



**UNIVERSITY OF PLOVDIV “PAISII HILENDARSKI”  
FACULTY OF PHILOLOGY  
DEPARTMENT OF BULGARIAN LANGUAGE**

**KRASILINA GEORGIEVA KOLEVA-KOSTOVA**

**THE BULGARIAN COMPLEX COMPOUND  
SENTENCE – A STUDY OF  
STRUCTUROGRAPHIC MODELS AND  
SYNTACTIC SKETCHES**

**AUTHOR’S ABSTRACT**

of the dissertation for obtaining  
the educational and scientific degree “Doctor”

Field of higher education: 2. Humanities  
Professional direction: 2.1. Philology  
Doctoral program: Contemporary Bulgarian language

**Doctoral Supervisor:**  
Assoc. Prof. Dr. Petya Ivanova Nestorova

Plovdiv  
2025

The dissertation “The Bulgarian Complex Compound Sentence – A Study of Structurographic Models and Syntactic Sketches” has been reviewed and scheduled for public defense before a scientific jury at a meeting of the Department of Bulgarian Language, Faculty of Philology, Plovdiv of Plovdiv “Paisii Hilendarski”, held on 17 November 2025.

The dissertation consists of 442 standard computer pages and includes an introduction, three chapters, conclusion, bibliography (138 sources), list of excerpted sources, and three appendices.

**Academic Jury:**

Prof. Dr. Petya Nacheva Osenova

Prof. Dr. Ruska Sabeva Stancheva

Assoc. Prof. Dr. Galina Mihaylova Petrova

Assoc. Prof. Dr. Mayya Dimitrova Kuzova

Assoc. Prof. Dr. Boryan Georgiev Yanev

The public defense of the dissertation will take place on March 3, 2026, at 14:00 in the Conference Hall of Plovdiv University “Paisii Hilendarski”, Rectorate Building, 24 Tsar Asen St.

The defense materials are available at the University Library, Rectorate, 24 Tsar Asen Street.

## CONTENTS

### **Introduction**

**Chapter I.** The Complex Sentence and the Term “period” in the Bulgarian Syntactic Tradition

**1.1.** The complex sentence in Bulgarian linguistics from the 1850s to the present (2024) – research and trends

**1.1.1.** Theoretical description of complex sentences during the Bulgarian National Revival – the contributions of Yoakim Gruev, Ivan Momchilov and Todor Ikonomov

**1.1.2.** Theoretical description of complex sentences from the 1880s to the end of the 19th century

**1.1.3.** Theoretical description of complex sentences from the early 20th century to the 1940s

**1.1.4.** Theoretical description of complex sentences from the 1940s to the 1970s

**1.1.5.** Theoretical description of complex sentences from the 1980s to the end of the 20th century

**1.1.6.** Theoretical description of complex sentences from the early 21st century to the present (2024)

**1.2.** Theoretical foundations and development of the term “period” in the Bulgarian syntactic tradition

**1.2.1.** The term “period” in grammars of the National Revival

**1.2.2.** The term “period” in post-Liberation grammars

**1.2.3.** The concept “period” in scholarly works from the 1990s to the present (2024)

**Chapter II.** Theoretical Platform of the Study

**2.1.** Generative grammar as the theoretical foundation of the study

**2.2.** Conceptual apparatus of Government and Binding theory

**2.2.1.** Constituent grammar

**2.2.2.** Phrasal combinations among syntactic categories (lexical and functional)

**2.2.3.** Functional categories

**2.2.3.1.** The complementizer group (CP)  
**2.2.3.2.** Inflection (IP)  
**2.2.3.3.** The sentence rule in constituent grammar  
**2.3.** Subordinate sentences as part of complex and complex compound sentences

**2.4.** Constituent tree  
**2.5.** Sentence structurography  
**2.5.1.** Boundaries of expansion of structurographic models.

Recursion in action

**2.5.2.** Experiment with Old Bulgarian texts  
**2.5.3.** New principles of classification  
**2.5.4.** Intonation and structurography  
**2.6.** Configurational analysis of the simple sentence  
**2.7.** Configurational analysis of the complex sentence  
**2.8.** Primary sketches – the technique of analysis  
**2.9.** The language of the authors

**Chapter III.** Statistical Modelling of the Corpus. Results  
**3.1.** Observations. Justification of the empirical material in the study

**3.2.** Comparisons between the frequency characteristics *scope* and *depth* in complex compound sentences  
**3.2.1.** Comparison of the frequency characteristic *scope*  
**3.2.2.** Comparison of the frequency characteristic *depth*  
**3.3.** The complex compound sentence. Theoretical foundations for a new classification

**3.4.** Statistical data on types of subordinate sentences within complex compound sentences in the works of Yordan Yovkov and Yordan Radichkov

**3.4.1.** Statistical data on subordinate sentences obtained in previous research

**3.4.2.** Statistical data on subordinate sentences in the excerpted complex compound sentences from the novels The Farm by the Border and Noah's Ark

**3.5.** Extended analysis of quantitative characteristics in sentences 101–200 from Noah’s Ark by Yordan Radichkov

**3.6.** Extended scope of syntactic analysis of simple two-member sentences in the novels Antichrist, The Farm by the Border, and Noah’s Ark

**3.7.** The contribution of statistical predictive methods. New statistical data on the structure of the complex sentence in the works of Yordan Yovkov and Yordan Radichkov

**3.7.1.** Statistical analysis of quantitative characteristics derived from 200 complex compound sentences from the works of Yordan Yovkov and Yordan Radichkov

**3.7.1.1.** Conclusions about the syntax of the novel The Farm by the Border by Yordan Yovkov

**3.7.1.2.** Conclusions about the syntax of the novel Noah’s Ark by Yordan Radichkov

**3.7.2.** Comparison between the quantitative characteristics in the samples from Yordan Yovkov and Yordan Radichkov

**3.7.3.** Variance analysis using Levene’s test and the independent two-sample t-test

**3.7.4.** Variance analysis using the Mann–Whitney U test

**3.7.5.** Comparative charts of the quantitative characteristics of complex compound sentences from the novels The Farm by the Border and Noah’s Ark

**3.8.** Statistical analysis of simple sentences. Conclusions about the statistics. Conclusions about the syntax

**3.8.1.** Descriptive statistical analysis

**3.8.2.** Statistical tests for variance analysis

**3.9.** Analysis of the connecting mechanisms in complex compound sentences in The Farm by the Border by Yordan Yovkov and Noah’s Ark by Yordan Radichkov

**3.9.1.** Subordinative connections between simple sentences within complex compound sentences

**3.9.2.** Coordinative connections between simple sentences within complex compound sentences

**3.10.** Structurographic models of complex compound sentences

**Conclusions**

**Bibliography**

**List of excerpted sources**

**Appendix 1** (Primary syntactic sketches of one hundred complex compound sentences from The Farm by the Border by Yordan Yovkov)

**Appendix 2** (Primary syntactic sketches of two hundred complex compound sentences from Noah's Ark by Yordan Radichkov)

**Appendix 3** (Comparative charts of quantitative characteristics for the authors Yordan Yovkov and Yordan Radichkov)

## GENERAL CHARACTERISTICS OF THE DISSERTATION

The object of the dissertation research is the *scope* (as a quantitative characteristic it includes the number of simple sentences in each complex compound sentence) and the *depth* (as a quantitative characteristic it includes the number of levels that express the embedding of subordinate sentences into one another, where each previous sentence functions as a main sentence for the following one. On the first level there are always main sentences, on the second – a subordinate sentence and/or two or more co-subordinate ones, on the third – a subordinate sentence referring to any of the subordinate sentences from level two, etc.) of the Bulgarian complex compound sentence in the novel The Farm by the Border by Y. Yovkov and in the novel Noah's Ark by Y. Radichkov. The subject of the research are the primary syntactic sketches and the structurographic models of the excerpted complex compound sentences. The primary syntactic sketches represent preliminary, algorithmically calculable models of the possible combinations in complex compound sentences. They reflect the hierarchical structure of the sentence, while simultaneously accounting for the interaction of the coordinative and subordinative principles in the organization of the syntactic level (Barkalova 2011: 152). In the present study, the term *structurographic model* is used as a synonym of constituent (syntactic) tree.

The dissertation sets out two main aims:

The first aim is to derive *quantitative parameters* (scope, depth, number of main sentences, number of subordinate sentences, number of co-subordinate sentences, types of paratactic and hypotactic relations, etc.) from the primary syntactic sketches of complex compound sentences and, by applying comparative statistical analysis, to draw conclusions about the language of the authors Y. Yovkov and Y. Radichkov.

The second aim of the dissertation is to *classify complex compound sentences* into subtypes, considering, first, the quantitative parameters *scope* and *depth* and, second, clarifying the meaning and use of the term “period”.

The dissertation proposes two possibilities for distinguishing types of complex compound sentences. *The first* classification of the complex compound sentence stems from the theoretical views of renowned Bulgarian scholars whose opinions are discussed in Chapter One. We adopt the view that *the period is a complex compound sentence divided into meaningful parts that are juxtaposed in parallel through syntactic parallelism and are characterized by specific intonation* – usually a rise of pitch in the first part and a fall in the second part. From this follows our first classification, which is two-component and includes *periodic* and *non-periodic* complex compound sentences.

*The second* classification is based on the following regularity between scope and depth: in sentences with *a small number* of main predication at the first level, the depth of the sentence structure is *greater*, and vice versa – the more main predication there are at the first level, the fewer the structural levels (one or two). This classification is three-component and includes the types *linear*, *deep* and *combined* complex compound sentences. The two classifications proposed in this study are not mutually exclusive.

To achieve the aims of the dissertation, the following tasks must be fulfilled:

1. To trace the emergence and classification of the Bulgarian complex compound sentence in Bulgarian grammars and scholarly works from the National Revival period to the present day, and to summarize the leading scholarly opinions.
2. To outline the origin of the term “period” in the Bulgarian syntactic tradition.
3. To examine the main theoretical postulates of generative grammar and the concepts derived from it that are employed in compiling the corpus.

4. To select appropriate works by classical Bulgarian authors.
5. To excerpt 300 complex compound sentences from these works.
6. To create a corpus of 300 primary syntactic sketches of complex compound sentences from the novels The Farm by the Border by Y. Yovkov and Noah's Ark by Y. Radichkov.
7. To present structurographic models of complex compound sentences.
8. To describe a first classification of complex compound sentences, including periodic and non-periodic complex compound sentences.
9. To identify and describe the intonation contours and regularities characteristic of subordinate sentences in copular constructions within complex compound structures.
10. To perform an acoustic analysis of selected copular constructions (S1 cop S2, NP cop S, S cop NP) using the software Praat, with the aim of highlighting intonational characteristics.
11. To formulate thirty-three quantitative characteristics to be extracted from two hundred (100 from The Farm by the Border and 100 from Noah's Ark) primary syntactic sketches of complex compound sentences.
12. To compare and visualize in graphs the frequency characteristics *scope* and *depth* of all excerpted sentences from the three studied novels – Antichrist by Em. Stanev, The Farm by the Border by Y. Yovkov and Noah's Ark by Y. Radichkov.
13. To establish regularities between scope and depth of complex compound sentences derived from their linear organization and degree of structural hierarchy.
14. To describe a second classification of complex compound sentences including linear, deep and combined complex compound sentences.
15. To present the quantitative ratio between types of subordinate sentences within complex compound sentences in the three novels studied – Antichrist by Em. Stanev, The Farm by the Border by Y. Yovkov and Noah's Ark by Y. Radichkov.

16. To present data on scope, depth, number of main sentences, number of subordinate sentences and their quantitative ratio from a second sample consisting of the 101st to the 200th complex compound sentences from Noah's Ark by Y. Radichkov.
17. To present a statistical study of thirty-three quantitative characteristics (scope, depth, number of subordinate sentences, number of main sentences, number of co-subordinate sentences, etc.) of two hundred (100 from The Farm by the Border and 100 from Noah's Ark) of the excerpted complex compound sentences.
18. To summarize the modes of connection (subordinative and coordinative) between the simple sentences within complex compound sentences.
19. To present the quantitative ratio between four secondary sentence parts (object, adverbial modifier, attribute and predicative) from 150 simple two-member sentences (50 from Antichrist by Em. Stanev, 50 from The Farm by the Border by Y. Yovkov and 50 from Noah's Ark by Y. Radichkov), in order to create a basis for comparison with complex compound sentences.
20. To analyse the scope and depth of 150 simple two-member sentences (50 from Antichrist by Em. Stanev, 50 from The Farm by the Border by Y. Yovkov and 50 from Noah's Ark by Y. Radichkov), in order to create a basis for comparison with complex compound sentences.
21. To present a statistical study of eight frequency characteristics (scope, depth, subordinative connection – agreement, prepositional government, government, adjunction; coordinative connection – syndetic, asyndetic) of 150 simple two-member sentences as a complement to the statistical study of complex compound sentences, in order to outline similarities and differences between simple and compound sentences with respect to the above characteristics.
22. To draw conclusions about the style and language of the authors Y. Yovkov and Y. Radichkov.

23. After conducting the research, to illustrate the structure of the complex compound sentence through a formal notation of constituent rules.

To accomplish the aims and tasks of the present dissertation, a methodology is used that combines the following methods: 1. the method of excerpt; 2. the comparative-historical method; 3. instrumental method; 4. descriptive method; 5. statistical method.

For each complex compound sentence in the corpus, the types of subordinate sentences, the type of relations between the simple sentences, as well as the hierarchical levels of the subordinate sentences have been identified. The dissertation employs terminology characteristic of both generative and traditional syntax. The classification of subordinate sentences is considered in the context of the traditionally established model of five basic types of subordinate sentences in contemporary Bulgarian grammars: subject, predicative, attributive, object sentences and the ten types of adverbial sentences. Each of the three hundred excerpted sentences is represented by a primary syntactic sketch which graphically depicts the hierarchical structure, the main constituents and the relations between them. The method of representation follows the model presented in the monograph Bulgarian Syntax: Known and Unknown (Barkalova 2011: 153).

The dissertation has the following compositional structure: *introduction, three chapters, conclusion, bibliography and three appendices*. Chapter One, entitled The Complex Sentence and the Term “period” in the Bulgarian Syntactic Tradition, offers a review of scholarly works from the National Revival period to the present day (1858–2024) and aims to trace the development of the complex compound sentence and of the term *period*. Chapter Two, Theoretical Platform of the Study, describes the terms and concepts used in generative grammar. Chapter Three, entitled Statistical Modelling of the Corpus. Results, presents the results of the study based on 300 excerpted complex compound sentences by classical Bulgarian authors and the 300 models of primary syntactic sketches compiled for them. The first two

appendices include 300 primary sketches of the excerpted complex compound sentences, and Appendix 3 contains comparative diagrams of the quantitative characteristics studied for the authors Y. Yovkov and Y. Radichkov.

Chapter One presents a theoretical review, which surveys monographs and grammars from the National Revival period to the present (1858–2024). It summarizes the views of scholars who have included syntax in their grammars and have addressed the topic of the complex sentence and its types (compound, complex and complex compound). Opinions regarding the term “period” are also examined. The overview is structured into several chronological periods. The first covers the years from 1858 to 1875, and from the scholarly views presented there – those of Y. Gruev (1858), I. Momchilov (1868) and T. Ikonomov (1875) – it emerges that the complex compound sentence *is not described* as a syntactic phenomenon. In the second period (1.1.2.), where Grammar of the Bulgarian Language by St. Vezhenov (1880), Elementary Bulgarian Grammar by T. Shishkov (1880), Syntax of the Bulgarian Language by At. Iliev (1888), and Manual in Bulgarian in Three Courses for the Lower Classes of the Gymnasium. Course III. Syntax by D. Mishev (1895) are discussed, it likewise becomes clear that the term “complex compound sentence” is not commented on; only At. Iliev maintains that in the language there are cases where compound and complex sentences merge into a single type. Section 1.1.3. summarizes the scholarly opinions of authors from the beginning of the 20th century to the 1940s. In the two editions of Kl. Karagyulev (1901; 1922), the work of P. Kalkandzhiev (1936) and the grammar by St. Mladenov and St. Popvasilev (1939) we again find no definitions of the notion in question – the complex compound sentence. An important time span for our research is the period from the 1940s to the 1970s because in this period the complex compound sentence is first described as a third type of complex sentence by L. Andreychin (1944). The term is absent from the grammars of Al. Teodorov-Balan (1940) and D. Popov (1941). This period is also significant for the studies of K. Popov (1962) and R.

Rusinov (1967), who not only define the complex compound sentence but also introduce its subtypes. In the last two decades of the 20th century, which include the works of Yu. S. Maslov (1982), the Academic Grammar (1983), Iv. Nedev (1992), St. Brezinski (1995), Y. Penchev (1993), P. Pashov (1999) and Sv. Koeva (1999), the question of complex sentences is examined in depth. Different views of compound complex sentences emerge, visible through their subtypes. It is precisely in this period that the essence of the complex compound sentence as a distinct type of complex sentence becomes clearly delineated. The last period (1.1.6.) examined presents the scholarly opinions of five authors – St. Petrova (2008), Ya. Pometkova (2015), P. Radeva (2015), El. Kanevska-Nikolova (2020) and V. Vatov (2021). Their claims about the nature of the complex compound sentence are largely similar. This fact attests to the unification and convergence towards a shared understanding of the nature of these structures.

Section 1.2. presents definitions of the term period from the National Revival period to the present (1858–2024). Two models of understanding the period emerge. According to Y. Gruev (1858), “sentence” and “period” denote one and the same concept, whose main characteristic is bipartition. I. Momchilov (1868), T. Ikonomov (1875) and T. Shishkov (1872) develop a more complex model in which the period is defined as an expression of a main thought and is classified according to its composition, conjunctions and number of main parts, with all of them emphasizing bipartition as its characteristic feature. In grammars from the Revival period, the term “period” is treated as a structure more complex than the sentence (with the exception of Gruev’s 1858 grammar). Gradually, the period evolves as a syntactic phenomenon with distinctive features including specific intonation and syntactic parallelism. The authors who published their works after the Liberation – At. Iliev (1888), P. Kalkandzhiev (1936), Al. Teodorov-Balan (1940), E. Nikolov (1947), K. Popov (1998, 3rd ed.) and R. Rusinov (1970) – define the term “period” as a special type of complex sentence with an additional distinguishing characteristic. It gradually

becomes a complex sentence with its own differential features – specific intonation, bipartition and syntactic parallelism. In the scholarly works from the 1990s to the present (2024) the authors present different perspectives on the term “period”. Iv. Nedev (1992) defines it as a subtype of multi-component complex sentences characterized by structural parallelism and intonational division. St. Brezinski (1995) describes it as a highly developed complex sentence with internal gradation and specific punctuation (semicolon), while according to A. Getsov (1997) periods may coincide with or differ from sentence structure in formal terms. V. Vatov (2021) likewise emphasizes the supra-sentential nature of the period, presenting it as a syntactic unit with high structural complexity.

Chapter Two of the dissertation is a theoretical overview of generative-transformational grammar. Using the analytical apparatus of this grammar, 300 primary syntactic sketches of complex compound sentences were created. Here the principles of constituent grammar as set out by Y. Penchev, Il. Krapova, Y. Tisheva, Iv. Petrova and P. Barkalova are presented.

A substantial part of Chapter Two focuses on the description of *configurational syntactic analysis*. The concept is examined in the context of both simple and complex sentences. The algorithm for determining the function of subordinate sentences is based on the so-called postulates of configurational syntactic analysis. The method is borrowed from P. Barkalova (Barkalova 2017; Barkalova 2019). The technique for analysing primary syntactic sketches is also demonstrated.

A significant portion of Chapter Two is devoted to constituent rules for subordinate sentences as part of complex and complex compound sentences. The classifications offered by Y. Penchev, Sv. Koeva and P. Barkalova are described. In compiling the corpus, the study works entirely with the systematized presentation of subordinate sentences in P. Barkalova (Barkalova 2017; Barkalova 2019).

From the works of Y. Penchev (1998) and Iv. Petrova (2009), examined in the first part of Chapter Two, it is summarized that word

combinations are groups of words linked by a relation of subordination which, according to Government and Binding theory, function as a single syntactic unit. The dissertation adopts this view, and the sentence models are constructed entirely on the theoretical grounding of generative grammar.

Section 2.2.2. presents the principles for building syntactic structures within X' Theory. It is established that every phrase XP is a projection of a given lexical category – noun N, adjective A, verb V, adverb Adv or preposition P, with the head being the central element in the structure. Based on the researches of Y. Penchev (1993; 1998) and Il. Krapova (2000), the criteria for constituency of word combinations are defined (coordination, substitution, deletion, replacement, movement), and following Barkalova's monograph (2019) the possible combinations between the individual categories in Bulgarian are derived. A combinatorial matrix and postulates for the actually existing grammatical relations are presented, showing that Bulgarian allows certain types of word combinations (e.g. a glass of water, always good, travels to somewhere). The section concludes that word combinations are the basic projection in the syntactic organization of the sentence and an important step in modelling its structure.

A considerable part of Chapter Two focuses on the functional categories CP and IP. The topic of complementizers in Bulgarian is extensively discussed. The dissertation adopts the position of P. Barkalova (1997) and uses the term “subordinating conjunction”. Section 2.3. (Subordinate sentences as Part of Complex and Complex Compound Sentences) presents the system of subordinate sentences in contemporary Bulgarian according to the interpretations of Y. Penchev (1999), Sv. Koeva (2001) and P. Barkalova (2019). The algorithm for identifying the type of subordinate sentence, which relies on the postulates of configurational analysis (cf. Barkalova 2019), is examined in detail. In addition, the notion of the constituent tree is explained in detail based on the works of Y. Penchev (1984; 1993).

To clarify the concepts of structurography and configurational syntactic analysis, their treatment in P. Barkalova (Barkalova 2018; Barkalova 2019) is described. The subject of structurography is the “visual capturing” of sentence structure and design, as well as the measurement of qualitative and quantitative parameters in the “architectural” plan of the syntactic level (Barkalova 2019: 155). The qualitative aspect manifests itself through the content of the “embedded” portions of linguistic expression conveyed through the structure in the process of speech activity. The quantitative aspect includes the parameters of scope and depth of the structure (Barkalova 2019: 155). Configurational syntactic analysis is a way of determining the syntactic function of words within the simple sentence and the type of subordinate sentences in complex sentences without resorting to the traditional method of formulating questions. It is sufficient to apply the postulates clearly outlined by means of syntactic trees of simple sentences and primary syntactic sketches of complex and complex compound sentences. This analysis is a reliable tool that supports syntactic practice and the present dissertation.

By constructing a structurographic representation of a complex compound sentence that illustrates the maximal scope of 19 simple sentences, the dissertation demonstrates the thesis that the branching of sentences is recursive and that recursion is a property of linguistic structures. The creation and examination of all syntactic sketches show that the corpus contains sentences reflecting recursive “proliferation” within complex compound sentences. It is established that recursion (self-return) is rooted not only at the level of lexemes and phrases, but also at the level of sentences.

By presenting a structurographic model in section **2.5.2** of a selected sentence from the texts of Euthymius of Tarnovo, it is confirmed that the structurographic approach is applicable to sentences that at first glance appear non-productive. The models exhibited great scope and depth of structure – a result also obtained for the three authors studied: Em. Stanev, Y. Yovkov and Y. Radichkov.

Based on the historical overview, the first classification of complex compound sentences was constructed, by means of which the term “period” was implemented in the paradigm of complex compound sentences. Two types of complex compound sentences were distinguished – periodic and non-periodic complex compound sentences. Periodic are those complex compound sentences that possess the differential features of the period – bipartition, syntactic parallelism without stylistic markedness, and specific intonation; non-periodic are those complex compound sentences that do not possess these characteristics. It was also found that in our sample there are only a few examples of periodic complex compound sentences.

Chapter Two also presents studies on the relation between intonation and structurographic models. From the data obtained, which confirm studies by other authors (Marinov 2018, etc.), a hypothesis was proposed that in sentences (from the sample of twenty copular constructions) introduced by the subordinating conjunction че (that), an inter-clausal pause is expressed and clearly registered in the intonational contour. The result obtained for sentences introduced by the conjunction да (to) is that да does not mark an inter-clausal pause and, together with the final word of the main sentence and the following word in the subordinate sentence, forms a single phrasal unit.

Finally, Chapter Two provides a brief overview of scholarly opinions on the style and language of the three authors studied, including Em. Stanev. It was established that their language is characterized by rich and complex syntactic structures. The present research confirms that Em. Stanev, Y. Yovkov and Y. Radichkov construct linguistic structures that exhibit a high degree of syntactic complexity and artistic mastery. The results obtained show that the richness and diversity of their syntactic constructions are not only a sign of individual style but also evidence of the potential of the Bulgarian language.

The exposition in Chapter Three constitutes the core of the study, where, through statistical modelling, the quantitative characteristics (33 in total) of complex compound sentences are analysed. It was established

that the syntax of complex compound sentences in the three hundred excerpted sentence structures from the two classical Bulgarian novels The Farm by the Border and Noah's Ark reveals a high degree of complexity and multi-layered structure. On the basis of systematic observations and the formulation of generalizations, the research aims and tasks were successfully accomplished. Through syntactic sketches and on the basis of configurational analysis, the structure of each sentence unit in the corpus was visualized. In the course of the investigation it became possible to derive all summarized results using statistical predictive methods, including additional statistical methods – Levene's test (Levene 1960) for equality of variances and the t-test (Rice 2006), presented in the study both in tabular form and descriptively.

Comparing the two authors in terms of the scope of simple predication within complex compound sentences, a conclusion was drawn regarding the total number of simple sentences in the 100 complex compound sentences studied: in Y. Yovkov they amount to 668, and in Y. Radichkov – 663. The difference of 5 sentences is not statistically significant. A surprising finding was that in 100 randomly excerpted complex compound sentences from The Farm by the Border and the same number from Noah's Ark, the number of simple sentences is approximately equal. The main predication in both authors (293 in Y. Yovkov and 277 in Y. Radichkov) are about one hundred fewer than the number of subordinate ones. Subordinate sentences are used significantly more frequently in both (375 in Y. Yovkov and 386 in Y. Radichkov). The main predication in The Farm by the Border exceed those in Noah's Ark by 16, while for subordinate sentences the reverse is true – in Noah's Ark they are 11 more than in The Farm by the Border. This result is important for the dissertation because it allows the following conclusions to be drawn:

- In both works the number of subordinate sentences exceeds that of main sentences;
- The difference in the number of simple sentences between the two novels is not statistically significant.

Chapter Three also derives and compares data on the scope and depth of complex compound sentences. The results from the sample from Noah's Ark outweigh those from The Farm by the Border, since the largest scope of simple sentences within a complex compound sentence in Y. Radichkov is nineteen, whereas in Y. Yovkov it is thirteen. Figures 1 and 2 illustrate in detail the data on scope in the works studied.

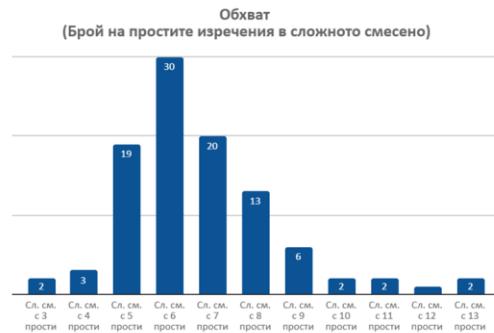


Figure 1. *Number of simple sentences in complex compound sentences from the novel The Farm by the Border by Y. Yovkov*

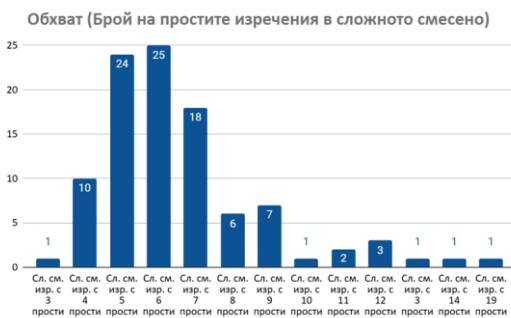


Figure 2. *Number of simple sentences in complex compound sentences from the novel Noah's Ark by Y. Radichkov*

The complex compound sentence with the largest scope of 19 simple sentences, excerpted from Noah's Ark by Y. Radichkov, shows

the highest value among all 500 complex compound sentences examined. The sentence and its primary syntactic sketch are illustrated in the figure below.

67. По-напанък картина се поетори... след още веднъж... и още веднъж привързане излязка внимателно водата от свояте дълги ведра, забързайки се чепира в пана, и без да изпиташ нищо на непроявението си, лице, отпокъд на този сълз и се израта обратно при обичените и всеки един труп сида на скот си огъз, а на костите дървата се привързаха, влизаша под с брадвата на външните в гората и подвир матко се разложа от гората външни възки на брадвата и възки на посечените дърва, обича това баха възки в пустиня, никой не се притискаше там на позем, али на пропад, един привързан си изчезна отпреди дърво при своя огъз, и тень от Еро вече се готвил да влезе в гората със своята блъскава брадва, защото огъзът му в съвест излязъл и едва-едва припомни и облизъл си очи спущеното дъло на ведрото, докато през това време от следените огъзъв една част от привързаните вече наскакаха обдръжаните в парка сълзъв и излизаха внимателно скежданите бодва от там, изчврсъл много съсрѣдоточени в работата си, поодир изпитването на водата един по един лъжеше тръгват за още сълз, запазвайки непроявението на лицата си...



Figure 3. Primary syntactic sketch of the complex compound sentence with the greatest scope

Section 3.2.2. presents the data on depth (the term depth denotes the number of hypotactic levels) of sentence structure. The results again show differences. In the sample from *The Farm by the Border* the greatest depth is five levels, and most sentences have two or three levels. All results are shown in Figure 4.



Figure 4. *Number of levels in complex compound sentences from the novel The Farm by the Border by Y. Yovkov*

The frequency of levels in Noah's Ark by Y. Radichkov was also calculated. He is the author in whose work as many as eight levels are distinguished. This is the maximum result with respect to levels in all studies, confirming the recursive nature of language at the level of the complex sentence. The most frequent cases have two and three levels – a result that holds for all three authors. The findings for Noah's Ark are illustrated in Figure 5.



Figure 5. *Number of levels in compound-complex sentences from the novel Noah's Ark by Y. Radichkov*

In Section 3.3 of Chapter Three, on the basis of the relationship between scope and depth, the following regularity was derived: in sentences with a small number of main predication, the depth of sentence structure is greater, and conversely, the more main predication there are, the fewer levels there are (one or two). This regularity served as the basis for the second classification of complex compound sentences, which includes linear, deep and combined complex compound sentences. The taxonomy is three-component. Those complex compound sentences whose structure unfolds in a linear sequence and contain a

large number of main predication are assigned to the so-called linear complex sentences. Complex compound sentences that project onto more than three levels and contain a large number of subordinate/co-subordinate sentences are classified as deep complex compound sentences. The classification also includes sentences with intermediate parameters – those that occupy a middle position, contain an equal or approximately equal number of main and subordinate predication and have an intermediate number of levels (two or three). In them neither of the two regularities can be clearly observed. These complex compound sentences are set apart in a separate group, typologized as combined complex compound sentences.

A central place in the dissertation is occupied by studies on the frequency of types of subordinate sentences in the two works. Adverbial sentences are the most frequent, whereas predicative sentences are the least used. Object, attributive and subject sentences occupy second, third and fourth place respectively. On the other hand, the study allows us to conclude that within the material examined certain elements of syntactic expression are absent – no predicative sentences referring to the subject were found.

For the 33 quantitative characteristics studied, it was demonstrated that the average statistical result is valid for the complete literary works. This result was recorded as having the highest contribution to the dissertation. After obtaining values for the statistical measures mean and median with a 99% confidence interval for all quantitative characteristics considered, results of interest to syntax were obtained. Conclusions were drawn about the syntax of complex compound sentences for the two novels as a whole. The most significant conclusions concern the quantitative characteristics scope, depth, number of main sentences, number of subordinate sentences and number of co-subordinate sentences in the two works studied. It was established that in both novels (*The Farm by the Border* by Y. Yovkov and *Noah's Ark* by Y. Radichkov) it is typical for the number of simple sentences in the complex compound sentence (its scope) to be 6 or 7. For the depth of

syntactic levels, statistical analysis showed that it is typical for the number of levels in the complex compound sentence to be 3 in both novels. In The Farm by the Border it is typical for the number of main sentences in the complex compound sentence to be 3, while in Noah's Ark it is 2 or 3. For the number of subordinate sentences in the complex compound sentence, the characteristic value in both novels is 3 or 4. For the number of co-subordinate sentences, a difference was found between the two authors: in Y. Yovkov it is 1 or 2, while in Y. Radichkov it is 2 or 3.

In Section 3.7.3., Levene's test for equality of variances and the t-test were used for additional statistical analysis to compare the mean values of the two samples. The former checks whether the data for the two authors have similar variance, and the latter whether the means differ significantly. On the basis of these tests it was found that for a number of subordinative connections (e.g. ЗА ДА "in order to", КАТО "as/when", ПОНЕЖЕ "because", КОГАТО "when", СЯКАШ "as if", etc.) the mean values are statistically equal and authorship does not influence their frequency. For the remaining indicators, however, significant differences were observed, which means that authorship has an influence. Additional analysis using the Mann-Whitney test confirmed the results of Levene's test and the t-test. It was established that for most characteristics there is no statistically significant difference between the two authors, but for certain indicators (e.g. the number of subordinating connections of the type КАК "how" and КОЙТО/КОЯТО/КОЕТО "who/which") authorship exerts a substantial effect. These differences can be viewed as markers of stylistic identification, whereas the other indicators reflect individual usage patterns and broader tendencies in Bulgarian literary practice.

A separate part of Chapter Three (3.6.) presents conclusions about the number of simple sentences in complex compound sentences in which the simple sentences from the last sentences analysed (from the 101st to the 200th, sentences included in Appendix 2) number 601. Of these, 246 are main sentences and 355 are subordinate. A difference of

over 100 is observed between the numbers of main and subordinate sentences, with subordinates again predominating. The scope of simple sentences in these complex compound sentences ranges from a minimum of three to a maximum of thirteen. The largest group consists of complex compound sentences containing five simple sentences. Next in frequency are those containing four and six simple sentences. A regularity was found whereby an increase in the scope of simple sentences (to eleven, twelve or thirteen) is accompanied by a sharp decrease in the number of complex compound sentences (to one or two in a sample of 100 complex compound sentences). This thesis is valid for all previous samples as well. Another important quantitative characteristic derived from the second hundred complex compound sentences (from the 101st to the 200th sentence in Appendix 2) is the depth of hypotactic levels of sentence structures. The results from this sample confirm the already established data – complex compound sentences with two levels are the most frequent, and the greatest depth is seven levels. Cases with three levels are also not rare. The data on the quantitative ratio between types of subordinate sentences show once again the following: subordinate adverbial sentences are the most numerous, followed by object sentences, then attributive sentences, subject sentences in fourth place, and predicative sentences at the lowest frequency.

A considerable part of Chapter Three also covers the results of statistical analyses conducted on data from simple sentences. To demonstrate that this way of presenting information is meaningful, it was necessary to compare the data obtained from the analysis of complex compound sentences with data from analyses of simple two-member sentences. The aim is to prove that the adopted approach to the analysis of complex compound sentences (comparative statistical analysis of quantitative characteristics) is applicable to quantitative characteristics of simple sentences as well. From the studies of 150 simple two-member sentences (50 each from Antichrist, Noah's Ark and The Farm by the Border) it was established that the function of attribute is most frequent in all three works. In two of the authors (Y. Yovkov and Y. Radichkov)

adverbial modifiers come next, while in Em. Stanev objects occupy second place. Predicatives are last in all three works.

From the comparative statistical analysis of our sample of simple two-member sentences (150 sentences – 50 from each of the novels *Antichrist*, *Noah's Ark* and *The Farm by the Border*), results were obtained for eight quantitative characteristics: scope (number of content words), depth, agreement, prepositional connection, government, adjunction, syndetic coordination and asyndetic coordination. The conclusions are typical for the works as a whole. For scope it was established that the typical number of words in the simple sentence is 6 or 7 in *Antichrist*, 7 or 8 in *Noah's Ark*, and 6 in *The Farm by the Border*. For depth the results showed that the typical value is 4 or 5 in *Antichrist*, 5 in *Noah's Ark*, and 4 or 5 in *The Farm by the Border*.

The dissertation also analyses the use of types of connections between simple sentences within complex compound sentences. The study of subordinate sentences in the works of Y. Radichkov and Y. Yovkov revealed a clearly pronounced predominance of subordinative connections. The conjunctions *да* ("to") and *че* ("that") are the most frequently used by all three authors, while other conjunctions (макар *че* "although", *без да* "without to", *преди да* "before to", etc.) occur more rarely. Particularly frequent is asyndetic subordination by means of wh-words and relative wh-words, which ensures a high degree of syntactic variety and flexibility in the literary text. The adopted classification (after P. Barkalova 2017) distinguishes five types of coordinative connections (asyndetic, copulative, adversative, correlative and specifying). Data from the dissertation on Y. Yovkov and Y. Radichkov show that copulative relations are the most frequently used, followed by asyndetic ones, while specifying relations are the rarest and are entirely absent in Radichkov. Compared with subordinate connections, coordinative ones are less represented, which is due to the predominance of subordinate sentences in complex compound sentences.

As the culminating manifestation of the object analysed in the dissertation, the structurographic models of sample sentences selected

according to various criteria are presented. The analysis of the complex compound sentence is carried out through the phrase-structure approach. At its core is the understanding that the syntactic tree reflects the structural possibilities of Bulgarian and its predicative and recursive expansion. Syntactic trees are presented for sentences with the greatest scope and greatest depth, as they demonstrate the potential of the method and show how it “reconfigures” the analysis of Bulgarian syntax. This is especially important since, in the Bulgarian tradition, the complex compound sentence has not previously been represented through a graph with clearly visible predicative relations and recursive embedding from words to phrases, from phrases to sentences, from lexical to functional categories and vice versa. It is observed that however different the sentences may appear at first glance, they can be reduced to a single formal description through functional nodes and constituent rules that are repeated. Lexical and functional categories interweave in a mechanism that operates in every sentence. Through the syntactic trees presented we demonstrated that with an increase in the number of levels in depth, the number of functional categories also increases.

## CITED IN THE AUTHOR'S ABSTRACT LITERATURE

**Levene 1960:** Levene, H. Robust tests for equality of variances. // *Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling*. Stanford University Press, 1960, 278 – 292.

**Rice 2006:** Rice, A. *Mathematical Statistics and Data Analysis*. 3rd ed. Belmont, CA: Thomson Brooks/Cole, 2006.

**Бъркалова 2017:** Бъркалова, П. *Българският синтаксис: познат и непознат*. Пловдив: УИ „Паисий Хилендарски“, 2017 (трето преработено и допълнено издание). [Barkalova, P. Balgarskiyat sintaksis: poznat i nepoznat. Plovdiv: UI „Paisiy Hilendarski“, 2017 (treto preraboteno i dopalneno izdanie).]

**Бъркалова 2018:** Бъркалова, П. Изреченската структурография – преоборудване на синтаксиса и пресечна точка с други науки. // *Български език*, №65, 2018, Приложение, 45 – 61. [Barkalova, P. Izrechenskata strukturografija – preoborudvane na sintaksisa i presechna tochka s drugi nauki. // Balgarski ezik, №65, 2018, Prilozhenie, 45 – 61.]

**Бъркалова 2019:** Бъркалова, П. *Български синтаксис. Конфигурационен анализ на изреченето*. Пловдив: УИ „Паисий Хилендарски“, 2019. [Barkalova, P. Balgarski sintaksis. Konfiguratsionen analiz na izrechenieto. Plovdiv: UI „Paisiy Hilendarski“, 2019.]

**Веженов 1880:** Веженов, Ст. *Граматика за българский язик*. Пловдив, 1880. [Vezhenov, St. Gramatika za balgarskiy yazik. Plovdiv, 1880.]

**Шишков 1880:** Шишков, Т. *Начална българска граматика*. (Второ издание, поправено и допълнено). Търново: Книгопродавница „П. Стоянович Джамаджиев“, 1880. [Shishkov, T. Nachalna balgarska gramatika. (Vtoro izdanie, popraveno i dopalneno). Tarnovo: Knigoprodavnitsa „P. Stoyanovich Dzhamatdzhiev“, 1880.]

**Илиев 1888:** Илиев, А. *Синтаксис на българския език*. Пловдив: Изд. „Христо Г. Данов“, 1888. [Iliev, A. Sintaksis na balgarskia ezik. Plovdiv: Izd. „Hristo G. Danov“, 1888.]

**Мишев 1895:** Мишев, Д. *Ръководство по български език в три курса за долните три класа на гимназиите и горния курс на началните училища. Курс III. Синтаксис.* Пловдив: Изд. „Хр. Г. Данов“, 1895. [Mishev, D. Rakovodstvo po balgarski ezik v tri kursa za dolnite tri klasa na gimnaziite i gornia kurs na nachalnite uchilishta. Kurs III. Sintaksis. Plovdiv: Izd. „Hr. G. Danov“, 1895.]

**Маринов 2018:** Маринов, Вл. За интонационния контур на подчиннените подложни изречения. // *Проблеми на устната комуникация, 11. Единадесета международна научна конференция*, Велико Търново, 10-11 ноември 2017. Велико търново, 2018, стр. 369 – 381. [Marinov, Vl. Za intonatsionnia kontur na podchinnenite podlozhni izrechenia. // Problemi na ustnata komunikatsia, 11. Edinadeseta mezhdunarodna nauchna konferentsia, Veliko Tarnovo, 10-11 noemvri 2017. Veliko tarnovo, 2018, str. 369 – 381.]

## PUBLICATIONS ON THE TOPIC OF THE DISSERTATION

**Barkalova, Koleva-Kostova (2021):** Barkalova, P., Kr. Koleva-Kostova. About the Nature and Definition of a Complex Compound Sentence. // Proceedings of the International Annual Conference of the Institute for Bulgarian Language Prof. Lyubomir Andreychin (Sofia, 2021), Vol. II. Sofia: Prof. Marin Drinov Publishing House of the Bulgarian Academy of Sciences, 2021, 49 – 59.

**Barkalova, Koleva-Kostova, Manev (2022):** Barkalova, P., Kr. Koleva-Kostova, Hr. Manev. The Structurographic Potential of the Bulgarian Complex Sentence. The Contribution of Statistical Prognostic Methods. // Proceedings of the International Jubilee Conference of the Institute for Bulgarian Language Prof. Lyubomir Andreychin (Sofia, 15–17 May 2022). Sofia: Prof. Marin Drinov Publishing House of the Bulgarian Academy of Sciences, 2022, 102 – 112.

**Koleva-Kostova (2022a):** Koleva-Kostova, Kr. Rhythmic-intonational Patterns of Subordinate Clauses Attached to Copular Main Clauses. // Bulgarian Language, No. 69, 2022, Supplement, 218–229.

**Koleva-Kostova (2022b):** Koleva-Kostova, Kr. On Scope and Depth in the Complex Compound Sentence – Parallel Observations. // *Verba iuvenium* – Voices of the Young, Plovdiv: Paisii Hilendarski University Press, No. 4, 2022, 66 – 79.

**Barkalova, Koleva-Kostova, Manev (2023):** Barkalova, P., Kr. Koleva-Kostova, Hr. Manev. Extending the Scope of Syntactic Analysis through Structurography and Statistical Predictive Methods. // Proceedings of the International Jubilee Conference of the Institute for Bulgarian Language Prof. Lyubomir Andreychin (Sofia, 2023). Sofia: Prof. Marin Drinov Publishing House of the Bulgarian Academy of Sciences, 2023, 13 – 23.

## **SUMMARY OF THE SCIENTIFIC CONTRIBUTIONS OF THE DISSERTATION**

1. The present dissertation is the first comprehensive study of the Bulgarian complex compound sentence in contemporary Bulgarian.
2. The research contributes by conducting an extensive diachronic investigation of the term “period”, tracing the main stages of its development.
3. The compiled corpus of 300 primary syntactic sketches of complex compound sentences constitutes an original empirical base providing systematic and representative material.
4. The dissertation proposes two new classifications of complex compound sentences. The first is two-component and includes *periodic* and *non-periodic* complex compound sentences. The second classification is three-component and includes linear, deep, and combined complex compound sentences.
5. For the first time, the dissertation demonstrates that the averaged statistical result for 33 quantitative characteristics is valid for the complete literary works Noah’s Ark and The Farm by the Border, which represents a significant contribution to the methodology of syntactic research. A detailed statistical analysis with a 99% confidence interval was conducted for all characteristics examined, providing the basis for conclusions about the syntax of complex compound sentences.
6. The first comparative statistical analysis of 150 simple two-member sentences (50 from each of the novels Antichrist, Noah’s Ark, and The Farm by the Border), from which eight quantitative characteristics were derived (scope (the number of content words), depth, agreement, prepositional connection, government, adjunction, syndetic and asyndetic coordination), revealed regularities typical for the complete novels of the authors studied.
7. The structurographic models created for sample sentences present, for the first time, the Bulgarian complex compound sentence as a

graph with clearly visible predicative relations and recursive structure. Through them, the structural potential of the Bulgarian language and its recursive nature is revealed.