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ANALYSIS OF NOUNS EXPRESSING NATURAL PHENOMENA WITH THE "N+V+ung" STRUCTURE IN THE GERMAN LANGUAGE

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ABSTRACT

This article examines the morphological and semantic structure of nouns that describe natural phenomena in the German language. The study focuses on compound nouns formed with the ***Noun + Verb + "-ung" suffix*** *structure. Six key nouns are analyzed: Eisbildung (formation of ice), Sonnenstrahlung (solar radiation), Gebirgsbildung (formation of a mountain range), Morgendämmerung (dawn), Abenddämmerung (dusk), and Tierwanderung (animal migration). The research explores the structural components of these nouns, their semantic relationships, synonyms, and antonyms. The findings demonstrate that these compound nouns not only convey precise meanings but also exemplify the productive word formation mechanisms in the German language.*

KEYWORDS: *compound nouns, German language, semantics, morphology, word formation, natural phenomena, "-ung" suffix, synonymy, antonymy.*

Language is one of the primary means of perceiving the world. Nouns that describe natural phenomena encompass various occurrences in the environment, ranging from weather conditions to geophysical processes and even cosmic events. In this article, we examine the morphological and semantic structure of nouns that express natural phenomena. Our analysis focuses on a specific group of nouns whose morphological composition and semantic meaning are closely interrelated. These compound words are frequently encountered in German and serve as precise lexical units for describing natural events and processes. Throughout our research, we identified numerous nouns and noun-based combinations representing natural phenomena and subjected them to structural-semantic analysis. In this article, we focus on nouns formed according to the Noun + Verb + Suffix -ung structure. Our study has identified six such nouns, which are as follows: eisbildung (formation of ice); sonnenstrahlung (solar radiation); gebirgsbildung (formation of a mountain range); morgendämmerung (dawn); abenddämmerung (dusk); tierwanderung (animal migration).

The research material consists of German nouns, selected from "Duden – das große Wörterbuch der deutschen Sprache" [2] and "Wörterbuch der Synonyme und Antonyme" [6] dictionaries, as well as analyzed based on the works of German scholars dedicated to lexicology and semantics. During the analysis process, the semantic-stylistic method, contextual analysis method, and componential analysis method were employed. These methods contribute to a deeper and more comprehensive approach to the study.

There are several types of word formation in the German language, which primarily differ based on the lexemes and elements used in their construction. In German, there are three main types of word formation: Composition, Derivation, and Abbreviations. This study focuses specifically on composition, i.e., compound words. German linguist Hans Jürgen Heringer describes compound words as follows: "In der Komposition werden mindestens zwei Lexeme zu einem komplexen Wort zusammengesetzt. Komposita können rekursiv aus wortgebildeten Lexemen gebildet werden: Biospriterzeugung, Biospriterzeugungsfabrik".

This means that in composition (compound words), at least two lexemes combine to form a complex word. Additionally, compound words can be formed recursively from already derived lexemes (author's translation) [4, 89]. The nouns analyzed in this study are also compound nouns, all of which follow the same morphological structure: noun + verb + "-ung" suffix. This morphological structure is characteristic of many German nouns that describe processes or states. The first component of the compound noun refers to an object or a location associated with the action (ice, sun, mountain), while the second component denotes the action or process itself (formation, radiation, melting). The "-ung" suffix functions as a nominalizing suffix, converting the verb's meaning into a state or result, thereby forming a new derived noun.

For example, let us analyze the noun "Tierwanderung":
Tier – animal
wandern – to migrate, to travel
-ung – a suffix used to form nouns
Thus, the derived noun "Tierwanderung" translates to "animal migration". A more detailed analysis of other words is presented in the following table:

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№	Natural event	Noun	Verb	
1	Die Eisbildung	Eis	bilden	-ung
2	Die Sonnenstrahlung	Sonne	strahlen	
3	Die Gebirgsbildung	Gebirge	bilden	
4	Die Morgendämmerung	Morgen	dämmern	
5	Die Abenddämmerung	Abend	dämmern	
6	Die Tierwanderung	Tier	wandern	

Such compound nouns enable the expression of complex phenomena and processes in a single word. They contribute to the clarity and efficiency of verbal communication. Moreover, depending on the context in which they are used, these nouns often convey poetic or figurative expressions related to the described phenomena.

Compared to simple nouns, compound nouns have the advantage of expressing precise and distinct meanings. For instance, the word "Bildung" alone is a broad and general concept, but when combined with "Eis" or "Gebirge", it forms a derived noun that explicitly refers to a specific process or phenomenon. *Das Institut hat drei Jahre lang Menschen aus 141 Ländern gefragt, wie sehr sie bereit sind, für Gesundheit, Bildung, Natur, Sozialhilfe, Kultur und Infrastruktur Steuern zu bezahlen* [2, 10].

In the given sentence, the word "die Bildung" conveys the meaning of "education" and is used in a very general sense. However, in the following sentence, when this word is combined with "Eis" to form a compound noun, it shifts from a general meaning to a specific one, explicitly referring to the formation of ice, thereby representing a particular natural phenomenon. *Am Hallstättersee wurden die Anfänge der Eisbildung am 14. Januar beobachtet* [5, 314].

From a semantic perspective, all the analyzed nouns represent natural phenomena and processes. They primarily convey a clear and tangible meaning, which can be perceived through visual or sensory experiences. There is a close semantic connection between the individual components of compound nouns. The meaning of a compound noun arises from the combination of the meanings of its constituent words. The components merge harmoniously, forming a unified semantic expression. Below, we will examine the semantic relationships of the analyzed words in greater detail.

Sonnenstrahlung – von der Sonne ausgehende Strahlung (solar radiation, i.e., sunlight emitted by the sun) [2, 1626]. According to Planck's radiation law, it refers to electromagnetic radiation emitted by the sun's photosphere, which corresponds to the radiation of a black body at 6000 K (author's translation) [8]. Regarding semantic relationships, words such as die Solarenergie, die Sonneneinstrahlung, das Sonnenlicht, die Solarstrahlung serve as synonyms in different contexts, whereas die Dunkelheit, der Schatten, die Abschirmung, die Finsternis function as antonyms, establishing an opposition in meaning [9].

Another noteworthy aspect observed in these compound words is their lack of polysemy. From a polysemantic perspective, all analyzed compound words possess only one specific meaning, referring exclusively to a natural process or phenomenon. This means that polysemy is not present in these words.

German linguist Christiane Vansek explains polysemy as follows: „Die lexikalische Polysemie liegt vor, wenn ein Wort mehr als eine Bedeutung besitzt. Ein solches Wort bekommt eine oder mehrere zusätzliche neue Bedeutungen durch den Wandel der Ausgangsbedeutung (Polysemierung)" [1, 60].

This translates to: Lexical polysemy occurs when a word has more than one meaning. Such a word acquires one or more additional new meanings through the transformation of its original meaning (polysemization) (author's translation).

This further reinforces the fact that compound words in this study primarily convey concrete meanings, explicitly describing specific natural phenomena and processes.

Words	Meaning	Synonyms	Antonyms	Polysemy
Eisbildung	process of converting water into ice	Vereisung Vergletscherung Gefrieren Ausfrieren	Schmelzen Auftauen Verflüssigung Degeneration	-
Sonnenstrahlung	Energy emitted by the sun in the form of electromagnetic waves	Solarenergie Sonneneinstrahlung Sonnenlicht Solarstrahlung	Dunkelheit Schatten Abschirmung	-
Gebirgsbildung	Geological process of mountain formation	Orogenese Bergentstehung Bergfaltung Tektonische Hebung	Erosion Verflachung Abtragung Verwitterung	-
Morgendämmerung	transition period from darkness to morning light	Morgenröte Tagesanbruch Frühe	Abenddämmerung Nacht Dunkelheit Sonnenuntergang	-

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		Morgenstunden Sonnenaufgangszeit Grauen		
Abenddämmerung	transition period from light to darkness in the evening	Abendrot Dämmerung Sonnenuntergangszeit Späte Abendstunden	Morgendämmerung Morgen Tageslicht Sonnenaufgang	-
Tierwanderung	Seasonal or regular movement of animals from one area to another	Tierzug Migration Wanderung Tiermigration	Sesshaftigkeit Verharren Residenz Standorttreue	-

In conclusion, the analyzed nouns represent a fascinating example of the high productivity of the German language and are essential for a deeper understanding of word morphology and semantics. The morphological and semantic analysis of all these nouns demonstrates that they possess a clear structure and thematic coherence, with observed synonymy and antonymy in relation to the described phenomena. Additionally, these nouns exhibit monosemy, meaning that they refer exclusively to natural phenomena. They serve as highly productive word-formation models in German, illustrating how new meanings emerge through word composition. The examined compound derived nouns play a crucial role in describing natural processes, contributing to the precision and expressiveness of the German language. They are commonly found in both scientific and everyday texts. As observed, all the analyzed nouns follow the same structural pattern: noun + verb + "-ung" suffix. This morphological structure is characteristic of numerous German nouns that describe processes or states.

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