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**SPECIFIC CHARACTER OF LANGUAGE CATEGORIZATION
OF ECOLOGICAL CONCEPT «ERWÄRMUNG» / «WARMING»
IN MODERN GERMAN JOURNALISTIC DISCOURSE**

The paper presents the investigation of the verbalization means of ecological concept “Erwärmung”/ “Warming” in today’s German journalistic discourse including the analysis of terminological units as a dominant verbalization means of it. The peculiarities of composites, attributive constructions, separate lexemes and substantive connections are investigated for objectivization of the concerned concept. Lexicography and parts-of-speech analysis of lexemes representing the information about warming is carried out.

Key words: concept, conceptsphere, term, parts-of-speech analysis, lexicography analysis, cognitive metaphor.

The modern stage in the development of linguistics is marked by the growth of interest in the processes of conceptualization and categorization of phenomena and facts of man’s surrounding reality. Nature in general and ecological processes in particular is an interesting and complex research object, which is important from the standpoint of universal human values and represents an inherent factor of the normal existence of human society now and in the future. Ecological processes and phenomena have been dealt with within the framework of linguistic research, namely, such a branch as ecolinguistics since the second half of the 20th century. We consider the definition of this science given by N.N. Kislitsyna to be the most accurate definition, according to which ecolinguistics is one of the modern scientific branches in linguistics, which was “formed as a cross-discipline between social (relationship between social and linguistic structures in the process of thought development at different stages of ethnogenesis), psychological (problems of linguistic manipulation) and philosophical (manifestation of general characteristics and regularities of societal and perceptual development in a language) branches of linguistics. It should be noted that the mental process of the perception of ecological realia results in ecological concepts. At the present stage in the development of linguistics a “concept” is not clearly defined; opinions are divided as to what it is. Some researchers take the view that a “concept is the term that serves the purpose of explaining the units of mental or psychic resources of our consciousness and the information structure that reflects man’s knowledge and experience” [2, 3]. Stepanov defines a concept as a “conglomeration of culture in man’s consciousness; something, in the form of which culture enters the mental world of man. But at the same time, a “concept” is something, by means of which man enters culture and in some cases even influences it” [4]. The following definition of the term “concept” is used in this research: a “concept” is a mental national-specific formation, which plane of content is the totality of knowledge about a particular object, and plane of expression is the totality of lexical, paremical and phraseological units that name and describe this object [5].

The emergence of new realia in the life of modern society, which are conditioned by different factors of the environment, presupposes the necessity of their interpretation and perception and is a strong incentive to study them, which results in the creation of new means of language which enable to conceptualize new realia in the language consciousness of a particular ethnos.

“Nowadays we are facing very rapid warming. In the last 100 years average global temperatures have risen by approximately 0,74 °C; furthermore, according to UN climatologists, global temperatures may rise by roughly 6,4 °C by 2100. Global warming is caused by our modern lifestyle of an industrialized society. Burning fossil fuels, deforestation and mass cattle breeding release large amounts of greenhouse gases into the atmosphere” [7]. At the current stage of its development human society should ponder the true state of the ecological situation, become aware of the role of every individual and the whole mankind in the ecological crises that are taking place at the moment and try to prevent the negative effects of climate processes as much as possible.

Within the framework of ecolinguistics the perception of information about ecological processes and phenomena, and also the analysis of ecological concepts, which are mental units containing this information, cannot be implemented without the analysis of one of the fundamental ecological concepts: the concept **Erwärmung** (“warming”). This article deals with the analysis and description of the concept *Erwärmung* on the basis of the methods of cognitive linguistics, which we think until now has formulated the most accurate methodology of studying and describing concepts; it also aims at studying meanings of words and expressions objectifying this ecological concept in the German language. The first stage in the course of analysis and description of a concept consists in gleaning the list of linguistic units verbalising this concept, which must be as full as possible. “The totality of linguistic units objectifying the content of a concept during a particular period of societal development is called the nominative field of this concept” [8]. Then the gathered units of nominative fields are subjected to the procedure of cognitive interpretation. The idea that a concept as a mental unit can be described through the analysis of the means of its language objectivization is the main principle of cognitive linguistics [9].

The research material is journalistic texts in German, published in the newspaper “Die Zeit” in the period of 2009-2013.

The relevance of this research is determined not only by the insufficient knowledge of ecological concepts objectified by different means of language, but also by the necessity of linguoculturological understanding of the concept *Erwärmung*, which is the part of the sphere of concepts of the German nation.

Our analysis shows that terms being units of the system of scientific language are the most frequent and primary means of the verbalization of the concept *Erwärmung*. We have divided the terminological units which represent the ecological information about climate warming into the following groups:

1. independent lexemes, which are basic terms: *Erwärmung* (warming), *Temperatur* (temperature);
2. genitive constructions: *Erwärmung des Klimas* (climate warming), *Erwärmung der Erde* (warming of the Earth), *Aufheizung der Erde* (heating of the Earth). In this case the use of genitive constructions serves the purpose of specification of basic terms, for example, *Erwärmung des Klimas*, *Erwärmung der Erde* contain the concretisation of the basic term “warming”: climate warming, warming of the Earth;
3. compound words (the use of compound words for the verbalisation of the concept *Erwärmung* enables to convey characteristics of basic terms): *Erderwärmung*

(warming on the Earth), *Klimaerwärmung* (climate warming), *Temperaturanstieg* (temperature rise), *Wärmephase / -periode* (warm phase / period);

4. attributive constructions: *steigende Hitze* (increasing heat), *warme Phase* (warm phase), *hohe / steigende Temperatur* (high / increasing temperature).

For example, *Aber von den Folgen der Erderwärmung kann sie viel erzählen: von der verheerenden Dürre in ihrer Heimat, vom sterbenden Vieh, von der Not* [Zeit 50/2009: 46].

The consequences of the warming on the Earth are actualized in this context: devastating drought, dying cattle, indigence.

Beobachtungen zeigen, dass der globale Temperaturanstieg sich in der letzten Dekade verlangsamt hat [Zeit 48/2010: 42].

“Observations show that the global temperature rise has slowed down in the last decade”.

The analysis of the nominative field of any concept includes the analysis of the interpretations of its key lexemes and therefore it is reasonable to carry out a part-of-speech and lexicographical analysis of the terms naming the concept *Erwärmung* (“warming”).

Part-of-speech analysis of the terms representing the concept *Erwärmung* (“warming”)

The part-of-speech and lexicographical analyses of the lexemes of the terms naming the concept *Erwärmung* (“warming”) have been carried out in order to gain a deeper understanding of the concept and reveal some of its additional characteristics.

The part-of-speech analysis of the terms representing the concept *Erwärmung* (“warming”) shows that in most cases *nominal* lexemes are used to verbalize the concept. The use of the nominal lexemes that represent the concept *Erwärmung* (“warming”) indicates that this concept is thematized as a “matter / phenomenon”. Moreover, the corpus of the lexemes naming the concept *Erwärmung* (“warming”) is characterized by the prevalence of *deverbal nominal lexemes*: *Erwärmung* (“warming”), *Aufheizung der Erde* (heating of the Earth), *Erderwärmung* (warming on the Earth), *Klimaerwärmung* (climate warming), *Temperaturanstieg* (temperature rise).

Carrying out a morphological analysis of predicative lexical units nominating the concept *Erwärmung* on the basis of word-building with a view to studying the phenomenological essence of the concept more fully is reasonable. It reveals the cognitive characteristics of the concept.

In most cases deverbal nouns ending in –ung are used to represent the ecological information about climate warming. Deverbal substantivization with the suffix –ung represents such a model of word-building as suffixation of a productive stem. According to L. M. Eichinger, derivatives ending in –ung make up 80 % of all the nominalizations of the German language [10]. The functional purpose of deverbal nominalization consists in giving the process image, forming the categorical lexico-grammatical meaning of a verb, the categorical grammatical meaning of a noun. This way an initially non-substantive lexical meaning turns into a substantive meaning with certain consequences for the syntactic functioning of words, which are the products of nominalization (substantivization). The character of the congruence of noun meanings and respective verb meanings is diverse: nouns can denote processes in their development, as well as individual, time-constrained and finished within their limits acts, and also occurrences characterized by the complex, multi-aspect structure of the content.

The lexeme *Temperaturanstieg* (temperature rise) is used to verbalize the concept *Erwärmung* (“warming”), apart from deverbal nouns ending in *-ung*. This lexeme is a compound word which is formed by means of the composition of nominal and verbal lexical units. The lexical unit *Anstieg*, which is relevant to the study of the ecological concept *Erwärmung* (“warming”) verbalized by deverbal nouns, is formed from a predicative stem according to the non-affixal word-building pattern (implicit derivation).

Consequently, the ecological phenomenon of climate warming is not static, it is dynamic. The deverbal nominal lexemes, which are used to verbalize the concept *Erwärmung* (“warming”), reflect the essence of the phenomenon of warming in the time perspective of its development.

Apart from the fact that deverbal nouns are usually used to verbalize the concept *Erwärmung* (“warming”), it is necessary to note that the ecological information about warming is also represented by compound words, which indicates the scientific character of the information which is conveyed and enables to reflect several topical areas simultaneously. The morphological analysis of the terms which name the concept *Erwärmung* (“warming”) and are compound words has shown that most compound words representing this concept are formed according to the model: *Erwärmung* + Sub. actualizing an area of warming (Klima, Erde). Compound words which are used to verbalize the information about the ecological phenomenon of warming enable to satisfy the need of scientific style for conciseness with a high degree of the condensation of mental content.

It should be highlighted that the lexemes verbalizing the concept *Erwärmung* (“warming”) are characterized by relatively small semantic heterogeneity, which indicates the recent formation of this concept in the German sphere of concepts.

It is interesting to note that apart from the substantival terms, which represent the concept *Erwärmung* (“warming”) and are the primary means of the verbalization of this concept, the ecological phenomenon of warming is objectified by verbal lexemes. Moreover, the verbalization of the concept *Erwärmung* (“warming”) with the help of not only predicative lexical units, but also deverbal nominal lexemes enables to reflect the processual, unstable, changing character of this ecological phenomenon through the grammatical meaning of a verb. For example,

Die Antarktis hat sich in den letzten 50 Jahren im Durchschnitt um ein halbes Grad Celsius erwärmt [www.zeit.de 48/2011].

“On average, the Antarctic has warmed by 0,5 °C over the last 50 years”.

Als mögliche Folge einer raschen Schmelze des Arktiseises, des Verschwindens des Amazonas-Regenwaldes oder des Permafrostes könnte sich so die Atmosphäre noch rascher aufheizen – könnte, falls es eintritt [Zeit 37/2009: 31].

“As a possible consequence of the fast melting of Arctic ice, the disappearance of rainforests or permafrost areas, the atmosphere could get warmer even more quickly – could, if it happens”.

The examples mentioned above represent the verbal means of the verbalization of the concept *Erwärmung* (“warming”), which, first and foremost, has great potential to verbalize the processual, dynamic characteristics of the ecological phenomenon of warming and reflect its changing, unstable character.

Since terms belonging to the units of scientific language are the primary means of the representation of the ecological information about climate warming, conduction of a lexicographic analysis of the terms representing the concept *Erwärmung* (“warming”) is an important part of the research of this concept carried out within the framework of cognitive linguistics.

Lexicographic analysis of the terms representing the concept *Erwärmung* (“warming”)

The modern stage in the development of human society is characterized by the extension of knowledge in all spheres of life and science, which leads to the emergence of new research branches and even new scientific disciplines. In this day and age progress in science and technology and its consequences are affecting all spheres of people’s lives more and more with every passing day. It is virtually impossible for this fact not to influence the language. The inflow of new terms from different fields of study and ecology in particular is an incentive to carry out research devoted to systematization and description of terminological lexical units. In this article the means of the verbalization of the concept *Erwärmung* (“warming”) are represented. It is also necessary to reflect a lexicographic description of the terms representing the ecological phenomenon of climate warming

The definition of the lexeme *Erwärmung* is das [Sich]erwärmen [11]. According to this definition, the ecological process under consideration is characterized as heating, warming.

The lexeme *Temperatur* has the following definition: Wärmegrad eines Stoffes; in Zahlen, Graden gemessene Wärme von etw. [11]. Consequently, one of the basic terms representing one of the cognitive characteristics of the ecological phenomenon of warming is defined as a “heating level of a substance (material, matter); warmth of something measured in numbers, degrees”.

The lexeme *Aufheizung* is defined as das (Sich)Aufheizen, Aufgeheiztwerden [12]. It is necessary to consider the definition of the verb from which this deverbal noun derives. *Aufheizen* is defined as a) (Physik, Technik) allmählich erwärmen, erhitzen, b) [a+sich] (Physik, Technik) sich allmählich erwärmen, erhitzen [12]. According to this definition, the ecological phenomenon of warming is characterized as “gradual heating”.

One of the definitions of the lexeme *warm* is eine verhältnismäßig hohe Temperatur habend [11], and therefore this lexeme, which takes part in the naming of the process of climate warming, actualizes its following characteristic: “having relatively high temperature”.

The lexeme *Hitze* is defined as sehr starke, als unangenehm empfundene Wärme, hohe Lufttemperatur [11]. Consequently, the definition of the analyzed ecological concept is “intense warmth, which is perceived as unpleasant, high air temperature”.

The deverbal lexemes *Anstieg* and *steigend*, which are used to verbalize the concept *Erwärmung* (“warming”) as specifying sememes with the lexemes *Hitze* и *Temperatur*, actualize the cognitive characteristic of the ecological phenomenon of warming: temperature / heat “which is becoming higher, growing, rising” owing to the main definition of the substantival predicative in the first case and Participle I in the second one: a) im Niveau höher werden; b) zunehmen, sich mehren [11].

The method of the semantico-cognitive analysis, which presupposes that during the linguo-cognitive research we are turning from the content of meanings to the concepts’ content, will be used for the further description [13].

Cognitive characteristics of the concept *Erwärmung*

Having carried out a semantico-cognitive analysis of the empirical corpus, we were able to single out the following lexemes which take part in the representation of the concept

Erwärmung (“warming”): *Temperaturniveau* (temperature level), *Temperaturextrem* (extreme temperature), *Temperaturlimit* (temperature limit), *Erwärmungsphänomen* (warming phenomenon). In the examples mentioned above these lexemes representing the ecological concept *Erwärmung* (“warming”) reflect some cognitive characteristics of this concept. More specifically, the basic term *Temperatur*, which is accompanied by specifying lexemes and numeric data in order to convey the information about the ecological phenomenon of warming, is concretized by the sememes *Niveau* (level), *Extreme* (extreme), *Limit* (limit). Consequently, it is feasible to pick out the following characteristic of the concept *Erwärmung* (“warming”): “range of temperatures”. Additionally, during the verbalization of the ecological information about climate warming this cognitive characteristic can be introduced by giving concrete numeric data, for example,

Ein kanadisches Forscherteam legte dieses Jahr neue Simulationen vor, die vom politisch beschlossenen Klimaziel (höchstens zwei Grad Erwärmung) rückwärts errechnen, welchen Ausstoß an Treibhausgasen sich die Menschheit noch erlauben darf [www.zeit.de 48/2011].

“This year a team of Canadian researchers has made known new models, which has shown on the basis of the politically set climatic target (warming is limited to no more than two degrees) how many greenhouse gas emissions people are allowed to release into the atmosphere”.

In den letzten Jahrzehnten hat sich das Klima auf der antarktischen Halbinsel – dem beliebtesten Ziel – von einem kalten und trockenen Polartyp zu mild-feuchten subantarktischen Bedingungen gewandelt, denn die Erderwärmung hat die Region voll im Griff: Verglichen mit 1950 stiegen die Durchschnittstemperaturen um 2,5 Grad Celsius – fast fünf Mal so viel wie im globalen Mittel [www.zeit.de 5/2009].

“In recent decades the climate on the Antarctic Peninsula, which is the favourite target, has changed from the cold and dry polar type to soft and humid subantarctic conditions because this region is accustomed to global warming: in comparison with 1950 its average temperatures have risen by 2,5 °C, which is approximately five times higher than the average global rise”.

It is necessary to consider the cognitive characteristic actualized by the lexeme *Phänomen* used to verbalize the concept *Erwärmung*. The definition of this lexeme is 1. (bildungsspr.) etw., was in seiner Erscheinungsform auffällt, ungewöhnlich ist; 2. (Philos.) das Erscheinende, sich den Sinnen Zeigende; der sich der Erkenntnis anbietende Bewusstseinsinhalt [8]. According to this definition, the lexeme *Phänomen* actualizes the cognitive characteristic of warming “something that attracts attention by its emergence, something unusual”, in the philosophical sense “something that has appeared and is showing its meaning; something that offers to cognize the content of consciousness”. It should be noted that the use of philosophical categories (unique categories of culture), which represent fundamental ideas and reflect the most important and logical connections and relations of existence in the world, to represent ecological phenomena gives an opportunity to talk about the universal meaning of the ecological problems under consideration.

It should also be highlighted that the research reveals the frequent use of the lexeme *extrem* in order to represent the information about the ecological phenomenon of warming. Owing to its semantics: *äußerst...*, *bis an die äußerste Grenze gehend* [11], this lexeme characterizes the verbalised concept *Erwärmung* as “something utmost, reaching maximum limit”. For example,

Ich war vor Kurzem in Indien, wo man den zweitwärmsten Winter seit Beginn der Aufzeichnungen registriert hat, und die schrecklichen Folgen der Buschfeuer in Australien – die durch eine extreme Hitzewelle und keineswegs durch außergewöhnliche

Brandstifteraktivitäten verursacht wurden – stehen uns ja noch vor Augen [www.zeit.de 14/2009].

“I have lately been to India, which has experienced its second warmest winter on record, but the dire consequences of Australian forest fires, which were caused by an extreme heat wave and by no means by an arsonist’s extraordinary actions, still haunt us”.

»Wenn wir hier lokale Niederschlags- und Temperaturextreme berechnen wollen«, begründet Brasseur, »dann sind dafür ja auch globale Modelle notwendig« [Zeit 28/2009: 33].

“If we want to estimate local precipitation and temperature extremes”, Brasseur explains, “we will also need global models”.

Die arktische Kälte soll die gesammelten Samen als natürlicher Schild schützen und selbst bei extremer Klimaerwärmung noch mindestens 200 Jahre vorhalten [Zeit 37/2009: 31].

“The Arctic cold weather must protect the gathered seeds as a natural shield and hold for 200 years even by extreme climate warming”.

On the one hand, in the examples mentioned above the use of the expressive lexeme *extrem* is conditioned by the communicative sphere of functioning and reflects the cognitive characteristics of the concept *Erwärmung* (“warming”). On the other hand, it actualizes the finest shades of the estimations of this ecological phenomenon.

The most frequent and primary means of the verbalization of the concept *Erwärmung* (“warming”) is the terms, which belong to the units of scientific language: *Erwärmung* (warming), *Aufheizung der Erde* (heating of the Earth), *Erderwärmung* (warming on the Earth), *Klimaerwärmung* (climate warming), *Temperaturanstieg* (temperature rise). Most terms that name the concept *Erwärmung* (“warming”) are represented by deverbal nominal lexemes. It should be noted that apart from the substantival terms, which represent the concept *Erwärmung* (“warming”) and are the primary means of the verbalization of this concept, the ecological phenomenon of warming is objectified by verbal lexemes: *erwärmen* (heat), *aufheizen* (get warm). The verbalization of the concept *Erwärmung* (“warming”) with the help of predicative lexical units, as well as deverbal nominal lexemes enables to reflect the processual, unstable, changing character of this ecological phenomenon through the grammatical meaning of a verb. Furthermore, the small heterogeneity of the corpus of lexemes verbalizing the concept *Erwärmung* (“warming”) is indicative of the recent formation of this concept in the German sphere of concepts. It should be highlighted that the analysis of the lexemes naming the concept *Erwärmung* (“warming”) has revealed such cognitive classifiers of the concept as a) level of temperature (*Temperaturniveau* (temperature level), *Temperaturextrem* (extreme temperature), *Temperaturlimit* (temperature limit)); b) essence of the ecological phenomenon of warming (*Erwärmungsphänomen* (warming phenomenon)).

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