Chapter 4 Argument Structure And Case Assigning Properties of Nouns

4.1 INTRODUCTION

In this chapter I discuss two issues: the argument structure of nouns and their case assigning abilities. Following Grimshaw (1990) I assume that not all nouns have an argument structure. Only certain kinds of nominals, called 'process' or complex event nominals, have an argument structure. Other nominals, which Grimshaw (1990) divides into two classes, result and simple event nominals, do not have an argument structure. With respect to case, I assume a distinction between inherent and structural case, a distinction based on the means of assignment and not the particular case forms. In particular, I show that genitive case assigned by nouns is structural in Serbian, and all other cases assigned by nouns are inherent. Nominalization and word order facts provide direct evidence for this distinction. Specifically, nominative and accusative case, as prototypical structural cases assigned by verbs, become genitive in nominalizations. These genitives must obey a condition of adjacency to the head noun, whereas the inherent cases do not have this restriction.

This chapter is organized as follows. In Section 4.2, I briefly review some theories of argument structure, focusing on Grimshaw's (1990) theory of the argument structure of nouns. Following Grimshaw (1990), I distinguish between

process and result nominals, showing how this distinction is reflected morphologically and syntactically in Serbian (Section 4.3). In Section 4.4, I show how arguments are expressed in the Serbian noun phrase. In Section 4.5, I discuss the issue of case, showing that Serbian nouns are proper case assigners. In order to account for the word order facts and the distribution of genitives, I apply the distinction between structural and inherent case. In Section 4.6, I propose an argument structure of Serbian nouns.

4.2 THEORIES OF ARGUMENT STRUCTURE

Most theories view argument structure as a hierarchical representation of arguments a lexical item selects for (e.g. Williams 1981, Marantz 1984, Belleti & Rizzi 1988, Grimshaw 1990, Wechsler 1995). A point of divergence arises with respect to two issues: how arguments are sorted, i.e., whether the sorting is based on thematic relations, grammatical relations, or a combination of the two, and how they are linked to grammatical functions.

Most theories of argument structure use theta role types as the basis for argument structure. For example, Williams' (1981) argument structure contains a list of theta role labels, with a designated external argument (Actor for verbs or R(eferential) for nouns) which is realized outside the maximal projection of a predicate (i.e. as a subject). However, in the presently prevailing 'predicate-internal' subject hypothesis, this view of linking cannot be maintained. In addition, there are many verbs that take a non-actor theta role, but still have a

subject. For example, in *John fears earthquakes, John* is the grammatical subject but has an experiencer role.

As discussed in Chapter 3, Pollard & Sag (1994) have a 'syntacticized' view of argument structure (ARG-S), viewing it as a list of dependents, arranged in order of obliqueness, whereby terms (NPs in English) are less oblique than PPs (in English). The arguments on the ARG-S list are then linked to the corresponding theta roles, encoded in the semantic content of a predicate. To illustrate, the lexical entry for the ditransitive verb *give* looks as follows.

(1) *give*:
$$\begin{bmatrix} \text{CAT} & \begin{bmatrix} \text{VALENCE} & \begin{bmatrix} \text{SUBJ} & \langle [1]\text{NP} \rangle \\ \text{COMPS} & \langle [2]\,\text{NP},\ [3]\,\text{PP}[to] \rangle \end{bmatrix} \\ \text{ARG-S} & \langle [1]_i,\ [2]_j,\ [3]_k \rangle \end{bmatrix} \\ \text{CONT} & \begin{bmatrix} give-rel \\ \text{GIVER } i \\ \text{GIVEE } j \\ \text{GIVEN } k \end{bmatrix} \end{bmatrix}$$

We observe that the feature ARG-S is part of the CAT(egory) attribute, hence it belongs to the syntax proper. We will show in Chapter 5 that ARG-S is the site for anaphoric binding relations. The verb *give* has three arguments which correspond to the appropriate grammatical relations defined on the VALENCE lists. This correspondence or linking is formally represented by the tag notation, indicating structure-sharing of elements appearing in different places. The elements on the ARG-S list are linked (formally indicated by subscripted referential indices) to the appropriate participants of the *give* relation, encoded in the semantic CONT(ent) of the verb. In other words, the CONT(ent) value of the

verb together with the ARG-S value, comprises the predicate-argument structure, i.e. the relation and the appropriate theta role carried by the participants of that relation. On this view, the theta role assignment is strictly a local process.

Following Manning (1994), Wechsler & Arka (1997) modify the above version of ARG-S by proposing an ARG-S that is based on the combination of theta roles and the term-oblique grammatical distinction.

(2) Theory of ARG-S ordering (Wechsler & Arka (1997 :17)

a. terms outrank obliques

b. arguments within each group are ordered by the lexico-semantics of the verb.

The second ordering is based on a universally defined thematic hierarchy. The first ordering is the grammaticalized version of ARG-S, and therefore subject to language specific conditions. For instance, in English, terms are identified as NPs and obliques as PPs, whereas in case-marking languages, terms would correspond to NPs with direct (structural) cases, while obliques would be NPs with oblique (inherent) cases, as well as PPs. Wechsler & Arka (1997 : 17) emphasize that "the term/oblique distinction reflects the lexico-semantic grounding of the notion 'oblique', in that obliques are marked by semantically contentful morphology (adposition or case) indicating semantic role type". They further propose linking rules that map elements on the ARG-S list to grammatical functions defined on the VALENCE attribute. Roughly, for intransitive verbs, the grammatical subject

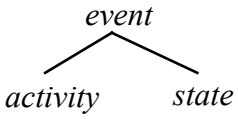
would be linked to a single term on the ARG-S list. For transitive verbs (in nominative-accusative languages) the grammatical subject would be linked to the first element (or L(ogical) subject) on the ARG-S list, whereas complements would be linked to other elements on the ARG-S list, in the order given.

An interesting approach is that of Grimshaw (1990), who defines argument structure on purely semantic grounds, as an interaction of two hierarchies: thematic and aspectual. She assumes the following hierarchy of thematic roles in which the agent is the highest and the theme, the lowest argument.

(3) Agent < Experiencer < Goal/Source/Location < Theme

The aspectual hierarchy has Cause as its most prominent element (other elements are not specified). This hierarchy is based on the event structure of a predicate, where 'the event structure represents the aspectual analysis of the clause, and determines such things as which adjuncts are admissible... "(p. 26). For example, the event structure of an accomplishment verb, such as *build*, would have the following sub-events.

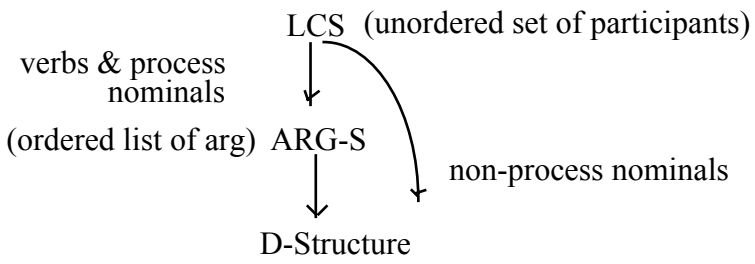
(4)



According to Grimshaw, an argument participating in the first sub-event is always more prominent than an argument participating in the second sub-event, because activity involves causation, i.e. agentivity, whereas the (resulting) state does not. She further proposes that the most prominent argument on the aspectual hierarchy is always realized syntactically as a D-structure subject, irrespective of what thematic role that subject has. For Grimshaw, to qualify as an external argument, and consequently, a grammatical subject, an element must be the most prominent on both dimensions. Agents, being maximally prominent in both dimensions, are always external arguments.

Grimshaw (1990) also discusses the argument structure of nouns. According to her, while all verbs have an argument structure, not all nouns do. Only certain nominals, called 'process' or complex event nominals have an argument structure (ARG-S). They take obligatory complements, just like the verbs to which they are morphologically related. Other nominals, which Grimshaw divides into two classes, result and simple event nominals, do not have an argument structure. Rather, their "arguments" or participants, are projected onto a D-structure directly from the lexico-semantic level of representation called Lexical Conceptual Structure (LCS). Grimshaw's theory of projection of arguments of verbs and nouns can be schematically illustrated as follows.

(5)



Grimshaw further claims that participants of non-process nominals are syntactically complements despite the fact that they are not arguments on the argument structure list. Complements are thus defined as the LCS participants, which are syntactically realized in either Spec or Complement position. On the other hand, arguments are members of both LCS and ARG-S lists, as illustrated in (5). To distinguish arguments and complements from adjuncts, Grimshaw proposes that adjuncts are not members of either LCS or ARG-S list.

Semantically, "result nominals name the output of a process or an element associated with the process; process nominals name a process or an event" (Grimshaw 1990 : 49). To distinguish them formally, Grimshaw proposes that process nominals have a non-thematic external argument Event, whereas non-process nominals have a non-thematic argument R(eferential), which does not refer to events but to individuals (cf. Williams 1981, Higginbotham 1985). Grimshaw points out that in English, most nouns are ambiguous between process and result readings. This excludes pure gerundive nominals, which have an unambiguous process denotation. She devises various tests to disambiguate the

two classes of nominals. In the next section, I show how the semantic distinction between process and result nominals is reflected in Serbian.

4.3 DISTINGUISHING PROCESS FROM RESULT NOMINALS IN SERBIAN

4.3.1 Morphological Distinctions

In general, process nominals in Serbian are derived from imperfective verbs while result nominals are derived from perfective verbs.[59] The former take obligatory complements (cf. (6a)) while the latter do not (cf. (6b)). (Examples are taken from Mrazović & Vukadinović 1990 : 289.)

(6) a. Rešavanje *(postavljenog zadatka) trajalo je čitav sat.
solution-IMPERF assigned-G problem-G lasted-NT.SG AUX whole hour
'The solving of the assigned problem took a whole hour.'

b. Rešenje (postavljenog zadatka) nalazi se u udžbeniku.
solution-PERF assigned-G problem-G locate in textbook
'The solution (to the assigned problem) is in the textbook.'

In (6a), the process denoting nominal *rešavanj*e is formed by adding the nominalizing affix *-nje* to the imperfective infinitival verb stem *rešava* (i.e. *rešava+nj*e = *rešavanj*e).[60] The corresponding nominal with a result denotation,

[59]This tendency is present across Slavic languages. However, Comrie & Thompson (1985 : 363) report that Polish allows process nominals to be derived from both perfective and imperfective verbs.

[60]This characterization is a matter of debate. Following traditional grammarians, Mrazović & Vukadinović (1990) claim that the nominalizing affix *-je* is added to the passive participle of the

*rešenj*e in (6b), is formed by adding the nominalizing affix -*enj*e to the perfective verb stem *reš-* (i.e. *reš+enje = rešenje).* The process noun *rešavanje* in (6a) can combine with the predicate *trajalo je čitav sat* 'lasted for a whole hour' which semantically selects for events. This is not possible with the result noun *rešenje* (cf. **Jovanovo rešenje je trajalo čitav sa*t *'John's solution took a whole hour').

Nouns derived from imperfective verbs generally get the suffix -*nje* (or allomorphs -*enje* or -*će*), whereas those derived from perfective verbs get either zero-ending or the -*a* feminine suffix, and only occasionally the -*nje* suffix (as in (6b)).[61] The table below illustrates this paradigm.

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corresponding imperfective verb, e.g. *rešavan+j*e = *rešavanj*e. However, there are many imperfective verbs that have no passive counterparts, but the corresponding nouns still end in -*nje*. For example, nouns such as *plivanje* 'swimming', *sećanj*e 'remembering', *strahovanje* 'fear' have no passive forms (cf. the nonexisting **plivan*, **strahovan*, **sećan*). Hence, the characterization as in the main text. In particular, according to Wayles Browne (personal communication) the morphophonemic rules for forming process nominals are the following:

i. if the verbal stem ends in a consonant, the -*enje* suffix is added (cf. *reš+ava+nje'* 'solving');
ii. if the stem ends in -*i/*e then *i* is dropped, and -*enj*e is added (cf. *vadi+enj* e = *vadjenje* 'extracting');
iii. if the stem ends in -*u*, the suffix -će is added;
iv. in all other cases, the -*nje* suffix is added (e.g. *čitanje* 'reading').

[61]For a list of nouns derived from perfective verbs but ending in -*nje* see Bibović (1973).

Table 1 Nouns Derived from Imperfective and Perfective Verbs

Imperfective Verb	**'Imperfective' Noun**	**Perfective Verb**	**'Perfective' Noun**
ispitivati 'exam'	ispitivanje 'examining'	ispitati 'exam'	ispit 'exam'
pozivati 'invite'	pozivanje 'inviting'	pozvati 'invite'	poziv 'invitation'
opisivati 'describe'	opisivanje 'describing'	opisati 'describe'	opis 'description'
pobedjivati 'win'	pobedjivanje 'winning'	pobediti 'win'	pobeda 'victory'
rešavati 'solve'	rešavanje 'solving'	rešavati 'solve'	rešenje 'solution'

As can be seen from the table, the nouns derived from imperfective verbs correspond to English gerundive nominals. English gerundives are claimed to have an unambiguous process reading (cf. Grimshaw 1990, Zucchi 1993). However, unlike English gerundives which take adverbial modifiers on a par with verbs, all Serbian nouns, whether process or not, take adjectival modifiers. This is shown below.

(7) dobro rešenje/rešavanje
'good-NT.SG solution/solving-NT.SG'

Since all nouns ending in *-nje* decline like neuter singular nouns, the modifying adjectives inflect for these features.[62] In the nominative subject position, these nouns induce neuter singular agreement on the participles (cf. *trajalo* 'lasted-NT.SG' in (6a)), and singular on the finite verbs and auxiliaries. Furthermore, both classes of nouns assign genitive case to their NP-complements (cf. *postavljenog zadatka* 'assigned-G problem-G' in (6a-b)). However, unlike result nominals, process denoting nominals cannot pluralize, as will be illustrated below.

As pointed out by Mrazović & Vukadinović (1990 : 208), even nouns ending in *-nje* can have both kinds of reading. Some of these nouns can be disambiguated by different stress pattern, as for example, *pečenje* 'roasting' vs. *pečénje* 'roast', *krštenje* 'baptising', vs. *kršténje* 'baptism'. In the process reading, the above nouns have a short rising accent on the appropriate stem vowel (not indicated); in the result reading, the accent on the vowel before the suffix is long rising (indicated as an accute accent - *é*).

Not all nouns can be derived from both perfective and imperfective verbs. Most nouns are derived from imperfective rather than perfective verbs. Nouns derived only from imperfective verbs are *branje* 'harvest' (compare the non-existing perfective form **obranj*e from *obrati* 'to harvest'), *putovanje* 'travel' (cf.

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[62]It should be noted however, that the adjective *dobro* in (7) is homophonous with the adverbial *dobro,* for adverbials are formed from neuter singular adjectives. As discussed in the text, there are deverbal nouns that do not end in *-nje*, as for example *berba* 'harvest', *odbrana* 'defense', *prodaj*a 'sale' which have feminine gender, and are ambiguous between process and result reading. In both readings, these nouns unambiguously take adjectival modifiers which agree in case and phi-features with the head noun.

i. njegova loša briga
his-N.F.SG poor-N.F.SG care-N.F.SG
'his poor care'

nonexisting form **otputovanje* from the perfective verb *otputovati* 'to depart'), *hapšenj*e 'arrest' (cf. **uhapšenje* from the perfective verb *uhapsit*i 'to arrest'), *ispitivanje* 'interrogation' (cf. **ispitanje* from the perfective verb *ispitati* 'to examine'). Deverbal nouns lacking the *-nje* ending (e.g. *brig*a 'worry', *berba* 'picking', *odbran*a 'defense', *prodaj*a 'sale', *borba* 'fight', *gluma* 'acting', *lo*v 'hunting, *pla*č 'crying', *šetnja* 'walk') can have either a process or result denotation. In the next section, I discuss some syntactic devices for disambiguating such nominals.

4.3.2 Syntactic Distinctions

Grimshaw (1990) uses various syntactic tests to distinguish process from result nominals in English. Some of these tests are applicable in Serbian as well.

Grimshaw observes that English process nominals cannot occur in existential sentences, whereas non-process nominals can. The following Serbian facts support this observation.

(8) a. Postoji jedno rešenje.
exists one solution
'There exists a solution.'

b. *Postoji rešavanje problema.
exists solving problem-G
*'There exists solving of a problem.'

In the first example, the result nominal *rešenje* can appear in an existential sentence whereas the unambiguously process noun *rešavanje* in (8b) cannot. In this sentence, the process noun *rešavanje* is followed by a complement, since, as illustrated in (6a) transitive process nominals require complements. As Ileana Comorovski points out (personal communication), the fact that process nominals cannot occur in existential sentences (in either English or Serbian) is an immediate consequence of the following two facts: i. process nominals cannot take the indefinite article (cf. **a solving of the problem*) and ii. definite NPs are generally not allowed in existential sentences. Therefore, the basic fact to note about English process nominals is not their non-occurrence in existential sentences, but their inability to contain an indefinite article. This may look like a syntactic fact, but it seems to be due to the semantics of process nominals (i.e. they are event-denoting). The non-occurrence of process nominals in existential sentences in Serbian is most likely due to the fact they cannot get an indefinite reading. The situation is therefore the same in English and Serbian. It's just that English has a syntactic reflex of the impossibility of giving process nominals an indefinite reading. The reflex is the imposibility of these nominals to appear with the indefinite article. Since Serbian has no articles, indirect evidence is needed for the impossibility of assigning process nominals an indefinite interpretation. One such piece of evidence is the fact that they cannot occur in existential sentences, as shown in (8b).

Furthermore, process nominals can't be used predicatively whereas result nominals can (cf. (9)).

(9) Ovo je dosta teško rešenje/*rešavanje problema.
this is very difficult solution/solving problem
'This is a very difficult solution/*solving of a problem.'

Again, in English there is a syntactic reflex of this semantic fact. Namely, process nominals cannot contain the indefinite article. In other words, while English indefinite NPs can be type shifted from the regular semantic type of NPs, i.e. <<e,t>t> to the type of a predicate, i.e., <e,t> (see Partee 1987), process nominals cannot have the type of a predicate.

With respect to their phrase internal properties, only process nominals allow aspectual modifiers such as 'frequent' or 'constant'.

(10) Često rešavanje/*rešenje problema je poželjno.
Frequent solving/solution problems is desirable.
'The frequent solving/solution of problems is desirable.'

Note that in English, both forms *solution* and *solving* are acceptable. As Grimshaw points out, this is because a noun such as *solution* is ambiguous between process and result denotation. In (10), *solution* has a process denotation since it is followed by a complement (cf. the ungrammatical sequence *The frequent solution is desirable).

Due to their different semantic denotations, process nominals do not pluralize whereas non-process nominals do (cf. (11)). In this respect, process nominals behave like mass nouns.

(11) Rešenja/*rešavanja ovih zadataka ....
solutions/solvings these problems
'the solutions/*solvings of these problems'

In addition, process nominals cannot occur with demonstratives since demonstratives can't point to events.

(12) Ovo rešenje/*rešavanje zadatka ....
thissolution/solving problem
'this solution/solving of the problem'[63]

What is interesting in this regard is that Serbian manner demonstratives, discussed in Chapter 2, can occur with both process and non-process nominals, indicating that with process nominals they have only a qualifying function and not the identifying function.

(13) Ovakvo rešenje/rešavanje zadataka ....
this-kind solution/solving problems
'this kind of solution/*solving of problems'

[63]Carlota Smith (personal communication) comments that the demonstrative is somewhat acceptable with English process nouns (as in (12), especially when used in a subject position.

Summing up, in this section I have shown how the semantic distinction between process and non-process nominals is reflected morphologically and syntactically in Serbian. In Chapter 5, it will be shown that this distinction plays an important role in anaphor binding. In the next section I discuss the issue of syntactic realization of arguments in Serbian, pointing to some peculiarities of expressing agents.

4.4 EXPRESSING ARGUMENTS IN SERBIAN

In the previous section it was shown that Grimshaw's diagnostics for distinguishing process from results nominals are valid in Serbian. It was illustrated that complements of process nominals are obligatory (cf. (6a)). However, 'subjects' are optional elements for both classes of nouns (cf. (14)). In this respect, process nominals differ from verbs which require subjects (cf. *(Marija) voli Jovana '*(Mary) likes John.).[64]

(14) a. (Jovanovo) rešavanje *(problema) je uvek brzo.
John's-ADJ solving problems is always fast
'John's solving of problems is always fast.'

b. (Jovanovo) rešenje (problema) je tačno.

[64]It must be assumed, however, that in 'pro-drop' languages, such as Serbian, the pronominal null subjects are present on the ARG-S list, as evidenced by binding facts.

John's-ADJ solution problem is correct

'(John's) solution (to the problem) is correct.'

In (14b), both the agent and theme argument of the non-process nominal *rešenje* is optional, whereas in (14a), only the agent argument is an optional element. In both examples, the optional agent is expressed by the prenominal possessive adjective (cf. *Jovanovo* 'John's-ADJ') whereas the theme is expressed by the postnominal genitive noun phrase (cf. *problema* 'problems-G'). However, possessive adjectives can also be interpreted as a theme, as in the following example.

(15) Jovanovo hapšenje od strane policije

John's-ADJ arrest from side police-G

'John's arrest by the police'

The objective interpretation of the possessive *Jovanovo* is induced by the presence of the agentive prepositional phrase headed by the preposition *od strane* 'from the side of'. However, when both the possessive adjective and the genitive NP are expressed, the possessive adjective always has a higher theta role. In the example below, the possessive adjective *inspektorovo* has an agentive role, whereas the genitive *studenata* /*policajaca* has a theme role.

(16) inspektorovo hapšenje studenata/policajaca

inspector's-ADJ arrest students/policemen-G

'the inspector's arrest of students/policemen'

This order resembles the order in a clause, where in the neutral order, the subject appears before the verb and the object after the verb. This parallelism is further reinforced by the fact that the nouns underlying prenominal possessive adjectives are always definite in interpretation on a par with preverbal 'bare' subject NPs, as discussed in Chapter 2.

Postnominal genitives are not restricted to themes, but can also be agents (as in (17a)) or experiencers (as in (17b)).

(17) a. protest studenata protiv sadašnje vlade

protest students-G against present-G government-G

'the students' protest against the present government'

b. strah studenata od ispita

fear students-G from exams-G

'the students' fear of (taking) exams'

In the first example, the deverbal noun *protest* is derived from the intransitive verb *protestovati* 'to protest', which selects an agent argument and an optional oblique argument, realized as a PP. The same theta roles are inherited in nominalization. Namely, the genitive NP *studenata* in (17a) has the theta role of

agent and the oblique argument is expressed by the same preposition. In the second example, the psychological noun *strah* selects an experiencer argument, realized as a genitive NP, and a theme argument realized by the prepositonal phrase, headed by the preposition *od* 'from'.

Mrazović & Vukadinović (1990 : 289) note that with transitive nominals such as *hapšenje* in (16), the postnominal genitive is always interpreted as an object (i.e. theme), irrespective of the presence of the subject argument. For example, *hapšenje studenata* always means 'arresting of students' and not 'arresting by students'. This is not surprising in light of the above findings that transitive process nominals take obligatory complements. Only with result nominals, are genitive NPs ambiguous between the agentive and objective readings, as shown below.

(18) Evo opisa ovog studenta.
here description this-G student-G
'Here is the description by/of this student.'

The noun *opis* 'description' derived from the perfective verb *opisati* 'to describe' has a result reading. As a consequence, the postnominal genitive *ovog studenta* can be interpreted either as the agent or theme of the description. This observation is supported by the fact that the genitive NP of the corresponding process noun *opisivanje* (derived from the imperfective verb *opisivati*) is interpreted only as a theme.

(19) Opisivanje ovog studenta je dugo trajalo.
describing this-G student-G AUX long lasted
'Describing this student took a long time.'

Mrazović & Vukadinović (1990 : 289) bring up the following example to show that the possessive adjective can have two interpretations if it occurs as the sole argument of a transitive noun.

(20) Jovanovo saslušavanje je proteklo bez incidenta.
John's-ADJ interrogation AUX went without incident
'The interrogation of/by John went without any incident.'

I believe this ambiguity is due to the fact that the noun *saslušavanje* can also be used intransitively, just like its related verb *saslušavati* (cf. *Oni stalno saslušavaju* 'They are always interrogating (someone)'). This is supported by the fact that Serbian process nominals whose related verbs can be detransitivized (as in (21a)) can appear with no arguments at all (as in (21b)).

(21) a. Ja objektivno ocenjujem.
I objectively grade
'I grade objectively.'

b. Ocenjivanje je objektivno.
grading is objective
'The grading is objective.'

Other nouns that behave like *ocenjivanje* are *učenje* 'teaching/studying, *ocenjivanj*e 'grading', *čitanj*e 'reading', *pisanje* 'writing', *slikanj*e 'painting', *pevan*je 'singing', *sudjenje*' judging'. Their morphologically related imperfective verbs *učiti*, *ocenjivati*, *čitati*, *pisati*, *slikati*, *pevati*, *suditi* can also be used intransitively. However, the corresponding perfective verbs cannot be detransitivized, i.e. they are obligatory transitive verbs (cf. **Ja sam ocenio* *'I graded-PERF'). The nouns derived from such verbs have a result denotation with idiosyncratic meanings (e.g. *ocena* 'grade', *pismo* 'letter', *pesma* 'song', *slik*a 'picture', *osud*a 'sentence').

Detransitivized process nominals can also occur with agents, as in the following examples.

(22) a. Moje ocenjivanje je objektivno.
my-ADJ grading is objective
'My grading is objective.'

b. Ocenjivanje moje učiteljice je objektivno.
grading my-G teacher-G is objective
'My teacher's grading is objective.'

c. Ocenjivanje mi je objektivno.
grading me-D is objective
'My grading is objective.'

d. Ocenjivanje od strane moje učiteljice je objektivno.
grading from side my-G teacher-G is objective
'The grading by my teacher is objective.'

The above examples show that the agent can be expressed by either the pronominal possessive adjective (cf. *moje* in (22a)), the postnominal genitive (cf. *moje učiteljice* in (22b)), the dative clitic pronoun (cf. *mi* in (21c))[65], and also by the *od strane*-phrase (cf. (22d))). However, with obligatory transitive nouns, the *od strane*-phrase is unacceptable unless the theme is realized as well, as illustrated by the contrast in grammaticality of the following two examples.

(23) a. *poništavanje od strane političara

[65]In (22c), the dative clitic pronoun has an agentive interpretation. With non-argument taking nouns, especially with nouns denoting parts of the body, kinship terms, or items of clothing, dative pronominal clitics express a possession relation, on a par with possessive adjectives. This is shown below.

i. Ćerka mi spava.
daughter I-D sleeps

ii. Moja ćerka spava.
my-ADJ daughter sleeps
'My daughter is sleeping.'

Both examples have the same interpretation, as indicated by the single English translation. The reason why the pronominal possessive adjective precedes the noun while the dative pronominal clitic follows it is because the former is an adjective (see Section 3.3.4) whereas the latter is a noun. There is a general ordering rule mentioned in Chapter 2, which says that APs precede the head noun.

annulment from side politicians

*'the annulment by the politicians'

b. poništavanje glasova od strane političara

annulment votes-G from side politicians

'the annulment of votes by the politicians'

These two examples show that the *od strane*-phrase is licensed by the presence of a theme argument. Thus, the observation, originally noted by Lebeaux (1986), that the presence of the agent induces the obligatory presence of the theme of an action nominal, is confirmed in Serbian, as well as in other Slavic languages (cf. Rappaport 1992).

It is interesting to note that in Serbian, the *od strane*-phrase cannot be used for expressing an experiencer role (cf. (24a)), nor can it be used with non-argument taking nominals (cf. (24b)).[66]

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[66]Other languages (e.g. Italian, Romanian, German, Dutch, most Slavic languages) also disallow the agentive prepositional phrase with either result nominals or for expressing an experiencer argument. To illustrate, in Russian, agentive NPs bearing instrumental case are used with both passive verbs (cf. i.) and argument taking nouns (cf. ii), but not with result nouns (as in iii). (All three examples are from Comrie & Thompson 1985 : 365 & 375).

i. Gorod byl razrušen vragom.
city-N was destroyed enemy-I
'The city was destroyed by the enemy.'

ii. razrušenie goroda vragom
destruction city-G enemy-I
'the destruction of the city by the enemy.'

iii. *kniga Tolstym
book Tolstoy-I
'the book by Tolstoy'

(24) a. briga *od strane/*od ovih studenata
worry from side/from these students
'worry of these students'

b. knjiga od /*od strane Čomskog
book from/from side Chomsky
'the book by Chomsky'

In (24b), only the prepositional phrase headed by *od* 'from' can be used with result nominals. In (24a), the experiencer argument of the psych-noun *briga* cannot be expressed by either *od* or *od strane* phrase. Rather, it must be expressed by either the possessive adjective (cf. *studentova briga* 'the student's worry'), or if the adjectivalization is not possible, by the genitive NP (cf. *briga ovih studenata* 'worry of these students').

To summarize, agents of transitive nouns can be expressed by either possessive adjectives (cf. (14a)) or the agentive *od strane*-phrase (cf. (15)), while themes can be expressed by either genitive NPs (cf. (14a)) or possessive adjectives (cf. (15)), with the restriction that the theta role expressed by the possessive adjective be higher on the thematic hierarchy (see Section 4.6) than the theta role expressed by the genitive (as in (16)). Agents of detransitivized nouns are expressed by either possessive adjectives (cf. (22a)), genitive NPs (cf. (22b)), dative pronominal clitics (cf. (22c)), and by the agentive *od strane*-phrase. In the

next section, I show that the distribution of postnominal arguments is governed by the structural-inherent case distinction.

4.5 CASE ASSIGNING ABILITIES OF NOUNS

According to Chomsky (1986b), nouns, as opposed to verbs, are not structural case assigners, since they cannot be followed by NP complements (cf. (25b)) nor can they assign case to those complements to which they do not assign a theta role (as in (26b)).

(25) a. donation of money to hospitals

b. *donation money to hospitals

(26) a. John believes Mary to be a good linguist.

b. *John's belief of Mary to be a good linguist.

Rather, according to Chomsky, nouns are inherent case assigners, able to assign case to those nominal complements which they theta mark, i.e. assign a theta role to.[67] In order to account for the distribution of genitives in English, Chomsky (1986b) proposed that inherent case is assigned at D-structure, while it is syntactically realized at S-structure via the preposition *of* and '*s* as case markers.[68]

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[67]It is not obvious that nouns are always inherent case assigners since the possessive genitive NP below does not receive a thematic role from the head noun *house*.

i. John's house

[68]Chomsky further assumes that case assignment is done in the direction of the head-parameter. In English, the case assignment is to the right, since English is a head-initial language. From this assumption, it follows that both types of genitives are assigned inherent cases to the right of the head noun. At S-structure, the prenominal '*s* genitive is realized in the specifier position.

A more extreme view on the 'defectiveness' of nouns as governors is taken by Grimshaw (1990), who claims that nouns have neither case- nor theta-assigning capacity, i.e., they cannot directly assign a theta role or case. In order to obey the Theta Criterion and the Projection Principle, nouns need a preposition, which is lexically inserted at D-structure. Via the preposition, the noun is able to transmit (or discharge) the theta role to the complement NP and to assign structural case to this NP.

However, in languages with rich morphological case systems, such as Serbian, nouns can be followed by NP complements. In these languages, a rich case system formally marks grammatical relations, such as subject and object. With regard to exceptional case marking, Serbian lacks such constructions in both the clausal and the nominal domain. In the following two subsections, I show that Serbian nouns are proper case assigners and that nominalization provides evidence for the distinction between structural and inherent case.

4.5.1 Nouns as Proper Case Assigners in Serbian

The following example, which is a translation of the English example in (25a), illustrates that Serbian nouns are proper case assigners (see also Leko 1990 for a similar claim).[69]

[69]As pointed out by Leko (1990), the claim that Serbian nouns are proper case assigners falsifies the Case Resistance Principle proposed by Stowell (1981) whereby a lexical item cannot simultaneously be both a case assigner and a case receiver. The following Serbian example illustrates that this is in fact possible.

(27) a. donacija novca bolnicama
donation money-G hospitals-D
'donation of money to hospitals'

b. donirati novac bolnicama
donate-INF money-A hospitals-D
'to donate money to hospitals'

The deverbal noun *donacija* takes two 'internal' NP arguments, the theme marked for genitive case and the goal marked for dative case. The corresponding loan verb *donirati* also takes two NP complements, having the same thematic relations, theme which is marked for accusative case and the goal marked for dative case. The reason why the case of the theme argument in the verbal and nominal domain is different, is because in nominalization, accusative (as well as nominative) becomes genitive.[70] On the other hand, oblique cases are often retained in nominalization, as evidenced by the above example (cf. the dative NP *bolnicama*), and the example below.

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i. Pročitao sam opis Amerike.
read-1.SG AUX description America-G
'I read the description of America.'

In this example, the noun *opis* 'description' receives an accusative case from the verb *pročitati* 'read' and, in the same time, assigns genitive case to its NP-complement *Amerike* 'of America'.

[70]This generalization that nominative and accusative generally turn into genitives in nominalization applies to a vast group of unrelated languages, as reported by Koptjevskaja-Tamm (1993) in her typological study on nominalizations.

(28) a. pretnja lopovu zatvorom
threat thief-D prison-I
'a threat of imprisonment to the thief'

b. pretiti lopovu zatvorom
threaten-INF thief-D prison-I
'to threaten a thief with imprisonment'

The deverbal noun *pretnja* 'threat' in (28a) selects two 'internal' arguments, Goal and Instrument, which are in dative and instrumental case respectively, just like the corresponding arguments of the related verb *pretiti* in (28b).

We saw in (27) that the accusative case becomes genitive in nominalization. The following example illustrates that the nominative case assigned by verbal predicates also becomes genitive in nominalization.

(29) a. protest ovog studenta
protest this-G student-G
'a protest by this student'

b. Ovaj student protestuje.
this-N student-N protests
'This student is protesting.'

The postnominal genitive *ovog studenta* in (29a) has an agentive reading corresponding to the nominative subject of the intransitive verb *protestovati* 'to protest' in (29b).

Nouns derived from transitive verbs with nominative and accusative arguments, cannot express both the agent and theme by the use of genitive NPs. Rather only one argument, usually the theme, is expressed by the genitive. The agent argument is expressed as a prenominal possessive adjective (cf. (16) above and (30) below).

(30) a. Jovanov opis Amerike
John's-ADJ description America-G
'John's description of America'

b. *opis Jovana-G Amerike-G

c. *opis Amerike-G Jovana-G

Notice that the order of postnominal genitives in (30b-c) is irrelevant; either order renders the construction ungrammatical. A similar situation is also found in English, where the agent and the theme cannot be expressed by two *of*-phrases (cf. the ungrammatical (31c)).

(31) a. the shooting of the hunters (agent)

b. the shooting of the deer (theme)

c. *the shooting of the hunters of the deer

As discussed above, the agent argument of transitive nominals can also be expressed by a prepositional phrase headed by the preposition *od strane* 'from the side of', corresponding to the English agentive *by*-phrase.

(32) a. opis Amerike od strane ovog studenta
description America-G from side this-G student-G
'the description of America by this student'

b. *opis od strane ovog studenta Amerike
description from side this-G student-G America-G

The contrast in grammaticality between the two examples shows that the genitive NP must be adjacent to the head noun (see also (38) below).

Not all accusative cases become genitives in nominalization. For instance, with certain deverbal nouns, the accusative goal argument of the corresponding verb becomes dative rather than genitive (cf. (33b)), or it is realized as a prepositional phrase (not shown).

(33) a. Studenti su posetili predsednika Srbije.
students-N AUX visited president-A Serbia-G
'The students visited the president of Serbia.'

b. poseta studenata predsedniku Srbije
visit students-G president-D Serbia-G
'the students' visit to the president of Serbia'

In (33a), the verb *posetiti* takes the nominative agent and the accusative goal argument. The related noun *poseta* in (33b) takes the genitive agent and the dative goal argument.

Furthermore, there is a group of nouns derived from the transitive psychological verbs that take nominative subjects and genitive objects. In nominalization, the nominative subject of such verbs becomes genitive while the genitive object is expressed by an idiosyncratically determined prepositional phrase. This is shown below.

(34) a. Deca se sećaju svoga dede.
children-N REFL remember self's-G grandfather-G
'The children remember their grandfather.'

b. sećanje dece na svog dedu
remembering children-G on self's-A grandfather-A
'the children's memory of their grandfather'

The 'reflexive' verb *sećati se* 'to remember' in (34a) takes the nominative experiencer and the genitive theme argument. In nominalization, the experiencer is expressed by the postnominal genitive (or the possessive adjective) while the theme is expressed by the PP headed by the preposition *na*.[71] The examples in (33-34) thus illustrate that nouns inherit theta grids from their related verbs rather than their subcategorization frames, contrary to Chomsky's (1970) assumptions. In other words, nouns must have their own subcategorization frames.

Furthermore, Rappaport (1983 : 119) brings up the following English example to show that it is the argument structure inherited in nominalizations rather than the syntactic structure.

(35) a. Herbie promised Louise to write.

b. Herbie's promise to Louise to write.

c. *Herbie's promise of Louise to write.

In (35a) the verb *promise* takes a direct NP object carrying the goal theta role and the infinitival clause. The corresponding nominal in (35b) takes a prepositional phrase headed by the preposition *to* reflecting the goal theta role. The preposition *of* is precluded in (35c) because it does not explicitly express goal theta role. This tendency for using prepositions with more semantic content or oblique cases that explicitly mark a thematic role of the noun's argument is a wide-spread phenomenon (for details see Comrie & Thompson 1985).

[71]A similar case alternation with these types of psychological predicates is found in Dutch, as discussed in Hoekstra (1986).

The two questions that beg an answer are why the genitive is restricted to be adjacent to the head noun and why two genitives are not allowed. An answer to these questions lies in the distinction between structural and inherent case, the topic of the next section.

4.5.2 Structural vs. Inherent Case: Evidence from Nominalization

In order to account for the peculiarities of Serbian cases exhibited in nominalization, I propose a distinction between structural and inherent case, a distinction different from that of Chomsky (1986b). Specifically, as discussed in Section 3.5 with reference to QNPs, I assume that every noun has two case features, INH(erent) and STR(uctural).

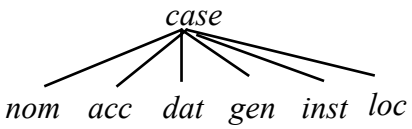
(36) $\left[\text{CASE}\left[\begin{array}{ll}\text{STR} & \textit{case}\\ \text{INH} & \textit{case}\end{array}\right]\right]$

Furthermore, I assume that each feature takes the same range of values: nominative, accusative, genitive, dative, instrumental and locative, as depicted by the case sort in (37).[72]

[72]That prototypical structural cases, such as accusative, can also be inherent, can be supported by the following example in which the verb *pitati* 'ask' selects two accusative complements, one of which is inherent. We will see in (43) below that genitive case assigned by nouns can also be structural or inherent.

i. Profesor pita učenike matematiku.
professor asks students-A mathematics-A
'The professor is asking the students about mathematics.'

(37) The Serbian Case Sort



The case bifurcation in (36) roughly parallels the traditional distinction between direct and oblique case, and the GB distinction between structural and inherent case. As many linguists have argued (e.g. Hale 1983, Freidin & Babby 1984, Zaenen, Mailing & Thråinsson 1985, Belletti & Rizzi 1988), inherent cases are associated with thematic roles and often encode information about thematic role types (e.g. dative for goals, instrumental for instruments, and so on). On the other hand, STRuctural case is a sort of default for any arguments lacking inherent case, and as such can have various thematic roles. I assume that verbs assign STRuctural nominative and accusative, and INHerent genitive, instrumental, dative and locative. I depart from the GB view that structural case is assigned within constituent structure. Instead, I adopt the lexicalist view that it is lexically determined within the complement structure of the assigner.

Structural nominative and accusative of the clausal domain become structural genitive in nominalization, as the examples from the previous section have shown. In other words, I claim that all STR(uctural) case assigned by nouns is genitive, all other cases assigned by nouns are INHerent (but see the exception below).

On the assumption that genitive case assigned by nouns is structural, we are able to account for the strict adjacency of genitive NPs, as exhibited in examples such as (32) above and (38) below.

(38) a. donacija novca bolnicama
donation money-G hospitals-D
'donation of money to hospitals'

b. *donacija bolnicama novca
donation hospitals-D money-G

The ungrammatical example, in which the dative NP precedes the genitive NP, is a permuted version of the grammatical (38a) with the opposite order of arguments. The ungrammaticality of (38b) is due to a violation of the condition on adjacency of structural case assignment formalized in (39).

(39) NP[*str*] < XP

This adjacency condition, or linear precedence rule, states that any two items that meet the above description must be ordered with respect to each other in such a way that an NP bearing structural case precedes all other phrasal elements (i.e. XP). This condition makes reference to phrasal elements and not to heads, i.e. X^0 elements, because the head noun generally precedes all NP complements, as

illustrated by numerous examples above. Furthermore, this adjacency requirement is obeyed in the phrasal domain (nominal, prepositional or adjectival) but not in the clausal domain, where the word order of NPs (with structural or inherent case) is much more flexible (see Section 2.3.5 for some examples). The question why this is so, remains for further research.

The following examples further support the above proposal.

(40) a. pretnja lopovu zatvorom
threat thief-D prison-I
'a threat of imprisonment to the thief'

b. pretnja zatvorom lopovu
threat prison-I thief-D

The first example represents the neutral order of the internal arguments of the deverbal noun *pretnja*, in which the NP with the dative case precedes the NP with the instrumental case. The second example shows that it is possible to permute this order. I contend that the above permutation is possible since both of the two arguments have an inherent case, hence they need not obey the adjacency requirement imposed for structural case. The corresponding verb *pretiti* selects the NPs with same inherent cases, as was illustrated in (28b) above.

Under the above proposal, we can also account for the ungrammatical examples like (30b-c) above containing two postnominal genitive NPs. On the

assumption that these genitives are structural, the construction is ruled out by the following condition, prohibiting an assignment of two structural cases by the same predicate.[73]

(41) *COMPS <NP[*str*] ... NP[*str*]>

This condition, which says that the two complement NPs with structural cases are prohibited, applies to verbs as well as nouns. The ungrammatical English example in (31c) can also be explained using this reasoning. Specifically, the English preposition *of*, being a structural case marker analogous to the Serbian genitive case morpheme, cannot be used to case mark two NP arguments of a single predicate.[74]

The claim that in the constructions (30b-c) we are dealing with two structural genitives can be supported by the fact that the corresponding verb *opisati* 'describe' selects two arguments, with cases assigned structurally, namely nominative and accusative. This is shown below.

(42) Jovan je lepo opisao Ameriku.
John-N AUX nice described America-A
'John described America well'.

[73]A similar proposal was also made by Vergnaud (1985) for French.
[74]In addition, English prohibits a sequence of two prenominal genitives (cf. i.) indicating that this genitive, although morphologically distinct from the *of*-genitive, is also structural.

i. *John's America's description

The above proposal can also explain the following constructions involving nouns such as *lišavanje* 'deprivation', which do allow two genitive complements.

(43) a. lišavanje brata njegovog nasledstva
deprivation brother-G his-G inheritance-G
'depriving the brother of his inheritance'

b. lišavati brata njegovog nasledstva
deprive-INF brother-A his-G inheritance-G
'to deprive the brother of his inheritance'

In traditional grammar books the second genitive in (43a) is called the ablative genitive, expressing 'separation' or 'motion away' from the object denoted by a verb/noun, and is often substituted by the PP headed by the preposition *od* 'from' (cf. *lišavanje brata od njegovog nasledstva* 'deprivation of the brother from his inheritance'). Other nouns that behave like *lišavanj*e are *oslobadjanj*e 'freeing' and *razrešavanj*e 'releasing' derived from the verbs *oslobadjati* and *razrešavati* that take accusative and ablative genitive complements.

This, at first, problematic example, can be explained if we assume that one genitive is inherent and the other is structural, as evidenced by the corresponding ditransitive verb *lišavati* 'deprive' in (43b) which takes an accusative and a genitive complement. As argued above, in the clausal domain, accusative is

structural whereas genitive is inherent. In nominalization, structural cases of verbs (nominative and accusative) become genitive, inherent cases being retained under the nominalization process. Thus, the second genitive in (43a) is inherent, carrying a thematic role of Source. The permutation of the two genitives in (43a) is not possible, for the adjacency condition on structural case in (39), would be violated (cf. **lišavanje njegovog nasledstva brata* 'deprivation his-G brother-G inheritance-G').

In sum, in this section, it is shown that the distribution of postnominal arguments can be explained if the distinction between structural and inherent case is adopted. The above analysis can automatically be extended to other Slavic languages which show the same behavior with respect to case.[75]

4.6 THE ARGUMENT STRUCTURE OF SERBIAN NOUNS

In this section, I explain how the complementation system works in Serbian and provide motivations for the argument structure (ARG-S) feature, distinct from both the VALENCE feature, where grammatical functions are listed,

[75]As an illustration, Russian prohibits two structural genitive NPs (cf. i.) but allows two genitives with nouns such as lišenie (cf. ii.), one of which is an ablative, or in my terms, inherent genitive. (Both examples are reproduced from Rappaport 1992 : 247.)

i. *kritika formalistov sovetskih učenyih
criticism formalists-G Soviet-G scholars-G
'the criticism of the formalists by Soviet scholars'

ii. lišenie nasledstva ego brata
deprivation inheritnace-G his-G brother-G
'the deprivation of his brother of inheritance.'

and from the CONTENT feature where thematic roles of the predicate's arguments are encoded. The intent of this section is to show how it is possible to account for the alternation of arguments without resorting to movement. In particular, the observed alternation between possessive adjectives and genitive NPs for expressing the agent or the theme theta role can be captured via linking rules, whose purpose is to relate syntactic expression of a predicate's arguments to the predicates meaning.

4.6.1 Argument Structure and Linking

The issue of argument structure involves determining the basis on which the argument structure is formed (e.g. thematic hierarchy, term/oblique distinction) and the linking rules that map elements in the argument structure onto the corresponding grammatical relations. I first propose general association rules that map elements from the ARG-S to those on the VALENCE lists, showing how this mapping is able to account for all the possible combinations and disallow bad ones. I then state general grammatical constraints imposed on the ARG-S order.

I propose that Serbian argument-taking nouns obey the association rules in (44), whose purpose is to relate the noun's arguments with their syntactic realization.

(44) a. Link the first element on the ARG-S to the SPR (specifier), if there is one.

b. Link the remaining elements on the ARG-S to the corresponding COMP(lements), preserving the order.

These linking rules are formalized below.

(45)
$$\begin{bmatrix} \textit{noun - word} \\ \text{VALENCE}\begin{bmatrix}\text{SPR [1]} \\ \text{COMPS [2]}\end{bmatrix} \\ \text{ARG - S [1]} \oplus \text{[2]} \end{bmatrix}$$

From this attribute-value matrix, it can be observed that the ARG-S value is just the SPR (specifier) value appended (indicated by the '?'?symbol) to the COMPS (complements) value. Item [1] on the ARG-S could be an empty list, accounting for the optionallity of subject arguments. Since the argument structure ordering correlates with the ordering of elements on the VALENCE lists, the need for an independent ARG-S feature is not apparent. There are two reasons why it is needed, however. First, it allows us to underspecify ARG-S of nouns, so that we can get various alternations of argument realizations without the need for syntactic movement. Second, it allows us to define the notion of a binder for a reflexive in terms of ARG-S prominence, i.e. as the leftmost element on the ARG-S.

Using the concrete example, I show how the above association rules work. Let us start with the lexical entry of a dyadic noun *vraćanje* 'going back', derived from the corresponding imperfective verb *vraćati se* 'to go back'.

(46) *vraćanje*:

$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & <([1]\text{AP})> \\ \text{COMPS} & <(\text{NP}[\textit{gen}]),[2]\text{NP}[\textit{dat}]> \end{bmatrix} \\ \text{ARG-S} \quad <([\ ]_i),\ [2]_j> \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \textit{goback-rel} \\ \text{AGENT}\ i \\ \text{GOAL}\ j \end{bmatrix} \end{bmatrix}$$

From this lexical entry we observe the following. While both ARG-S and VALENCE are part of the syntactic (CAT)egory attribute, thematic relations are part of the semantic CONT(ent) attribute, corresponding to Lexical-Conceptual structure of Rappaport & Levin (1988) and Grimshaw (1990). The aspectual hierarchy is not included in the semantic content of a nominal, for the distinction between process and result nominals can be captured by the presence vs. absence of ARG-S feature, as it will be shown in Section 5.2 of Chapter 5.

In the lexical entry of this noun it is encoded that it takes two arguments on the ARG-S list. These arguments bear theta roles of agent and goal, formally indicated by the subscripted indices *i* and *j,* respectively. The goal argument is prelinked to the (inherent) dative NP complement (cf. tag [2]) capturing the direct correspondence between the goal theta role and the inherent dative case. However, the optional agent argument is underspecified (indicated by the empty list [ ]) as to how it is syntactically realized. It is at this point that the linking rules in (45) come into play. These rules would permit the agent to be realized as a specifier, as in J*ovanovo vraćanje svojoj ženi* 'John's going back to his wife', which has the lexical entry in (47a). The above rules also allow the agent to be realized as the genitive NP complement, as in *vraćanje izbeglica svojim kućama* 'the refugees' going back to their homes', which has the lexical entry in (47b).

(47) a.
$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & <[1]\text{AP}> \\ \text{COMPS} & <[2]\text{NP}[\textit{dat}]> \end{bmatrix} \\ \text{ARG-S} & <([1]_i), [2]_j> \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \textit{goback-rel} \\ \text{AGENT } i \\ \text{GOAL } j \end{bmatrix} \end{bmatrix}$$

b.
$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & < > \\ \text{COMPS} & <[1]\text{NP}[\textit{gen}],[2]\text{NP}[\textit{dat}]> \end{bmatrix} \\ \text{ARG-S} & <([1]_i), [2]_j> \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \textit{goback-rel} \\ \text{AGENT } i \\ \text{GOAL } j \end{bmatrix} \end{bmatrix}$$

Either lexical entry conforms to the linking rules in (45). However, the association rules in (45) would rule out the lexical entry below in which there are more grammatical functions than there are arguments.

(48)
$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & <\text{AP}> \\ \text{COMPS} & <[1]\text{NP}[\textit{gen}],[2]\text{NP}[\textit{dat}]> \end{bmatrix} \\ \text{ARG-S} & <[1]_i, [2]_j> \end{bmatrix} \\ \text{CONT} \begin{bmatrix} \textit{goback-rel} \\ \text{AGENT } i \\ \text{GOAL } j \end{bmatrix} \end{bmatrix}$$

Let us take a look at another, more complex noun, like the triadic noun *vraćanje* 'returning', homophonous with the dyadic one. For ease of reference, a triadic noun will be called *vraćanje*3. This noun is derived from the imperfective

verb *vraćati* 'to return' which takes three arguments having the theta roles of agent, theme and goal.[76] The lexical entry of *vraćanje*3 would look as follows.

(49) *vraćanje*3:

$$\left[\begin{array}{l} \text{CAT}\left[\begin{array}{l}\text{VALENCE}\left[\begin{array}{l}\text{SPR} \quad <(\text{AP})> \\ \text{COMPS} \quad <(\text{NP}[\textit{gen}]),[1]\text{NP}[\textit{dat}]>\end{array}\right] \\ \text{ARG-S} \quad <([\ ])_i\,,\ [\ ]_j,\ [1]_k>\end{array}\right] \\ \\ \text{CONT}\left[\begin{array}{l}\textit{return-rel} \\ \text{AGENT}\ i \\ \text{THEME}\ j \\ \text{GOAL}\ k\end{array}\right] \end{array}\right]$$

This noun has three arguments on the ARG-S list with theta roles agent, theme and goal, indicated by the corresponding subscripted referential indices. Both the optional agent argument and the obligatory theme argument are underspecified as to how they are syntactically realized. The actual realization of these arguments must be in accordance with the linking rules in (45). When they apply to (49), we would obtain the following realizations for the agent and theme argument.

(50) a.

$$\left[\begin{array}{l} \text{CAT}\left[\begin{array}{l}\text{VALENCE}\left[\begin{array}{l}\text{SPR} \quad <[2]\text{AP}> \\ \text{COMPS} \quad <[3]\text{NP}[\textit{gen}],[1]\text{NP}[\textit{dat}]>\end{array}\right] \\ \text{ARG-S} \quad <[2]_i\,,\ [\ 3]_j,\ [1]_k>\end{array}\right] \\ \\ \text{CONT}\left[\begin{array}{l}\textit{return-rel} \\ \text{AGENT}\ i \\ \text{THEME}\ j \\ \text{GOAL}\ k\end{array}\right] \end{array}\right]$$

[76]It is interesting to note that in Polish, the reflexive clitic *sie* is retained in nominalization, so that the Polish counterparts of the nouns in (46) and (49) are distinguished morphologically. For data, see for example, Comrie (1976), Comrie & Thompson (1985) and Rozwadowska (1988).

b.
$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & < > \\ \text{COMPS} & < [2]\text{NP}[gen], [1]\text{NP}[dat] > \end{bmatrix} \\ \text{ARG-S} & < [2]_j, [1]_k > \end{bmatrix} \\ \text{CONT} \begin{bmatrix} return\text{-}rel \\ \text{AGENT } i \\ \text{THEME } j \\ \text{GOAL } k \end{bmatrix} \end{bmatrix}$$

c.
$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{VALENCE} \begin{bmatrix} \text{SPR} & < [2]\text{AP} > \\ \text{COMPS} & < [1]\text{NP}[dat] > \end{bmatrix} \\ \text{ARG-S} & < [2]_j, [1]_k > \end{bmatrix} \\ \text{CONT} \begin{bmatrix} return\text{-}rel \\ \text{AGENT } i \\ \text{THEME } j \\ \text{GOAL } k \end{bmatrix} \end{bmatrix}$$

In (50a), all three arguments are syntactically realized. The agent is realized as a specifier, the theme is realized as a genitive complement and the goal is the dative NP. This entry would correspond to an example like *Jovanovo vraćanje dece svojim roditeljima* 'John's returning of the children to his parents'. In this example both the specifier and genitive complement appear together. The theta role of a specifier is higher on the thematic hierarchy (see (52) below) than the genitive COMP.[77] The linking rules in (45) above can account for this fact, i.e., they would preclude the genitive NP from being the first element on the ARG-S.

In (50b-c), only the theme and goal are syntactically realized. In (50b), the theme is realized as the genitive NP, corresponding to example like *vraćanje dece njihovim roditeljima* 'the returning of the children to their parents'. In

[77]Similar facts are found in English, where the prenominal genitive always has a higher role than the postnominal *of*-phrase.

(50c), the theme is realized as a specifier, as in *detetovo vraćanje njegovoj kuć*i 'the returning of the child to his house'.

In sum, the linking rules in (45) are able to account for all possible syntactic realizations of arguments without resorting to syntactic movement. So far, we haven't said what the ordering on the ARG-S is based on, i.e. what the general grammatical constraints on ARG-S order are. Based on the facts presented in Sections 4.4 and 4.5, the argument structure of Serbian nouns is governed by the following obliqueness hierarchy.

(51) [ARG-S: AP_{ref} < NP[STR:*gen*] < NP¬[STR:*gen*] < PP]

This hierarchy, defined in terms of syntactic categories, is interpreted as a constraint on the ARG-S ordering. It says that referential APs or what traditional grammarians call 'possessive' adjectives (see Section 3.3.4) have the highest rank on the ARG-S, while PPs have the lowest rank. Furthermore, NPs with structural genitive are less oblique than all other NPs, i.e., NPs that are not marked for structural case. This hierarchy correlates with the default linear ordering of the noun's dependents.

As noted above, the ARG-S seems to be sensitive to thematic hierarchy. In particular, we noted that the theta role of the argument expressed by the SPR is higher than the theta role of the genitive NP complement. Since all specifiers are expressed by referential APs, and since these APs have the highest rank on the ARG-S , the ARG-S ordering in (51) automatically accounts for this fact, without

recourse to thematic hierarchy. However, we will see in the next section that the ordering of NPs bearing inherent case obeys the thematic hierarchy, given below.

(52) Agent/Experiencer < Instrument < Goal/Source/Location < Theme

This hierarchy says that either the agent or experiencer is the highest and the theme is the lowest argument. The purpose of the above theta role labels is to semantically distinguish each argument of a given predicate. Although they are cognitive in nature, theta roles play an important role in various linguistic processes, as for example, in control (cf. Jones 1985) and binding (cf. Wilkins 1988).

Before giving further justification for the existence of the ARG-S feature independent of the VALENCE feature, I state rules of linear ordering of constituents in the noun phrase, showing how they relate to the ordering on the ARG-S list.

4.6.2 Linear Precedence Rules

As discussed in Section 3.2 of Chapter 3, the fact that SPRs occur prenominally while COMPS occur postnominally, is the result of the following linear ordering constraints.

(53) a. SPR < HEAD

b. HEAD < COMPS

This constraint, applying to all heads, says that specifiers precede the head and complements follow it.

The linear ordering of complements of nouns is regulated by the following linear precedence (LP) rules.

(54) a. NP[str] < XP

b. NP < PP

The first rule captures the adjacency condition on structural case assignment, as discussed earlier. It says that structural case must precede all other phrasal elements. The second rule says that all NPs precede PPs (cf. the ungrammatical **pomaganje od strane države izbeglicama* 'the helping by the government (to) the refugees-D'). This rule still allows for relative freedom of NPs with inherent cases. To capture the 'default' order for more than one NP with inherent case, we must refer to thematic hierarchy since these NPs (and perhaps PPs) normally follow thematic hierarchy given in (52). The following example illustrates the ordering of NP complements with inherent cases.

(55) pretnja lopovu zatvorom

threat thief-D prison-I

'a threat of imprisonment to the thief'

In this example, the NP with the dative case precedes the NP with the instrumental case. This corresponds to the order on the thematic hierarchy in (52), whereby goal theta role, expressed by the dative case, is 'closer' to the predicate than the instrument, expressed by the instrumental case.

However, in the marked context, the order of these complements can be reversed, as shown below.

(56) pretnja zatvorom lopovu
threat prison-I thief-D

Functionally speaking, the order of NPs with inherent cases can be reversed since their case markings reflect their thematic role types (e.g. dative for goals, instrumental case for instruments). This is permitted by the LP rules in (54), which place no constraint on the relative order of NPs bearing inherent case. However, this is not possible with NPs bearing structural case, for they are not tied to a specific thematic relation, as evidenced by examples from Section 4.4, in which the NP with structural genitive can have various thematic roles (e.g. theme in (14a), an agent in (17a), or an experiencer in (17b)).

4.6.3 Motivation for ARG-S: Binding

The motivation for the ARG-S can also be found in anaphor binding. Since anaphor binding is discussed in detail in the next chapter, here I briefly show some crucial evidence that justifies the independent ARG-S. Specifically, I show that a binder must be a(rgument)-subject, i.e. the first on the ARG-S, regardless of whether it is realized as an AP or NP[*gen*]. I start with the following two examples.

(57) a. [NP Vraćanje izbeglica$_i$ svojim$_i$ kućama] se odvijalo sporo.
returning refugees-G self's-D houses-D SE went slow
'The refugees' returning to their homes was slow.'

b. Iznenadili smo se 'we were surprised'
[NP Jovanovim$_i$ vraćanjem dece$_j$ svojim$_{i/*j}$ roditeljima].
John's-ADJ returning children-G self's-D parents-D
'We were surprised by John's returning the children to his parents.'

Recall from the discussion in Section 4.6.1, that these two nouns (namely *vraćanje* and *vraćanje*$_3$), although homophonous in form, have two different valences and hence, different argument structure (cf. (46) with (49)). The first example illustrates that the postnominal genitive NP *izbeglica* 'refugees', being an

agent, is able to bind the reflexive possessive *svojim* embedded in the goal argument. That only an argument that is the highest on the ARG-S is an eligible binder is evidenced by the second example, in which the ditransitive noun *vraćanje* homophonous with the monotransitive one, allows an agent argument (cf. the possessive adjective *Jovanovim*) but not the theme argument (cf. the genitive NP *dece*) to bind the possessive reflexive pronoun *svojim.* Note that these facts can be explained using solely the obliqueness hierarchy in (51), without resorting to the thematic hierarchy. More precisely, in (57a), the highest argument on the ARG-S is the genitive NP, hence, it is the binder. In (57b), the highest argument on the ARG-S is the AP, hence, it is the binder. However, the obliqueness hierarchy in (51) would not be able to account for the following example.

(58) Ministar policije naredio je 'The minister of police ordered'
hapšenje demonstranata$_i$ zbog *svog$_i$/njihovog$_i$ agresivnog ponašanja.
arresting demonstrators-G because self's/their aggressive behavior
'the arresting of demonstrators for their aggressive behavior.'

In this example, the theme argument of the noun *hapšenje*, expressed by the genitive NP *demonstranata*, despite being the highest on the ARG-S, cannot bind the possessive reflexive *svog* embedded in the adjunct PP. This example shows that for purposes of anaphor binding, only agent arguments count as antecedents of the reflexives. Although it would be pragmatically deviant, the possessive

reflexive *svoj* in (58) could refer to the clausal subject *ministar policije*. Besides agents, experiencers of psychological nouns are also eligible antecedents for reflexives, as shown in Chapter 5. Thus, in the nominal domain, only 'logical' subjects can be binders of reflexives, where by the L(ogical) subject is meant either an agent or an experiencer, which have the same rank on the thematic hierarchy in (52). This contrasts sharply with binding in the clausal domain, where only the grammatical subjects, irrespective of their theta role, can bind reflexives, hence, the traditional term (grammatical) subject-orientation of reflexives. By having an ARG-S independent of both the semantic content and the valence attribute, we are able to define binding theory in terms of prominence on the ARG-S (see Section 5.2). Furthermore, as pointed out by Booij (1992), by positing a predicate-argument structure independent of lexical-conceptual structure, we can also explain the valence alternation of verbs such as *eat, sing, read* and their corresponding nominals (see examples (21-22) with detransitivized process nominals and the discussion in the next section). Both transitive and intransitive counterparts have the same number of arguments (they are transitive) at the level of lexical-conceptual structure. But at the level of predicate-argument structure, the valency of these verbs and their corresponding nominals is different, transitive taking two arguments, intransitive only one. This is akin to what Grimshaw (1990) calls argument suppression.

4.6.4 The Status of Agentive PPs

We saw above that agents count as binders for reflexives. However, not all agents can be binders. In particular, oblique agents, expressed by the PP headed by the preposition *od strane* 'from the side of' do not count as binders, as the following example illustrates.

(59) Iznenadili smo se 'We were surprised'
poništavanjem glasova od strane socijalista$_i$ radi *svoje$_i$/njihove$_i$ pobede.
annulment votes by part socialists because self's/their victory
'We were surprised by the annulment of votes by the socialists for their victory.'

In this example, the reflexive possessive *svoj* embedded in the adjunct prepositional phrase cannot refer to the agentive prepositional object *socijalista*. Rather, the regular possessive pronoun *njihove* must be used.[78] This example indicates that the agentive PP phrase has no argument status, an observation pointed out by many linguists (e.g. Zubizarreta 1987, Grimshaw 1990). Note that

[78]Moreover, the agentive *od strane* phrase cannot bind NPs in an argument position, as shown below.

i. *opis sebe$_i$ od strane ovog studenta$_i$
description self-G from side this student
'*the description of himself by this student'

if we were to assume that the oblique agent phrase is present on the ARG-S, neither the obliqueness hierarchy in (51) nor the thematic hierarchy in (52) would be able to predict its behavior with respect to anaphor binding. In particular, the oblique agent would fulfill both conditions for binders: it would be the highest on the thematic hierarchy and it would be less oblique than an adjunct PP. For this reason, I propose that agentive PPs are adjuncts rather than arguments.

In HPSG, adjuncts are licensed by the Head-Adjunct Schema discussed in Section 3.1.3, devised for combining modifying and modified phrases. It is further assumed that adjuncts, through their own head feature called MOD(ified), select a modified phrase. Based on this background, the lexical entry of the preposition *od strane* look as follows.

(60) *od strane:*

$$\begin{bmatrix} \text{CAT} \begin{bmatrix} \text{MOD} \begin{bmatrix} \text{CAT N'} \\ \text{CONT [1]} \begin{bmatrix} \text{AGENT } i \\ \text{THEME } j \end{bmatrix} \end{bmatrix} \\ \text{VALENCE|COMPS} < \text{NP}_i[gen] > \end{bmatrix} \\ \text{CONT [1]} \end{bmatrix}$$

In this entry it is shown that the preposition, via its head feature MOD, selects N'. This N' selects two arguments with theta roles agent and theme. The CONT(ent) of this N' is the same as the content of the preposition itself, as indicated by the same tag [1], appearing in both places. This is guaranteed by the Semantics principle, given in (20) of Chapter 3, which says that the content value of the adjunct is inherited by the entire phrase. On its valence list, the preposition *od strane* selects an NP [*gen*] as a complement. This complement has the same theta role as the theta role selected by a noun (i.e. N'), namely the agent theta role,

indicated by the subscripted index *i* appearing in two places. In other words, although the noun selects the agent theta role, that role is syntactically expressed by the adjunct PP, headed by the preposition *od strane*.

It is important that the lexical entry of the preposition *od strane* in (60) indicate that the noun (i.e. N') be transitive, i.e., that it select for both the agent and the theme argument. This is because cross-linguistically, agentive PPs are licensed by the presence of the theme argument (cf. Lebeaux 1986, Zucchi 1993). This was illustrated by the Serbian example (23) above, repeated below as (61).

(61) a. *poništavanje od strane političara
annulment from side politicians
*'the annulment by the politicians'

b. poništavanje glasova od strane političara
annulment votes-G from side politicians
'the annulment of votes by the politicians'

To put it formally, the agentive PP is licensed only if the noun's argument structure contains the obligatory theme argument, as in (62).

(62) ARG-S: <(agent), theme>

(62) can be viewed as a constraint on occurrence of agentive PPs. It will not only rule out examples like (61a), but also examples like (63), in which the agentive PP occurs with intransitive nouns, i.e., nouns lacking the theme argument.

(63) *plakanje od strane male dece
crying from side small children
*'the crying by small children'

However, the constraint in (62) would incorrectly rule out the Serbian example (64) below, in which the agentive *od strane* phrase occurs with the noun that has no syntactically realized theme argument, i.e. the noun that has been detransitivized (see Section 4.4 for discussion).

(64) Ocenjivanje od strane moje učiteljice je objektivno.
grading from side my-G teacher-G is objective
'The grading by my teacher is objective.'

The process nominal *ocenjivanje* 'grading' is detransitivized (cf. the transitive version *ocenjivanje učenika od strane profesora* 'the grading of the students by the professors'), which technically means that in the semantic CONT(ent) of this nominal there is a theme participant that is not present on the ARG-S. The lexical entry in (60) which states that the N' has both the agent and the theme participants in its CONT(ent) attribute, automatically accounts for this fact. In

other words, all that is needed is that the agentive PP be licensed by the presence of the theme argument encoded in the semantic content of a noun, irrespective of whether this argument is syntactically realized or not. This constraint is formalized below.

(65) $\text{CONT}\left[\begin{array}{l}\text{AGENT}\\ \text{THEME}\end{array}\right]$

Examples like (64) provide direct evidence for the separation of the 'syntactic' ARG-S from the semantic CONT(ent) attribute, which corresponds to Grimshaw's lexical conceptual structure. Furthermore, the fact that process nominals can also occur without any arguments (as in (66) from Zucchi 1993 : 159), speaks in favor of distinguishing between the ARG-S and the CONT(ent) attribute.

(66) a. The destruction went on and on.
b. The destruction lasted for days.
c. The destruction started at noon.

The fact that process nominals can appear without any arguments (see also the Serbian example (21b)) means that such nouns lack ARG-S altogether. The function of nouns without the ARG-S is simply to name the process. The lexical entry of the English argumentless process noun *destruction* would be as follows.

(67)
$$\begin{bmatrix} \text{ARG - S} < > \\ \text{CONTENT} \begin{bmatrix} \text{EVENT } i \\ \text{RESTR} \left\{ \begin{bmatrix} \text{INSTANCE } i \\ \text{TYPE } \textit{destruction} \\ \text{AGENT} \\ \text{THEME} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

This noun has an empty ARG-S list and no specification for semantic arguments in the VALENCE features (not shown). However, in the content of this noun, corresponding to the lexical-conceptual structure of Grimshaw (1990), it is indicated that it refers to an event of the type *destruction*, and has two participants with theta roles of agent and theme. It is at this level that the two types of nouns meaning *destruction* are related. Namely, *destruction* that has an ARG-S as in (62) (corresponding to the sequence *destruction of the city by the enemy*) and the other one that lacks it, as in (67) (corresponding to examples in (66)).

4.7 SUMMARY AND CONCLUSIONS

In this chapter, I have discussed the argument structure of nouns and their case assigning abilities. I first described morphological and syntactic differences between process and result nominals in Serbian. I showed that Serbian deverbal nouns with process denotation inherit the argument structure of their morphologically related verbs, rather than their subcategorization frames, an observation made by many linguists (e.g. Rappaport 1983, Hoekstra 1986, Lebeaux 1986, Grimshaw 1990). I explained how the complementation system

works for Serbian nouns, providing motivations for the argument structure (ARG-S) feature, distinct from both the VALENCE feature, where the grammatical functions are listed and the CONTENT feature, where the thematic roles of the noun's arguments are encoded. The observed alternation between possessive adjectives and genitive NPs for expressing the agent or the theme theta role can be captured via linking rules, which relate syntactic expression of a predicate's arguments to the predicate's meaning.

It was also shown that the order of postnominal NP-arguments is governed by the structural-inherent case dichotomy. Specifically, noun phrases with structural case assigned by the nouns must always precede noun phrases with inherent cases. The claim that nouns are able to assign structural case is in sharp contrast to previous claims by the GB linguists that nouns, unlike verbs, are defective case assigners.