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# The Syntax of Argument Structure

Leonard H. Babby

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## THE SYNTAX OF ARGUMENT STRUCTURE

Each verb in natural language is associated with a set of arguments, which are not systematically predictable from the verb's meaning and are realized syntactically as the projected sentence's subject, direct object, etc. Babby puts forward the theory that this set of arguments (the verb's "argument structure") has a universal hierarchical composition which directly determines the sentence's case and grammatical relations. The structure is uniform across language families and types, and this theory is supported by the fact that the core grammatical relations within simple sentences of all human languages are essentially identical. Babby determines and empirically justifies the rigid hierarchical organization of argument structure on which this theory rests. The book uses examples taken primarily from Russian, a language whose complex inflectional system, free word order, and lack of obligatory determiners make it the typological polar opposite of English.

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*To my wife, Kathleen Parthé, who helped me get through the rough spots and enjoy the smooth ones.*

“The more outré and grotesque an incident is the more carefully it deserves to be examined, and the very point which appears to complicate a case is, when duly considered and scientifically handled, the one which is most likely to elucidate it.”

Sherlock Holmes

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# *Abbreviations*

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|                                |                                                                                    |
|--------------------------------|------------------------------------------------------------------------------------|
| <b>A</b>                       | adjective stem                                                                     |
| <b>A</b>                       | adjective (head of syntactic AP)                                                   |
| <b>-a</b>                      | adjectival suffix; head of aP                                                      |
| <b>ABL</b>                     | ablative case                                                                      |
| <b>ACC</b>                     | accusative case                                                                    |
| <b>ADV</b>                     | adverb, adverbial                                                                  |
| <b>-af-</b>                    | any affix                                                                          |
| <b>-af<sub>c</sub>-</b>        | causative suffix                                                                   |
| <b>-af<sub>n</sub></b>         | final affix in a derivation                                                        |
| <b>afP<sub>i</sub></b>         | affixal phrase with unbound unlinked external theta role                           |
| <b>afP<sub>&lt;v&gt;</sub></b> | affixal phrase with vertically bound unlinked external theta role                  |
| <b>AP</b>                      | adjective phrase                                                                   |
| <b>aP</b>                      | phrasal projection of adjectival suffix: [ <sub>AP</sub> [ <sub>a</sub> [A-a] AP]] |
| <b>aux</b>                     | auxiliary                                                                          |
| <b>C</b>                       | complementizer                                                                     |
| <b>caus</b>                    | causative                                                                          |
| <b>cop</b>                     | copula                                                                             |
| <b>CP</b>                      | complementizer phrase                                                              |
| <b>c-selection</b>             | categorial selection (subcategorization)                                           |
| <b>D</b>                       | determiner                                                                         |
| <b>DAT</b>                     | dative case                                                                        |
| <b>DN</b>                      | derived nominal                                                                    |
| <b>DP</b>                      | determiner phrase: [ <sub>DP</sub> [ <sub>D</sub> D nP]]                           |
| <b>EPP</b>                     | extended projection principle                                                      |
| <b>FEM</b>                     | feminine                                                                           |
| <b>GEN</b>                     | genitive case                                                                      |
| <b>g<sup>P</sup></b>           | verbal adverb phrase                                                               |
| <b>i</b>                       | external argument theta role of lexical heads                                      |
| <b>i<sub>c</sub></b>           | external agentive theta role of causative suffix                                   |
| <b>IMPERF</b>                  | imperfective aspect                                                                |

|             |                                                     |
|-------------|-----------------------------------------------------|
| inf         | infinitive (head of infP)                           |
| <b>-inf</b> | infinitive suffix                                   |
| infP        | infinitive phrase                                   |
| INST        | instrumental case                                   |
| <b>j</b>    | internal argument theta role (merges in spec-VP)    |
| <b>k</b>    | internal argument theta role (sister to V)          |
| kP          | <i>kak</i> ‘as’ phrase                              |
| LF          | long form of adjectives and participles             |
| lit.        | word-for-word translation                           |
| M           | masculine                                           |
| MDP         | minimal-distance principle                          |
| mod         | modal                                               |
| mP          | modal phrase                                        |
| N           | noun stem                                           |
| N           | noun (syntactic head of NP)                         |
| N           | neuter                                              |
| n           | small n (syntactic head of nP)                      |
| <b>n-</b>   | small n (affixal head of nP)                        |
| NOM         | nominative case                                     |
| NP          | noun phrase                                         |
| nP          | small nP ([ <sub>nP</sub> [ <sub>n</sub> [N-n] NP]) |
| obliq       | oblique morphological case                          |
| P           | preposition or postposition                         |
| PASS        | passive                                             |
| PERF        | perfective aspect                                   |
| PI          | predicate instrumental case of adjectives           |
| PL          | plural                                              |
| PP          | prepositional or postpositional phrase              |
| PRO         | null subject of an infinitive clause (‘big PRO’)    |
| pro         | null form of an overt pronoun (‘small pro’)         |
| prt         | particle                                            |
| s-selection | theta role selection (s here = s[emantic])          |
| s-clause    | small clause                                        |
| SF          | short form of adjectives and participles            |
| SG          | singular                                            |
| SOV         | subject-object-verb word order                      |
| spec        | specifier                                           |

|                   |                                                                                                                     |
|-------------------|---------------------------------------------------------------------------------------------------------------------|
| s-predicate       | small / secondary predicate, i.e. a phrasal projection with an unlinked external theta role: { $i^{\wedge}$ }- $_1$ |
| SVO               | subject-verb-object word order                                                                                      |
| T                 | head of tense phrase TP                                                                                             |
| t                 | trace/copy                                                                                                          |
| TBC               | theta binding chain                                                                                                 |
| TP                | tense phrase                                                                                                        |
| UTAH              | the Uniformity of Theta (role) Assignment Hypothesis                                                                |
| <b>V</b>          | verb stem                                                                                                           |
| V                 | verb (syntactic head of VP)                                                                                         |
| v                 | small v (syntactic head of vP)                                                                                      |
| <b>-v</b>         | finite affix                                                                                                        |
| V <sub>aux</sub>  | auxiliary verb                                                                                                      |
| V-bound           | vertically bound (an unlinked external theta role bound by a higher <b>i</b> or <b>j</b> theta role)                |
| V <sub>cop</sub>  | copula verb                                                                                                         |
| VP                | verb phrase                                                                                                         |
| vP                | small vP ([ <sub>vP</sub> [ <sub>v</sub> [V-v] VP])                                                                 |
| <b>w</b>          | internal portion of a diathesis (positions 2 to 4)                                                                  |
| w                 | word                                                                                                                |
| ~                 | alternates with                                                                                                     |
| <=>               | a reversible (biunique) relation                                                                                    |
| ^                 | is linked to (linear diathesis notation)                                                                            |
|                   | is linked to (box diathesis notation)                                                                               |
| +                 | composes with (a diathesis-level operation)                                                                         |
| =>                | projection of a verb's final diathesis to syntax                                                                    |
| >                 | argument-structure level operation                                                                                  |
| >>                | automatic/obligatory argument-structure level operation                                                             |
| ->                | syntactic-structure level operation                                                                                 |
| { $x^{\wedge}y$ } | bipartite argument with a theta role (x) linked to a categorial head (y)                                            |
| [...]             | a constituent at any level of representation                                                                        |
| #                 | intonation contour (prosodic gap) at major constituent boundary                                                     |
| *                 | ungrammatical                                                                                                       |
| !                 | archaic but grammatical                                                                                             |
| *!                | archaic and ungrammatical                                                                                           |
| **                | morphologically and syntactically ill-formed                                                                        |

|       |                                                                                                                                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| *?    | ungrammatical for many but not all speakers                                                                                                                                               |
| ∠     | grammatical but degraded (infelicitous)                                                                                                                                                   |
| α     | variable case feature                                                                                                                                                                     |
| θ     | any theta role                                                                                                                                                                            |
| <θ>   | vertically bound theta role                                                                                                                                                               |
| Q     | gloss for enclitic interrogative <i>li</i> ‘whether’ in Russian                                                                                                                           |
| -     | absence of theta role or categorial head in diathesis (see s-predicate)                                                                                                                   |
| X’    | denotes intermediate phrasal projection in syntax ([ <sub>XP</sub> nP [ <sub>X’</sub> X nP]]) and palatalization in Russian words (e.g. <i>brat</i> ‘to-take’ vs. <i>brat</i> ‘brother’). |
| ...   | denotes irrelevant material in diathesis                                                                                                                                                  |
| (...) | parentheses denote optionality                                                                                                                                                            |
|       | division of sentence into topic and comment                                                                                                                                               |
| ≈     | link in a theta binding chain                                                                                                                                                             |

# Introduction

---

While current generative theory acknowledges the importance of argument structure and productive morphological processes, it nevertheless continues to be essentially syntactocentric and has therefore failed to produce a fully integrated, balanced theory of the relation between argument structure, the productive affix-driven operations that alter it, and the syntactic structures it projects. In *The Syntax of Argument Structure* I propose an explicit, unified theory of the mapping between a verb's argument structure representation and the core syntactic structure of the sentence it heads.<sup>1</sup> This theory's primary hypothesis is that *a sentence's core syntactic representation is the direct projection of the main verb's final argument-structure representation*, which entails that there is an isomorphic mapping relation between the positions in argument-structure representation and the corresponding positions in its syntactic projection, and that *the former determine the latter*. In slightly different terms, the premise on which this theory is based is that *a sentence's core grammatical (syntactic) relations are the direct projection of the internal relations of the main verb's final (derived) argument structure*. It follows that determining and substantiating the internal architecture of argument-structure representation, to which [chapter 1](#) is devoted, is an indispensable precondition for the theory of the relation between argument structure and morphosyntactic structure presented in *The Syntax of Argument Structure*.

Extensive empirical evidence will be presented demonstrating that argument-structure based morphosyntactic theory is better able than the more familiar syntax-based theories to explain the universal relations between argument structure, the operations (canonically affix-driven) that alter the verb's *initial* (basic) argument structure, and syntactic structure. It will be demonstrated that many of the syntactic structures whose derivations have been assumed in the generative literature to be primarily syntactic are in fact the syntactic projection of affix-driven operations on the main verb's argument structure. In other words, the main computational action often occurs in argument structure

rather than in syntactic structure. The crucial assumption here is that *function words and productive affixes have their own argument structures*, which interact with the lexical verb's argument structure, producing a single derived composite argument structure. For example, the active ~ passive alternation results from different affix-driven argument-structure level operations on the same verb stem's initial argument structure; active sentences are thus not transformed into passive ones by syntactic operations. More specifically, the verb stem's initial (underived 'active') argument structure is made passive by an affix-driven argument-structure level rule and the passivized verb's *final* derived *passive argument structure* projects to syntax as a passive sentence (see Jaeggli 1986, Roberts 1987; see below for details).<sup>2</sup> In more general terms, argument-structure level rules or operations canonically involve the *composition* or, more accurately, the *amalgamation* of a lexical verb stem's argument structure with a productive affix's argument structure; the projection-to-syntax of the resulting composite argument structure is perceived as having systematic *syntactic effects*, many of which have been misinterpreted as primary syntactic rules or operations.<sup>3</sup>

It will be argued that the internal organization of a verb stem's argument structure (**V**'s diathesis) and the type of operations that alter it are linguistic universals. Many of the systematic language-specific differences we observe among the world's languages are encoded in the diatheses of the overt and null affixes (**-af**) that drive argument-structure level derivations. This is why the theory presented in *The Syntax of Argument Structure* is characterized as *morphosyntactic* (rather than *syntactic* with a subsidiary morphological component): the *final* argument-structure representation (diathesis), which projects as the sentence's core syntactic structure, is canonically derived by the affixation of one or more of a relatively small set of productive, argument-structure-bearing, language-specific affixes.<sup>4</sup>

In order to help readers to better orient themselves, I present the following outline of the theory's terminology, notation, and criterial properties, all of which will be discussed in greater detail in the chapters to follow.

- All verbs are represented in the mental lexicon as *stems*, which have an *initial* argument structure.<sup>5</sup>
- The lexicon of each language has a distinct set of productive *paradigmatic affixes*, which have their own argument structures; they include what are traditionally classified as both *inflectional* and *productive derivational* affixes.
- Argument-structure level operations involve the *composition* of a verb stem (**V**) and its argument structure (diathesis) with one or

more paradigmatic affixes and their diatheses. Each paradigmatic affix composes with an initial stem **V** or a derived stem [**V...af**], inducing a specific change in the argument structure of the initial or derived stem it composes with.

- It is essential to bear in mind in what follows that all diatheses have the same internal skeletal structure (i.e., the same number ( $x$ ) of positions or places, some or all of which may be unfilled) and that when two diatheses, each with  $x$  places, *compose*, they *amalgamate*, the result being a *derived diathesis* with precisely  $x$  places (not  $2 \times x$  places). A corollary of this conception of diathesis composition is that no matter how many lexical and affixal diatheses compose in a given derivation, the result is a final diathesis with  $x$  places – it is the ‘contents’ of these positions that change; we see below that in natural language  $x = 4$ . Given that a **V**’s diathesis may have unfilled positions, another corollary of diathesis theory is that, whereas the number of positions in a **V**’s diathesis is immutable ( $x = 4$ ), its *valence* (the number of *arguments* it selects to fill these positions) can range between zero and three; the fourth position is occupied by **V** itself (see (1); the reason for this will be explained in [chapter 1](#)).
- The argument structures of stems and paradigmatic affixes have the same universal hierarchical internal organization, which, I argue, is responsible for the universal aspects of syntactic structure.
- **V**’s *initial* diathesis is altered in highly restricted ways by the diathesis of the first paradigmatic affix it composes with; [**V-af**]’s derived diathesis is further altered by the diathesis of the next paradigmatic affix, and so on. The derived argument structure of [[[**V-af**] -af] ... -af<sub>*n*</sub>] is the derivation’s *final diathesis* (argument structure representation), which projects to syntax. [[[**V-af**] -af] ... -af<sub>*n*</sub>] is a well-formed *word*, whose internal structure cannot be accessed by the syntactic rules that operate on its syntactic projection (see Di Sciullo and Williams 1987).<sup>6</sup>
- The theory proposed in *The Syntax of Argument Structure* is a successive, ‘in-line’ morphosyntactic derivational theory: first, **V**’s initial diathesis composes with the diatheses of a subset of the language’s paradigmatic affixes, producing [[**V-af**]...-af<sub>*n*</sub>] (a *word*, which is a barrier to subsequent diathetic operations) and **V**’s *final* diathesis, which projects to syntax as the initial syntactic structure from which the sentence’s final syntactic structure is derived by successive *syntax-level operations* (e.g. the merging of the higher functional projections,

*wh*-movement, topicalization, raising to A'-positions, expletive merger, etc.).<sup>7</sup>

- Our most important assumption, which is implicit in other theories (see below), is that **V** cannot have more than three syntactic arguments; what appear to be 'four arguments' turn out to be *adjuncts*.<sup>8</sup>
- Much of *The Syntax of Argument Structure* is devoted to presenting empirical evidence that argument structure has the 2×4 bipartite organization represented by the *diathesis* in (1), according to which **V**'s argument structure consists of two related *tiers*, a *theta-role-selection tier* (theta-selection, s-selection, theta-grid) and a corresponding *linked categorial tier* (subcategorization frame, c-selection). Since each argument's categorial head is *linked* to a corresponding theta role in *argument structure*, an argument is bipartite.<sup>9</sup> Since the maximal number of arguments **V** can have is three, argument structure has the four positions represented in (1): **i**, **j**, and **k** are theta roles, **N** is a categorial noun head, and **V** is a lexical verb-stem head.<sup>10</sup> A theta role may be linked to **V** in *derived* diatheses only (e.g., see the *by*-phrase in passive derivations and the causative derivation of Turkish *ditransitive* (three-argument) verbs in §1.9).

- (1) The diathesis of a ditransitive verb:

|          |          |          |          |
|----------|----------|----------|----------|
| <b>i</b> | <b>j</b> | <b>k</b> | <b>-</b> |
| <b>N</b> | <b>N</b> | <b>N</b> | <b>V</b> |
| 1        | 2        | 3        | 4        |

The following is an alternative, linear representation of the two-tiered box structure in (1) (read “ $\wedge$ ” as “is linked to”; the curly brackets represent the bipartite arguments; the outer curly brackets demarcate **V**'s diathesis):

- (2)  $\{\{i \wedge N\}_1 \{j \wedge N\}_2 \{k \wedge N\}_3 \{- \wedge V\}_4\}$

- The argument structure representation in (1)/(2) is universal: *all* predicates and productive affixes have this skeletal 2×4, eight-slotted structure, regardless of their initial *valence* (which ranges from zero to three).<sup>11</sup> The reason for this is that initially unfilled slots like the theta-slot in  $\{- \wedge V\}_4$  in (1)/(2) will be shown to play an active role in many argument-structure level operations. Unfilled argument positions (e.g.,  $\{- \wedge \}_3$  in the diathesis of monotransitive verbs) that are not affected by diathetic operations do not project to syntax.

- Given the bipartite structure of arguments, argument-structure rules, unlike syntactic rules, can operate on a theta role without affecting the **N** it is linked to (e.g.,  $\{i^{\wedge}N\}_1 > \{-^{\wedge}N\}_1$  *dethematization* in passive derivations) or can delete **N** without affecting *i* (e.g.,  $\{i^{\wedge}N\}_1 > \{i^{\wedge}-\}_1$  in the derivation of *s(mall)-predicates* (see below). Syntactic rules as presently conceived cannot delete an NP (DP) but not its theta role, or delete a theta role, stranding its NP.
- The two-tiered, four-positioned diathesis in (1)/(2) does not involve *redundancy* (see Lasnik and Uriagereka 2005: 3–7): (i) Since the unfilled positions in impersonal (zero valence), unergative, unaccusative, mono-transitive, and ditransitive diatheses play a crucial role in constraining diathesis-level operations involving the *rightward displacement* of initial arguments, they must be explicitly represented in each verb's diathesis (see §1.9). (ii) Conclusive evidence will be presented that the two tiers in diathesis representation are *autonomous*, i.e., **V**'s c-selection (subcategorization tier) *cannot* be predicted from its theta-selection tier, as has been claimed (see Pesetsky 1982, Bošković 1997, and others).<sup>12</sup> (iii) Empirical evidence will also be presented for the existence of *external subcategorization* in Russian and other languages, which entails that Chomsky's Extended Projection Principle is not an absolute universal: not all *verbs* have external arguments and, accordingly, not all *sentences* have subjects (e.g., the external argument of an impersonal verb is  $\{-^{\wedge}-\}_1$ , which does not project to syntax).<sup>13</sup> It appears that subject-optionality is a special case of a more general parameterizable universal, which I tentatively call the Spec-Parameter: the fact that the spec-position in Russian noun phrases and the subject position in Russian clauses (spec-vP) may be unfilled is an instantiation of the same parameter setting.
- The representation of argument structure by the diathesis in (1) is *hierarchical* in the sense that  $[V-af_n]$  in the final diathesis *merges* with  $[V-af]$ 's arguments *one at a time, from right-to-left*, projecting the sentence's core syntactic structure, which is the input (initial syntactic structure) to the syntactic phase of a sentence's derivation. Note that the bottom-to-top direction of syntactic projection and the binary branching of syntactic representation assumed in *The Syntax of Argument Structure* and in other theories are a consequence of the right-to-left merger of **V** and its arguments, which is determined by the diathesis's internal organization in (1)/(2).
- (1)/(2) projects the sentence's core syntactic structure (Extended Lexical Projection) in (3); 'small *v*' is the *finite affixal head* of vP:

- (3)  $\{\{i^{\wedge}N\}_1 \{j^{\wedge}N\}_2 \{k^{\wedge}N\}_3 \{-^{\wedge}V\}_4\} \Rightarrow [{}_{vP} NP_i [{}_{v'} [V-v] [{}_{vP} NP_j [{}_{v'} t_v NP_k]]]]$

Since  $\{i^{\wedge}N\}_1$  is the left-most argument in  $V$ 's diathesis, it is the last to merge syntactically and, given that  $VP$  has only two argument positions (spec- $VP$  and sister-to- $V$ ),  $\{i^{\wedge}N\}_1$ 's syntactic projection is *VP-external*: it projects to spec- $vP$  as the sentence's subject.<sup>14</sup> The  $vP$  s (mall)-clause in (3) canonically *merges* with higher functional heads and the subject  $NP_i$  canonically moves to the spec-position of a higher functional phrase (not shown in (3)). Once  $vP$  is projected to syntax from  $V$ 's final diathesis, all subsequent operations are syntactic.

- The theory outlined above has the following corollaries: (i) *The  $2 \times 4$  hierarchical structure of the final diathesis exhaustively determines the projected sentence's core grammatical (syntactic) relations.* (ii) Syntactic rules do not change a sentence's basic grammatical relations or the cases that express them, i.e., there are no syntactic movement rules that induce abstract or morphological case-change. All operations that alter  $V$ 's initial diathesis and, therefore, its projected syntactic relations, are diathesis-based and are canonically the result of the composition of  $V$ 's  $2 \times 4$  initial diathesis with the  $2 \times 4$  diatheses of its affixes or functional verbs (e.g., auxiliary verbs). Thus *alternations*, including voice alternations, are alternative realizations of a given  $V$ 's initial diathesis; the complete set of a given  $V$ 's alternations is its *morphosyntactic paradigm*. For example, the movement of direct object to subject position (with accompanying change of accusative to nominative case) in middle, passive, and unaccusative derivations does not by hypothesis involve syntactic movement. (iii) There are no rules of any kind at any level that change the value of a theta role. For example, when a Turkish unergative  $V$ 's initial external agent theta role is right-displaced by the causative suffix's diathesis and realized as  $[V-af_{CAUS}]$ 's direct object, it is an agentive accusative direct object: the agent role is not nor can it be converted to patient role (see §1.9).
- The initial and final diatheses of verbs and paradigmatic affixes always have  $2 \times 4$  structure, which entails the following universal: there are no operations of any kind at any level that can alter the basic  $2 \times 4$ , eight-slotted *skeletal structure* of the diathesis; all argument-structure level operations begin and end with the diathesis's eight slots intact; rules may of course act upon the contents of the slots, adding, displacing, deleting, and delinking arguments. This is the foundation of the theory proposed in *The Syntax of Argument Structure*. We shall see

below that diathesis-level operations may: (i) delink a theta role and its categorial head (e.g., *dethematization* and right-displacement of external **i** in passive derivations, which may be schematically represented as:  $\{\{i^{\wedge}N\}_1 \dots \{-^{\wedge}V\}_4\} > \{\{-^{\wedge}N\}_1 \dots \{i^{\wedge}[V\text{-af}_{\text{pass}}]\}_4\}$ ); (ii) create *s-predicates* by deleting **V**'s external **N**, i.e.:  $\{\{i^{\wedge}N\}_1 \dots \{-^{\wedge}V\}_4\} > \{\{i^{\wedge}-\}_1 \dots \{-^{\wedge}[V\text{-af}]\}_4\}$ ; <sup>15</sup> (iii) add new arguments to **V**'s initial diathesis in productive applicative and causative derivations *provided that appropriate positions are available*. <sup>16</sup> Given that a sentence's core syntax is determined by **V**'s final diathesis, the immutability of the diathesis's 2×4 structure predicts that the core syntax of clauses should be cross-linguistically *uniform* (allowing for variation due to the parameterization of universal principles like the headedness parameter); it also predicts the absence of *construction-specific grammatical relations* (see below).

- *s-predicates*, which are derived diatheses with unlinked external theta roles, i.e.,  $\{i^{\wedge}-\}_1$ , will be shown to play a central role in the building of morphosyntactic structures. For example, the following are s-predicates: attributive (but not predicate) forms of the adjective (chapter 2), hybrid verbal adjuncts (chapter 3), and subject-controlled infinitive complements (chapter 4). Now, if there are productive operations in natural language that dissociate (delink) theta roles and their categorial heads (e.g.,  $\{i^{\wedge}N\}_1 > \{i^{\wedge}-\}_1$  [s-predicate] or  $\{i^{\wedge}N\}_1 > \{-^{\wedge}N\}_1$  [dethematized verb]), there must be a computational level of representation at which such operations are possible. Whereas syntactic rules are not able to dissociate an NP and its theta role (e.g., delete or move an NP, stranding its theta role), the 2×4 structure of the diathesis, in which *arguments are bipartite* (i.e., their theta roles and categorial heads are distributed over two autonomous tiers), predicts the existence of precisely this kind of delinking operation in argument-structure level derivations.

The theory outlined above is characterized as an integrated *morphosyntactic* theory because diathesis-level operations, which are canonically *affix-driven*, derive final diatheses, which *project core morphosyntactic structure*. In other words, if verbs are represented in the lexicon as stems, their derivations necessarily involve the composition of the stem's diathesis with the diathesis of at least one affix to create a *word*, which is the 'atom' of the syntactic phase of the derivation (see Di Sciullo and Williams 1987). If this theory is correct, a sentence's universal Extended Lexical Projection is a morphosyntactic structure (see vP in (3), where the head *v* is the finite verbal affix).

Explicit theories have a way of taking on a life of their own, making falsifiable predictions and suggesting solutions to problems that were not initially envisaged. This phenomenon is responsible for my decision to expand my original circumscribed goal of exploring the mapping between argument structure and syntax into a comprehensive theory of morphosyntax in which argument structure is promoted from its accessory status in Government and Binding theory and the Minimalist Program to a far more central role. For example, since, as we shall see below, s-predicates turn out to play a fundamental role in syntactic structure building and, since the unbound projection of  $\{\hat{\cdot}\}_1$  is syntactically ill-formed, diathesis-based theory requires an explicit theory of *control*, which will be demonstrated to derive entirely from Binding theory and which is far broader than infinitive control (see [chapters 2–5](#)). Furthermore, theta binding chains (TBC), in which s-predicates are *vertically bound* (Williams 1994), turn out to also account for case, number, and gender *agreement*: the vertically bound tail of a TBC agrees with the TBC’s head. Thus an explicit theory applied systematically to the full range of data both provides new solutions to old problems (e.g. the use of noun phrases as both arguments and predicates) and, equally important, identifies new problems based on old data that were erroneously thought to be well understood (e.g., see the similarities and differences between copula and auxiliary verbs in [chapters 2, 3, and 4](#)).

While data in *The Syntax of Argument Structure* comes from English, Turkish, Icelandic, French, and other languages, the star of the show is Russian.<sup>17</sup> The reason for this is the same as the reason I have been working on Russian morphosyntax since 1965: Russian, with its rich inflectional system and concomitant free word order, is essentially the typological polar opposite of English and perforce plays an important role in getting beyond English-specific phenomena in our search for morphosyntactic universals. For example, Russian’s elaborate system of impersonal sentences provides robust empirical evidence against the English-biased claim that all sentences in all languages have a null or overt subject (see the Extended Projection Principle) and against Burzio’s Generalization (see §1.8). Russian’s rich case and agreement morphology provides precisely the kinds of data and problems that a coherent morphosyntactic theory must be able to account for (see Franks 1995, Lavine 2000). Note too that, as we shall see in [chapter 1](#), it is overt case morphology in tandem with argument structure that licenses ‘scrambling’ (see Bailyn 1995a, 1995b, 2006, Junghanns and Zubatow 1997, Slioussar 2005). Russian’s systematic gender, number, and case agreement serves a critical diagnostic function, enabling us to pinpoint the presence and absence of null categories; e.g., see [chapter 4](#) where the case agreement of the adjunct s-predicate pronominal

adjectives *sam* ‘(by) himself’, *odin* ‘alone’, and *ves* ‘all’ provides incontrovertible empirical evidence that infinitive complements come in three sizes: *infinitive s(mall) clauses*, which have *null* dative subjects when controlled: [<sub>infp</sub> PRO<sub>I.DAT</sub> inf” <<sub>i</sub>>]; *infinitive s(econdary) predicates*, which, like all anaphors, must be bound: [<sub>infp</sub><<sub>i</sub>> inf” <<sub>i</sub>>]; and *bare infinitive phrases*: [<sub>infp</sub> inf”], which obligatorily cooccur with auxiliary verbs (see §4.12). I assume that many of the categories, distinctions, relations, operations, and constructions analyzed in the following chapters, which are overtly realized in Russian, are morphosyntactic universals which happen not to have formal realizations in English and many other languages.

The theoretical scaffolding of *The Syntax of Argument Structure* is Government and Binding theory and the Minimalist Program enriched by the insights of Williams’ *Thematic Structure in Syntax* (1994). Williams’ influence has been profound (e.g., the crucial notions of *vertical binding* and *external argument* are his). The influence of what I will call the Russian School has also been substantial: I first encountered the two-tiered diathesis and its use as the basis for a typology of alternations in Mel’čuk and Xolodovič 1970 and Xolodovič 1974.<sup>18</sup> Relational Grammar has also exerted an influence, but more as a theory of argument structure than syntax (see Channon 1979, Perlmutter 1983, Perlmutter and Rosen 1984, Blake 1990, Farrell 2005: ch. 6). The following publications influenced my conception of argument structure in this book’s early stages: Fillmore 1968 (see Cook 1989), all references to Bowers, Marantz 1984, Pinker 1984: ch. 8, Zubizarreta 1987, Baker 1988b, Grimshaw 1990, Speas 1990, Wechsler 1995, Alsina 1996, Epstein *et al.* 1998, and all the references to Levin and Rappaport Hovav.

Since *The Syntax of Argument Structure*, which presents what I take to be a new theory of the mapping between argument structure and morphosyntactic structure, has unfamiliar terminology and notation, and is based primarily on Russian, which I do not assume my readers know, the book’s readability has been a constant concern. To this end I have in most cases avoided protracted polemical discussions, preferring instead to devote the limited space at my disposal to working out the details implicit in diathesis theory.<sup>19</sup> My assumption is that the best way to introduce a new theory is to demonstrate its explanatory power on the basis of a broad range of data rather than dwell on the perceived weaknesses of its competitors. My argumentation is accordingly data based (empirical) rather than theory internal.

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# 1 *The structure of argument structure*

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## 1.0 Introduction

One of recent generative theory's leading ideas is that *syntax is a projection of the lexicon*.<sup>1</sup> The primary goal of this book is to explore this hypothesis and to propose an explicit theory of the mapping between the lexicon and morpho-syntactic structure. I will argue that this hypothesis is correct if by 'lexicon' we understand *predicate argument structure*, which is an integral part of the lexical entry of every verb and, more generally, of every *predicator* in the mental lexicon.<sup>2</sup>

My main hypothesis is that a sentence's *core syntactic structure* (vP) is the direct projection of V's argument structure.<sup>3</sup> More specifically, argument structure has its own syntax, i.e., it has hierarchical internal structure which is operated on by argument-structure specific rules. This entails that vP is fully determined by the homologous structure of the head verb's *final derived argument structure*.<sup>4</sup> In other words, in the argument-structure based theory of morphosyntax presented in this book, the grammatical (syntactic) relations of a sentence's arguments are fully determined by the internal organization of V's diathesis. It is in this sense that V *heads* its clause.

This theory requires that we pay careful attention to whether the rules responsible for a sentence's derivation operate on argument structure (V's diathesis) or on the syntactic structure it projects: many operations that were thought to be syntactic will be shown to be diathetic. For example, *wh*-movement, which does not involve a change of grammatical relations or case, is patently a syntactic rule. But rules involving NP-movement, which involve a change of grammatical relations and case, will be shown to be operations on argument-structure representation that have predictable syntactic effects. A corollary of this theory is that *syntactic rules do not alter a sentence's basic (core) grammatical relations and the cases that lexicalize them*. In other words, operations that alter core grammatical relations must by hypothesis be diathesis-level operations.

My approach to *argument realization* is different from theories like that of Levin and Rappaport Hovav (2005), who posit a direct relation between a verb's lexical semantics and the syntactic realization of its arguments. The chapters of this book can be read as a protracted argument against the hypothesis that a verb's lexical semantics systematically determines the syntactic structure of the sentence it projects. We shall see that verbs with the same lexical semantics and even the same ordered set of theta roles routinely have different argument realizations, i.e., project different syntactic structures in the same language and cross-linguistically.<sup>5</sup>

An explicit theory of the mapping between argument structure and morpho-syntactic structure must be able to encode the *arbitrary, semantically unmotivated aspects of argument realization* as well as its systematic aspects. My position is that if the relation between syntactic form and verbal meaning were direct and systematic, *V*'s projected syntax would always be predictable and there would be no need for argument structure as an autonomous level of representation (see Alsina 1996, Stowell 1992: 14, Sadler and Spencer 2001: 218, Zubizarreta 1987).

In the theory I am proposing, lexical semantic representation maps onto *V*'s diathesis, which, in turn, maps onto syntactic representation. Our focus will be the mapping between *V*'s diathesis and the core syntactic structure it projects. Since the diathesis mediates between lexical semantic and syntactic representations, it can be thought of as a *rectifier* that aligns the information in semantic representation, presenting it in a form facilitating the *direct projection of V's arguments to syntactic structure*.<sup>6</sup>

Lexical semantic representation ideally involves the universal aspects of *V*'s event/participant meaning, whereas certain aspects of argument structure are, by hypothesis, necessarily language-specific, verb-specific, and *arbitrary*; e.g., it is in *V*'s diathesis that the unpredictable argument-realizations of *jealous* and its Russian counterpart *revnovat* are encoded (see note 5). But the hierarchical organization of diathesis representation (see below), the kind of rules that operate on it (which are canonically driven by diathesis-bearing affixes), and the final diathesis's isomorphic relation to core syntactic structure are, I argue, formal universals. This book will thus be primarily concerned with the universal hierarchical structure of the diathesis, the constraints on the affix-driven operations that alter it (e.g., causativization, passivization, nominalization, infinitive-formation, etc.), and the projection of *V*'s final derived diathesis to *vP*, its Extended Lexical Projection, which can be represented as  $[VP\ nP_{i,NOM}\ [{}_V\ [V-v]\ VP]]$  (*i* is *V*'s external theta role,  $nP_i$  is its subject, *v* is the productive finite verbal suffix,  $[V-v]$  is a word [verb]). Thus the diathesis simultaneously

encodes argument structure's immutable universal formal properties and the unpredictable, arbitrary properties of individual verbs in particular languages (see §1.8.1).

Languages typically have a closed class of productive, diathesis-altering, paradigm-creating affixes (**-af**), which have their own diatheses.<sup>7</sup> Since these affixes both alter **V**'s initial diathesis and head their own projections in the syntax (**afP**), diathesis theory provides a natural setting in which an important lexicalist dictum can be formalized: in addition to parameter-setting, the morphosyntactic differences we observe among languages can in large part be attributed to the language-specific properties of their diathesis-bearing *affixes*. A diathesis-level rule is thus the *composition* of **V**'s initial diathesis with the diathesis of a paradigmatic affix, which projects as  $[_{afP} nP_{i,\alpha} [_{af^*} [V-af] VP]]$  ( $\alpha$  = case).

Summary: A sentence's Extended Lexical Projection is the syntactic projection of **V**'s final diathesis (i.e. **V**'s initial diathesis in composition with the diathesis of at least one affix), which encodes **[V-af]**'s syntactically relevant information in a form that maps directly and isomorphically onto binary-branching phrase-structure representation. The information encoded in **V**'s final diathesis includes: its syntactic category (syntactic features), its *valence* (the number, type, and obligatoriness of its arguments), the binary-branching and grammatical relations of the sentence it projects, the lexical (quirky) cases and prepositions it selects, and other unpredictable properties. However, far from simply being a repository of unsystematic, unpredictable properties, diathetic representation is in fact the seat of syntactic structure in the sense that its internal organization determines the projected sentence's syntactic organization. This conception of argument structure entails that **V**'s diathesis and the diathesis-bearing affixes it composes with play a far greater role in determining syntactic structure than allowed for in syntax-centered theories. In the [next section](#) we look more closely at the hypothesis that **V**'s final diathesis encodes the grammatical (syntactic) relations of the sentence it projects.

## 1.1 The internal structure of the diathesis

Russian provides a great deal of evidence that **V**'s diathesis must explicitly represent its theta-role selection and its category selection (c-selection or subcategorization) as *autonomous* but related *tiers* since it is easily demonstrated that neither can be systematically predicted from the other.<sup>8</sup> I shall argue below that: (i) **V**'s theta-selection and c-selection cannot be systematically predicted from its lexical meaning. (ii) c-selection is not predictable from theta-selection