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A STRUCTURAL–SEMANTIC ANALYSIS OF ENGLISH NOUN PHRASES

Naila Asker Nabiyeva

associate professor at the Azerbaijan University of Languages

ORCID: 0000-0002-2195-4087

E-mail: nailanabiyeva@gmail.com

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Açar sözlər: *ismi birləşmələr, generativ qrammatika, söz birləşməsinin strukturu, iyerarxik struktur, konstituentlik.*

Ключевые слова: *именные группы, генеративная грамматика, фразовая структура, иерархическая структура, конституентность.*

This paper investigates the hierarchical organization of English syntax within a generative grammar framework, with particular emphasis on noun phrases and phrase-level structure. It examines how words combine to form phrases and sentences, exploring the relationship between underlying (deep) and surface structures and the syntactic roles of constituents. Drawing on examples from both academic discourse and everyday language, the study employs structural diagnostics such as substitution, movement, and embedding to uncover underlying syntactic patterns. Special attention is given to the internal structure of the English noun phrase, including the interaction between heads, modifiers, and specifiers, the distinction between obligatory and optional elements, and their representation through constituency rules. The analysis highlights the functions of determiners, adjectives, and prepositional phrases, as well as the theoretical rationale for the intermediate N-bar (N') category. By integrating Chomsky's (3, 4, 5) foundational insights with later developments in generative syntax, the paper demonstrates how hierarchical structure accounts for distributional constraints, interpretive differences, and variation in complexity across different registers, clarifying the link between syntactic form and meaning. Noun phrases (NPs) constitute a central unit in English syntax, serving as the primary carriers of referential meaning. This paper examines the structural components of NPs, their syntactic roles, and the occurrence of discontinuous forms. Emphasis is placed on the interplay between heads, determiners, modifiers, and complements, alongside the functional versatility of NPs across written and spoken registers.

Introduction.

Syntax studies how words combine into grammatically coherent sentences. While lexical properties are important, the hierarchical organization and sequential order of words are central to understanding sentence construction. Chomsky (3, p.5) argued that a finite set of generative rules can produce an infinite number of grammatical sentences. His framework distinguishes between phrase structure rules, which describe deep or underlying structures, and transformational rules, which convert these into surface structures—the actual sequence of words—without changing meaning. Deep structures encode grammatical relations and potential interpretations, while surface structures reflect the realized form of a sentence.

This distinction helps explain syntactic phenomena such as active-passive alternation. For example, *The dog chased the ball* and *The ball was chased by the dog* differ in surface form but share an underlying syntactic structure. Generative grammar emphasizes grammatical well-formedness over semantic coherence, as seen in the syntactically correct but semantically odd sentence *Colorless green ideas sleep furiously* (3, p.16).

Earlier structural approaches, such as immediate constituent analysis, focused on linear word order and surface-level relations. Although useful, they could not adequately account for structural ambiguities, active-passive transformations, or sentences with multiple interpretations (e.g., *Flying planes can be dangerous* or *The teacher is ready to grade*). Chomsky's (3, p.16) concepts of deep structure and transformations addressed these limitations, providing a systematic framework for understanding syntax.

Constituency.

Phrase structure rules formalize how syntactic categories expand into sequences of constituents. Each rule specifies a category (left-hand side) and its components (right-hand side). Optional elements, alternatives, and recursive structures allow unlimited generativity. For example, a sentence (S) may expand into a noun phrase (NP) and a verb phrase (VP). The NP can include determiners, adjectives, or prepositional phrases, while the VP may contain objects, complements, or adjuncts. These hierarchical relations are often visualized using tree diagrams or labeled bracketings.

Constituents are groups of words that function as a unit. They can be identified via substitution, movement, and coordination tests. For instance, in *The committee approved the revised policy*, the NP *the revised policy* can be replaced with *something* (*The committee approved something*) or moved (*The revised policy was approved by the committee*), confirming its status as a constituent. Constituents may also embed recursively, as in *inside [the box [on [the table]]]*, illustrating hierarchical sentence structure.

Syntactic structure often determines interpretation. For example, *Jessica promised to call tomorrow evening* allows two readings: the promise occurs tomorrow, or the call is scheduled for tomorrow. Phrase structure clarifies which constituents correspond to each reading.

Grammatical Roles of Constituents.

Within sentences, constituents assume specific grammatical roles. Noun phrases may function as subjects, objects, or complements, and their positions affect meaning: *I handed her the book* vs. *She handed me the book*. Modifiers depend asymmetrically on heads (e.g., *red car*), while governor-complement relationships involve mutual dependency (*bake a cake*, *sit on the chair*). Subjects and predicates form the core structure: the subject (usually an NP) denotes the actor or topic, while the predicate (usually a VP) expresses action or description. Expletive

subjects, such as *it* in *It is snowing*, occupy structural positions without lexical meaning, demonstrating syntactic flexibility.

Discourse studies show that syntax varies by context. Academic texts favor long, embedded constructions, e.g., *according to [the report [on [climate change]]]*, whereas casual conversation often relies on shorter sequences, e.g., *[will eat]*, *[don't know]*, *[my bag]*. Corpus studies indicate that single-word constituents account for approximately 70% of spoken discourse but only 13% of academic texts (1, p.104 -105), reflecting higher structural integration in formal writing.

Historical and Theoretical Background.

Chomsky's (2, 3, 4, 5) generative framework influenced subsequent models, including Head-Driven Phrase Structure Grammar (HPSG), Lexical Functional Grammar (LFG), Generalized Phrase Structure Grammar (GPSG), and Combinatory Categorical Grammar (CCG). These models retain constituency principles while emphasizing lexical heads, parallel syntactic representations, and explicit syntax-semantics mapping.

Phrases—such as noun phrases (NPs), verb phrases (VPs), adjective phrases (APs), adverb phrases (AdvPs), and phrasal verbs—are fundamental units of syntax. Structuralist approaches (2, p.247) and generative frameworks highlight that substitution and distributional patterns can be used to identify these units. Expanding on these insights, Chomsky's X-bar theory (5, p.46) introduced the concept of intermediate projections, enabling a hierarchical analysis of phrases:

- $XP \rightarrow (\text{Specifier}) X'$
- $X' \rightarrow X (\text{Complement})$

This hierarchical model clarifies the relationships between heads, modifiers, and complements in complex constructions. The principle was later refined in Chomsky's Minimalist Program (6, p.46-52). At the same time, cognitive approaches (9, p.31) propose that word groups function as integrated form-meaning units, thereby connecting syntactic structure to conceptual understanding.

Noun phrases.

Within English syntax, the noun phrase occupies a particularly central role. Its head noun determines grammatical properties, while optional constituents, such as adjective phrases (APs) and prepositional phrases (PPs), provide descriptive or relational information. Determiners (Det) mark features such as definiteness, quantity, or deixis and maintain an asymmetric relationship with the NP (8, p.330). This hierarchical organization can be further explained through N-bar theory, where intermediate projections like N-bar (N') link the head noun with its modifiers while excluding the determiner:

- $N' \rightarrow (\text{AP}) N (\text{PP})$
- $NP \rightarrow (\text{Det}) N' \mid \text{Pro} \mid \text{PN}$

Such a framework accounts for the results of substitution tests using pro-forms (e.g., *one*, *ones*), which can replace the noun along with its modifiers. Additionally, possessive markers (*'s*) can attach to entire NPs, demonstrating the structural flexibility inherent in noun phrases.

Beyond their internal organization, NPs perform a variety of syntactic functions within clauses (8, p.326-328). They can act as subjects, objects, prepositional objects, complements, and predicatives, and they may also appear in peripheral clause positions, such as parentheticals, tags, and vocatives. Under certain syntactic conditions, complex NPs may exhibit discontinuity

(10, p.1397), illustrating the dynamic interaction between hierarchical structure and functional versatility in English syntax.

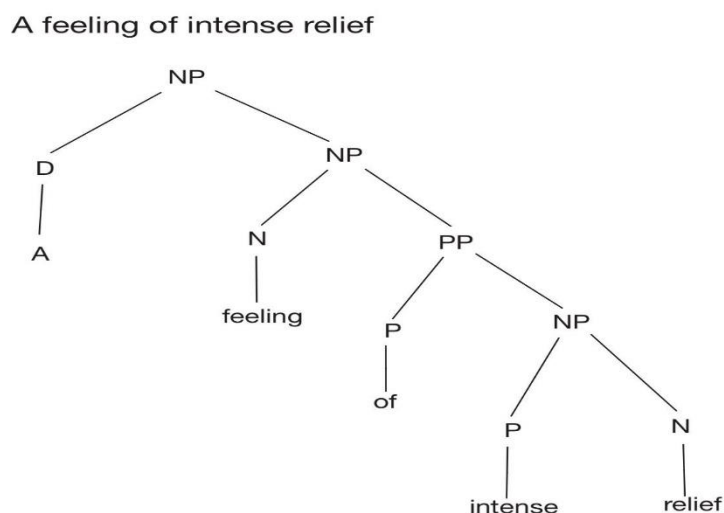
Breakdown of NP:

1. *A feeling of intense relief and a perfect sense of liberty spread through my aching limbs and wearied mind.* (fiction)

Table 1.

NP →	Det N PP	A feeling of intense relief
	Det A N PP	A perfect sense of liberty

The embedded phrases are *of intense relief* and *of liberty*. The simple tree diagram for the noun phrase:

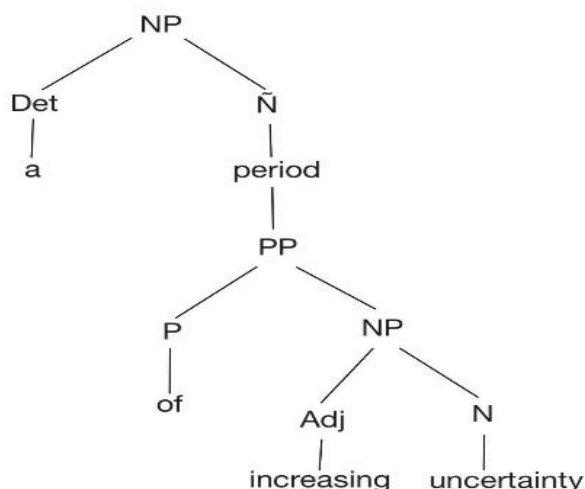


2. *Farmers worldwide are entering a period of increasing uncertainty as climate change compromises food production in areas already sensitive to food insecurity...* (academic)

Table 2.

NP →	N A	Farmers worldwide
	Det N PP	a period of increasing uncertainty
	N PP AP PP	food production in areas already sensitive to food insecurity
	Tree diagram:	

a period of increasing uncertainty



The noun phrase '*food production in areas already sensitive to food insecurity*' is nested:

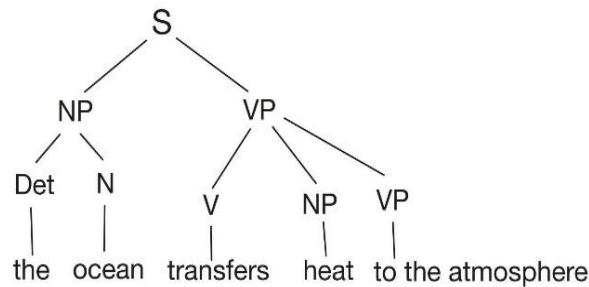
- Head noun: *production*
- Modifier 1: *food* → makes it *food production*
- Modifier 2 (Prepositional phrase): *in areas already sensitive to food insecurity*
- Nested NP inside preposition: *areas already sensitive to food insecurity*
- Head noun: *areas*
- Modifier: *already sensitive to food insecurity* (adjective + prepositional phrase)

As discussed earlier in the paper, a noun phrase (NP) constitutes a syntactic unit in which a noun, optionally accompanied by determiners, modifiers, or complements, functions as a single grammatical entity within a clause. Noun phrases can assume a variety of grammatical roles. They may serve as the subject, performing the action of the predicate; as the direct object, receiving the action; as the indirect object, indicating the beneficiary or recipient of the action; as a subject complement, providing descriptive or referential information about the subject; as an object complement, attributing a quality or designation to the direct object; or as the object of a preposition, completing the meaning of a prepositional phrase. The multifunctionality of noun phrases underscores their central role in sentence structure and syntactic analysis.

1. *The ocean transfers heat to the atmosphere.*

- Noun phrase (subject): *The ocean*
- Noun phrase (direct object within VP): *heat*
- Prepositional phrase (indirect object within VP): *to the atmosphere*
- Tree diagram:

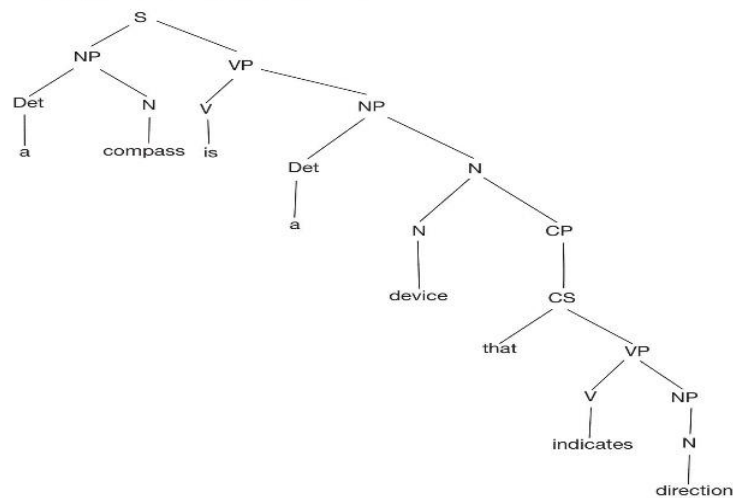
The ocean transfers heat to the atmosphere



2. *A compass is a device that indicates direction.*

- Noun phrase (subject): *A compass*
- Verb: *is*
- Noun phrase (subject complement): *a device that indicates direction*
- Simple diagram:

A compass is a device that indicates direction



3. *Scientists consider the Amazon rainforest a vital ecosystem.*

- Subject NP: Scientists
- Verb: consider
- Object NP: the Amazon rainforest
- Object complement (NP): a vital ecosystem

Methodology

This study employs a qualitative approach, combining:

1. Generative grammar analysis using phrase structure rules, transformations, and constituency tests.
2. Corpus-based examples from both academic and fictional sources to illustrate variation

in NP structure and functional roles.

3. Hierarchical tree diagrams to visualize NP components and nested structures.

Discussion

The analysis confirms that syntactic structures systematically link form and meaning NPs demonstrate structural and functional versatility, performing a wide array of grammatical roles and accommodating complex modifiers and embedded elements. The use of generative and cognitive frameworks provides a comprehensive understanding of how hierarchical organization underpins sentence formation and interpretation.

Conclusion

This study reinforces the view, widely supported in linguistic research, that syntactic structures systematically link form and meaning. By integrating generative approaches with corpus-based evidence, the analysis captures both the abstract regularities and the empirical diversity of English syntax.

A revised account of English syntactic organization is presented, highlighting hierarchical structures, generative mechanisms, and functional distinctions. Examination of sentence-level patterns alongside the internal organization of noun phrases illustrates how syntactic theory accounts for distributional constraints, interpretive variability, and differences across registers. The findings support the conception of syntax as a structured, rule-governed system that mediates between form and meaning while remaining flexible in varying communicative contexts.

English syntax exhibits layered organization, generative capacity, and functional variation. Investigating phrase structure rules, transformations, and constituency relations provides a comprehensive framework for understanding sentence formation and interpretation. Detailed analysis of noun phrase components—such as heads, modifiers, and specifiers—reveals the recursive and hierarchical character of syntax. By combining structural, generative, and cognitive perspectives, this study emphasizes syntax's foundational role in linguistic theory and its practical relevance in analyzing language use.

The analysis presented here aligns with a broad body of research demonstrating that syntactic structure mediates between form and meaning in systematic ways. By combining generative theory with insights from corpus linguistics, the paper highlights both the abstract principles and the empirical variability of English syntax.

This paper has presented a revised account of English syntactic organization, emphasizing hierarchical structure, generative capacity, and functional differentiation. By examining both sentence-level patterns and the internal structure of noun phrases, the study demonstrates how syntactic theory explains distributional constraints, interpretive variation, and register-based differences. The findings support a view of syntax as a structured and rule-governed system that mediates between form and meaning while remaining adaptable across communicative contexts.

English syntax is characterized by hierarchical organization, generative potential, and functional variation. Phrase structure rules, transformations, and constituency tests provide a robust framework for understanding sentence formation and interpretation. Analysis of NP structure—head, modifiers, and specifiers—demonstrates the layered, recursive nature of syntax. Integrating structural, generative, and cognitive approaches underscores syntax's

central role in linguistic theory and practical language analysis.

Noun phrases in English demonstrate considerable structural and functional versatility. Their composition, encompassing heads, determiners, modifiers, and complements, enables them to fulfill a wide array of syntactic roles, ranging from subjects and objects to adverbials and appositives. Complex and discontinuous forms further illustrate the adaptability of NPs in diverse registers, highlighting their central role in both spoken and written discourse.

Relevance of the topic. This study is significant because it addresses central issues in the analysis of English syntax, with particular focus on noun phrases, which are key units in conveying referential meaning. By examining their internal structure—heads, determiners, modifiers, and complements—the paper contributes to ongoing discussions in generative syntax and broader English linguistics. Its insights enhance our understanding of how phrase-level organization mediates between syntactic form and interpretive function across registers.

Scientific novelty of the article. The article demonstrates scientific novelty by offering original perspectives on the internal structure and distribution of English noun phrases. By integrating generative frameworks with corpus-based evidence, it introduces innovative approaches to analyzing hierarchical relationships, discontinuous forms, and functional versatility within NPs. These contributions extend current theoretical models, illuminating previously underexplored interactions between structural configuration and meaning.

Practical significance and application of the article. The practical value of the study lies in its applicability to teaching, linguistic analysis, and computational modeling. By providing a detailed and nuanced account of noun phrase structure and function, the findings equip researchers, educators, and language technologists with tools to analyze and model English more effectively. The insights also support applied work in discourse analysis, syntax-based language technologies, and pedagogical strategies targeting phrase-level comprehension.

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N.Ə.Nəbiyeva

**Structural and semantic analysis of English collocations
Summary**

This article examines the hierarchical organization of English syntax within generative grammar, with particular emphasis on noun phrase groups and phrasal structure. It examines how words are combined into phrases and sentences, as well as analyzes the relationship between deep and surface structures and the syntactic roles – the components. On the material of both academic discourse and – language, structural diagnostic methods are used in the work – such as for – installation, movement and attachment – to identify hidden syntactic laws – numbers.

Particular attention is paid to the internal structure of the English noun phrase, including the interaction of vertex, modifiers and specifiers, the difference between mandatory and optional elements and their presentation using cons – tituent structure rules. The analysis emphasizes the functions of determinatives, adjectival and prepositional groups, as well as the theoretical motivation of the intermediate kate – the N-bar mountain (N '). Integrating the fundamental ideas of N. Chomsky (3, 4, 5, 6) with more recent developments in – field of generative syntax, the article demonstrates how the hierarchical structure explains distributive restrictions, interpretive differences and variability of complexity in different registers, clarifying the relationship between syntak – sic form and meaning.

Name groups (NP) constitute the central unit of English syntax, acting as the main carriers of the reference value. The article examines the structural components of nominal groups, their syntactic functions and manifestations of discontinuous (discrete) forms. Particular attention is paid to the interaction of vertices, determinatives, modifiers and complements, as well as the functional – of name groups in written and oral registers.

N.Ə.Nəbiyeva

**İngilis dilindəki ismi söz birləşmələrinin struktur-semantik təhlili
Xülasə**

Bu məqalədə generativ qrammatika çərçivəsində ingilis dilinin sintaksisinin iyerarxik təşkili və xüsusilə də ismi birləşmələr, söz birləşməsi səviyyəsinin strukturu araşdırılır. Sözlərin söz birləşməsi və cümlə yaratmaq üçün sintaktik əlaqə qurması yolları, alt və üst qatlar arasındakı əlaqələr və tərkib hissələrin sintaktik rolları nəzərdən keçirilir. Akademik diskursdan və gündəlik ünsiyyətdən seçilmiş dil materialları əsasında, dərin sintaktik strukturların müəyyən olunması üçün əvəzlənmə, yerdəyişmə və birləşdirmə kimi struktur testlərdən istifadə edilir. İngilis dilindəki ismi birləşmələrə, əsas sözlər və təyinedicilər arasındakı qarşılıqlı əlaqələrə, zəruri və

seçmə elementlər arasındakı fərqlərə və onların konstituentlik qaydaları vasitəsilə təqdim edilməsinə xüsusi diqqət ayrılır. Determinantların, sifətlərin və sözönlü birləşmələrin funksiyaları və ismi birləşmənin zəruri elementi təhlil olunur. N. Çomskinin (3, 4, 5, 6) fundamental ideyaları ilə yanaşı, generativ qrammatikadakı son araşdırmaların nəzərdən keçirildiyi məqalədə sintaktik forma və məna arasındakı əlaqəyə aydınlıq gətirmək məqsədi ilə iyerarxik strukturun distributiv məhdudiyyətlərə təsiri, interpretiv fərqlər və müxtəlif registrlərdə mürəkkəb variativlik aşkar olunur. Məqalədə ingilis dili sintaksisində əsas vahid hesab edilən ismi birləşmələr referensial məna daşdığı yazılır; ismi birləşmələrin struktur komponentləri, onların sintaktik funksiyaları və diskret formada işlənmələri də tədqiq olunur. Bu birləşmələrin əsas hissəsi və determinantlar, təyinedicilər və əlavələr arasındakı əlaqələr, yazılı və şifahi diskursdan ismi birləşmələrin funksional müxtəlifliyinə xüsusi diqqət ayrılır.

Н.А.Набиева

**Структурно-семантический анализ английских именных групп
Резюме**

В данной статье исследуется иерархическая организация английского синтаксиса в рамках генеративной грамматики с особым акцентом на именные группы и фразовую структуру. Рассматривается, каким образом слова объединяются в фразы и предложения, а также анализируется соотношение глубинной и поверхностной структур и синтаксические роли составляющих. На материале как академического дискурса, так и повседневного языка в работе используются структурные диагностические методы — такие как подстановка, перемещение и вложение — для выявления скрытых синтаксических закономерностей.

Особое внимание уделяется внутренней структуре английской именной группы, включая взаимодействие вершины, модификаторов и спецификаторов, различие между обязательными и факультативными элементами и их представление с помощью правил конституентной структуры. Анализ подчеркивает функции детерминативов, прилагательных и предложных групп, а также теоретическую мотивацию промежуточной категории N-bar (N'). Интегрируя фундаментальные идеи Н. Хомского (3, 4, 5, 6) с более поздними разработками в области генеративного синтаксиса, статья демонстрирует, как иерархическая структура объясняет дистрибутивные ограничения, интерпретационные различия и вариативность сложности в разных регистрах, проясняя связь между синтаксической формой и значением.

Именные группы (NP) составляют центральную единицу английского синтаксиса, выступая основными носителями референтного значения. В статье рассматриваются структурные компоненты именных групп, их синтаксические функции и проявления разрывных (дискретных) форм. Особое внимание уделяется взаимодействию вершин, детерминативов, модификаторов и комплементов, а также функциональной многообразности именных групп в письменных и устных регистрах.

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