

**POLAR, ÁRTICO, NORTE: ESTUDO COM BASE EM CORPORA DA SEMÂNTICA DE ADJETIVOS RELATIVOS EM LINGUAGEM**

***POLAR, ÁRTICO, NORTE: ESTUDIO BASADO EN CORPORA DE LA SEMÂNTICA DE LOS ADJETIVOS RELATIVOS EN EL LENGUAJE***

***POLAR, ARCTIC, NORTHERN: CORPORA-BASED STUDY OF THE SEMANTICS OF RELATIVE ADJECTIVES IN LANGUAGE***

Svetlana A. VINOGRADOVA<sup>1</sup>

Tatiana Ye. ABRAMZON<sup>2</sup>

Andrey G. DOROZHKIN<sup>3</sup>

Oxana V. SAVATEEVA<sup>4</sup>

Elena S. GANITCH<sup>5</sup>

Vitalii A. PEDKO<sup>6</sup>

**RESUMO:** Os adjetivos ‘norte’, ‘polar’ e ‘ártico’ são submetidos à análise multilateral de sua etimologia, frequência, desenvolvimento semântico e uso corrente na língua. O artigo revela as características semânticas específicas comuns dos adjetivos denominais ingleses no material desses três adjetivos. Foi realizada uma análise semântico-cognitiva abrangente sintetizando as conclusões obtidas no âmbito da análise de definição, análise contextual, análise diacrônica das transformações dos significados linguísticos e sua interpretação cognitiva. Os resultados mostram desenvolvimento ativo das estruturas semânticas, crescimento relativo dos significados metonímicos, extensão dos usos metafóricos. O adjetivo ‘norte’ apresenta o maior número de usos devido à sua origem nativa, aparecimento precoce no vocabulário inglês, grande número de significados vinculados em usos terminológicos ou fraseológicos e existência de significado metafórico.

**PALAVRAS-CHAVE:** Semântica cognitiva, Adjetivos, Estudo baseado em corpus, Linguagem, Modelos semânticos.

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<sup>1</sup> Dr. of Philology, Professor, Head of the Foreign Languages Department, Institute of Social Sciences and Humanities, Murmansk Arctic State University, 15 Egorov street, Murmansk, 183038, Russia, [svetvin@mail.ru](mailto:svetvin@mail.ru), <https://orcid.org/0000-0002-2476-9338>

<sup>2</sup> Doctor of Philology, Professor, Director of the Institute of Humanities Education, Nosov Magnitogorsk State Technical University, 38 Lenin Avenue, 455000, Chelyabinsk Region, Magnitogorsk, Russia, [ate71@mail.ru](mailto:ate71@mail.ru), <https://orcid.org/0000-0002-9771-9569>.

<sup>3</sup> Dr. of History, Professor of the Department of General History, Nosov Magnitogorsk State Technical University, 38 Lenin Avenue, 455000, Chelyabinsk Region, Magnitogorsk, Russia, [andrew-67@mail.ru](mailto:andrew-67@mail.ru), <http://orcid.org/0000-0002-3426-8289>

<sup>4</sup> PhD, Associate Professor, Head of Philology and Media communications Department, Institute of Social Sciences and Humanities, Murmansk Arctic State University, 15 Egorov street, Murmansk, 183038, Russia, [ovsavateeva@mail.ru](mailto:ovsavateeva@mail.ru), <http://orcid.org/0000-0001-9049-3280>

<sup>5</sup> PhD, Associate Professor, Department of Foreign Languages, Institute of Social Sciences and Humanities, Murmansk Arctic State University, 15 Egorov street, Murmansk, 183038, Russia, [elga2004@mail.ru](mailto:elga2004@mail.ru), <http://ORCID:0000-0002-8011-5187>

<sup>6</sup> Senior Lecturer, Department of Social Sciences and Humanities, Marine Academy Institute, Murmansk State Technical University, 13 Sportivnaya street, Murmansk, 183010, Russia, [pedkova@mail.ru](mailto:pedkova@mail.ru) <https://orcid.org/0000-0002-7510-5080>

**RESUMEN:** Los adjetivos 'norte', 'polar' y 'ártico' se someten a un análisis multilateral de su etimología, frecuencia, desarrollo semántico y uso actual en el lenguaje. El artículo revela las características semánticas específicas comunes de los adjetivos denominacionales en inglés sobre el material de estos tres adjetivos. Se realizó un análisis semántico-cognitivo integral que resumió las conclusiones obtenidas en el marco del análisis definicional, análisis contextual, análisis diacrónico de las transformaciones de significados lingüísticos y su interpretación cognitiva. Los resultados muestran un desarrollo activo de las estructuras semánticas, crecimiento relativo de los significados metonímicos, extensión de los usos metafóricos. El adjetivo 'northern' presenta el mayor número de usos debido a su origen nativo, aparición temprana en el vocabulario inglés, gran cantidad de significados ligados en usos terminológicos o fraseológicos, y la existencia de significado metafórico.

**PALABRAS CLAVE:** Semántica cognitiva, Adjetivos, Estudio basado en corpus, Lenguaje, Modelos semánticos.

**ABSTRACT:** The adjectives 'northern', 'polar' and 'arctic' are subjected to multilateral analysis of their etymology, frequency, semantic development and current usage in language. The article reveals the common specific semantic features of the English denominal adjectives on the material of these three adjectives. A comprehensive semantic-cognitive analysis was performed summarizing the conclusions obtained in the framework of the definitional analysis, contextual analysis, diachronic analysis of the transformations of linguistic meanings and their cognitive interpretation. The results show active development of the semantic structures, relative growth of metonymic meanings, extension of metaphorical uses. The adjective 'northern' displays the highest number of uses due to its native origin, early appearance in the English vocabulary, a big number of bound meanings in terminological or phraseological usages, and the existence of metaphorical meaning.

**KEYWORDS:** Cognitive semantics, Adjectives, Corpus-based study, Language, Semantic models.

## INTRODUCTION

With most Russian grammarians, it has long been a thoroughly traditional approach to divide adjectives into two main classes: qualitative and relative. Qualitative adjectives, being 'model, i.e., central' adjectives, convey the idea of a certain autonomous property directly and have a predicate function ('*a red dress*', '*a round table*', '*a pleasant voice*'), while relative adjectives denote a property via the idea of an object bearing this property ('*starry configuration*' – the configuration of stars, '*crystalline structure*' – the structure of a crystal, '*crystalline waters of the lake*' – clear – like crystal – waters of the lake). The difference is supported grammatically (relative adjectives do not build the forms of degrees of comparison, do not take the predicative syntactic function in a sentence, and – in the Russian language - do not build short forms

In this study, special attention is focused on the semantic and functional features of the

English relative adjectives. It is widely known that the generalized lexical meaning of the relative denominal adjectives is a relationship between two arguments expressed by the basic and described nouns: *linguistic* research – research related to linguistics, *rural* population – population, inhabiting villages, *marine* life – life of the inhabitants of the sea, etc. The relationship in many dictionaries is generalized to “of, or relating to...”. We share the view on relative adjectives as having dual nature of their semantics. Firstly, adjectives, as well as verbs, adverbs, etc., due to their indicative meaning, attributive syntactic function and part-of-speech meaning belong to the class of ‘predicate words’. On the other hand, denominal relative adjectives, being the derivatives of nouns, retain in their semantics the substantive nature of the basic noun, showing the semantic feature of projectivity (SULIMENKO, 2012). Semantic projectivity of the relative adjectives supposes that the semantic structures of the basic nouns are projected in the semantic structures of derived adjectives. Thus, they contain the semes inherited from the semantics of the basic nouns. More than that, the indicative semantics of predicate words like adjectives enables them to realize the latent possibilities of their nominal bases. In discourse such metonymical, metaphorical meanings are realized, which fail to be so in the case of their nominal analogues: equivalent attributive nouns generally do not develop such secondary meanings. Therefore, they form a predicate concept, while retaining, on the other hand, the substantive nature of the basic noun’s concept.

## LITERATURE REVIEW

The semantic analysis of adjectives in question gives an account for the specificity of the semantic features and processes of ‘predicate words’ (‘predikatnye slova’, i.e., words denoting property (LAENKO, 2006). In lexical semantics this group of words is generally studied less as the main semantic processes are described on the example of ‘substantive words’ (words denoting entities). However, in recent decades regularities of development and features of the general adjectival semantics were considered in the works of E. Rakhilina, E. Reznikova, etc. (POSTNIKOVA, 2018; RAKHILINA et al., 2009) on the example of Russian adjectives, S.V. Postnikova (NIKITIN, 1997) compiled a considerable monography on the adjectives in the German language, the English adjectives were studied by N.E. Sulimenko (RASKIN & NIERENBURG, 1995), L.V. Laenko (d Social Sciences” (CILDIAH-2019)), and others. Detailed semantic analysis of the adjectives in the aspect of their description in computer lexicography was given by V. Raskin and S Nierrenburg (REZNIKOVA et al., 2013).

The adjectives *northern*, *polar* and *arctic* are taken for the analysis as the

representatives of the relative adjectives subclass for many reasons. Firstly, they are denominal adjectives derived from nouns (though in different languages), showing the characteristic features of the group. Secondly, they belong to the same semantic field of geographical terminology, displaying the possibilities of similar semantic tendencies. Not less important is their etymological difference, having its impact on their use, frequency, semantic development.

### **Hypothesis**

The adjectives under study display specificity of their semantics. Relative adjectives are derived from other parts of speech (nouns, verbs, etc.) and retain in their semantics a semantic mould of the basic word. Hence, their semantics is dual, it contains not only the indicative features of predicate words, but also includes the fragments of the semantic structures of their basic nouns, displaying substantive words semantic properties.

Secondly, these adjectives have their competitors in the English language – attributively used nouns. The latter are more consistent with the analytical character of Modern English and show the tendency of superseding the old syntactic forms. The corpus-oriented study will conclusively demonstrate the frequency of uses of relative adjectives in modern English, their semantic flexibility and predominant types of semantic transformations, relations of initial and derived meanings. Thus, the research will show the semantic tendencies of the relative adjectives subclass to retain their categorical features in modern English.

### **METHOD**

A comprehensive semantic-cognitive analysis was carried out, summarizing the conclusions obtained in the framework of the definitional analysis, contextual analysis, diachronic analysis of the transformations of linguistic meanings and their cognitive interpretation. The work also used the analysis of corpus data to identify relative new meanings, as well as to study diachronic semantic changes. The method of quantitative analysis of corpus data was used to study the frequency of word usage.

The analysis of the semantic development of adjectives is carried out mainly on the basis of the Oxford historical online dictionary [OED] and generalization of the lexicographic data of the online dictionaries of the modern English language [ABBYY]. The analysis further is based on the study of the materials from the corpus portal English Corpora.org: the

Corpus of Contemporary American (VINOGRADOVA, 2017), the Corpus of Historical American (Davies, Mark, 2004), the British National Corpus (Davies, Mark, 2008), the iWeb Corpus (Davies, Mark, 2010). The values of the adjectives in question recorded by the historical dictionary are clarified by examples from the historical corpus, where the context of use helps to more accurately determine the meaning in which the adjective is used. A review of the dictionaries of modern English allows you to find out which of the historically recorded meanings are currently in use, which uses are not recorded by the dictionary, the corpus shows the dynamics of the development of the semantic structure of the adjective, and how the regrouping of meanings occurs. Much attention is paid to comparing models of semantic derivation of adjectives, the specifics of their semantics and semantic processes.

## RESULTS AND DISCUSSION

### Development of the semantic structure of the studied adjectives

The adjectives under discussion belong to the semantic group of geographic terms, all of them having contiguous meanings: relating to the North, to the Arctic, to the Pole (Northern or Southern).

The adjective *northern* is the only one in this group of Germanic origin having cognates in Old High German and Old Norse: OHG. *nordrōni* ‘septentrio’, ON. *norr* <oeacu>nn.. The word is a derivative of *norð*: *norð* + *-ern*. The first meaning of the adjective registered in Old English in 890: *northern* - of persons or peoples: living in, originating from, the north, esp. of England or of Europe [OED]. In Modern English dictionaries, such meanings of the word *northern* are registered:

- 1) situated in the north, or directed towards or facing the north; (*of a wind blowing from the north*);
- 2) living in or originating from the north northern breeds of cattle;
- 3) relating to or characteristic of the north or its inhabitants (She had a broad northern accent) [ABBYY]
- 4) Lying or situated to the northward; having a position relatively north.
- 5) Northern Lights, the Aurora Borealis [OED].

The adjective *polar* can be traced to Latin origin [ad. med. L. *polār-is*] [OED], it derived from the noun L. *pol-us*. In the historical dictionary, its first mention is referred to as appearing in 1551: These circles maye well bee called Pole circles, or *Polar* circles [OED]. The adjective *polar* in Old English denoted – 1) of or pertaining to the poles of the celestial

sphere or of the earth; 2) situated near or connected with either pole; 3) of or pertaining to the poles of another heavenly body[OED]. In Modern English dictionaries the adjective *polar* denotes:

- 1) relating to the North or South Pole;
- 2) (of an animal or plant) living in the north or south polar region;
- 3) relating to the poles of a celestial body; relating to the poles of a cell, organ, or part; having electrical or magnetic polarity; (of a liquid, especially a solvent) consisting of molecules with a dipole moment;
- 4) directly opposite in character or tendency [ABBYY].

The source of borrowing of the adjective *arctic* can be traced to Greek, though the source of borrowing was French [a. OF. *artique*, ad. L. *articus*, *arctic-us*, a. Gr. ἀρκτικ-ός of the Bear]: *arctic* - of or pertaining to the north pole, or north polar regions; northern. The adjective derived from ἄρκτος (*árktos*, “bear”) + -ικός. The adjective *arctic* in Modern English has several meanings:

- 1) related to the Arctic;
- 2) committed within the Arctic,
- 3) associated with Arctic exploration;
- 4) inhabitant, growing in the Arctic [ABBYY].

The branching of semantic structures of relative adjectives of the English language testifies to their stability in the language, despite the competition with attributive nominative constructions. This applies not only to native English adjectives, but borrowed, which are terminological in the first stage, but over time, they acquire secondary meanings becoming polysemantic. As a result, we can talk about the relative adjectives being a part of the main vocabulary of the language, despite competing with analytical constructions ‘attributive noun + noun’.

### **Frequency of use: corpora analysis**

Another sign of the stability of units may be their high usability. An analysis of the frequency of relative sub-substantive adjectives shows, however, that its absolute values are relatively low. At the same time, the occurrence index becomes significant with the appearance of secondary meanings in adjectives, including specialized metonymic uses (astronomy, physics, biology, etc.).

The study of frequency of the adjectives shows predictable results: *northern* is more

frequent than *polar* and *arctic*, though the number of meanings in the dictionaries is approximately the same

**Figure 1.** Mentions in corpora

	number of words	northern	polar	arctic
iWeb	14 billion	185 864	72 035	55 388
COCA	1,0 billion	12 661	5 524	4 584
COHA	420 mln	7 708	1 696	1 760
BNC	100 mln	2 445	498	436

The Corpus iWeb contains the texts from the Internet websites, it is 25 times the size of COCA, hence, the numbers of uses are much higher, the adjective *northern* is mentioned 185 864 times, while the other two – less than 100 000. The *northern* is used two times more frequently than the adjectives *polar* and *arctic*, *polar* though being more frequent than *arctic* [iWeb].

We can see from the table, that in the Corpus of Contemporary American (COCA) including texts from 1990 to 2015, the adjective *northern* has 12661 mentions, the figure is more than two times higher compared to the uses of the adjectives *polar* – 5524, and *arctic* – 4584 [COCA].

In the historical corpus (Corpus of Historical American – COHA) the data is collected from 1810 until 2019. It contains 7708 mentions of the adjective *northern*, 1760 – of *arctic*, 1696 – of *polar*. The total figures are smaller in COHA, as in this Corpus the sum total of all the words is less than half a million, while in COCA it exceeds a billion. However, the ratio of mentions of *northern* to *polar* and *arctic* is approximately the same: about two to one [COHA].

The information of the British National Corpus refers to the years of its active functioning – 1980-1993, therefore, the figures of mentions are the smallest in the table, the ratio conserves [BNC].

The fact that the adjective *northern* belongs to the original English stock and is known from the earliest available manuscripts of the Old English period coordinates with its highest frequency among the other two in Modern English.

## Development of polysemy: appearance of figurative meanings

Another feature, giving the rise of frequency to the adjectives, is the appearance of secondary meanings. For the relative adjectives, their usage in figurative meanings gives the ground for the transference into the class of qualitative, or pure, adjectives, with purely predicate semantic features supported by grammatical signs – degrees of comparison, uses with intensifiers, predicative syntactic function, etc.

In metaphorical uses (*arctic* cold of relations, *polar* views, *northern* character) the adjectives reveal the implicational semes of the basic nouns: the semantic elements, either realized, or not realized, but existing as the semantic potential in the nominal semantic structure.

The diachronic analysis reveals, that the adjective *northern* realizes in its metaphorical meaning the seme of cold, associated with the North, but not realized in the secondary meanings of the word, though actualized in the derivative *north-blooded*:

Considerate *North-blooded* Mountaineers of Jura (1837) [COHA].

This metaphorical meaning is found in Modern English iWeb Corpus:

The prize goes to Lizzy Connolly for her comic efforts in portraying the delightfully blunt and call-a-spade-a-spade *Northern* character of Doris [iWEb].

The first registered case of the use of *arctic* was in 1391:

The heyhte of owre pool *Artik* fro owre north Orisonte. (Chaucer. The Treatise of Astrolabe).

Later the word developed a figurative meaning in reference to extremeness, as its direct meaning ‘pertaining to the north pole’ contains the idea of belonging to the extremal point:

Beyond the *Artique* of my comprehension (1647).

Heathens and unbelievers are all *artick* and antartick reprobates (1670) [OED].

Truths within the *arctic* circle of doubt (1877) [COHA].

The figurative meaning of cold is registered in the historic dictionary since the 19<sup>th</sup> century:

Th' antartick and *artick* we visit by turn, In one we are frozen, in t'other we burn (1869) [COHA].

In modern English, the metaphorical meanings of the adjective *arctic* are confined to the reference of cold:

She took a step closer to him and her eyes went *arctic* cold.

His mother had turned the warm summer day to *arctic* winter with one glance



[COCA].

The fact that the adjective *polar* is more frequent than *arctic* may be explained also by the semantic reasons: the adjective *polar* is used to refer not only to the Northern Pole, but also to the Southern, while *arctic* refers only to the Northern one. The presence of reference to the both poles, as well as to both electric (having positive and negative electricity) and magnetic poles in the semantics of the adjective gives the reason for the appearance of the figurative meaning ‘extremal, opposite’: *polar* opposites, *polar* extremes:

Dante felt Good and Evil to be the two *polar* elements of this Creation, on which it all turns (1872).

The differences between literal and free translating are, however, no mere positive-negative dichotomy, but rather a *polar* distinction with many grades between them (1964) [OED].

This meaning of the adjective *polar* is the only metaphorical one registered by the Corpora currently:

Although sex-role ideologies form a continuum, we grouped the respondents into two *polar* categories, which we labeled ‘traditional’ and ‘contemporary’ [iWeb].

## CONCLUSION

The statistical data of the number of mentions of these adjectives in the corpora shows relatively high frequency. The adjective *northern* displays the highest among the three of them number of uses due to its native origin, early appearance in the English vocabulary, big number of bound meanings in terminological or phraseological usages, as well as the existence of metaphorical meaning. The branching of the semantics depends on the primary meaning, including not only the application to the absolute cardinal direction, but also the relative meaning of location to the north / northwest of some place. Hence, more frequent use of the adjective with nouns, denoting different, not necessarily northern localities. *Polar* and *arctic* display less commonality, the frequent uses appear in the professional terminology (astronomy, biology, geography, electricity, magnetic physics, etc.). Currently the uses of *northern / polar / arctic lights*, *polar / arctic night*, *arctic / northern tour*, *arctic shelf* are getting more common with the development of economy and tourism in the arctic territories (ALEKSANDROVA & AFANASEVA, 2019).

Development of the semantic structures of adjectives is based on the semantic structures of the initial nouns, displaying different measure of projectivity. Though the adjectives denote similar entities, their secondary meanings differ. For the adjectives *northern*

and *arctic*, denoting relation to the North (pole, circle), the metaphorical meaning of ‘cold’ is currently more characteristic than ‘extremal’, for the adjective *polar*, denoting both poles of the Earth, – the figurative meanings ‘opposite’, ‘extremal’ are common.

The adjectives under analysis fully rely in their semantic processes on the semantics of the original nouns, manifest the metaphorical and metonymic meanings of nouns or their latent senses that were not realised in the semantics of the noun. Diachronic analysis shows numerous cases of transcategorization of relative adjectives into qualitative ones based on the appearance of metaphorical meanings.

The corpus-oriented study conclusively demonstrated the frequent uses of relative adjectives under study in modern English. Their semantic flexibility, appearance of metaphorical meanings, development of polysemy show the semantic tendencies of the relative adjectives to retain and develop their semantic structures, hence, to retain the adjectival categorical features in the conditions of mainly an analytical language.

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#### **Conflict of Interests**

The authors confirm that the data provided does not contain any conflict of interests

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