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# SYNERGETIC CONCEPTS "CHAOS" AND "ORDER" IN MODERN ENGLISH VERBO-CREATING PROCESSES

## Abstract

The article deals with the problem of relevancy of the central notions and principles of synergetics for studying word-formation processes in Modern English. It is proved that the complex, open, nonequilibrium, nonlinear language super-system in general and word-formation macro-system, in particular, develop due to the contradiction of the chaos processes and its stability. The trans-level nature of structural relationships of the English word-formation macro-system with other levels of the language super-system (especially lexical one) determines the dynamism of verbo-creative processes, mobility of its constituents, poly-functionality and "poly-combinability" of word-forming tools and mechanisms. Periodic modification of verbo-creation mechanisms, creation of new combinations of word-formation methods, enrichment of the stock of word-formation tools by functional transposition of intra-level and extra-level language units and current dissipation of functionally passive word-forming morphemes manifest chaotic processes in different parts of the modern English word-formation system which simultaneously is aimed to maintain its structural organisation.

*Keywords*: synergetics, verbal creation, word-formation, open system, non-linearity, dissipation, unequilibriumness, order, chaos, fluctuations, attractor.

## Introduction

Synergetics, or the theory of self-organisation, is now one of the most popular and promising interdisciplinary approaches to scientific studies. It aims to "determine the internal isomorphy of the behaviour of complex systems" (Knyazeva, 2001, p. 103) to identify "unified, universal laws of evolution, common to animate and inanimate nature, human personality and society in general" (Semenets, 2004, p. 3).

The subject of analysis within the synergetic approach is "complex, open nonlinear super-systems that function via the interaction of their sub-systems and are in a state of greater or lesser equilibrium" (Selivanova, 2006, p. 538). A synergetic approach to the study of such super-systems involves a comprehensive study of the mechanisms that, on the one hand, regulate the dynamics and development of the complex system and, on the other - ensure its relative stability.

It is well-known that the language system is a classic example of a complex, open, nonlinear super-system capable of self-organisation and self-regulation. That is why applying this new research paradigm to study the problems of functioning and development of the language super-system has become an appropriate and very promising perspective. A synergetic approach to

studying linguistic phenomena allows defining the internal laws of self-development and self-regulation of the language super-system to see the feasibility of linguistic phenomena, which recently have been considered "non-systemic", marginal, creating conditions for predicting future development of this super-system.

Applying synergetic ideas in studying various lingual and linguo-relevant phenomena in the last quarter of the XX century, a new paradigm was formed and developed – Synergetic Linguistics (or Linguosynergetics). Nowadays, based on a synergetic scientific paradigm, research is carried out in such areas of linguistics as communication theory (Tarasova, 2000; Morozova, 2003), history of language (Dombrovan, 2014, 2015, 2018), cognitive linguistics (Prikhodko, 2015; Veremchuk & Yenikeyeva, 2020), text linguistics (Lotman, 1998; Semenets 2003, 2004), lexicology (Kiyko, 2014, 2016, Klymenko, 2007, 2014, 2018, 2022), discourse studies (Pikhtovnikova, 2000, 2005; Pryhodko 2003; Frolova 2005). Several scientific works were devoted to the problems of the relevance of synergetic ideas for the study of word-formation processes of modern English, determining the synergy of word-formation mechanisms (Yenikeyeva, 2006a, 2006b, 2006c, 2011, 2015; Yenikeyeva & Klymenko, 2021).

The relevance of further research in the field of linguosynergetics is therefore predetermined by its innovative nature, insufficient development of its individual tools, and the lack of a generally accepted holistic linguistic synergetic concept of the language system. The aim of the study presented in this article is to identify the role of synergetic mechanisms of order and chaos in self-regulation and self-development of word-formation as a macro-system that is part of the super-system of modern English. We argue that to achieve this goal, the following tasks should be outlined:

- to highlight a new view on the phenomena of chaos and chance offered by synergetics;
- to prove the synergy of the verbal-creation process;
- to confirm the relevance of the categories of order and chaos to explain the phenomenon of simultaneous stability and dynamism of the word-formation system;
- to identify the role of constructive chaos in the development of the word-forming macro-system and the evolution of the language super-system.

## Analysis and Results

A language super-system is a complex object characterised by different constituents, which together make up its substance, as well as numerous internal and external connections that determine its architecture. Systematic, structural organisation of language makes it stable in terms of functioning and development, provides "continuity of language" on the path of its historical existence, and makes it more or less stable. The internal tendency to the relative stability of the system (in synergetics, it is defined as an attractor) ensures the preservation of language, its relative stability, continuity and sequence of its development.

However, a viable system cannot remain a stable, rigid organisation. In the process of language functioning within the language super-system, there occur various deviations (deviations from the norm) and fluctuations (randomness, signs of chaos), which increase and intensify, that cause changes in the system at the micro- and macro-levels. The struggle of two tendencies determines the development of language as an open, dynamic system: on the one hand, maintaining the stability of their condition, and on the other – responding adequately to the action of "entropic environmental factors" (Selivanova, 2006, p. 307). The self-organisation of the language super-system is manifested in its ability to stabilise the imperative parameters by the directed ordering of its structure and functions in order to resist the entropic (random, disordered) factors of the environment (primarily society)

(Selivanova, 2006, p. 307; Khrutskaya, 2006, p. 216). The transient language phenomena, the nuclear and periphery organisation of elements, and the variability of lingual units are the characteristic features of a dynamic system capable of self-regulation and self-organisation. Such dissipation ("the transition of ordered evolution into the energy of chaotic motion" (Khrutskaya, 2006, p. 216) in the process of self-organisation of the language system contributes to its transition to a qualitatively new level. The ways of system evolution are discrete, and the very systemic nature of language determines the "spectrum of its dynamics", which determines the ways of its development.

The openness of the language super-system is manifested in its ability to exchange energy, information and substance with the environment and "exchange processes occur not only across the boundaries of a self-organising system but also at every point of this system" (Knyazeva & Kurdyumov, 2002, p. 33). The self-regulation of the language super-system is manifested mainly in its ability, on the one hand, to enrich itself with new linguistic units that meet growing communicative demands and, on the other hand, to get rid of "superfluous", "unnecessary" language material that has not been used by native speakers for communication. Self-regulation can also be carried out by redistributing the material resources within the super-system itself.

Responding to external stimuli, the main of which is the communicative demands of native speakers, the language super-system mobilises all its resources to meet them. Due to the absence of the necessary language tools for successful communication, new linguistic units are formed, or existing ones are functionally or semantically modified. In terms of synergetics, the innovative phenomena of this kind are considered the deviations that can be intensified and lead to a restructuring of the language system in "its particular points". Social factors (extralingual factors) and non-realisation of all potential features of the language super-system (intralinguistic factor) motivate it to make changes either by borrowing from other languages or by forming innovations from its own linguistic units, changes in exponents or content of language signs, modifications of their functions and purpose.

The language super-system consists of a certain number of interconnected macro- and micro-systems, which interact with each other to ensure its functioning. Language macro-systems (phonographic, morphemic, lexical-semantic, syntactic) differ in stability/instability, openness/closure, linearity/non-linearity, and, as a consequence, have different dynamics of change and development. Of all language macro-systems, the lexico-semantic one is directly related to the environment, open to the exchange of substance, information and energy, and, as a result, extremely mobile and dynamic. Scholars claim that "the lexical level of language accumulates and records the results of cognitive activity of speakers, and the concepts, developed in the practice of communication" (Grechko, 2003, p. 63). As a consequence, the lexical-semantic level is significantly different from all the other levels.

Thus, a characteristic feature of the lexical-semantic system is its mobility and openness because "new facts of reality, which appear in the human activity, new concepts formed on this basis, are directly reflected in the language vocabulary" (Grechko, 2003, p. 63). Nevertheless, for the materialisation of the acquired knowledge and the formation of concepts, it is necessary to mobilise the efforts of another system – word-forming. Enriching the vocabulary with the new units, which are the product of its activities, provides general dynamism and mobility to the lexical-semantic system. This, by the way, also expresses the openness of both systems.

In this regard, it should be emphasised that the word-formation is a real synergetic system, as it has a trans-level character. Using verbal-creative mechanisms, it can create qualitatively new words or formally or semantically modified variants of existing lingual signs based on constituents of different language levels (morphemes, lexemes, phrases, sentences). Being thus a complex, open, nonlinear system, the word-for-

mation of the English language allows observing the synergetic categories, such as order and chaos.

It should be underlined that synergetics offers a new perspective on the phenomena of chaos and chance. As the opposite of the established order, Chaos is recognised by synergetics as a constructive mechanism. In our opinion, the verbal-creative operations of an individual are a manifestation of the processes of constructive chaos in the system. The very result of the search for optimal methods and mechanisms of new lexical units' formation, the selection of the constitutive means necessary for the implementation of the verbo-creation, is often random. Word-formation offers various potential variants of the sign's exponent, which will serve to name a new object or phenomenon of reality, and only native speakers, visualising one of the innovations, can determine the most suitable variant.

The search for the best option continues in time. Sometimes native speakers use two (several) semiotic units at the same time to nominate one phenomenon, but, as a rule, as a result of the long-term competition of neologisms, only one lexical unit remains in literary language. Other lingual signs, having changed the semantics having undergone stylistic specialisation, may remain on the periphery of the language vocabulary or, gradually becoming obsolete, disappear altogether (Klymenko, 2014, 2018).

The attraction of synonyms around a certain concept is called poly-nomination (Zatsny & Pakhomova, 2001, p. 187). The concentration of neologisms around the basic centres of paradigm is due to the relevance of the phenomena and processes they denote. Many neologisms of modern English have been created around the concepts of the information revolution. Among the concepts that "attract" numerous synonyms are, for example, the following: "specialist in modern technology" – *cyberguru, cybernerd, geek, supernerd, techguru, technogeek, technoguru, technonerd, technosavant*; "a person who uses the Internet actively" – *cybercitizen, cybersurfer, e-surfer, netter, internaut, nethead,*

*netsurfer*; "a person who knows well the computer technology" – *computerate, computenent, computer-savvy, cybersavvy, techsavvy, technoliterate.*

Although the word-formation system of modern English has a wide variety of word-forming affixes, word-formation models, and mechanisms of verbal creation, lexical innovations sometimes occur in the word-formation process, the ways of formation of which contradict existing rules and regulations or constituent elements. Such "micro-chaos" is also constructive, as it can lead to the formation of new word-forming elements, word-forming models and tools. The formation of words by analogy with a particular word, increasing the number of lexical innovations created with an "atypical" word-forming element, so to say, "spreading" chaos in the environment, contributes to the visualisation of a new word-forming element and consolidation of a new word-forming model. The constructivism of chaos is that "chaotic processes at the micro-level, at the level of elements, seem to "breakthrough" the macro-level, to the level of the system, acquire significance for the system in general" (Knyazeva & Kurdyumov, 2002, pp. 26-27).

Due to the fact that modern English is experiencing the so-called "neological boom", in the process of word-formation, not only new lexical units but also new word-formation tools, new mechanisms of verbal creation are formed. There is a dialectical connection between the enrichment of the lexical language structure and the development of the word-forming system. On the one hand, with the development of word formation, vocabulary becomes more systematic and ordered (organised); on the other hand, the enrichment of vocabulary is accompanied by qualitative changes in the ways and means of lexical unit formation. Of course, atypical, chaotic processes associated with the violation of norms and order in word-formation are not always constructive, but they can potentially cause changes in the word-formation system.

The stability of any complex, open, nonlinear

system (the language) is relative because "the functioning of such a system is at the same time a continuous process of its change" (Grechko, 2003, p. 105). Society, where the speakers use the language, constantly feels the growing demand for linguistic expression of its diverse activities its achievements. These demands lead to the formation of new language elements, the formation of new rules for the language functioning, and new structural relations between the elements of the language system. Various deviations (fluctuations) at certain points of the system, provided the growth from microscopic to macroscopic, can result in a "violation of the overall growth rate of a complex structure necessary to maintain its integrity and sustainable development (Knyazeva & Kurdyumov, 2002, pp. 14-15). Thus, for a complex organisation, the idea of stability and planned and stable development is generally irrelevant. A complex organisation (structure) is most likely to be only "metastable" (Knyazeva & Kurdyumov, 2002, p. 13).

In general, chaos is constructive; as scientists claim, it is "necessary for the system to reach the attractor, the inherent trend of development, to initiate the process of self-completion" (Knyazeva & Kurdyumov, 1994, p. 112). The attractor in synergetics is understood as "a relatively stable state of the system, which seems to attract the whole set of trajectories of its development, regardless of the initial conditions" (Semenets, 2004, p. 20). The attractor reflects the whole range of ways of system development, creating a virtual image of its probable structure. In other words, the attractor is "a kind of plan of evolution, which is potential (not yet realised, moreover, obviously not everything in it will be realised), predetermined (predetermined by its characteristics of the environment, the degree of their non-linearity), ambiguous" (Knyazeva & Kurdyumov, 1994, p. 111).

In the process of verbal creation, such an attractor of "search" activity becomes the "invention" of the nominative unit, which would adequately reflect the phenomenon of reality and would be associated with the object of a nomina-

tion. The attractor determines the selection of speech material, its processing, and layout. As scientists claim, the course of creation processes "is determined by the interaction of intentionality and attractiveness of thinking, the resonant response of rhythms of consciousness and subconscious, verbal and nonverbal (Semenets, 2004, p. 21). Actually, the verbal-creative act is preceded by a preparatory stage, which can be characterised as a state of generative chaos, when the knowledge of the mechanisms and means of verbal creation is activated in the mind, and a constructive search begins. In the course of word-formation searches, there is an increase in energy, which, in the end, causes an emerging innovative explosion of verbal-creative thought.

It should be emphasised that for all the chaos of search, contingency, and the probability of results, nevertheless, verbal-creative human activity is a process controlled by the "author's" consciousness. Consciousness controls the sequence of the verbo-creative act, selects word-formation algorithms, and strives to prevent possible deviations from a given vector of verbal creation. Theoretically, due to the use of different word-forming tools, mechanisms, and combinations of elements, it is possible to create many "virtual" variants of the nominative unit. However, the author's consciousness, which controls the process of verbal creation, seeks to select one optimal variant. Consciousness not only determines the choice of word formation but also controls the course of its implementation. In creative verbal activity, a specific "automatic algorithm" is performed, which correlates with the existing language tradition. The work of the author's consciousness is aimed at maintaining the established mode of the verbo-creative act and preventing deviations from the specified algorithm.

A feature of highly organised systems, including language, is the combination of the principle of a high order of the deterministic type with the probabilistic (stochastic) principle of operation. A specific order and structure of the system, the determinism of functional manifestations ensure its stability and relative stability, continuity of

evolutionary processes, and stochastic deviations from a given algorithm can intensify and lead to the reorganisation of the entire system.

In the process of verbal creation, one can observe the interaction of the principles of determinism, probability and eventuality. Their connection and interaction ensure the harmonious existence and development of the whole system because certain aspects always remain predictable ("tradition") and, if we consider only them, the process will seem continuous and smooth, others – predictable with a certain degree of probability, others – completely unexpected" (Lotman, 2000, p. 352). The results of the study of word-formation ways and methods in modern English testify to the action of all three principles.

The majority of neologisms are created by traditional methods: compounding *(baby-bank, back-channel, buyback, cross-trading, flat-tax, guideshop, knowledge-worker, mouse-potato)*; affixation *(brokerdom (broker + -dom), celebrityhood (celebrity + -hood), weaponize (weapon + -ize), disengagement (dis- + engagement), unschool (un- + school))*; blending *(actor + activist > actorvist, advertisement + information > advermation, covid + exit > covexit, market + architecture > marketecture, Chinese + English > Chinglish, intelligent + dating > intellidating)*, abbreviation *(Extremely Important Person >EIP, financial independence, retire early > FIRE, high-definition television > HDTV, voice over Internet phone >VoIP, Black Lives Matter > BLM)*.

In modern English, a significant part of neologisms is also formed in non-traditional ways: by analogy with a particular word, with the participation of so-called "affixoids" – word-forming elements that are undergoing the stage of formation. As already mentioned, due to the intensification of verbo-creative processes in modern English ("neological boom"), there is not only the enrichment of the language vocabulary but also the formation of new word-formation tools and models. Thus, the formation of several lexical units by analogy with the "artificial" word,

the author's neologism of the writer George Orwell, *Newspeak*: *agentspeak, airlinespeak, artspeak, autospeak, bitespeak, bizspeak, blackspeak, computer-speak, cyberspeak, ecospeak, econospeak, Eurospeak, gayspeak, geekspeak, groupspeak, guruspeak, guyspeak, hackerspeak, marketing-speak, rapspeak, surfspeak, technospeak, TV-speak* – contributed to the "affixalization" of the element *-speak* (in the meaning of "the special language used in a particular subject area or business") and fixation in the minds of English speakers of the word-forming model $N + speak$. The high verbal creative activity of affixoids (*-abuse, -free, -friendly, -led, near-, once-, -something, -speak, -style, -watcher*) makes their "legalisation" and transition to the category of full-fledged affixes probable.

In addition to "traditional" and "probable" phenomena in the English language word-formation, there are "accidental" and "irregular" cases. Examples are the lexical units, created by abbreviations and numerical signs – homophones of words. In this way, some terms were created (*B2B = business-to-business, B2C = business-to-customer, C2C = customer-to-customer*, for example, *Some examples of types of business include B2C e-tailer, B2C service, C2C auction, B2C auction, and B2B purchasing* (Menascé & Almeida, 2000, p. 192)). In the language of informal computer communication, many "letter-and-digital" acronyms have been created, among them, for example: *Any1 < anyone, B4 < before, BBL8R < be back later, f2f< face-to-face, gr8 < great, 2L8 < too late, sk8 < skate*.

As already mentioned, in the verbo-creative activity, random factors play an essential role at all stages of the word-formation process: from the intention to "invent" a nominative unit to the practical realisation of the idea. Scientists emphasise that at the time of the verbal-creative "explosion", there are no mechanisms of causality or probability; the choice of the future is realised as a coincidence. As a result of the explosion, any element of the system or even an element of another system can become dominant. However, the next stage reveals the already pre-

dicted chain of events, and the consequences are significant and quite natural (Lotman, 2000, p. 679).

Despite the unlimited possibilities provided by a well-developed system of word-formation tools and mechanisms of verbal creation, native speakers sometimes use extraordinary ways of word-formation or borrow ready-made units from other languages (from foreign macro-systems). However, whatever the origin of a new lexical unit is, in order for it to take its rightful place in the language vocabulary, it must undergo a proper phonetic, semantic, grammatical, stylistic adaptation (a natural way of including a new token in the language vocabulary). If the innovation is created in "traditional" ways using standard word-formation tools, then its adaptation occurs automatically; if the way of token formation is "unconventional", or the word was borrowed from another language, its involvement in the language vocabulary requires additional adaptation efforts.

The dynamics of system development are interspersed with random, stochastic dissipative processes and periods of entering the attractor structure – the most stable state of the system. Continuity of language phenomena is clearly expressed in the nuclear-peripheral principle of the language system organisation. The word-forming system of the English language also has a so-called "zonal" organisation – a transparent core (traditional methods and verbal creation tools) and a blurred periphery (probable and accidental ways of verbal creation). Such an organisation corresponds to the "blurred sets", the peripheral elements of which may belong to neighbouring sets in several ways" (Semenets, 2004, p. 24).

The latter becomes evident if we consider the "probabilistic" ways of forming lexical units. For example, suppose the degree of abstract meaning and formal correlation with free tokens of new word-forming elements, which we call affixoids, cannot be considered full-fledged word-forming tools, then in word-forming activity and productivity. In that case, they are ahead of traditional

word-forming affixes, i. e. the new verbal creative elements and the corresponding models created with them are on the border of the core and periphery of the word-forming system.

Both the word-creating methods and mechanisms belonging to the core of the word-formation system and those that have not been involved in the creation of neologisms for a long time, but only reproduced as part of the registered units of the lexical language structure, take part in the processes of verbal creation. In recent decades, we can see an increase in creative verbal activity of some affixes that have long been on the periphery of the word-formation system (Klymenko, 2007). Thus, with "half-forgotten" suffixes *-dom* and *-hood*, such neologisms were created: *brokerdom, celebritydom, geekdom, gurudom, megastardom, moguldom, superstardom, thrillerdom, transgenderdom; celebrityhood, cronehood, mogulhood*. A significant number of neologisms are also formed with the new "affixoids", such as *bio-, eco-, -crat, cryo-, cyber-, docu-, -eraty, Euro-, -free, -friendly, -gate, giga- info-, mega-, nano-, near-, -nomics, -speak, techno-, tele-, -savvy, -style, -watcher, -zine*. The high verbal creative activity of new word-forming elements guarantees approval in the language of their affixal status, and their purposeful movement from the periphery to the core of the word-formation system.

The dynamics of the evolution of a complex, nonlinear systems reflect the struggle of two tendencies: "on the one hand – self-influence, self-strengthening (or slowing down) of processes due to positive (or negative) feedback aimed at building structure, self-regulation of the system. On the other hand – dissipative processes, the factor of "erosion" ("blurring"), energy dissipation as a manifestation of the general mechanisms of chaos" (Semenets, 2004, p. 21). Indicators of chaos at the micro-level can be the above-considered fluctuations.

A small fluctuation can serve as "the beginning of an evolution in a completely new direction, which will dramatically change the entire behaviour of the macroscopic system" (Prigo-

gine & Stengers, 1986, p. 56). In the case of intensification of fluctuations, there is a demand for development: either qualitative degeneration of the whole system via the formation of a new structure, a new differentiation of elements of the system or its complete destruction. If the fluctuations are insignificant, the system "returns to the previous equilibrium structure, returns to the previous attractor" (Knyazeva & Kurdyumov, 2002, p. 24).

A new direction in the development of the word-formation system of modern English, in our opinion, can be considered the formation of a new way of verbal creation – the formation of new tokens by composing "combining forms", for example, *Euro + crat* (Stein, 2002, p. 60). The mechanisms of formation of such tokens resemble compounding, but instead of the usual basis, auxiliary morphemes are used to say word-forming elements of a transitional nature ("affixoids"). In the process of word formation, one of the affixoids (the semantically significant one) becomes a basis, and the other (the one that clarifies and modifies the meaning of the basis) functions as a word-forming affix.

By "affixoido-compounding", as we propose to call this mechanism of verbo-creation, many lexical neologisms have been recently created: *auto + friendly = autofriendly, bio + friendly = bio-friendly, bio + nomics = bionomics, chrono + naut = chrononaut, cyber + erati = cyberati, cyber + naut = cybernaut, eco + friendly = eco-friendly, Euro + crat = Eurocrat, Euro + speak = Eurospeak, info + naut = infonaut, mega + zine = megazine, techno + crat = technocrat, techno + speak = techno-speak.* Thus, fluctuations at the level of elements – the formation of affixoids, their combination with each other and, consequently, the formation of a new way of verbo-creation – can lead to a restructuring of the structure of the whole word-formation system in case, of intensification of these processes.

The ability to evolve and improve is an integral feature of all living, functioning languages. The dynamics of the development of any language as a complex organisation are associated with "periodic alternation of processes of acceleration and deceleration, modes of structuring and erasing differences, partial disintegration of structures, with a periodic shift of focus from the centre to periphery and back" (Knyazeva & Kurdyumov, 2002, pp. 13-14). Thus, chaotic phenomena and processes in different parts of the word-formation system are an essential factor in its development since they cause the language self-organisation and steady movement from one attractor to another, i. e. its evolution.

## Conclusion

The dynamics of word-formation in modern English are determined by the trans-level nature of its structural relationships with other levels of the language system (especially lexical), the dynamism of verbal-creative processes, mobility, poly-functionality and "poly-combinability" of word-forming tools and mechanisms. Periodic modification of core means and mechanisms of verbal creation at the expense of peripheral ones, creation of new combinations of word-formation methods, enrichment of the stock of word-formation tools by functional transposition of intra-level and extra-level language units, and simultaneous "dumping" of "obsolete", functionally passive lingual material to the peripheral zone – all these factors determine the synergetic character of the modern English word-formation system's evolution.

The synergetic approach to the study of the word-formation system, thus, opens up great opportunities for us to analyse those systemic and non-systemic processes and phenomena that have not been explained in terms of the traditional scientific paradigm. The experience of the synergetic format represented in the article allows declaring that the fundamental concepts of synergetics – "chaos" and "order" are relevant for studying modern English verbal creativity processes. The subject of further research may be to study the problem of synchronicity/asynchrony of macro-system development within the language super-system.

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