CASE ASSIGNMENT AND ARGUMENT REALIZATION IN NOMINALS

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Case assignment and argument licensing in process nominals, that is, nouns such as *destruction* that are morphologically related to verbs, are assumed to operate in a verblike manner both within government-and-binding theory and, more recently, within the distributed morphology framework. The data from Russian challenge this approach and reveal that there is an important difference between the verbal and the nominal domains: case assignment in verbs is sensitive to the underlying argument structure, but in nominals to surface structure, that is, the collection of overt arguments. We propose a hierarchy of case-assignment rules that applies in the nominal domain. Moreover, within the nominal domain, case assignment is uniform: the same rules apply to different types of nominals, including prototypical process nominals and relational nouns. The main theoretical advantage of our lexicalist, constraint-based approach is that it can capture similarities between the verbal and the nominal domains, seen in the assignment of inherent and lexical cases, but also in their fundamental differences.

Keywords: nominals, case assignment, argument mapping, simpler syntax, Russian

1. INTRODUCTION. Despite the fact that the analysis of nominals has for a long time received a certain amount of attention (e.g. Chomsky 1970, Grimshaw 1990), argument realization and case assignment in the nominal domain have been primarily viewed through the lens of verbal syntax. Here we analyze nominals on their own terms, proposing a lexicalist, constraint-based approach to case assignment in Russian nominals, couched within the SIMPLER SYNTAX framework (Culicover & Jackendoff 2005).

We pay attention predominantly to PROCESS NOMINALS that are morphologically related to verbs. The semantic argument structure of these nominals is essentially the same as that of their cognate verbs, even when their syntactic argument structure differs. For instance, the process nouns *construction* and *attack* are understood as having the same agent and patient arguments as the verbs *construct* and *attack*, even if these arguments are not expressed, as in **The (government's) construction (of the city)** *took a long time* and **The (army's) attack (on the city)** *continued for days*.

An important theoretical conclusion from our analysis is that case assignment and argument licensing in nominals operate on somewhat different principles than in the verbal domain. The two domains are to some extent similar, in that case marking in both can be divided into structural, inherent (thematically based), and lexical (quirky) case. However, we call attention to three differences. First, the structural cases in the two domains need not be the same. In Russian, for example, the structural cases in the verbal domain are nominative and accusative; in the nominal domain, they are genitive and instrumental. Second, if a verb assigns a lexical case, its nominalization typically assigns the same one, but there are also divergences.

The third difference is more substantial. In Russian, structural case in the verbal domain is assigned on the basis of argument structure. The agent and patient of an active transitive verb are marked nominative and accusative, respectively, and these markings are invariant whether or not the other argument is expressed. We call this sort of marking ARGUMENT-BASED structural case. In the nominal domain in Russian, by contrast, structural case is assigned on the basis of surface structure. In particular, the agent argument may be marked either instrumental or genitive, depending on whether the patient is expressed and marked with a structural genitive. We call this sort of marking SURFACE-BASED structural case. We work out an account of this difference in §§2 and 3.

Section 4 compares our approach to other proposals in the literature. We discuss configurational theories of case assignment (Marantz 1991, Zimmerman 2002, 2003, Baker 2015), case assignment by functional heads in the MINIMALIST PROGRAM (Woolford 2006, 2015), and an approach to case in nominalizations based on DISTRIBUTED MORPHOLOGY (Alexiadou 2001, 2011). While our approach is conceptually similar to configurational theories of case assignment, there are important differences between our proposal and those advocated in the previous literature.

Finally, §5 shows that it is a mistake to limit discussion of nominals to the class of ARGUMENT STRUCTURE NOMINALS identified by Grimshaw (1990), despite the frequent citation of this distinction in the literature—first, because her approach still does not account for case marking in Russian nominals, and second, because the line drawn between these and other nominals cannot be maintained in light of data even from English.

2. CASE ASSIGNMENT IN RUSSIAN NOMINALS: EMPIRICAL GENERALIZATIONS. This section identifies the three types of case—structural, inherent (thematic), and lexical case—and discusses their distribution and interaction.

2.1. THE GENITIVE AS AN INDEPENDENT STRUCTURAL CASE. Genitive case is assigned to an argument of a nominal irrespective of its thematic role, and thus can be viewed as a structural case (Yip et al. 1987, Marantz 1991, Alexiadou 2001, Baker 2015; see Babby 1997 on Russian). It appears on arguments of both unergative (1a) and unaccusative nominals (1b), whose arguments are agents and patients, respectively (see Rappaport 1992:243–44, Schoorlemmer 1998:217).[1]

(1) a. razmyšleni-e Ivan-a   (na protjaženi-i   čas-a)
         thinking-NOM Ivan-GEN for duration-PREP hour-GEN
             'Ivan's thinking (for one hour)'
    b. isčeznoveni-e   Ivan-a   (za čas)
         disappearance-NOM Ivan-GEN in hour.ACC
             'Ivan's disappearance (in an hour)'

If only a single argument of a two-argument nominal is expressed, it is marked with the genitive case, irrespective of whether it is a patient (2a), an agent (2b), or an experiencer (2c).[2]

(2) a. razrušeni-e   gorod-a (za čas)
         destruction-NOM city-GEN in hour.ACC
             'the destruction of the city (in an hour)'

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[1] Russian has one default nominalization morpheme, *-nie* (Sadler et al. 1997:188). Other morphological suffixes, such as *-ka*, are also available, but are considered to be nonproductive (Rappaport 1992). In Russian, as in English, the type of interpretation, process vs. result, cannot be predicted based on morphology alone. One exception is prefixed *-nie* nominals with secondary imperfective morpheme *-iv(a)*: they always have a process interpretation (Sadler et al. 1997:190).

In these and subsequent examples, we append a duration modifier in order to show that they are process rather than result nominals. We arbitrarily mark the head nominal with nominative case; in a real sentence, its case would be determined by its syntactic context. The following abbreviations are used in glosses: 2IPFV: secondary imperfective, ABS: absolute, ACC: accusative, AUX: auxiliary, DS: double subject, ERG: ergative, F: feminine, GEN: genitive, IMP: imperative, INF: infinitive, INST: instrumental, IPFV: imperfective, N: neuter, NEG: negation, NOM: nominative, PFV: perfective, PL: plural, POSS: possessive, PREP: prepositional, PRS: present, PRT: particle, PST: past, REFL: reflexive, REL: relational, SG: singular.

[2] A common assumption in the literature is that constructions with unexpressed patient arguments as in 2b are not process nominals (Grimshaw 1990, Alexiadou 2001, Borer 2014). We return to this question in §5, where we challenge this assumption.

    b. objasneni-e   učitelj-a   (na protjaženi-i   dv-uh   čas-ov)
        explanation-NOM teacher-GEN for duration-PREP two-GEN hours-GEN
           'the explanation by the teacher (for two hours)'
    c. ljubov'   roditel-ej
        love.NOM parents-GEN
           'parents' love'

In transitive constructions with two expressed arguments, the genitive is normally assigned to a patient argument, and the agent receives instrumental, as in 3.

    (3) razrušeni-e   gorod-a vrag-om
         destruction-NOM city-GEN enemy-INST
           'the destruction of the city by the enemy'

However, if the patient receives idiosyncratic lexical case, the agent will be case-marked with the genitive. For instance, in 4a, the verb *upravljat'* 'govern' assigns instrumental case to its patient, and so does the nominal *upravlenie* 'government' in 4b. In this situation the agent receives genitive case. Another example is given in 5, this time with lexical dative case.

    (4) a. Prezident   upravljaet   stran-oj.
           president.NOM govern.IPFV.3SG.PRS country-INST
              'The president governs the country.'
      b. upravleni-e   prezident-a/ *prezident-om stran-oj
           government-NOM president-GEN/ president-INST country-INST
             (v   tečeni-i   god-a)
              for duration-PREP year-GEN
           'the government of the country by the president (for a year)'
    (5) a. Det-i   podražajut   roditelj-am.
           children-NOM imitate.IPFV.3PL.PRS parents-DAT
              'Children imitate parents.'
      b. podražani-e   det-ej/   *det'-mi   roditelj-am
           imitation-NOM children-GEN/ children-INST parents-DAT
             'the imitation of parents by (their) children'   (Babby 1997:216, ex. 26a,b)

Although genitive case appears on agents and patients alike, both arguments of a transitive nominal cannot appear in the genitive at the same time, as 6 shows.

    (6) *objasneni-e   zadač-i učitelj-a (na protjaženi-i   dv-uh
         explanation-NOM task-GEN teacher-GEN for duration-PREP two-GEN
           čas-ov)
           hours-GEN
        intended: 'the explanation of the task by the teacher (for two hours)'

The badness of 6 cannot be attributed to the assignment of genitive case to the agent argument, since a single agent argument in the genitive is possible, as in 1a and 2b. The ungrammaticality of 6 is also not due to a ban on two identical cases within a nominal. For instance, the verb *bojat'sja* 'fear' in 7a lexically case-marks its stimulus argument with the genitive. In 7b, the corresponding nominal *bojazn'* 'fear' marks its stimulus with the genitive as well, but its experiencer argument is also genitive.

    (7) a. Rebenok boit-sja   čuž-ih   ljud-ej.
           child.NOM fear.IPFV.3SG.PRS-REFL other-GEN people-GEN
             'The child is afraid of strangers.'
      b. bojazn'   rebjenk-a čuž-ih   ljud-ej
           fear.NOM child-GEN other-GEN people-GEN
             'the child's fear of strangers'

The correct generalization is that two identical STRUCTURAL cases are ruled out, as in 6 (cf. Galkina-Fedoruk 1958, Rozwadowska 1988:163, Padučeva 2009).[3] Two identical cases can cooccur as long as they are ontologically distinct, namely, if one is structural and the other lexical.

As further evidence that genitive is a structural case, we observe that it is a default case for arguments of RELATIONAL NOUNS (so-called 'ultra-nominal nouns'; Barker & Dowty 1993), such as those in 8.

> (8) a. obložk-a   knig-i
>   cover-NOM book-GEN
>   'the cover of the book'
>   b. otec   mal'čik-a
>   father.NOM boy-GEN
>   'the father of the boy'

Barker and Dowty (1993) suggest that argument realization in relational nouns should be regulated by different mechanisms than in process nominals.[4] We believe that a unified approach should be preferred on theoretical grounds, and it is indeed possible, as we show in §3.

2.2. THE INSTRUMENTAL AS A DEPENDENT STRUCTURAL CASE. The distribution of instrumental case is sensitive to three factors: (i) there has to be at least one other syntactically expressed argument; (ii) the case on the other argument must be structural, not lexical or inherent; (iii) the instrumental goes to the highest-ranked argument, which is usually the agent. We take these up in turn.

First: instrumental case is possible only when there are at least two arguments overtly present in syntax, as in 9a (= 3). Constructions with a single agent argument in the instrumental are ungrammatical, whether the construction involves an unergative nominal (1a), an unexpressed patient argument (2b and 9b), or an intransitive construction with an infinitival complement (10) (cf. Babby 1997:222).

> (9) a. razrušeni-e   gorod-a vrag-om
>   destruction-NOM city-GEN enemy-INST
>   'the destruction of the city by the enemy'
>   b. *razrušeni-e   vrag-om
>   destruction-NOM enemy-INST
>   intended: 'the destruction by the enemy'
> (10) popytk-a   komand-y/ *komand-oj vyigrat' čempionat mir-a
>   attempt-NOM team-GEN   team-INST win.INF Cup.ACC   World-GEN
>   'the team's attempt to win the World Cup'

The assignment of the instrumental also depends on the type of case on the other argument: if the theme argument is realized with a lexical case, as in 11, the other structural argument must be genitive, not instrumental (see also 5 and 7).[5]

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[3] Babby (1997:220) argues that constructions with two structural genitive cases are infelicitous rather than ungrammatical, and are possible in nonstandard language.

[4] According to Barker and Dowty (1993), argument realization in relational nouns should be understood in terms of PROTO-WHOLE and PROTO-PART roles. An argument that has the greatest number of proto-whole entailments, that is, it 'entirely contains the other relatum as a proper part' and 'is a concrete entity' (Barker & Dowty 1993:7), is realized with the preposition *of*, whose equivalent is the genitive case in Russian. In process nominals, by contrast, PROTO-AGENT and PROTO-PATIENT thematic roles are responsible for argument mapping.

[5] Babby (1997:242), citing Peškovskij (1959:103), observes that process nominals with an agent argument in the instrumental case can appear in nonstandard Russian, as in (i).

(11) a. upravleni-e   prezident-a/   *prezident-om stran-oj
     government-NOM president-GEN/ president-INST country-INST
       'the government of the country by the president'

   b. sležk-a   detektiv-a/   *detektiv-om   za podozrevaem-ym
     shadowing-NOM detective-GEN/ detective-INST for suspect-INST
       'the detective's shadowing of the suspect'

   c. atak-a   vrag-a/   *vrag-om   na gorod
     attack-NOM enemy-GEN/ enemy-INST on city.ACC
       'the enemy's attack on the city'

Finally, the assignment of the instrumental also depends on the ranking of thematic roles. If there are two arguments, neither of which requires lexical case, then the instrumental goes on the highest thematic argument, typically the agent. Example 12 is ungrammatical because the instrumental is assigned to the patient, a lower-ranked argument (compare to 2b).

(12) *objasneni-e   zadač-ej učitelj-a   (na protjaženi-i   dv-uh
     explanation-NOM task-INST teacher-GEN for duration-PREP two-GEN
       čas-ov)
       hours-GEN
     intended: 'the explanation of the task by the teacher (for two hours)'

There are two possible ways to think about instrumental case in these examples. First, it could be a structural case that is dependent on structural genitive case being assigned elsewhere. Alternatively, since it appears only on the highest arguments, typically agents, it could be an inherent (semantic) case which, unlike other inherent cases such as dative, is ranked below structural case. We adopt the former analysis, because there are other instances of instrumental that are genuinely inherent: see 15 below.

To summarize, instrumental case is sensitive to the thematic role of the argument—it appears on the highest argument. It is also dependent on the number of arguments realized and the type of their case. These observations challenge the analysis of instrumental case as being entirely thematically driven, as we discuss in §4.[6]

   (i) vъezd   v   Rur člen-ami   pravitel'stv-a/   člen-ov   pravitel'stv-a
     entrance.NOM into Ruhr members-INST government-GEN/ members-GEN government-GEN
      'the entrance into the Ruhr by members of the government'   (Babby 1997:242, ex. 74)

If this pattern is consistent (see also Bailyn 2012:54, n. 12), then the distribution of case in this nonstandard dialect would be thematically based: the agent would always receive the instrumental case.

  [6] In a limited number of cases Russian allows the expression of a prehead argument with possessive morphology. This option is available for pronominal arguments, proper names, some kinship terms, and some words for professions (see Babyonyshev 1997, Koptjevskaja-Tamm 2003). Thus, the agent in (i), expressed with the proper name *Petja*, is realized in the possessive form, but the common noun *pianist* 'pianist' lacks such a form and can only be expressed in the instrumental case, as in (ii).

   (i) Pet-in-o/   *pianist-in-o   ispolneni-e   Ravelj-a
     Peter-POSS-NOM/   pianist-POSS-NOM performance-NOM Ravel-GEN
      'Peter's/the pianist's performance of Ravel'
   (ii) ispolneni-e   Ravelj-a   pianist-om
     performance-NOM Ravel-GEN pianist-INST
      'the performance of Ravel by the pianist'
                  (adapted from Koptjevskaja-Tamm 2003:740, ex. 34c,d)

In constructions with two expressed arguments, as in (i), the genitive argument is obligatorily interpreted as patient, and the possessive argument as agent. Other constraints on argument mapping are less clear. Some authors observe that a combination of a possessive patient and an instrumental agent is ungrammatical.

2.3. LEXICAL AND INHERENT CASES. Lexical case is idiosyncratic case assigned to an argument irrespective of its semantic role, its structural position, and the properties of other arguments. For example, the patient arguments of *upravlenie* 'government' and *sležka* 'shadowing' in 13a,b are realized with lexical case, irrespective of whether the agent argument is mapped to the structure.

(13) a. upravleni-e   (prezident-a)   stran-oj
     government-NOM president-GEN country-INST
       'the (president's) government of the country'

    b. sležk-a   (detektiv-a)   za podozrevaem-ym
     shadowing-NOM detective-GEN for suspect-INST
       'the detective's shadowing of the suspect'

In 13 the assignment of lexical case is uniform across the verbal and nominal domains: the verb *upravljat'* 'govern' also marks its patient argument instrumental, and the verb *sledit'* 'shadow' also marks its patient *za* plus instrumental. But mismatches are possible. For example, the verb *atakovat'* 'attack' assigns structural accusative case to its patient argument, but the corresponding nominal marks its patient with the preposition *na* and lexical accusative case, in parallel to English *attack$_N$ on **NP***.

(14) a. Vrag   atakoval   gorod.
     enemy.NOM attack.PFV.3SG.PST city.ACC
       'The enemy attacked the city.'

    b. atak-a   (vrag-a)   na gorod
     attack-NOM enemy-GEN on city.ACC
       'the enemy's attack on the city'

Turning to inherent (or thematic) case: unlike idiosyncratic lexical case, this depends on the thematic role of the argument. Examples include instrumental case on instruments in 15 and dative case on recipients in 16, in both verbal and nominal domains.[7]

(15) a. Maria   rešila   zadač-u   metod-om   Monte Carlo.
     Maria.NOM solve.PFV.3SG.PST problem-ACC method-INST Monte Carlo
       'Maria solved the problem with a Monte Carlo method.'

  (iii) *moje uvol'neni-e načal'nik-om
    I.POSS firing-NOM chief-INST
    intended: 'my firing by the chief'   (Padučeva 2009:76, ex. 10)

But this view was challenged by Rappaport (1992), van Peteghem and Paykin (2013:77), and Padučeva (2009: 84), who cited the following example.

  (iv) Moje zaderžani-e   polici-ej vyzvalo   burj-u   negodovanij-a.
    I.POSS detention-NOM police-INST elicit.PFV.3SG.PST storm-ACC outrage-GEN
    'My detention by the police elicited outrage.'

In constructions with one expressed argument, the possessive more often realizes agents (Koptjevskaya-Tamm 2003, Padučeva 2009), but patients in the possessive are possible for some predicates.

  (v) Pet-in-o   uvol'neni-e/ uničtoženi-e/   osvoboždeni-e   [Peter = patient]
    Peter-POSS-NOM firing-NOM/ destruction-NOM/ liberation-NOM
    'Peter's firing/destruction/liberation'

The disagreement in the theoretical literature might be due to the semiproductivity of the prenominal possessive in Russian (see Babyonyshev 1997). At present we set aside the question of what mechanisms regulate the mapping of arguments into the possessive and how it interacts with other cases.

  [7] As a referee pointed out, the status of dative as inherent case is not uncontroversial. Baker (2015) shows that in some languages, such as Sakha, it can be analyzed as structural case.

    b. rešeni-e   zadač-i   metod-om   Monte Carlo
       solution-NOM problem-GEN method-INST Monte Carlo
          'the solving of the problem with a Monte Carlo method'

(16) a. Kompozitor   posvjatil   pesnj-u geroj-am.
       composer.NOM dedicate.PFV.3SG.PST song.ACC heroes-DAT
          'The composer dedicated the song to the heroes.'

    b. posvjaščeni-e pesn-i   geroj-am
       dedication-NOM song-GEN heroes-DAT
          'the dedication of the song to the heroes'

In 15 and 16, the inherent cases are the same in verbal and nominal domains, but again there are mismatches. A prominent example is the case marking of experiencer predicates. The stimulus argument of an experiencer-subject verb receives structural accusative case, but that of an experiencer-subject nominal is marked with the preposition *k* 'for' plus dative case (cf. also Koptjevskaja-Tamm 1993:§1.3).

(17) a. Roditel-i   ljubjat   apel'sin-y.
       parents-NOM love.IPFV.3SG.PRS oranges-ACC
          'Parents love oranges.'

    b. ljubov' (roditel-ej) k apel'sin-am
       love.NOM parents-GEN for oranges-DAT
          'the (parents') love for oranges'

Russian is not unique in showing this mismatch. Data from typologically diverse languages in 18–20 show that there are consistent differences in how the stimulus arguments of experiencer verbs and experiencer nouns are case-marked. (We leave for future research the question of why so many languages display this behavior.[8])

(18) a. John respects (*for) Mary.
    b. John's respect for/*of Mary

(19) a. Ik bewonder de koning.   (Dutch)
       I admire   the king
    b. mijn bewondering voor/ *van de koning
       my admiration   for/   of the king   (Hoekstra 1986:557, ex. 28b)

(20) a. Ali baba-sı-nı   sev-er.   (Turkish)
       Ali father-POSS-ACC love-PRS
          'Ali loves his father.'
    b. Ali-nin baba-sı-na/ *baba-sı-nı   olan sevgi-si
       Ali-GEN father-POSS-DAT/ father-POSS-ACC REL love-POSS
          'Ali's love for his father'

If lexical and inherent case conflict, lexical case has priority over inherent case. For instance, as seen in 7, the verb *bojat'sja* 'fear' case-marks its stimulus argument with lexical genitive case. In the nominal domain, however, the lexical genitive case con-

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[8] English also has its peculiarities in this domain. As is well known, verbs allow both stimulus-subject verbs such as *frighten* and experiencer-subject verbs such as *fear*. But the nominal domain allows only experiencer-subject nouns, even with nouns derived from stimulus-subject verbs such as *anger*.

  (i) a. John's fear of snakes
     b. *snakes' frightening of John
     c. *the frightening of John by snakes
 (ii) a. Corruption angers Bill.
     b. *the anger(ing) of Bill by corruption
     c. Bill's anger at/with corruption

flicts with inherent case, which normally realizes the stimulus argument with the preposition *k* 'for' plus dative case (see 17). As it turns out, the stimulus argument of *bojazn'* 'fear' is marked genitive case rather than dative (see 21), suggesting that lexical case takes priority over inherent case.

(21) a. Rebenok   boit-sja   temnot-y.
        child.NOM fear.IPFV.3SG.PRS-REFL darkness-GEN
            'The child fears the darkness.'
     b. bojazn'   rebenk-a darkness temnot-y/   *k   temnot-e
        fear.NOM child-GEN darkness-GEN/ for darkness-DAT
            'the child's fear of the darkness'

To sum up, the case system in Russian involves structural, inherent, and lexical case. These are assigned to expressed arguments according to the priorities in 22.

(22) lexical >> inherent >> structural (genitive) >> dependent structural (instrumental)

In particular, structural instrumental case can be assigned only if another surface argument is marked with structural genitive, and if that argument has a less highly ranked thematic role.

2.4. COMPARISON WITH CASE ASSIGNMENT IN THE VERBAL DOMAIN. We have now shown that structural cases in Russian nominals are based on surface structure. This behavior contrasts with the verbal domain. There, when two arguments are present, they bear structural nominative and accusative case (23a). But if either argument is omitted (23b–e), the remaining argument retains its case. In other words, structural case is assigned in the verbal domain based on underlying argument structure.[9]

(23) a. Častn-yj   detektiv   rassledujet   kraž-u.
        private-NOM detective.NOM investigate.IPFV.3SG.PRS theft-ACC
            'The private detective investigates the theft.'
     b. Q: Who investigates the theft?
        A: Častn-yj   detektiv   rassledujet.
           private-NOM detective.NOM investigate.IPFV.3SG.PRS
               'A private detective investigates (it).'
     c. Q: What does the private detective do?
        A: Rassledujet   kraž-u.
           investigate.IPFV.3SG.PRS theft-ACC
               '(He) investigates the theft.'
     d. Rassleduj   kraž-u!
        investigate.IPFV.3SG.IMP theft-ACC
            'Investigate the theft!'
     e. Častn-yj   detektiv   obeščal [rassledovat'   kraž-u].
        private-NOM detective.NOM promised investigate.INF theft-ACC
            'The private detective promised to investigate the theft.'

[9] An alternative, which we mention in §4.1 but have not explored sufficiently, is that the verbal domain is based on a level intermediate between syntactic and semantic argument structure, for example the F-STRUCTURE of lexical-functional grammar (LFG) or the Grammatical Function tier of simpler syntax. In fact, Neidle 1982 works out Russian case assignment in the verbal domain in terms of LFG grammatical functions. (For other alternatives, see §4.) The essential issue, whatever the account, is that case marking in the verbal and nominal domains operates on slightly different principles.

3. THE ANALYSIS. We couch our analysis within the simpler syntax framework (Culicover & Jackendoff 2005). We first introduce the foundational assumptions (§3.1), and then present the analysis (§3.2).

3.1. SIMPLER SYNTAX. Simpler syntax is one component of the PARALLEL ARCHITECTURE (Jackendoff 1997, 2002), which is conceived of as an overall framework for the structure of language and its interaction with the rest of the mind. Other components of the parallel architecture (PA) include CONCEPTUAL SEMANTICS (Jackendoff 1983, 1990) and, more recently, RELATIONAL MORPHOLOGY (Jackendoff & Audring 2018); the theory as a whole can be embedded in a theory of language processing (Jackendoff 2002, 2007, Jackendoff & Audring 2018).

A major tenet of PA—shared with other frameworks such as LEXICAL-FUNCTIONAL GRAMMAR (LFG; Bresnan 1982, 2001, Kaplan 1989), AUTOLEXICAL SYNTAX (Sadock 1991, 2003), STRATIFICATIONAL GRAMMAR (Lamb 1966), and ROLE-AND-REFERENCE GRAMMAR (Van Valin & LaPolla 1997)—is that semantics and phonology are not derived from syntax, as in mainstream generative grammar. Rather, they are independent generative domains that are LINKED to syntax. Proposals along these lines also appear in Bach 1983 and van der Hulst 2006. In a similar 'modular' spirit, AUTOSEGMENTAL PHONOLOGY (Goldsmith 1990) treats phonological structure itself in terms of a number of independent but linked tiers. Simpler syntax includes in its syntactic structure a Grammatical Function tier, a sort of bare-bones counterpart of LFG's f-structure and of the structures posited by RELATIONAL GRAMMAR (Perlmutter 1983).

In concurrence with other constraint-based theories such as LFG, HEAD-DRIVEN PHRASE STRUCTURE GRAMMAR (HPSG; Pollard & Sag 1994), COGNITIVE GRAMMAR (Langacker 1987), CONSTRUCTION GRAMMAR (Goldberg 1995, 2006, Croft 2001), and CONSTRUCTION MORPHOLOGY (Booij 2010), simpler syntax states rules of grammar in terms of declarative constraints or SCHEMAS, which apply as licensing conditions on possible linguistic structures. An important consequence of this approach is that it precludes analyses based on derivations from underlying forms or on rule ordering in which one rule applies 'before' another. Rather, constraints/schemas must be applied simultaneously to surface forms.

Within this outlook, an important hypothesis of simpler syntax is that syntax contains only the minimal structure necessary to mediate between phonology and meaning. The outcome is a relatively flat, multiply branching syntactic structure that is highly constrained not only through the absence of underlying forms and ordered rule application, but also through the absence of movement and the near-absence of phonologically null elements.

As in construction grammar in particular, rules of grammar are stated in the same format as words: they are pieces of well-formed linguistic structure, stored in the lexicon. A lexical item is more word-like to the extent that it is fully specified in semantic, syntactic, and phonological structure, for instance *cat* in 24a. In contrast, an item is more rule-like to the extent that its structure contains variables. For instance, the schema for English regular plurals contains semantic, syntactic, and phonological variables that must be instantiated by a noun, as in 24b. (The variables are marked by underlining.)

(24) a. Semantics: $[\text{CAT}]_1$
       Syntax: N_1
       Phonology: $/\text{kæt}/_1$
  b. Semantics: $[\text{PLUR}_4\ (\underline{x}_3)]_2$
       Syntax: $[_{\text{Npl}}\ \underline{N}_3,\ \text{pl}_4]_2$
       Phonology: $/\ \underline{\ldots}_3\ z_4/_2$

The subscripts in 24 mark the links among corresponding pieces of semantic, syntactic, and phonological structure. By virtue of these links, lexical items serve as part of the interface among the three structures.

Paralleling the treatment in HPSG, simpler syntax encodes the argument structure of a lexical item such as *construct* in 25 in terms of variables linked across semantic and syntactic structures. For instance, subscript 6 in 25 links the patient variable in the semantics to the direct object position in syntax.[10]

(25) Semantics: $[_{\text{Event}} \text{CONSTRUCT}_5 \ ([_{\text{Thing}} \underline{x}], [_{\text{Thing}} \underline{y}]_6)]$
$\phantom{(25) Semantics: [_{\text{Event}} \text{CONSTRUCT}_5 \ (}$ (agent)   (patient)

Syntax: $V_5 \ \underline{NP}_6$
Phonology: construct$_5$

Simpler syntax concurs with AUTOLEXICAL SYNTAX (Sadock 1991) and diverges from HPSG, cognitive grammar, and the most popular versions of construction grammar (e.g. Goldberg 1995, Croft 2001, Boas & Sag 2012) in that it does not insist that every lexical entry be a full sign, encompassing semantics, syntax, and phonology. For instance, words such as *hello* and *ouch* have no discernible syntactic properties and are best treated as having only semantic and phonological structures. Similarly, words such as epenthetic *it* and *do*-support *do* are meaningless and incorporate only syntactic and phonological structures. We encounter more such items in the schemas for case assignment below. For an extreme case, phrase structure rules can be stated as schemas (or TREELETS) that stipulate only syntactic structure, all parts of which are variables. For instance, 26 is the schema for the English transitive verb phrase.

(26) $[_{\text{VP}} \ \underline{V} \ \underline{NP}]$

A final tenet of our approach here (Chomsky 1970, Jackendoff 1975, Bochner 1993) is that nominal stems are in no sense DERIVED from the cognate verb, either in the syntax (as in e.g. distributed morphology; Halle & Marantz 1993) or within the lexicon (as in e.g. Hale & Keyser 2002 and LEXICAL PHONOLOGY; Mohanan 1986). Among the reasons for this position are that (i) many nominals, such as the musical sense of *recital* and the linguistic sense of *transformation*, have idiosyncratic meanings that cannot be derived from the cognate verb; and (ii) many 'derived nominals' such as *commotion* and *compunction* have no cognate verb at all. In addition, as we have seen in §2, nominals sometimes diverge from their cognate verbs in their case-marking properties.

Thus, alongside the lexical entry for the verb *construct* in 25, the lexicon also contains the entry for the process nominal *construction* in 27a, fully specified for phonological, syntactic, and semantic information.[11] Semantically, it denotes an event, just like the verb. The lexicon also contains the result nominal *construction* (27b), which, unlike the process nominal, denotes a THING, 'something that has been constructed'; this is best encoded in the semantics by lambda-abstraction, binding the variable in the patient argument of *CONSTRUCT*.

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[10] In this framework, thematic roles are regarded as shorthand for structural positions in semantics, so the thematic role markings should be understood as abbreviations for more explicit semantic structure. There is no separate 'argument structure' level, as in Williams 1984, Grimshaw 1990. See Barker & Dowty 1993 for arguments against assuming such a level.

[11] See Jackendoff 1975 and Jackendoff & Audring 2018 for arguments that the lexicon has to store derived nominals in fully specified form, rather than simply listing unpredictable information.

(27) a. Process nominal
　　　Semantics:　　$[_{\text{Event}}\text{ CONSTRUCT}_7\ ([_{\text{Thing}}\ \underline{x}],\ [_{\text{Thing}}\ \underline{y}]_8)]$
　　　　　　　　　　　　　　　　　　　(agent)　(patient)
　　　Syntax:　　　$N_7\ (\underline{NP_8})$
　　　Phonology:　construction$_7$
　　b. Result nominal
　　　Semantics:　　$[_{\text{Thing}}\ \lambda y.\ [_{\text{Event}}\text{ CONSTRUCT}\ ([_{\text{Thing}}\ \underline{x}],\ [_{\text{Thing}}\ y])]]_9$
　　　　　　　　　　　　　　　　　　　　　(agent)　(patient)
　　　Syntax:　　　N_9
　　　Phonology:　construction$_9$

The semantic and morphological relations between the verb *construct* and its two nominals are captured by a general schema that matches corresponding structures in the three items (Jackendoff 1975, Bochner 1993, Booij 2010, Haspelmath & Sims 2013). Crucially, where the object of the verb is obligatory, that of the process nominal is optional (see our discussion in §5); and there is no object in the result nominal, since the patient argument has been bound by the lambda-operator.

3.2. The analysis of case on russian nominal arguments. We propose that case assignment in Russian is subject to the following constraints.

(28) Constraints on Russian case assignment
　　　a. For a construction to be well formed, an NP must be assigned case.
　　　b. An NP can be assigned only one case.
　　　c. Each structural case can be assigned only once within the same domain.

There should be nothing surprising in these constraints. Constraint 28a closely resembles the case filter (Chomsky 1981), except that in our framework, the case that satisfies this constraint is overt and morphological, not abstract. Similarly, constraint 28b is reminiscent of the case uniqueness principle from government and binding (GB; Chomsky 1981). Constraint 28c is motivated by the fact that Russian disallows two identical structural cases within the same domain (see 6). This constraint is language-specific, and a different stipulation is needed for languages like Japanese that allow case spreading (see Yip et al. 1987 for discussion).

Turning to specifics: the distribution of genitive case in nominalizations can be explained with the schema in 29, which specifies that any NP argument within a nominal phrase can appear with genitive case. The variable X at the semantic level ranges over the full set of possible thematic roles: agent, patient, experiencer, and others. In fact, the list of roles is so general that semantic information really plays no role. The schema could actually involve just syntax; that is what makes it structural.[12]

(29) Semantics:　　$[\quad \underline{F}_i\quad (\ \dots\ \underline{X}_j\ \dots\ )\ ]_k$

　　　Syntax:　　　$[_{\text{NP}}\ \dots\ \underline{N}_i\ \dots\ \underline{NP}_j{+}\text{GEN}\ \dots\ ]_k$

---

[12] The term structural case is often understood as abstract Case assigned in syntax (as opposed to morphological case, that is, the spell-out of abstract Case). The function of abstract Case in GB was to license nominal arguments within the clause (Chomsky 1981; see Polinsky & Preminger 2014 for an overview). However, we use the term without these accompanying assumptions. The framework adopted here treats argument licensing as independent of case assignment. In this respect our approach is conceptually similar to that of Zaenen and colleagues (1985) and Yip and colleagues (1987), who provided early critique of the notion of abstract Case.

Schema 29 applies straightforwardly to license intransitive process nominals, as in 30, as well as relational nouns, as in 31, and to case-mark their single arguments with the genitive case. Hence there is no need for special rules for relational nouns.

(30) Semantics: $[\text{THINK}_5 \; ([\text{IVAN}_4])]_5$
   (experiencer)

   Syntax: $[_{NP} \; N_5 + \text{NOM} \quad NP_4 + \text{GEN}]_5$

   Phonology: razmyšleni-e Ivan-a
   thinking-NOM Ivan-GEN
   'Ivan's (process of) thinking'

(31) Semantics: $[\text{COVER}_{12} \; ([\text{BOOK}_{18}])]_{12}$

   Syntax: $[_{NP} \; N_{12} + \text{NOM} \quad NP_{18} + \text{GEN}]_{12}$

   Phonology: obložk-a knig-i
   cover-NOM book-GEN
   'the cover of the book'

To account for assignment of instrumental case to the highest thematic argument, typically the agent, we introduce the schema in 32.

(32) Semantics: $[\; \underline{F}_i \quad (\ldots \underline{X}_j \ldots) \;]_k$
   (highest thematic argument)

   Syntax: $[NP \ldots \underline{N}_i \ldots \underline{NP}_j + \text{INST} \ldots]_k$

As in many theories of case (e.g. Yip et al. 1987, Marantz 1991, Baker 2015), the two rules for structural cases are ranked: the assignment of genitive case has priority over instrumental, as suggested in §2. We can imagine an OPTIMALITY-THEORETIC (OT) implementation of this procedure, in which different case assignments are candidates in a tableau. The ranking in 33 then corresponds directly to an OT constraint ranking.

(33) structural genitive (29) >> structural instrumental (32)

Let us see how schemas 29 and 32 account for the morphosyntactic realization of arguments of *razrušenie* 'destruction' in 34. Schema 29 is consistent with genitive case on either of the arguments, but constraint 28c says that genitive cannot be marked on both. Schema 32 is consistent only with instrumental case on the agent argument; hence genitive must be on the patient argument.

(34) $[\text{DESTROY}_6 \quad ([\text{ENEMY}_{10}], \; [\text{CITY}_{11}])]_6$
   (agent) (patient)

   $[_{NP} \; N_6 + \text{NOM} \quad NP_{11} + \text{GEN} \quad NP_{10} + \text{INST}]_6$

   razrušeni-e gorod-a vrag-om
   destruction-NOM city-GEN enemy-INST
   'the destruction of the city by the enemy'

As stressed in §2.4, important to our analysis is that the case-assignment rules are surface-oriented: only arguments that are mapped to syntactic structure are considered for case assignment. In 35, for example, the patient is not mapped to syntax, so there is

only one syntactic argument eligible for case assignment, the agent. Both the genitive schema (29) and the instrumental schema (32) are applicable to this argument. This time, however, the genitive schema has no alternative, as it does in 34. Hence it is in direct competition with the instrumental schema. At this point the ranking hierarchy (33) adjudicates between them, ruling in favor of the genitive.

(35) $[\text{EXPLAIN}_{14}$ $([\text{TEACHER}_{15}],$ $[_{\text{Thing}}\ \underline{y}]_{22}])]_{14}$
         (agent)   (patient)

$[_{\text{NP}}\ \text{N}_{14}+\text{NOM}$ $\text{NP}_{15}+\text{GEN}]_{14}$

objasneni-e   učitelj-a
explanation-NOM   teacher-GEN
  'the explanation by the teacher'
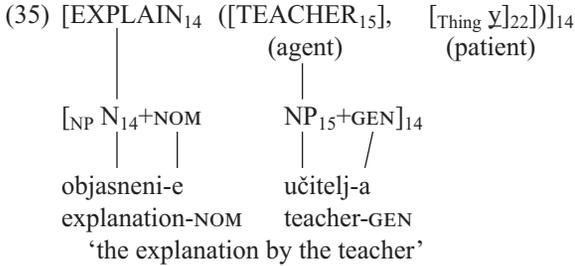
Turning now to the assignment of lexical case, we assume that it is specified in the syntactic level of the relevant lexical items, as shown for the patient argument of *upravlenie* 'government'.

(36) Lexical entry for (process reading of) *upravlenie* 'government'
     Semantics: $[_{\text{Event}}\ \text{GOVERN}_{17}\ ([_{\text{Thing}}\ \underline{x}]_{23}, [_{\text{Thing}}\ \underline{y}]_{40})]_{17}$
                    (agent)   (patient)
     Syntax: $\text{N}_{17}\ (\text{NP}+\text{INST})_{40}$
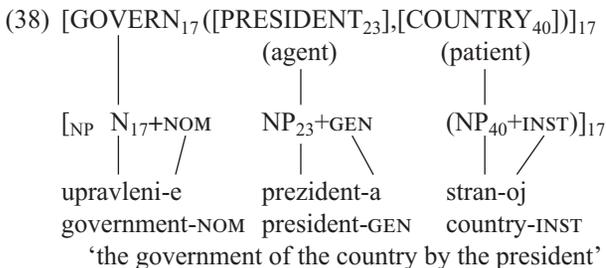   Phonology: upravlenie
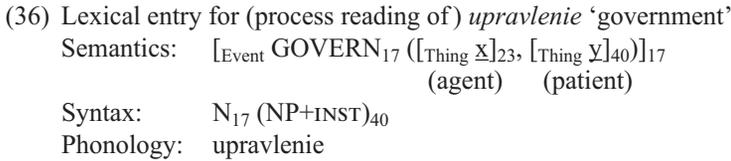
As we discussed in §2.3, arguments that receive lexical or inherent case never appear in structural genitive. This empirical observation is accounted for by the hierarchy in 37, which requires lexical case to apply before structural case.
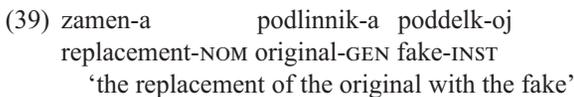
(37) lexical >> structural genitive (29) >> structural instrumental (32)
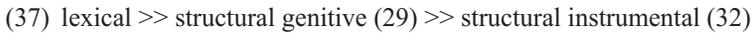
Suppose *upravlenie* 'government' surfaces with a patient argument only. This argument is consistent with either lexical instrumental case or structural genitive. However, since lexical case takes priority, genitive cannot be realized here.

Next suppose that both arguments of *upravlenie* 'government' are mapped to syntactic structure. The genitive is blocked on the patient argument by the priority of lexical instrumental case. But the genitive also potentially applies to the agent argument, where it is in competition with structural instrumental; and here it wins the competition, resulting in the case marking in 38.

(38) $[\text{GOVERN}_{17}([\text{PRESIDENT}_{23}],[\text{COUNTRY}_{40}])]_{17}$
              (agent)   (patient)

$[_{\text{NP}}\ \text{N}_{17}+\text{NOM}$ $\text{NP}_{23}+\text{GEN}$ $(\text{NP}_{40}+\text{INST})]_{17}$

upravleni-e   prezident-a   stran-oj
government-NOM president-GEN   country-INST
  'the government of the country by the president'

A referee has pointed out an apparent counterexample to the analysis presented so far, concerning the nominal *zamena* 'replacement', shown in 39. In this example, the instrumental marks a lower-ranked argument, not the agent.

(39) zamen-a   podlinnik-a poddelk-oj
     replacement-NOM original-GEN fake-INST
       'the replacement of the original with the fake'

However, we observe that the corresponding verbal structure in 40 has instrumental case on *poddelka* 'fake', suggesting that it may be lexical case.

(40) Vor-y   zamenili   podlinnik   poddelk-oj.
     thieves-NOM   replace.PFV.3PL.PST   original.ACC fake-INST
          'The thieves replaced the original with the fake.'

Moreover, if the agent argument is present in the nominal, as shown in 41, it too is realized in instrumental case.

(41) zamen-a   podlinnik-a   poddelk-oj vor-ami
     replacement-NOM   original-GEN   fake-INST   thieves-INST
          'the replacement of the original with the fake by the thieves'

Since in Russian two structural arguments cannot bear the same case (see 28c), two identical cases are possible only if one of them is structural and the other lexical, as in 7. Example 41 likewise suggests that the instrumental on *poddelka* 'fake' is not structural but lexical case, parallel to the lexical instrumental in the verbal construction in 40.[13] Hence our analysis accounts for the constructions with *zamena* 'replacement' as follows: the lexical entry for *zamena* specifies lexical case for the 'replacer' argument.

(42) Lexical entry for (process reading of) *zamena* 'replacement'
     Semantics: $[_{\text{Event}} \text{REPLACE}_{43} ([_{\text{Thing}} \underline{x}]_{42}, [_{\text{Thing}} \underline{y}]_{41}) [_{\text{Thing}} \underline{z}]_{40})]_{43}$
                                    (agent)   (patient)   (replacer)
     Syntax: $N_{43} (NP)_{41} (NP_{40}+\text{INST})$
     Phonology: zamena

When only two arguments are realized, as in 39, both the patient argument and the 'replacer' argument are compatible with the genitive schema in 29. But since the assignment of lexical case overrules the assignment of structural genitive (37), the 'replacer' argument is realized in the lexical instrumental case rather than in the genitive case. The patient argument is realized in the genitive case. Example 41 works the same way, except that now the agent is expressed, and it is assigned STRUCTURAL instrumental case.

Finally, consider the assignment of inherent case. The schemas in 43 capture the observation that recipients and instruments have thematically motivated case—dative and instrumental, respectively. These schemas are category-neutral: they apply in the nominal and the verbal domains alike. This analysis captures the fact that instruments and recipients are realized with inherent case whether they are arguments of verbs or of nouns.

(43) a. Inherent case schema for dative recipients
         Semantics: $[\underline{F} \; (\ldots \; \underline{X}_j \ldots)]_k$
                              (recipient)
                                  |
         Syntax: $[_{\text{NP/VP}} \ldots \underline{NP}_j+\text{DAT} \ldots]_k$
     b. Inherent case schema for instrumental instruments
         Semantics: $[\underline{F} \; (\ldots \; \underline{X}_j \ldots)]_k$
                              (instrument)
                                  |
         Syntax: $[_{\text{NP/VP}} \ldots \underline{NP}_j+\text{INST} \ldots]_k$

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[13] Zimmermann (2002:281–82) discusses an example with *ob-men* 'exchange', a word that has the same root as *za-men-a*, and shows that it also has instrumental lexical case on its internal argument. An alternative analysis, suggested by a referee, is that the instrumental case in 39 and 40 is inherent case. This approach can be motivated by the fact that the instrumental arguments in these examples have 'instrument-like' roles. We leave as an open question whether the instrumental case in 39 and 40 should be analyzed as lexical or inherent. Important for our analysis is that it is not structural case.

Like the lexical-case schema, the inherent-case schema takes priority over structural case. This is based on the observation in §2.3 that a single argument eligible to receive inherent case cannot be assigned genitive case. The hierarchy in 44 captures this generalization.

(44) inherent >> structural genitive (29) >> structural instrumental (32)

When applied to arguments of *posvjaščenie* 'dedication', 44 guarantees that the recipient argument is assigned inherent dative case, and that the other argument, the patient, is realized in the genitive case.

(45) [DEDICATE$_{16}$ ([SONG$_{24}$], [HEROES$_{38}$])]$_{16}$

                  (patient)   (recipient)

    [$_{NP}$ N$_{16}$+NOM   NP$_{24}$+GEN (NP$_{38}$)+DAT]$_{16}$

    posvjaščeni-e   pesn-i   geroj-am
    dedication-NOM song-GEN heroes-DAT
      'the dedication of the song to the heroes'

When the nominal takes three arguments—agent, patient, and recipient—as in 46, case assignment proceeds as follows: the hierarchy in 44 dictates that the recipient argument is assigned inherent dative case rather than genitive case. Of the two remaining arguments, the agent argument is compatible with the genitive schema and with the instrumental schema, but the patient is compatible only with the genitive. Since the assignment of genitive case to the agent argument would violate the constraint in 28c, the agent receives instrumental case, and the patient, genitive case.

(46) [DEDICATE$_{16}$ ([SHOSTAKOVICH$_7$] [SONG$_{24}$], [HEROES$_{38}$])]$_{16}$

            (agent)   (patient) (recipient)

    [$_{NP}$ N$_{16}$+NOM   NP$_7$+INST   NP$_{24}$+GEN (NP$_{38}$)+DAT]$_{16}$

    posvjaščeni-e Shostakovič-em   pesn-i   geroj-am
    dedication-NOM Shostakovich-INST song-GEN heroes-DAT
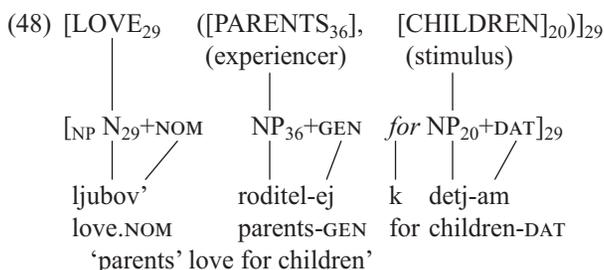   'Shostakovich's dedication of the song to the heroes'

Let us now consider nominalizations of experiencer predicates, which have their own pattern of case marking. Stimulus arguments of subject-experiencer VERBS are expressed in structural accusative case, like ordinary agent-patient verbs. But stimulus arguments of NOUNS are expressed with *k* 'for' plus dative case. Hence schema 47, inherent case on stimulus arguments, is restricted to NP contexts, unlike inherent dative and instrumental case in 43, which apply in both nominal and verbal contexts.

(47) Inherent case schema for stimulus arguments in NPs
    Semantics: [F   (… X$_j$ …)]$_k$
                   (stimulus)

    Syntax: [$_{NP}$ … *k* 'for' NP$_j$+DAT …]$_k$

The application of schema 47 with the priority specified by the ranking in 44 yields the case-assignment pattern for *ljubov'* 'love' in 48. Inherent dative and structural genitive compete for the stimulus argument, and inherent dative takes priority. The experiencer argument is compatible with both structural genitive and instrumental (by virtue of being the highest thematic argument), but the genitive has priority, according to the ranking in 33.

(48) [LOVE$_{29}$ ([PARENTS$_{36}$],   [CHILDREN]$_{20}$)]$_{29}$
                              (experiencer)   (stimulus)

[$_{NP}$ N$_{29}$+NOM   NP$_{36}$+GEN   *for* NP$_{20}$+DAT]$_{29}$

ljubov'   roditel-ej   k   detj-am
love.NOM   parents-GEN   for children-DAT
          'parents' love for children'

Next, suppose that a psych nominal is realized with only one syntactic argument, corresponding to the stimulus. Inherent dative and structural genitive are again in competition, and inherent dative takes priority. This prediction is correct (see 17).[14]

The final refinement pertains to the question of how lexical and inherent cases are ordered with respect to each other. The data in §2.3 showed that when these two cases are in competition, the argument is realized in the lexical case. This suggests that lexical case is ranked above inherent case, as the refined hierarchy of case in 49 specifies.
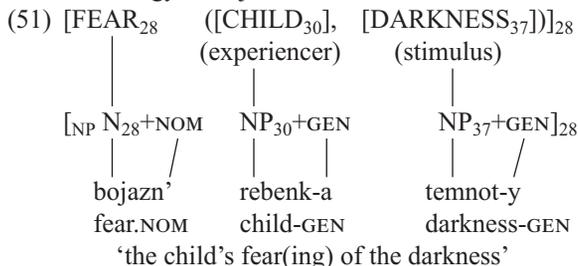
(49) lexical >> inherent >> structural genitive >> structural instrumental

For example, given the lexical entry for *bojazn'* 'fear' in 50, the application of the ranking in 49 yields the case-assignment pattern shown in 51.

(50) Lexical entry for (process reading of) *bojazn'* 'fear'
     Semantics: [$_{State}$ FEAR$_{28}$ ([$_{Thing}$ $\underline{x}$]$_{30}$,   [$_{Thing}$ $\underline{y}$]$_{37}$)]$_{28}$
                              (experiencer) (stimulus)
     Syntax: N$_{28}$ ($\underline{NP}_{37}$+GEN)
     Phonology: bojazn'

(51) [FEAR$_{28}$ ([CHILD$_{30}$],   [DARKNESS$_{37}$])]$_{28}$
                          (experiencer)   (stimulus)

[$_{NP}$ N$_{28}$+NOM   NP$_{30}$+GEN   NP$_{37}$+GEN]$_{28}$

bojazn'   rebenk-a   temnot-y
fear.NOM   child-GEN   darkness-GEN
          'the child's fear(ing) of the darkness'

Three schemas are consistent with the stimulus argument: the lexical rule for *bojazn'* 'fear' in 50, the inherent case schema in 47, and structural genitive in 29. By the ranking in 49, however, lexical case, here genitive, takes priority. As for the experiencer, both structural genitive and structural instrumental can apply, but the structural genitive 'wins' the competition, resulting in the case marking shown in 51.

3.3. SUMMARY. We have proposed an analysis formulated in terms of a ranking of case-assignment rules and a set of constraints on well-formedness. Three core design features of the analysis distinguish it from previous proposals (to be discussed in the next section).

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[14] Even though the majority of psych verbs realize the stimulus argument with *k* 'for' plus dative, the noun *znanie* 'knowledge' is an exception, as it shows the pattern associated with nonpsych nominals such as *objasnenie* 'explanation'.

     (i) znani-e   teorem-y   Ivan-om
         knowledge-NOM theorem-GEN Ivan-INST
            'the knowledge of the theorem by Ivan'

In order to account for this example, we need to treat it as an agent-patient nominal on a par with 'explanation'.

- First, consistent with the lexicalist tradition, nouns and verbs exist independently in the lexicon. This approach makes it natural to account for the fact that stimulus arguments of Russian psych predicates are realized in structural accusative case in the verbal domain but in inherent dative case in the nominal domain, and for mismatches in the morphosyntactic realization of arguments in the verbal and nominal domains, as shown for English in 52. (See Merchant 2016 for additional examples of idiosyncratic lexical selection by different lexical categories that have the same root, verbs vs. nouns vs. adjectives, and for an argument that selectional information is located on categorizing heads.)

(52) a. *attack$_V$ NP* but *attack$_N$ on NP*
     b. *respect$_V$ NP* but *respect$_N$ **for/*of** N*
     c. *debate$_V$ NP* but *debate$_N$ **over/*of** NP*
     d. *battle$_V$ NP* but *battle$_N$ **against/*of** NP*
     e. *prohibit$_V$ NP* but *prohibition$_N$ **against/on/*of** NP*

- Second, agents and patients can compete for the same structural case, genitive. This captures the observation that case assignment to agents is sensitive not only to their thematic role, but also to the number of other arguments and their case.
- Finally, the analysis is surface-oriented—only arguments that are mapped to syntactic surface structure are considered for case assignment. This allows us to explain why the agent argument in process nominals with unrealized patient arguments bears genitive case. In the next section, we show that such an approach has wider empirical coverage and a number of theoretical advantages when evaluated against its competitors.

4. Comparison with other analyses. This section considers a number of alternative theoretical proposals for case marking in nominals. One class of approaches (Yip et al. 1987, Marantz 1991, Zimmermann 2002, and Baker 2015) resembles ours in being configurational, in that case assignment on one argument is conditioned on the presence or absence of another argument in the same syntactic domain. We consider such approaches in §§4.1 and 4.2. Another approach grows out of GB or its reformulation in Woolford 2006, 2015, where case assignment is linked to a particular functional category; we consider this approach in §4.3. Finally, §4.4 discusses an approach based on distributed morphology (Alexiadou 2001, 2011).

4.1. Configurational theories of case. Marantz (1991) proposes that the two cases available to NP arguments of a transitive verb are structural cases. The assignment of one structural case—accusative or ergative—is dependent on the assignment of the other structural case—nominative or absolutive, respectively. Hence accusative and ergative are dependent cases, licensed in the presence of another NP, which serves as a case competitor. Cases are assigned to an expression in a particular order, regulated by the disjunctive hierarchy in 53, where 'disjunctive' means that a noun can receive one case only. This principle has the same function as constraints 28 and 33 in our analysis.

(53) lexical/oblique case >> dependent case >> unmarked case

<div align="right">(adapted from Marantz 1991:247, ex. 29)</div>

Marantz's proposal is updated and refined by Baker (2015), who redefines the relation between two NPs in terms of c-command.

(54) a. If NP$_1$ c-commands NP$_2$ and both are in the same domain, value NP$_1$'s case as ergative.

    b. If NP_1 c-commands NP_2 and both are in the same domain, value NP_2's case as accusative.

    c. If NP has no other case features, value its case as nominative/absolutive.

<div align="right">(Baker 2015:74, ex. 66)</div>

Baker retains the view that case assignment proceeds in the order specified in 53. He also proposes that genitive is the unmarked case in the nominal domain.

(55) If NP is not otherwise case-marked when DP/NP is spelled out, assign it genitive.

<div align="right">(Baker 2015:166, ex. 84a)</div>

    Marantz and Baker do not discuss case assignment in process nominals, but their analysis can in principle be extended to the nominal domain, where the genitive and instrumental cases in Russian would parallel the distribution of absolutive (unmarked) and ergative (dependent) cases, respectively. (For comparison of case marking in nominals to ergative case marking, see §4.3.) Under this analysis, the assignment of instrumental case would be conditional on the presence of another NP in the structure within the same local (or spell-out) domain. Specifically, instrumental case would be assigned to the higher NP if there is another NP lower in the same domain which it c-commands. This analysis would correctly predict that in transitive nominals such as 56, the agent argument is assigned the dependent instrumental case, and the patient is assigned the unmarked genitive case.

(56) rassledovani-e   kraž-i   častn-ym detektiv-om
      investigation-NOM theft-GEN private-INST detective-INST
        'the private detective's investigation of the theft'

It also correctly predicts that a single argument of an intransitive verb is realized in the genitive, the unmarked case, as in 57, since the instrumental is a dependent case and can be assigned only when there is another NP in the structure.

(57) po-hrapyvani-e   starik-a/   *starik-om
      PFV-snoring.2IPFV-NOM old.man-GEN/ old.man-INST
        'the snoring of the old man'

    This analysis further explains why in constructions with lexically marked patient arguments, as in 58 (= 5b), the instrumental is unavailable: lexical case is assigned before dependent case, and the assignment of the dependent case (instrumental) is possible only if the other NP argument is not marked for case at the time of case assignment. Thus, for instance, in 58 the patient argument will be lexically marked dative by *po-dražanie*, thus rendering the instrumental unavailable.

(58) podražani-e   det-ej/   *det'-mi   roditelj-am
      imitation-NOM children-GEN/ children-INST parents-DAT
        'the imitation of parents by (their) children'   (Babby 1997:216, ex. 26b)

    This analysis, based on Marantz's (1991) and Baker's (2015) proposals, would, however, diverge from ours in the treatment of examples with unexpressed arguments. Baker assumes that unexpressed arguments are realized in syntax by phonetically null elements PRO and *pro*. The fact that Russian assigns accusative case to the direct object in 59 (= 23c–e) would be explained by the assumption that there is a *pro* or PRO subject, which serves as a case competitor, in the presence of which the dependent accusative can be licensed.[15]

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[15] We recognize that the status of *pro* is a controversial topic in Russian linguistics (Franks 1995, Perlmutter & Moore 2002) and in theoretical linguistics more generally. (See Culicover & Jackendoff 2005:195 for an

(59) a. Q: What does the private detective do?
      A: Rassledujet   kraž-u.
           investigate.IPFV.3SG.PRS theft-ACC
             '(He) investigates the theft.'
      b. Rassleduj   kraž-u!
        investigate.IPFV.3SG.IMP theft-ACC
          'Investigate the theft!'
      c. Častn-yj   detektiv   obeščal [rassledovat'   kraž-u].
        private-NOM detective.NOM promised investigate.INF theft-ACC
          'The private detective promised to investigate the theft.'

Similarly, Baker argues that in ergative languages such as Shipibo, ergative case on the subject is explained with the presence of a *pro* object that serves as a case competitor, which triggers the dependent ergative on the higher argument.

(60) Apo   jo-ke-tian-ra,   e-n   oina iki.   (Shipibo)
      president come-PFV-DS-PRT I-ERG see   AUX
        'When the president came, I saw him.'
                                 (Loriot et al. 1993, cited in Baker 2015:203, ex. 34)

Within Baker's approach, we can envision two possible explanations of Russian nominal constructions with unexpressed syntactic arguments, as in 61.

(61) rassledovani-e   častn-ogo detektiv-a/ *častn-ym   detektiv-om
      investigation-NOM private-GEN detective-GEN/ private-INST detective-INST
         (na protjaženi-i   dv-uh   let)
           for duration-PREP two-GEN years.GEN
        'the private detective's investigation (for two years)'

One solution would be to say that the difference between the nominal and verbal domains is that there are no null elements in the nominal domain. Therefore, in 61 there is only one syntactic element, the agent, and it receives default genitive case.

Another possible solution would be to assume that there is a null object, *pro*, in 61, but that in the nominal domain it does not serve as a case competitor. Since it does not compete, the other NP in the clause will receive genitive case. In principle, this solution is not incompatible with Baker's general approach, as he argues that it is a matter of crosslinguistic variation which null elements can serve as case competitors.

However, this solution would have problematic consequences for Russian. Specifically, according to Baker, elements that can serve as case competitors are ordered on a hierarchy, as given in 62.

(62) Overt NPs   > pro > controlled PRO > arbitrary PRO > implicit agent of   > PP, VP,
      and clitics   passive,   etc.
                                                 agent of nominal,
                                                 nonspecific object

    ←——→
       Always case competitors   Never case competitors
                                                      (Baker 2015:201, ex. 29)

In all languages, overt NPs and clitics are always case competitors, but the nonnominal elements PP and VP can never compete for case. Different languages choose different cutoff points, but the general prediction is that elements to the left of the cutoff point can serve as case competitors. Thus, if implicit agents can trigger the dependent accu-

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analysis of '*pro*-drop' phenomena that does not postulate a null phonological element in syntax, and chapter 12 of the same for a treatment of control without PRO, not unlike the treatment in LFG and HPSG.)

sative on the object, then all elements to the left of it should also serve as case competitors. (Baker cites Sakha as such a language.)

Turning to Russian, we see that controlled PRO triggers the dependent accusative case on the object, as in 63 (= 23e).

(63) Častn-yj   detektiv   obeščal [rassledovat'   kraž-u].
     private-NOM detective.NOM promised investigate.INF theft-ACC
        'The private detective promised to investigate the theft.'

The hierarchy in 62 then predicts that *pro* should also serve as a case competitor, and this is indeed what we find in the verbal domain (see 59). The question is how to reconcile this fact with the assumption that *pro* cannot serve as a case competitor in the nominal domain, as in 61.

To summarize, in Baker's analysis, case assignment could be uniformly based on the surface syntactic structure in both the verbal and the nominal domain. The nonuniformity between the two domains lies instead in either the presence of PRO/*pro* (present in clauses, absent in NPs) or the ability of PRO and *pro* to serve as case competitors (yes in clauses, no in NPs)—as well as in the repertoire of structural cases (nominative plus dependent accusative vs. genitive plus dependent instrumental).

Our configurational approach is conceptually similar; however, we do not assume null elements in syntax. Therefore for us the relevant configuration for case assignment in the nominal domain is surface syntactic argument structure—the arguments that are actually expressed within the nominal construction. In contrast, case assignment in the verbal domain is sensitive to the status of arguments at the conceptual/semantic argument structure level (or the Grammatical Function level of Culicover & Jackendoff 2005) rather than to their surface syntactic realization.

4.2. Case in lexical decomposition grammar (zimmermann 2002, 2003). A different configurational theory of case marking appears in Zimmermann 2002, 2003, couched within the framework of lexical decomposition grammar (LDG; Wunderlich 1997). In this framework, aspects of meaning relevant for argument mapping, case assignment, and other syntactic operations are represented at the level of Semantic Form rather than syntactic structure. Each structural argument of a verb or nominal is associated with abstract, binary, semantico-syntactic case features. Case mapping is formulated in terms of the interrelation between abstract semantico-syntactic features on semantic arguments and morphosyntactic case on NPs. Following Jakobson 1936, Zimmermann assumes that morphosyntactic cases can be understood in terms of semantic features: ±R: directional 'signaling the goal of the event', ±P: marginal 'assigning the entity an accessory role in the message', ±U: quantified 'focusing upon the extent to which the entity takes part in the message', and ±obl: oblique. Case is realized according to a system of correspondence rules and constraints. As in OT, the optimal candidate for case marking is the one that violates the fewest higher-ranked constraints.

Zimmermann's approach does capture the differences in case realization between the nominal and the verbal domains, by means that need not concern us here. But since case assignment is determined by argument structure at the level of Semantic Form, verbs and process nominals, which share semantic argument structure, should have identical case-marking properties. But we have seen that this is incorrect. For instance, if a transitive nominal such as *rassledovanie* 'investigation' surfaces with a single agent argument, this argument ought to be assigned instrumental case, parallel to transitive cases with two expressed arguments. This is contrary to the actual pattern we observe in Russian (cf. 56 vs. 61). We conclude that case marking in nominals cannot be based on Semantic Form.

4.3. CASE ASSIGNMENT BY FUNCTIONAL HEADS (WOOLFORD 1997, 2006, 2015). A common observation in the literature is that case marking on nominal arguments often shows an ergative-like pattern (Sadock & Levi 1977, Lebeaux 1986, Safir 1987, Williams 1987, Nunes 1993:384; see Comrie 1978:376, Koptjevskaja-Tamm 1993 on Russian). For instance, Sadock and Levi (1977) observe that the subject of an intransitive nominal such as *disappearance* in 64a has the same morphosyntactic realization as the object of a transitive nominal such as *discovery* in 64b: they are introduced by the preposition *of*. The subject of a transitive nominal is realized differently, with the preposition *by*, as in 64c. The former pattern parallels the distribution of absolutive case, while the latter parallels the distribution of ergative case.

(64) a. the disappearance of Houdini
     b. the discovery of America
     c. the invention of the telephone by Bell   (Sadock & Levi 1977:91, ex. 1–3)

Hence a natural question is whether this analysis can be extended to the Russian data, adapting Woolford's (1997, 2006, 2015) analysis of ergative systems.

Woolford treats the absolutive and the ergative as qualitatively different. For her, absolutive is a structural case. In the minimalist framework that she assumes, structural case is assigned by a designated functional projection: transitive *v* assigns accusative/absolutive case to the internal argument, while finite *T* assigns nominative case. Ergative case, in contrast, is analyzed as a nonstructural inherent case linked to a particular θ-position; it is licensed to external arguments by little *v*. This analysis explains case assignment to subjects of transitive verbs: they are external arguments and thus get the ergative irrespective of their thematic roles, for example, agent in 65a but instrument in 65b.

(65) a. Jonek   sagarra   jaten du.   (Basque)
        Jon.ERG apple.ABS eat   AUX
          'Jon ate the apple.'   (Levin 1983:308, ex. 6.26a, cited in Bobaljik 1993, ex. 55a)
     b. Giltzak atea   ireki zuen.   (Basque)
        key.ERG door.NOM open AUX
          'The key opened the door.'
                              (Uriagereka 1992:434, ex. 30b, cited in Woolford 2006:124, ex. 40)

Woolford's analysis applies straightforwardly to so-called active ergative languages such as Basque. In these languages, subjects of agentive intransitive verbs are taken to be external arguments and therefore receive ergative case (66a), but subjects of nonagentive intransitive verbs are not external arguments and therefore are not marked ergative (66b).

(66) a. Gizona-k kurritu du.   (Basque)
        man-ERG run   AUX
          'The man ran.'   (Levin 1989, ex. 33, cited in Woolford 2006:115, ex. 10)
     b. Ni   etorri naiz.   (Basque)
        I.NOM come AUX
          'I came.'   (Levin 1989, ex. 8, cited in Woolford 2006:115, ex. 12)

We also find so-called strict ergative languages, in which external arguments of intransitives do not get ergative case, for instance, Tsez. In such languages only the subjects of transitive clauses are realized in the ergative.

(67) a. ʕali   Ø-iš-xo.   (Tsez)
        Ali.ABS I-eat-PRS
          'Ali eats.'   (Comrie 2000:366, ex. 17, cited in Woolford 2015:512, ex. 83)

    b. Žek'-ā   bišʷa   r-ac'-xo.   (Tsez)
       man-ERG food.ABS IV-eat-PRS
         'The man eats the food.'

                              (Comrie 2000:363, ex. 5, cited in Woolford 2015:512, ex. 84)

    Woolford (1997, 2006) argues that the absence of ergative on external arguments of intransitives in strict-type ergative languages (67a) should not be surprising and is what we should expect given the analysis of ergative as inherent case. Such a transitivity restriction on the distribution of ergative parallels the behavior of another inherent case, dative on goals, which is possible in transitive but not in intransitive clauses in languages like Japanese (Woolford 2006:120). Yet the question of how these restrictions should be encoded in the grammar still awaits a systematic explanation (Legate 2012: 182; see also Baker 2015:54–55 for criticism along these lines).[16]

    Turning to Russian nominalizations, the pattern is that of a strict ergative language, like Tsez. Specifically, we do not find instrumental (the counterpart of ergative in the nominal domain) on single arguments of intransitive nominals.

(68) po-hrapyvani-e   starik-a/   *starik-om   [= 57]
     PFV-snoring.2IPFV-NOM old.man-GEN/ old.man-INST
       'the snoring of the old man'

We conclude that Woolford's analysis might be more suitable for languages whose nominalizations show the pattern that parallels case assignment in active ergative languages. And again we conclude that case assignment in Russian is not uniform across verbal and nominal domains: Russian clauses pattern with accusative languages, while Russian NPs pattern with strict ergative languages.

    4.4. NOMINALIZATIONS IN DISTRIBUTED MORPHOLOGY. We next review a distributed morphology (DM) analysis of nominalizations, focusing on how this approach explains mismatches in argument realization in the nominal and the verbal domains (Alexiadou 2011), and on another proposal that nominalizations have ergative structure (Alexiadou 2001).

    One of the main assumptions of the DM framework is that words are built syntactically from category-less roots. The outcome of the word-building process is a verb if the highest functional projection is an IP, and a noun if the highest functional projection is an nP. Since process nominals share a portion of their structure with the corresponding verbs, one prediction is that arguments of nominals and verbs should have the same morphosyntactic realization. However, as we have mentioned several times, there exist mismatches in argument realization between the verbal and nominal domains, for instance in this subject-experiencer construction.

(69) a. John respects (*for) Mary.
     b. John's respect *(for) Mary

A challenge for the DM approach is to reconcile its assumptions with examples like 69.

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[16] Woolford (2015) adopts a definition of transitivity from Hale & Keyser 1993, where transitive verbs are verbs with external arguments, independently of whether they have a direct object in syntax. She presents data from an impressive array of languages to support the generalization that there are only two types of ergative languages: active ergative languages and object-shift languages, that is, languages in which the ergative case is assigned to the transitive subject only if the object moves out of VP. Languages such as Tsez are not active ergative languages, but it is not clear either whether they are object-shift languages. Even if we adopt the definition of transitivity from Woolford 2015, the question of how to account for the absence of ergative on intransitive subjects in strict ergative languages remains open.

Alexiadou (2011) proposes that the stimulus arguments of verbs such as *respect* and of the corresponding nominals are introduced with a preposition. In her analysis, the verbal and the nominal constructions have the structures in 70 and 71, respectively.[17] The difference in morphosyntactic realization of the stimulus arguments is explained with the stipulation that in the verbal domain the preposition *for* is phonologically null.[18]

(70) Transitive stative verb

```
              Voice′
           ┌────┴────┐
     Voice_stative    vP
                   ┌───┴───┐
                   v      PP
                 ┌─┴─┐    ┌─┴──────┐
                 v  √respect  P the truth
                              │
                              Ø
```
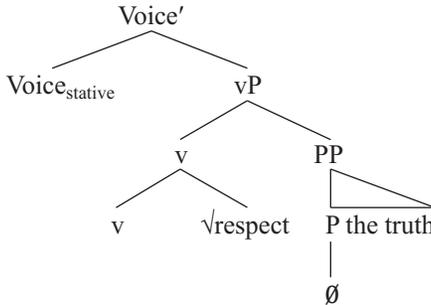
(adapted from Alexiadou 2011:43, ex. 50)

(71) Nominalization of a transitive stative verb

```
            nP
         ┌──┴──┐
         n   AspectP ( for x-time)
            ┌────┴────┐
         Aspect     VoiceP
                  ┌────┴────┐
            Voice_stative    vP
                          ┌───┴───┐
                          v      PP
                        ┌─┴─┐    ┌─┴──────┐
                        v  √respect  for the truth
```

(adapted from Alexiadou 2011:45, ex. 58)

However, such an analysis runs into problems when applied to Russian, because, unlike English, Russian cases have overt morphosyntactic realization. If we assume with Alexiadou (2011) that the preposition *k* 'for' that introduces the stimulus argument in the nominal domain is also present in the verbal domain (albeit silently), then we predict that this preposition should assign dat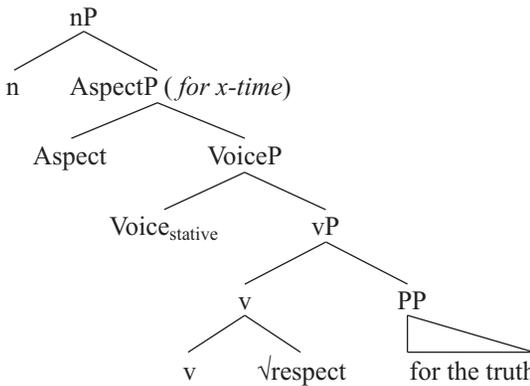ive case to its verbal argument. Contrary to this prediction, the stimulus argument of the verb is realized in the accusative case, and the dative case found in the nominal domain is impossible.

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[17] Alexiadou's analysis is based on the proposal that stativity is syntactically manifested by the presence of a PP in the verbal structure (Hale & Keyser 2002). Alexiadou further assumes that arguments of psych predicates are introduced by PPs in a manner similar to Marantz's (2005) analysis of noncore transitive verbs such as *sweep*, whose optional arguments are introduced with a PP. However, subject-experiencer verbs like *respect* are unlike noncore transitive verbs in several respects: (i) while the internal argument of *sweep* can optionally be realized with a preposition (*John swept (at) the floor*), the internal argument of *respect* and other subject-experiencer verbs cannot (*John respects (*for) Mary*); (ii) the theme argument of *sweep* can be dropped (*John swept*), but the theme argument of subject-experiencer verbs is obligatorily present (**John respects*). These data might be taken as evidence that noncore transitive verbs and subject-experiencer verbs should be analyzed differently.

[18] Alexiadou (2011) does not explicitly discuss this stipulation. It is not clear to us how it is to be stated formally.

(72) a. Obščestv-o   uvažaet   pravd-u/ *(k) pravd-e.
         society-NOM respect.IPFV.3SG.PRS truth-ACC/ for truth-DAT
            'The society respects the truth.'
     b. uvaženi-e   obščestv-a *pravd-u/ k pravd-e
         respect-NOM society-GEN truth-ACC/ for truth-DAT
            'the society's respect for the truth'

The subject-experiencer construction is the most regular example of mismatches in argument realization, but it is not the only case. There are other lexical heads that realize their arguments differently in the nominal and verbal domains, such as in 14 above. A lexicalist framework such as ours assumes an independent existence for related nouns and verbs in the lexicon. It is thus better suited to account for these mismatches, in that it allows for different morphosyntactic mapping of arguments, while still allowing uniform mapping as the default case.

Another issue for the DM approach is why accusative case does not appear on the object argument of a process nominal. In the DM framework, accusative case is licensed by the functional head Voice (Harley 2009) or by little v (Alexiadou 2001), which also introduce external arguments. The absence of accusative on objects implies that no Voice/little v can be present in the nominal domain or that little v is defective (Alexiadou 2001). Consequently, nominals do not have external arguments (see also Babby 1997:234); there is only one projected argument—patient. Patient arguments receive the only available structural case, the genitive. The agent argument, by contrast, 'functions like an exceptional adjunct which is internal to the verbal root and is thematically licensed by the preposition *by*' (Alexiadou 2001:118). Hence agents in nominalizations receive lexical/prepositional case, similar to agents in ergative languages: 'the *by*-phrase is strictly parallel to ergative case, if this is analyzed as a prepositional/lexical case' (Alexiadou 2001:119).[19] In short, as a consequence of their different syntactic status within the nominal, agents and patients are assigned case by different mechanisms. In other words, the nonuniformity in case-marking behavior across the verbal and nominal domains stems from the difference in the status of agents.

While Alexiadou's analysis does capture the apparent parallels between case-assignment and argument-realization patterns in nominalizations and in ergative languages, her assumption that agents and patients have different status for case-assignment purposes faces several empirical and theoretical challenges. First, Alexiadou claims that, in process nominals, agents are not projected and thus cannot receive structural genitive case. Her evidence is that in Greek, agents cannot be realized with the same case as patients (73a); they must be realized with the preposition *apo* (73b), the equivalent of the instrumental case in Russian.

(73) a. *i   silipsi tu Jani   tis astinomias   (Greek)
            the capture the John.GEN the police.GEN   (Alexiadou 2001:79, ex. 5a)
     b. i   silipsi tu Jani   apo tin astinomia   (Greek)
            the capture the John.GEN by   the police
               'the capture of John by the police'   (Alexiadou 2001:91, ex. 48)

The data in 73, however, do not necessarily show that the agent cannot receive genitive case in a transitive construction; they might simply show that two arguments cannot

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[19] Note that ergativity in the context of Alexiadou's framework means the inability of a construction to license structural subjects (cf. Nash 1996) and is different from ergativity as a case-assignment pattern in which the subject of an intransitive and the object of a transitive receive the same case, while the subject of a transitive verb is case-marked differently.

bear the same structural case. The latter is not surprising: the Russian nominals discussed in §2 show the same pattern, as do Icelandic nominals (Yip et al. 1987:234). In order for Alexiadou's argument to go through, it is necessary also to consider the morphosyntactic realization of agents in transitive constructions that have LEXICAL or INHERENT case on patient arguments. The data in 74 (= 11a) challenge Alexiadou's generalization, at least for Russian: when the patient has lexical case, the agent argument can in fact receive genitive case.[20]

(74) upravleni-e   prezident-a/ *prezident-om stran-oj
     government-NOM president-GEN/ president-INST country-INST
        'the government of the country by the president'

   Alexiadou's second argument in support of the asymmetrical status of agents and patients in process nominals is the observation that 'the single genitive argument within such nominals is necessarily interpreted as a theme' (Alexiadou 2001:77; see also Babby 1997:223 on Russian). In 75, for example, 'the police' can only be interpreted as a patient. The intuition is that if agents were structural arguments, we would find cases in which a single argument of a nominal can be interpreted as an agent.

(75) i   silipsi tis astinomias   (Greek)
     the capture the police.GEN
        'the capture of/*by the police'   (adapted from Alexiadou 2001:79, ex. 2a)

This point is weakened by the fact that single arguments in Russian nominals can receive an agent interpretation (see the discussion in §5 below).

(76) a. rassledovani-e   detektiv-a   (na protjaženi-i dv-uh   let)
        investigation-NOM detective-GEN for duration-PREP two-GEN years.GEN
           'the detective's investigation (for two years)'   [= 61]
     b. objasneni-e   učitelj-a   (na protjaženi-i dv-uh   čas-ov)
        explanation-NOM teacher-GEN for duration-PREP two-GEN hours-GEN
           'the teacher's explanation (for two hours)'   [= 2b]

In English, too, there are examples where a single argument of the nominal realized with *of*, the equivalent of the genitive case, can be interpreted as an agent (see also Smirnova 2015).

(77) the shooting of the hunters (for two hours)

                                              (adapted from Chomsky 1956:123, ex. 49)

   Finally, Alexiadou observes that in languages like Greek (Markantonatou 1995, Alexiadou 2001) and Catalan (Picallo 1991), only unaccusative roots can give rise to process nominals. The absence of unergative process nominals in these languages can be explained if nominalizations require unaccusative structure, that is, a structure with a projected patient argument. Russian does not conform to this generalization, however, since it allows unergative process nominalizations (see 1a and Schoorlemmer 1998).

   Anticipating this issue, Alexiadou (2001:86) suggests that 'Russian does not distinguish between unergatives and unaccusatives, thus permitting intransitive structures that generally include an internal argument'. But this cannot be maintained in light of a well-established syntactic test that distinguishes between unergative and unaccusative predicates in Russian (cf. Babyonyshev et al. 2001, Perlmutter & Moore 2002).[21] The

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[20] Not all languages have nominalizations that preserve lexical case. In Icelandic, unlike Russian, lexical case does not show up on arguments of derived nominals (Yip et al. 1987:233, 235).

[21] The test is based on the availability of the genitive-of-negation pattern: only subjects of unaccusative verbs can optionally be realized in the genitive case when the predicate is negated (i); subjects of unergative verbs cannot be realized in the genitive case, as shown in (ii).

fact that Russian has unergative process nominals casts doubt on Alexiadou's approach to nominalizations in the general case.

In sum, Alexiadou's proposal that agent arguments receive nonstructural lexical/prepositional case is problematic, in view of the fact that lexical case is usually insensitive to the type of case assigned to other arguments and to the number of arguments realized. As shown in §2.2, case assignment to agents in Russian nominalizations does depend on these factors. We conclude that Alexiadou's analysis, where agent and patient arguments are assigned case by different mechanisms—a consequence of their different syntactic status—cannot explain the data in Russian.

A referee has brought to our attention another potentially relevant approach to ergativity: Massam's (2009) analysis of verbal constructions in Niuean. On this approach, both unaccusative and unergative subjects are projected vP-internally and receive the same structural case—absolutive. Transitive subjects, by contrast, are merged in Spec, Voice and receive inherent ergative case.

(78) a. Transitive: $[_{TP}$ Predicate T $[_{VoiceP}$ Agent Voice $[_{AbsP}$ Theme$_i$ Abs$[_{vP}$ v $[_{VP}$ V <Theme$_i$>]]]]]

b. Unaccusative: $[_{TP}$ Predicate T $[_{AbsP}$ Theme$_i$ Abs$[_{vP}$ v $[_{VP}$ V <Theme$_i$>]]]]

c. Unergative: $[_{TP}$ Predicate T $[_{AbsP}$ Doer$_i$ Abs$[_{vP}$ <Doer$_i$> v $[_{VP}$ V (NP$_{Theme}$)]]]]

(Massam 2009:132, ex. 15)

If this analysis were applied to nominalizations, it could in principle explain why single arguments of unergative and unaccusative nominalizations in Russian receive the same case: structural genitive. Yet such an approach would still not be able to explain why, in the presence of a theme argument with lexical case, the transitive agent receives the genitive, which is the nominal counterpart of absolutive case. Such a pattern should not be possible if the transitive agent receives inherent case.

5. The status of process nominals: revisiting grimshaw's diagnostics. Most of the recent attempts to assimilate case marking in process nominals to verbal patterns, especially within the DM framework, depend on a prior hypothesis: that argument-realization mechanisms are the same for these two classes. Specifically, both transitive verbs and process nominals require a licensed internal (theme) argument, as in 79. Such nominals are often referred to as argument-structure (AS) nominals, after Grimshaw (1990).

(79) a. the barbarian's destruction of the city

b. *the barbarian's destruction (intended: the destruction by the barbarian)

(Chomsky 1981:104, ex. vi)

c. *The barbarian destroyed.

(i) Unaccusative   (Babyonyshev et al. 2001:12, ex. 10d,c)

a. Ne rastajal-a   snežink-a.
   not melted-f.sg snowflake-nom.sg
      'The snowflake didn't melt.'

b. Ne rastajal-o   ni odn-oj   snežink-i.
   not melted-n.sg neg single-gen.sg snowflake-gen.sg
      'Not a single snowflake melted.'

(ii) Unergative   (Perlmutter & Moore 2002:624, ex. 21)

a. Matematik-i   ne dumal-i   ob   etoj probleme.
   mathematicians-nom neg thought-pl about this problem
      'Mathematicians didn't think about this problem.'

b. *Ob   etoj probleme ne dumal-o   matematik-ov.
    about this problem neg thought-n mathematicians-gen

Nominals without expressed internal arguments, such as *invasion* in 80, are referred to as SIMPLE EVENT (SE) nominals and are argued to be qualitatively different.

(80) The enemy's invasion took the media by surprise.

SE-nominals lack event structure (Grimshaw 1990) or a set of verbal functional projections responsible for the licensing of arguments (Alexiadou 2001); their arguments are not projected and have adjunct-like status (Grimshaw 1990, van Hout & Roeper 1998, Alexiadou 2001). Hence case assignment and argument mapping in SE-nominals proceed by different mechanisms than in verbs and AS-nominals. Together with RESULT (R) nominals such as *song*, SE-nominals are treated as a sort of residual or catch-all class, so-called non-AS-nominals.

Since the introduction of Grimshaw's diagnostics, the typological division into AS-nominals and non-AS-nominals has become common practice in the syntactic literature and has been generalized to other languages. For example, Alexiadou (2001:88) observes that in Hebrew nominals, 'omission of the object while retaining the subject is not compatible with maintaining the process reading for the nominal'. The same observation is made for Greek and Romance languages by Alexiadou (2001) and Zubizarreta (1987), respectively. Similarly, Schoorlemmer (1998:211) observes for Russian that AS-nominals 'must occur with their objects'. (This generalization cannot be true, however, given examples like 2b and 61, to be repeated in a moment.)

Our diagnosis is that it has been a mistake to lump SE-nominals—process nominals whose patient argument is not projected into syntax—with R-nominals, which DENOTE the patient of some event. Rather, we wish to show that so-called AS-nominals and so-called SE-nominals form a natural class of process nominals. The difference between the two kinds of nominals is simply that, at least in Russian and English, different process nominals show different argument-realization patterns. For instance, the single expressed argument of the *destruction*-type nominal can only be a patient (2a), but nominals like *explanation* allow their single arguments to be agents, as shown in 81 for Russian and 82 for English. These argument-mapping strategies are possibly due to lexical semantic properties of the nominal heads (cf. Smirnova 2015 on English), but these lexical differences are irrelevant for the case-assignment rule: single arguments of Russian process nominals are assigned genitive case, regardless of their thematic role.

(81) a. objasneni-e   učitelj-a   (na protjaženi-i dv-uh čas-ov) [= 2b]
       explanation-NOM teacher-GEN for duration-PREP two-GEN hours-GEN
          'the explanation by the teacher (for two hours)'

    b. rassledovani-e   detektiv-a   (na protjaženi-i dv-uh let) [= 61]
       investigation-NOM detective-GEN for duration-PREP two-GEN years.GEN
          'the detective's investigation (for two years)'

    c. častoje nabljudeni-e   vrač-a
       frequent observation-NOM doctor-GEN
          (povyšaet   effektivnost'   lečenij-a)
           improve.IPFV.3SG.PRS effectiveness.ACC treatment-GEN
       'the doctor's frequent observation (improves the effectiveness of the
          treatment)'

(82) a. Bill underwent the school's examination.
    b. John underwent the FBI's investigation.
    c. The child needs the court's supervision.   (Roeper 1993:203–4, ex. 64b,c,e)

The crucial issue, then, is whether so-called AS-nominals are as distinct from SE-nominals as Grimshaw claims. Accordingly, we revisit Grimshaw's diagnostics and

compare typical AS-nominals (*the enemy's destruction of the city*) with typical SE-nominals with unexpressed patient arguments (*the enemy's invasion*).

5.1. GRIMSHAW'S DIAGNOSTICS.

REFERENTIAL PROPERTIES. First, like *destruction*-type nominals (83a), nominals without expressed internal arguments refer to events rather than to objects or results of an action. They are compatible with eventive predicates such as *take place* and *occur* (83b) and are infelicitous in contexts that require a nominal referring to an object/individual, where R-nominals are possible (84).

(83) a. The enemy's destruction of the city took place/occurred last night.

                                                  (AS-nominal)

      b. The enemy's invasion took place/occurred last night.   (SE-nominal)

(84) a.   The exam/examination was on the table.   (R-nominal)

      b. #The enemy's invasion was in France.   (SE-nominal)

In fact, event reference as a diagnostic for argument structure has been previously challenged in two respects: (i) some event-denoting nominals do not take arguments, such as *the destruction lasted for days* (Zucchi 1993:160), and (ii) some noneventive stative nominals take arguments, such as *the court's awareness of the problem* (Borer 2003:48) and *John's knowledge of algebra* (Alexiadou 2011:28). These facts argue against Grimshaw's claim that the presence of syntactic arguments is a criterion for event structure.

MODIFICATION BY MANNER EXPRESSIONS. Second, the AS-nominal *performance* can be an argument of a manner predicate such as *be slow* or *be careless* (85a; cf. Vendler 1968) and can be modified by a manner adjective. The same is true of the SE-nominal *invasion* in 85c,d.

(85) a. John's performance of the song was slow/careless.

      b. John's slow/careless performance of the song

      c. The enemy's invasion was slow/careless.

      d. the enemy's slow/careless invasion

Manner modification is considered to be a probe for the Davidsonian event argument and can be viewed as a diagnostic for the presence of a vP (Alexiadou 2001, 2010). From the DM perspective, these data suggest that *invasion* in 85c,d contains at least a vP, and thus is structurally parallel to AS-nominals in 85a,b.

AGENT-ORIENTED MODIFIERS. Third, Grimshaw claims that AS-nominals such as 86a are compatible with agent-oriented modifiers, but SE-nominals such as 86b are not. She attributes the contrast to the different syntactic status of the possessives in these constructions—an argument and a modifier, respectively.

(86) a.   The instructor's intentional/deliberate examination of the papers took a long time.

      b. *The instructor's intentional/deliberate examination took a long time.

                                       (Grimshaw 1990:51–52, ex. 11b,a)

However, the nominal *invasion* with unexpressed patient argument permits agent-oriented modifiers, too.

(87) The enemy's deliberate invasion/attack was heinous.

Hence this test too does not reliably distinguish between AS- and SE-nominals. (See also Grimm and McNally (2014), who arrive at the same conclusion based on a corpus study.)

CONTROL. Fourth, Grimshaw observes that AS-nominals exhibit control into an *in order*-clause.

(88) the translation of the book (in order) to make it available to a wider reader-
      ship   (Grimshaw 1990:58, ex. 26b)

However, 89 shows control into an infinitival complement of an SE-nominal.

(89) The enemy's sudden invasion in order to provoke a wider war/in order to
      catch us by surprise was heinous.

Modification by aspectual modifiers *frequent* and *constant*. Fifth, Grimshaw
proposes that AS-nominals can combine with modifiers of events such as *frequent* and
constant in their singular form (90a and 91a). Singular SE-nominals, by contrast, are
ungrammatical when modified by these adverbials (90b and 91b).

(90) a.   The constant assignment of unsolvable problems is to be avoided.
      b.   *The constant assignment is to be avoided.
           (cf. The constant assignments are crushing.)   (Grimshaw 1990:50, ex. 8c,b)
(91) a.   The frequent expression of one's feelings is desirable.
      b.   *The frequent expression is desirable.
           (cf. Those frequent expressions are appalling.) (Grimshaw 1990:50, ex. 7c,b)

But this diagnostic is weakened by the fact that these modifiers are indeed compati-
ble with some singular SE-nominals, as Grimshaw herself briefly acknowledges in a
footnote (see also Moulton 2014).[22]

(92) a.   Only frequent examination by the doctors kept John healthy.
                                                             (Grimshaw 1990:178, n. 1)
      b.   Their frequent invasion disrupted lessons and destabilized classes.[23]
      c.   Constant observation is required to ensure the child's safety.
                                                             (Moulton 2014:121, ex. 4b)
      d.   Constant exposure to the sun is harmful to the skin.
                                                             (Newmeyer 2009:105, ex. 33j)

While the validity of Grimshaw's (1990) diagnostics has been questioned in the past,
the proposed division between AS-nominals and non-AS-nominals is still commonly
assumed in the literature. For example, while Borer (2014) acknowledges that 'some di-
agnostics are less robust than others', she nevertheless maintains that 'the mixing and
matching of properties across the R-nominals/AS-nominals line should lead to straight-
forward ungrammaticality' (Borer 2014:72). She presents examples such as those in 93
to support her claim.

(93) a.   the collection *(of multiple samples) in order to document the spreading
           of mushrooms
      b.   *Mary's deliberate exam/journey   (Borer 2014:72, ex.1a,b)

Borer is correct about the distinction between AS-nominals and R-nominals, but she
neglects the SE-nominals, which are crucial for our argument. For her, the compatibil-
ity of *collection* with the purpose clause in 93a crucially depends on the presence of the
internal argument. However, purpose phrases are in fact compatible with SE-nominals,
as in 89. Similarly, Borer attributes the ungrammaticality of 93b to the alleged incom-
patibility of SE-nominals with an agent-oriented modifier. The data presented earlier
here cast doubt on this claim by showing that agent-oriented modifiers are possible with

[22] Moulton (2014) observes that AS-nominals and SE-nominals are similar in certain respects. However,
the theoretical implications and the analysis he proposes are different from ours.
[23] http://schools.nyc.gov/SchoolPortals/09/X229/AboutUs/Overview/pricipalcorner.htm, last accessed Jan-
uary 2017.

SE-nominals (87). Moreover, *careful journey* and *daring journey* sound better than 93b, and *careful* and *daring* are agent-oriented.[24]

To sum up, Grimshaw's proposed tests correctly distinguish AS-nominals from R-nominals. But SE-nominals fall in with AS-nominals, not with R-nominals, as Grimshaw claims. This challenges the hypothesis that AS-nominals constitute an independent class whose principles of argument realization are uniform with the verbal domain. Grimshaw succeeds in maintaining uniformity by artificially excluding the counterexamples, namely the SE-nominals.

5.2. Theoretical implications. Our results echo Grimm and McNally's (2014) conclusion, whose corpus data show that internal arguments of AS-nominals such as *destruction* can be optional, as in 94, and argue against singling out AS-nominals as a special class.

(94) How does a country recover from 40 years of destruction by an unchallenged tyrant?　　　　　(*Newsweek*, cited in Grimm & McNally 2014:126, ex. 5)

Grimm and McNally suggest that argument realization in nominals depends on the previous discourse and that an argument often can be dropped if it refers to a discourse-salient individual, as in 95.

(95) a.　??Bob's friendship *vs.* Bob's friendship with Sue
　　　b.　　Sue has known Bob for years. Bob's friendship means the world to her.
　　　　　　　　　　　　　　　　　　　　　　(Grimm & McNally 2014:126, ex. 7)

This parallels the Russian verbal construction in 23b. In English, however, verbal arguments behave differently: they must be expressed even if their referent has been mentioned in the previous discourse.

(96) The city endured a lot of suffering. *An unchallenged tyrant destroyed.

These data invite us to reconsider the standard assumption that similar mechanisms license and case-mark verbal arguments and at least some nominal arguments, as in Grimshaw 1990, Alexiadou 2001, and others. (See Higginbotham 1983, Dowty 1989, Grimm & McNally 2014 for other critiques of this approach.) If we are correct in arguing that verbs and nouns assign case by somewhat different mechanisms, then it might not be surprising that the many analyses that treat nominalizations as parallel to verbal constructions, ergative or otherwise, do not succeed in explaining the pattern of case assignment and argument realization in the nominal domain.

6. Conclusions. In this article we have proposed an analysis of case assignment to arguments of nominals. Focusing specifically on Russian nominalizations, we have offered empirical and theoretical challenges to approaches that capitalize on parallels between ergativity and nominalization and/or assume that the mechanisms that assign case in verbal constructions also operate in the nominal domain. Support for our analysis comes from empirical tests that challenge the established typology of nominalizations based on Grimshaw's (1990) diagnostics, and that therefore challenge the existence of a special class of AS-nominals.

The core design features of our analysis—lexicalism and constraint-based design—have a number of empirical and theoretical advantages over alternative contenders. In particular, on our analysis, the mechanisms of case assignment are uniform within the

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[24] A referee pointed out that *X's deliberate journey* is in fact possible, as in the following example from a book blurb: '*The Outlander* is the haunting tale of one young woman's deliberate journey deep into the wild'.

nominal domain. They apply to different types of nominals, ranging from prototypical AS-nominals (*the enemy's destruction of the city*) to SE-nominals without expressed internal arguments (*the teacher's explanation*) to relational nouns (*the book's cover*).

However, we have concluded that the mechanisms of case assignment are NOT uniform across the nominal and verbal domains. In nominals, case marking is based on surface structure: the collection of overt arguments. In the verbal domain, by contrast, it is based on argument structure, whether arguments are overtly expressed or not. In pointing up the nonuniformity of verbal and nominal domains, our analysis presents a modest limitation on the generality of X-bar theory, the hypothesis that lexical categories project phrases in (relatively) uniform fashion.

A referee has quite reasonably asked why this disparity should exist. Is it principled? Could it have just as well gone the other way—basing case marking on argument structure in nominals and on surface structure in the verbal domain? With some hesitation, we offer a conjecture.

At a few points in our exposition, we have suggested that structural case in the verbal domain might well be based not on semantic argument structure, but rather on grammatical functions along the lines of f-structure in LFG or, more specifically, on the Grammatical Function (GF) tier of simpler syntax (Culicover & Jackendoff 2005:Ch. 6; see especially p. 193). The GF-tier is responsible for the manipulation of argument structure in, for instance, passive and raising, including the treatment of dummy subjects.

Our conjecture is that NPs/DPs lack a GF-tier—or at least their GF-tier is more weakly structured. In support of this conjecture, we note that the arguments of NPs/DPs are more freely ordered and are much more liable to be optional. What looks like a passive *by*-phrase in nominals—for instance, *the destruction of the city by the enemy*—turns out to be licensed semantically rather than syntactically: the *by*-phrase has to be agentive. For example, alongside *These facts are known by everyone* we find **the knowledge of these facts by everyone*. Raising in nominals is more restricted than in clauses, especially raising of dummy subjects and idiom chunks: alongside *the devil is likely to be in the details* we find **the devil's likelihood of being in the details*. ECM/Raising to object is impossible in nominals: alongside *they believe Bill to be smart* we find **their belief of Bill to be smart*. In short, many of the purely syntactic phenomena within the verbal domain that are the responsibility of the GF-tier are either absent or more semantically based in the nominal domain.

If NPs/DPs were to lack a GF-tier, it would of course be impossible to base structural case on grammatical functions; surface structure would be a weaker alternative. At this point, we would hardly call the evidence conclusive. However, this conjecture at least connects the problem of case marking in nominals with other differences between the nominal and verbal domains. It remains for future research to investigate these differences more closely.

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