been assumed to be optional syntactic constituents. I have argued that the pattern is subject to the autonomous/dependent asymmetry between 'subject' and 'object' entities. A 'subject' entity is conceptually dependent vis-à-vis an 'object' entity. Consequently, the occurrence of the 'subject' entity in either the *by*-phrase or the possessive NP forces the 'object' entity to be overtly expressed.

For the proposed analysis the examples in (11), repeated here as (21), would pose a problem. In these examples the 'subject' *by*-phrases appear in spite of the fact that the 'object' NPs are missing.

(21) a. The poor are susceptible to constant exploitation by the rich.
b. Political dissidents in the ex-USSR were under constant surveillance by the KGB.

Compare these examples with (16), repeated as (22):

(22) a. *The enemy's destruction was awful to watch.
b. the expression *(of aggressive feelings) by patients
c. the destruction *(of the city) by the enemy

There is an insightful analysis proposed in the GB framework to account for cases like (21). I will refer to this analysis as the PRO analysis. Under the analysis, invisible PRO discharges the 'object' function. Assuming a grammatical construct like PRO, however, does not follow a basic tenet of the theory I am assuming in this paper. Even without recourse to PRO, the CG framework can capture what the PRO analysis has revealed. I will demonstrate in section 4.1 how the PRO effect is achieved in this framework.

4.1 PRO

We will begin by summarizing the notion of PRO, considering *to*-infinitives. Unlike finite clauses, *to*-infinitives allow their subjects to be left unexpressed, though we can recover what entities are referred to by the unexpressed subjects. Consider the following examples:

(23) a. It is wiser to make no reply to angry words.
b. The man offered to show us the way.

In (23) the understood subjects of the infinitives are people in general and *the man*. This fact has been explained by a syntactic, 'invisible' construct called PRO in the GB framework (cf. Chomsky (1981)). PRO is introduced into the framework because of the Projection Principle and the theta criterion. The Projection Principle demands that lexical information be represented at every level. Given a verb with subject and object arguments, the arguments must be syntactically represented. In (23) in spite of the common assumption that the verbs *make* and *show* bear the subject arguments, those arguments are not visible. PRO needs to be invented to avoid this problem. The assumption that invisible PRO occupies the subject position enables the Projection Principle and the theta criterion to apply in cases like (23).

The PRO analysis has been applied to the cases in (21) as well. The resulting structures are given in (24):[8]

(24) a. The poor$_i$ are susceptible to [PRO$_i$ constant exploitation by the rich].
b. [Political dissidents in the ex-USSR]$_i$ were under [PRO$_i$ constant surveillance by the KGB].

This analysis suggests that since invisible PRO counts as the object in (24), the nominalizations do not break the distributional pattern of the periphrastic expressions.

There is another type of PRO that has been assumed in the GB framework. The antecedent to PRO of this type is determined from contexts, not on the basis of

[8] This analysis has been adopted in the literature (cf. Roeper (1993), among others). Williams (1985), however, argues against the postulation of PRO.

syntactic structures. The referent of PRO in each example of (24), by contrast, is structurally determined and is unambiguously linked to the clausal subject.[9] Symptomatic of this distinction is the existence of the following minimal pair given by Roeper (1993:187):

(25) a. Reagan enjoys defeat.
b. Reagan enjoys the defeat.

The difference between (25a) and (25b) lies in the presence or absence of the definite article *the*. According to Roeper, in (25a) the object of *defeat* has to be understood to be Reagan whereas in (25b) who has been defeated depends on contexts. In the latter example the object-control reading (i.e. the person defeated is Reagan) is possible. I simply point out here that the object-control reading of (25b) is gained by accident and (25b) is different in semantic nature from (25a) even when it receives the object-control reading. (I will discuss this point in section 4.3.)

Thirdly, there is a case where the antecedent of PRO is people in general. Observe (26), cited from Williams (1987:372):

(26) Selection by that committee means certain success.

In this example the referent is not expressed in the sentence.

There is a point as to (24)-(26) that we must not ignore. The PRO analysis could be applied to these cases, but in my opinion it does not grasp the essential. There is no conceptual (as opposed to theoretical) motivation for something invisible in the syntactic structure. It is natural to suppose that there is nothing invisible in the syntactic structure, because we cannot see or hear such a thing. What matters with (24)-(26) is that the sentences do not make a statement about the participants in the processes described by the derived nouns. The process denoted by each noun, on the contrary, absorbs our attention. For example, the topic of (26) is the act of selection carried out by a particular committee rather than who is selected. Similarly, in the other examples the nominal expressions do not attract our attention to their participants.

We might note in passing that in a context where an action itself is focused on, even a prototypical transitive verb allows the direct object to be omitted though it is not so productive.

(27) a. Some people build while others destroy.
b. We gave, they took.
c. He likes to shock. (*CCEG*:144-145)

Examples (27) and (24)-(26) may have something in common--participants are left unexpressed when they are not focused on. Whether or not (27) is parallel to (24)-(26) remains to be proved. This matter is left to further research.

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[9] The former type has been called arbitrary PRO to distinguish it from the latter type.

The invisible elements that we have surveyed so far fall into three classes: (i) PRO requires its antecedent in a sentence; (ii) PRO's antecedent is determined from contexts; (iii) PRO is understood to refer to people in general. Since our concern here is to demonstrate how the unexpressed 'object' of a derived noun is linked to another nominal expression without any special apparatus, we will confine our attention to the cases (i) and (ii).

4.2 Grammatical Valence Relation

In accordance with the symbolic thesis, we cannot assume any grammatical constructs assigned no semantic structures or phonological structures, including PRO. The CG framework can nevertheless accommodate the phenomenon that has been explained by the PRO analysis. I will argue that it is considered to be an effect achieved by a grammatical valence relation. A grammatical valence relation is established between two or more component items when the items combine to form a composite structure. The combination is possible to the extent that a substructure of one item corresponds to, or is identical to, a substructure of the other.

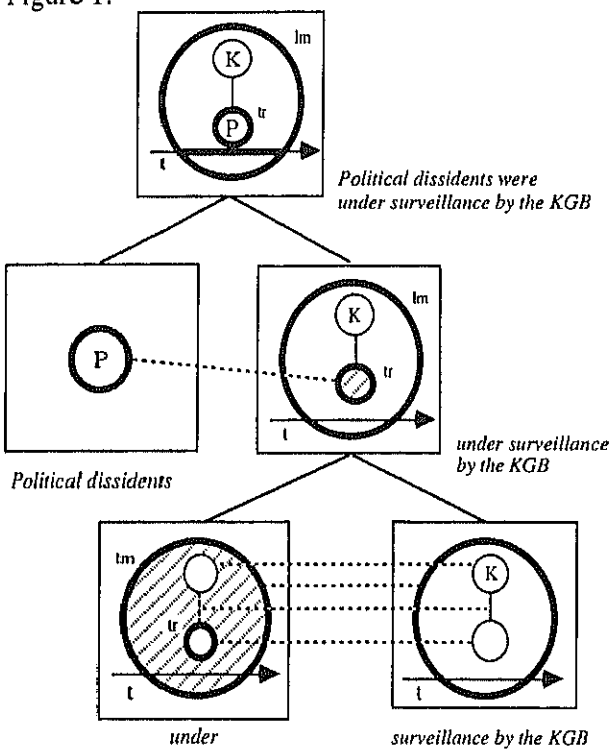
Let us take (21b) for example. The 'object' of *surveillance* in (21b) forms a relationship with the clausal subject through conceptual integration. The derived noun *surveillance* has a trajector (i.e. subject) and a landmark (i.e. object) in its base structure. This unprofiled landmark corresponds to the clausal subject at a certain level of grammatical organization. This is illustrated in Figure 1.[10]

Several notational devices should be noted. A thing is represented by a circle, and a relation by a line joining two things. In the top diagram, two small circles, K and P, symbolize two things, *Political dissidents* and *the KGB*, and their relation--the KGB was surveying political dissidents--is indicated by the line between the two circles. At the bottom right is the diagram of *surveillance by the KGB*, a composite structure consisting of *surveillance* and *by the KGB*. A conventional use of a *by*-phrase is to specify the 'subject' of a nominal. *By the KGB* is accordingly superimposed on the 'subject' position of *surveillance*. Recall that a nominalization construes a series of events as a single, abstract region. The reified (or nominalized) process profiled by the nominal head *surveillance* is seen as an abstract region. The profiled region is encircled by the heavy line. (Heavy lines mark the profiled portions of the diagrammed semantic structures.) An arrow stands for time. The heavy-line portion of the time arrow in the top diagram is due to the verb *be*, which designates the process. Boxes

[10] Figure 1 is after Langacker. It is important to bear in mind that the figure itself is not the semantic structure of (24b). It is just a means of explanation. The pictorial representations in Figure 1 describe only partial aspects of the semantic structure under discussion. For my concern here is to demonstrate how the clausal subject and the 'object' of the derived noun are related. For convenience of discussion, I will leave aside details of the semantic structure (such as profile determinant and autonomous/dependent relationship) and I will ignore the semantic contribution of words like *the* and *were*.

surrounding such figures represent the scopes of predication of the respective entities. Dashed lines indicate correspondences between entities. They represent the conceptual overlap by means of which the component structures merge to form a composite structure.

Figure 1.



The preposition *under* predicates an atemporal relation between two entities, each characterized only schematically. Both of the schematically characterized entities serve as elaboration sites (e-sites, for short), represented as cross-hatched in Figure 1. The notion of e-site is similar to what the GB framework calls argument slots. E-sights need to be given conceptual content by the expressions with which *under* combines. The preposition *under* in such an expression as is observed in (24b) indicates that the trajector is being affected by something. It profiles the relationship between a reified process (lm) and a participant (tr) that is going through that process (which corresponds to the 'logical object' of the process).

At the lower level of constituency, the preposition's landmark is elaborated by *surveillance by the KGB* to form *under surveillance by the KGB*. As the dashed line indicates, *under*'s schematically characterized landmark and *surveillance by the KGB* conceptually overlap, and thus they are integrated. What has to be noticed is that *under*'s trajector and *surveillance*'s 'object' (though both are schematic) also overlap.

This implies that the clausal subject and the noun's 'object' are specified by one and the same entity. At the higher level of constituency, *political dissidents*, abbreviated as P, is identified as that entity. This is the way how the clausal subject is linked to the 'object' of *surveillance* without recourse to a grammatical construct like PRO.

4.3 Definite Article and Grounding

Now let us turn to the second case (i.e. PRO's antecedent is determined from contexts). As I have stated in section 4.1, the definite article *the* affords the key to an understanding of this case. The basic meaning of *the* is to show that the speaker and the hearer share knowledge about exactly what the speaker is talking about. The nominalizations in (15), marked with *the*, surely refer to particular events. Evidence that they receive a definite interpretation can be seen in the following texts, where the sentences in (15) are cited. The cited sentences are italicized here.

(28) a. Except for the disputed dating, Kenyon's discoveries at Jericho were largely consistent with the Bible story. For one thing, she found that the city's walls had fallen in a way suggestive of sudden collapse. Many scholars think *the destruction was caused by an earthquake*, which could also account for a temporary damming of the Jordan River described in the Bible. (*TIME* 3/15/1990)

b. So we shall, if we have not yet catch him and destroy him, drive him to bay in some place where *the catching and the destroying shall be, in time, sure.* (Bram Stoker 1897 *Dracula*)

The contents of the nominalizations in question are understood from contexts. In (28a) what was destroyed is the city's walls. In (28b) *the catching* and *the destroying* refer to *catch him* and *destroy him*, respectively, in the *if*-clause.

It is apparent from the semantic function of *the* that the circumstances of a speech situation and the participants involved in it--the ground, in Langacker's term--are involved in the meaning of the definite article. Langacker refers to an element like *the* as a "grounding predication". Both nominal and verbal elements take grounding predications. In the case of nominal structures, grounding has to do with questions of identification. A simple noun like *cat* denotes only a group of those things that have particular features in common. On the other hand, a noun phrase like *the cat* singles out a specific member of a group. Marking a noun with *the* makes it possible for the speaker and hearer to uniquely identify the thing it designates. In this sense noun phrases (as opposed to simple nouns) are grounded expressions that profile things.

A similar thing applies to verbal expressions. A verb is "a process type of capable of being instantiated at any location in time and with any appropriate set of participants" (Langacker (1991b:33)). A finite clause is grounded by a tense marker, specific participants and so on. Indefinite nominalizations and *to*-infinitives are similar in a

way. Both are not grounded expressions. This is a semantic motivation for parallels between *to*-infinitives and indefinite nominalizations.

Returning to the nominalizations in (28), we can say that they designate the grounded instances of the event types denoted by the head nouns. The speaker and the hearer (or the writer and the reader) know which event is being talked about. The expression *the destruction* in (28a), for instance, describes the event in which the wall was destroyed.

In contrast to (28), the nominalizations in (21), whose 'objects' are identified with the clausal subjects, do not take grounding predications. This suggests that they are left ungrounded even though their semantic contents are finely specified (or instantiated) by the participants *the rich* and *the KGB*. Neither of them in fact designates a particular single event. Based on these facts, we can make the following descriptive generalization:

(29) An ungrounded nominal expression allows its substructure to correspond to another entity within the same sentence.

The question of what factors capture this generalization will be left open for future research.

If my analysis is on the right track, the minimal pair given in (25) is accounted for as follows. The content of *the defeat* in (25b) is specified in a previous context, as indicated by the definite article. Given the information shared by both speaker and hearer that Reagan has been defeated, we can get the "object-control" reading. In this case we understand from the discourse where the sentence is embedded that the object's referent introduced in a previous context is the same figure as the referent of the clausal subject. This reading has to be distinguished from that of (25a). In (25a) *Reagan* counts as a person getting pleasure in being beaten. This means that it is viewed as both the experiencer of *enjoy* and the experiencer and/or patient of *defeat*. It is reasonable to suppose that *Reagan* corresponds to the schematically characterized 'object' of *defeat*, just as the case we have argued in section 4.1. Therefore, the object-reading is obligatory with (25a).

4.4 Summary

We have picked up two types of PRO and considered how PRO's antecedent is determined. I have clarified these two points. (i) The first type of PRO, i.e. the PRO that requires its antecedent in a sentence, is interpreted as an element corresponding to and integrated with its 'antecedent' within the same clause. (ii) The referent of the other type is determined from contexts. If it is identified with an entity in the same sentence, it is done by accident.

5. Conclusion

This paper has begun by posing three questions to the a-structure analysis of nominalizations: (i) Do nominalizations take arguments like verbs, in the sense of Grimshaw (1990)? (ii) Does a-structure capture every syntactic behavior of nominalizations? (iii) Does the grammar need a special apparatus like PRO?

Grimshaw extensively discusses argument-taking nouns and attempted to reveal the syntactic behavior of the prepositional phrases that they take in terms of a-structure. Nominalizations are derived by means of suppressing the external arguments of the base verbs. Grimshaw hypothesizes that internal arguments remain obligatory even when external ones are suppressed. We have showed, however, that 'internal arguments' as well as 'external arguments' are syntactically optional, contrary to her hypothesis. This is a natural consequence in light of the semantic structure of nominalizations. Since nominalizations profile abstract regions whose constitutive entities are the component states of process, participants are not profiled as well.

As for the second question, the a-structure analysis cannot give a sufficient account of every syntactic behavior that nominalizations show. Grimshaw faces difficulties in accounting for the fact that instrument subjects are incompatible with nominalizations. The difficulty lies in her system where much of the information about LCS is invisible to a-structure. The system is too simple to accommodate the subtle difference in meaning among those which are located at slightly different points on the continuum of agency.

I have explored the incompatibility of instrument subjects with nominalizations in terms of transitivity. Prototypical instruments are not regarded as ultimate causes of events and hence they are low in agency. This means that the event in which such an object takes part is low in transitivity on the side of subject. It is therefore difficult for instruments to enter into nominalizations.

Finally, I have demonstrated how the unexpressed participant of a nominalization is identified with another entity without a special grammatical construct like PRO. We have discussed from a cognitive linguistic viewpoint what two types of PRO are. Arbitrary PRO is discourse-determined. The referent of PRO of this type is discharged in previous contexts, not determined on the basis of structural configuration. The PRO which requires obligatory control is captured by conceptual integration of component structures.

I have made the generalization in (29) and in turn suggested that the grounding status of nominals has a close relationship with the above-mentioned characteristic of the latter type of PRO. We should notice that this does not hold only for nominalizations. Compare the following examples:

(30) a. John is in the back of the church.

b. John is in back of the church.

The difference in interpretation between them is pointed out by Fillmore (1971). In (30a) *the back* designates the part of the church that is toward the rear. On the other hand, *back* in (30b) does not specify a certain region. What should be emphasized is that *in back of* functions as a linguistic unit referring to a spatial configuration between *John* and *the church*. The phrase can be paraphrased as *behind*. The same is true of expressions like *under surveillance*. *Under surveillance* is paraphrasable as "being surveyed". A foreseeable extension of this research would be to afford an in-depth study of the semantics of the definite article and relational nouns, including (30).

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