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Synesthesia in the process of phraseologism-formation: a new approach

Abstract: The paper aims to explore how the process of phraseologism-formation is linked with the process of perception as part and parcel of human cognitive activity. Specifically, the research focuses on the role synesthesia plays in the construction of phraseological meaning. We proceed from the claim that the perceptual experience a human gains through multiple sensory channels while cognizing the world is preserved in the language semantics. Therefore, one of the main assumptions of the research is that synesthesia as a result of cross-integration of various perceptual sensations and their (sub)modalities influences the formation of phraseologisms and can be traced in their semantics. To test this assumption, a representative corpus of English and Russian phraseological units (more than 3,000) is analyzed. In the course of the analysis different types of synesthetic transfers that underlie the phraseological meanings in question are established. Special attention is paid to the way in which synesthesia is involved in the construction of the deep stratum of phraseological semantics that consists of the conceptual foundation (i.e., macro-metaphorical conceptual model) and phraseological image. Overall, the study offers further evidence that phraseological meaning is derived from the perceptual experience and from various synesthetic transfers in particular.

Keywords: figurative language; phraseological meaning; phraseological image; synesthesia; synesthetic transfers; perception; perceptual experience

1 Introductory remarks[1]

Like other language units, phraseologisms emerge as a result of cognition – a very complex phenomenon that "includes all conscious and unconscious processes

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by which knowledge is accumulated" (EB 2018), among which perceiving (or perception) occupies an important and in a certain sense key place. This fact infers the possibility of a special line of research in phraseology that focuses primarily on the study of the interaction between the human perceptual system and the process of phraseological meaning formation.

The interest in the issue of how the human perceptual system operates in the course of language meaning construction has increased substantially in the past few decades. Contemporary researches offer more evidence that confirms the relevance of the perceptual dimension of language semantics and the fact that language semantics is grounded in the perceptual experience. Besides, they also provide more empirically tested (experimental) data concerning the ways in which perceptual experience is involved in the formation of verbal signs. As a result, modern theory of language semantics is nowadays equipped with a number of conceptions and theories within the framework of which various aspects of the interplay of language and the human perceptual system have been elaborated, for instance: the conception of corporeal semantics (H. Ruthrof), the theory of perceptual symbols (L. Barsalou), the theory of embodied meaning (M. Johnson, R. Gibbs, G. Lakoff, Ch. Violi and others), the sensory-motor theory of semantics (U. Noppeney), the neural theory of language (J. Feldman, S. Narayanan; T. Regier), the interface theory of word meaning (A. Zalevskaya), and some others. Though the existing theories represent and develop different views of the problem in question, one of the basic tenets they all seem to share is that perceptual experience (which embraces a great variety of sensations, including proprioceptive, kinesthetic, etc.) is a crucial factor in the process of language sign formation. During this process, perceptual experience is transformed into the language signs' contents and therefore can be traced in different constituents and strata (or levels) of their semantic structure. In particular, as R. Gibbs emphasizes, "there is sufficient evidence to suggest that many aspects of language and communication arise from, and continue to be guided by, bodily experience" (Gibbs 2005: 207).

Among all the perceptual phenomena involved in the formation of the language system and speech production, synesthesia (Greek, *syn-* 'together' *aesthesis* 'perception') has a special significance. Much attention is paid to this phenomenon in the studies of figurative language, which has led to the elaboration of the theory of language synesthesia and the conception of synesthetic metaphors (see, e.g., ELL [2005]). Numerous scholarly works devoted to the analysis of figurative means of language provide reliable data revealing the fact that synesthesia can be regarded as a factor that stimulates figurative (metaphoric, in particular) thinking and activates the cognitive creative activity giving rise to metaphors of different kinds as well as other figures of language

and speech (see literary studies devoted to this problem, e.g. Galeev [2005]; Marks [1978]; McSweeney [1998]; Prokof'yeva [2008]; Ullmann [1945]). This fact makes this perceptual phenomenon particularly appealing in the research of phraseology.

Proceeding from this, the present paper aims at exploring the issue of how synesthesia is engaged in the process of forming such a special class of figurative units as phraseologisms, and in the process of constructing such a special type of language meaning as the phraseological meaning. Particularly, we are interested in discovering those types of synesthesia that provide the process of phraseologism-formation. As a starting point, it is necessary to consider in some detail modern approaches to synesthesia, to its definition and its study in relation to figurative language.

2 Synesthesia vs. figurative language within the framework of contemporary approaches

It is important to emphasize that synesthesia as a psychophysiological or neuropsychological phenomenon has been studied from many viewpoints. In modern science, there exists a great variety of disciplinary interpretations. While some see synesthesia as an abnormality or a rare disease evoked by a dysfunction of the human perceptual system, others hold it to be a unique capacity (exceptional skill or talent) peculiar to solely gifted humans or understand it as a universal and natural trait of human perceptual abilities. For example, B. Shanon regards synesthesia as a mode of operation that is "very basic to human cognition, but under normal conditions is not very apparent" (Shanon 2002: 338). Depending on the particular approach, the term 'synesthesia' may be used to describe a wide variety of phenomena (see, e.g., Simner and Hubbard [2013a]). However, according to N. Sagiv, "most commonly, it is used to denote a condition in which stimulation in one sensory modality also gives rise to an experience in a different modality" (Sagiv 2005: 3) – for instance, when we hear a particular sound while seeing a certain color, color starts to get associated with sound (ELL 2005). As J. Simner and E.M. Hubbard point out, synesthesia is "a neuropsychological condition which gives rise to extraordinary sensations" and is often defined as "merging of the senses" (Simner and Hubbard 2013b: xxi).

For quite a long period of time, a lot of attention has been paid to the ways in which the senses or perceptual sensations interact causing synesthetic experience (or synesthetic effect). It should be specially indicated that "by convention, the trigger that elicits synesthesia is referred to as *inducer*, and the

additional synesthetic experience itself is known as *concurrent*" and "in general, different variants of synesthesia are typically named by linking the inducer and concurrent, often with a hyphen or an arrow, with the inducer typically listed first and the concurrent second [...]" (Simner and Hubbard 2013b: xxi). It means that if colors are experienced in response to graphemes (i.e., letters or numbers), this synesthesia is termed as *grapheme-color synesthesia*, or *grapheme→color synesthesia*.[2] The research of synesthesia-producing stimuli (i.e., inducers) and the resulting synesthetic experience (i.e., concurrent) results in the detection of various kinds of synesthesia and the elaboration of its typology (e.g., *sound-color synesthesia*, *flavor-temperature synesthesia*, *sound-smell synesthesia*, *flavor-sound synesthesia*, *time units-colors synesthesia*, *time-space synesthesia*, *number-form synesthesia*, etc.) (EB 2018; Grossenbacher and Lovelace 2001; Sagiv 2005).[3] Interestingly, "different authors estimate that there are between 65 (Day 2005, Day 2012) and 150 (Cytowic and Eagleman 2009) different manifestations of synesthesia" (Simner and Hubbard 2013b: xxii). There are other approaches to the classification of synesthesia in which its other types are singled out: implicit and explicit synesthesia, positive and negative synesthesia, weak and strong synesthesia, true synesthesia and pseudo-synesthesia, etc. (see, e.g., Simner and Hubbard [2013a]; Werning et al. [2006]). Despite much work done at studying the intricate nature of synesthesia and at stating its peculiar forms and kinds, the data obtained differ (in some cases greatly) and give rise to the development of diverse theories that promote wide discussions in this field, especially in reference to its link with the language.

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2 However, other variants of indicating synesthesia are possible. For instance, the *grapheme-color synesthesia* can be also called "colored graphemes", "color-grapheme synesthesia", "graphemic color synesthesia", or "color-graphemic synesthesia" (see Simner and Hubbard [2013b]).

3 It should be specially noted that, according to some researches, the role of inducer can be performed not only by a sense, but also a concept (or semantics). This has led to the introduction of the term "ideasthesia", meaning 'sensing concepts' (*idea* is Ancient Greek for concept) (see in Nikolić [2009]). As T.M. van Leeuwen et al. (2015: 48) put it, "later investigations of synesthetic phenomena suggested that the sensory-sensory view of synesthesia should be expanded to allow for *concepts* that can induce synesthesia. It has been shown that it is not necessarily the sensory inputs that evoke synesthetic concurrents, but rather the extracted meaning of the stimulus". The authors also emphasize that the theory of ideasthesia "has a strong explanatory power in accounting for the fact that letters, numbers, days of week, and months are the most common inducers" (van Leeuwen et al. 2015: 48). As it follows from the argumentation, the basic difference between ideasthesia and synesthesia is that the former embraces mental processing helping to get aware of the feelings perceived. In our research, we set this most important point apart for the time being to return to it in our further studies because it introduces the notion of mental awareness, which should be dealt with separately.

Remarkably, the interest in the linguistic aspects of synesthesia is growing intensively nowadays. Studying these aspects, two opposite points of view have been evolved. Some scholars hold that a neuropsychological phenomenon should be distinguished from synesthesia as a phenomenon in natural languages since both are not directly related and form the opposition of 'real synesthesia – linguistic synesthesia'. According to others, the so-called neuropsychological synesthesia and linguistic synesthesia should be treated as interlinked and correlated to the extent that, in some cases, they can be even identified with one another. The latter implies that linguistic synesthesia is, in essence, an embodiment or incarnation of synesthesia as a neuropsychological phenomenon in the language. The analytical survey of the latest works on synesthesia makes it possible to claim that the second approach has recently gained a wider spread or currency. The results obtained within this framework help to see synesthesia as a source of many language processes: the formation of different grammatical and lexical categories, the development of semantics giving rise to polysemy, homonymy, the comprehension of on-line use of language units and the acquisition by language items of national-cultural specificity, etc. (see, e.g., Aikhenvald and Storch [2013]; Apresyan [1995]; Arutyunova [1999]; Dancygier and Sweetser [2014]; ELL [2005]; Evans and Wilkins [1998]; Galeev [2004]; Marks [1978]; Matveeva [2005]; Mroczko-Wąsowicz and Nikolić [2013]; Simner and Hubbard [2013a]; Skvortsov [2015]; Teliya [1986]; Williams [1976]; Yu [2003]).

A separate set of studies examines the role synesthesia plays in the creation of figurative language and the production of language signs based on synesthetic metaphors.

Traditionally, synesthetic metaphor is understood as a type of metaphor that is based on the inter-sensory (or cross-sensory) associations or inter-modal (or cross-modal) transfers. This definition implies that in the phrase *a cold light* the phenomenon *light*, which pertains to the vision, is defined in terms of *cold* (or *low temperature*), which belongs to the tactile domain. Synesthetic metaphors underlie a great number of figurative words, expressions and phrases that exist in different languages, such as in English *bitter cold* (touch→taste synesthesia), *loud colors* (color→sound synesthesia), *dark sounds* (sound→vision synesthesia), or in Russian *тонкий вкус* (lit. 'thin taste': taste→dimension (vision) synesthesia), *мягкий свет* (lit. 'soft light': light→touch synesthesia), *кричащие тона* (lit. 'screaming hues': color→sound synesthesia). As C. Cacciari puts it, "in synesthetic metaphors, words that pertain to one sensory modality (e.g., vision) are extended to express another sensory modality (e.g., audition) [...]" (Cacciari 2008: 427). According to Y. Shen, synesthetic metaphors are "a unique metaphorical type involving cross-sensory modality mapping" (Shen 2005: 460), or in other words,

"a verbal phenomenon in which a concept belonging to one sensory domain is referred to in terms taken from another sensory domain" (Shen 2005: 461).

Modern studies of synesthetic metaphors concentrate on a number of relevant questions, which help to bring out the relationships between synesthesia and figurative language. For instance, in her work C. Cacciari highlights two main approaches that investigate the psychological dimensions underlying synesthetic metaphors. The first approach is termed "taxonomic approach that identified the directions of the metaphorical borrowings trying to establish a hierarchy among the sensory modalities acting" as 'donors' (or metaphorizers) and 'recipients' (or metaphorized), respectively (Cacciari 2008: 427). In particular, the author dwells on the works of two scholars – S. Ullman, "who examined 2000 synesthetic metaphors extracted from English, French and Hungarian poetry", and J.M. Williams, who "proposed a model of metaphorical transfer across modalities (the five senses, plus color and dimension) based on the analysis of the semantic change over time of more than 100 English synesthetic adjectives" (Cacciari 2008: 427). The data obtained in the course of the given researches are rather suggestive. For instance, according to J.M. Williams, touch words "are generally transferred to taste (e.g., *sharp taste*), color (e.g., *dull color*), and sound (e.g., *soft sound*)", while sound words "are transferred only to color (e.g., *quiet green*)" (Cacciari 2008: 427). The second approach is a psychophysical approach that aims at analyzing "the physical characteristics of the signals and events that enter into linguistic synesthetic metaphors (e.g., the pitch of a sound, the brightness of a light)" (Cacciari 2008: 427). Discussing this approach, C. Cacciari pays special attention to the findings received in researches such as Marks (1982); Marks and Bornstein (1987); Rouby et al. (2002); and Zellner and Kautz (1990). In her paper, the scholar also raises a number of other relevant issues and brings to light some other up-to-date achievements that help to clarify the nature of synesthetic metaphors (see, e.g., Callan et al. [2004]; Ramachandran and Hubbard [2003]; Rich and Mattingly [2002]). One of the main conclusions C. Cacciari arrives at is that "metaphorical language expressing sensory experiences does not reflect an abstract-amodal combination of word senses, but rather the neural endowment necessary for treating sensory information" (Cacciari 2008: 439).

In general, in recent (alongside earlier) studies the domains of primary interest are those that are concerned with: 1) the exploration of congruency between (real) synesthesia and synesthetic metaphors as well as synesthesia and other tropes (e.g., synesthetic metonymies, synesthetic personification); 2) the cross-linguistic analysis and cross-cultural studies of synesthetic metaphors in different languages; 3) investigations of how synesthetic metaphors are employed to form various figurative means of the language; and 4) investigations of how synesthesia or synesthetic transfers provide the creation of specific

types of figurative meaning and language images, as well as the semantics of various forms of figurative language (see, e.g., Cytowic [2002]; Day [1996]; ELL [2005]; Gibbs and Colston [2012]; Simner and Hubbard [2013a]; Robertson and Sagiv [2005]). Continuing advances in these domains lead to the development of newer views of the nature of figurative language that has at least "some of its roots" in phenomena such as synesthesia (be it real or "simulated"). They testify to the neurological underpinnings of synesthetic metaphors and other synesthetic tropes and show how the latter are specifically shaped both from a cultural and linguistic point of view. Current research findings make evident the fact that synesthesia "might represent a basic mechanism for the development of metaphors" (Robertson and Sagiv 2005: 6) as well as of other tropes (ELL 2005). According to R.W Gibbs and H.L. Colston, the fact that most people can readily understand the phrases based on synesthetic metaphors (*sweet sound*, *light color*, etc.) "provides additional evidence for the commonality of synesthetic experience" (Gibbs and Colston 2012: 295). The authors emphasize (in accordance with Marks) that many cross-modal similarities in metaphoric language reflect natural correspondences between experiences in different sense modalities that seem to be hard-wired (Gibbs and Colston 2012: 295). Generalizing most recent findings, it is possible to state that synesthesia turns out to be fundamental in the sense that it gives rise to heterogeneous figures of figurative thinking (metaphors, metonymies, irony, etc.) that serve as bases for the formation of various categories or dimensions of figurative language.

It should be noted that among all the varieties of figurative language means, words and lexical expressions used to signify (literally and/or figuratively) the five external senses (i.e., vision, hearing, touch, taste, smell), for instance adjectives describing tactile sensations (*sharp, rough, soft*, *wet*, etc.), and verbs pertaining to visual perception (*look, see, glance*, etc.) are considered most investigated from the synesthetic point of view (see, e.g., Bubyreva [2011]; Sklyarevskaya [2004]; Winter [2016]). The review of modern linguistic literature shows, at the same time, that other categories of figurative language (more specifically phraseological units) are explored to a lesser extent with regard to synesthesia. A significant body of research is devoted to the study of phraseologisms (or idioms, set-expressions) related to certain kinds of sense modalities, mainly to those referring to the five external senses (e.g., phraseological units expressing the modalities of hearing, cf.: *be all ears*; *навостритьушки* (lit. 'to make ears sharp'), or to other types of perceptual sensations (e.g., idioms describing sensations of pain, cf.: *to have pins and needles*; *a dagger of pain*; *a rough tongue*) (see, e.g., Gibbs [2005]; Kövecses [2008]; Nagornaya [2015]; Skvortsov [2015]). Such studies usually describe or make comments on the instances of the cross-sensory transfers that underlie the formation of the figurative means under analysis and do not specifically aim at

elaborating theoretical interpretations of the phenomenon in question. However, synesthesia in the process of phraseologism-formation seems to have wider implications. Taking into account the latest achievements in its exploration and newer modes of its understanding (described above), the study of phraseology in terms of the synesthetic process or synesthetic experience might help to get deeper insights into the process of phraseologism-creation and opens up a new perspective for the study of the intricate ways in which phraseological meaning is formed and organized. In our research we attempt to tackle this concern within the particular theoretical framework described in the next chapter.

3 Theoretical framework of the present research

Working out a certain theoretical framework within which the process of phraseologism-formation can be analyzed via its relation to perceptual experience, more specifically to synesthetic experience, implies the acceptance or elaboration of a certain approach to synesthesia as well as to a number of other phenomena that are closely correlated with it. In doing this, we first and foremost follow the classical works of such well-known psychologists and physiologists as B.G. Anan'ev (1961, 2001), M.I. Sechenov (1952), and Ch. Sherrington (1969) and take into account the information about the phenomena under study summed up in modern dictionaries and encyclopedias on psychology, physiology, philosophy, and linguistics (e.g., BPS 2006; ChAFP 2011; ELL 2005; EPs 2000; NFE 2001; NFS 1999; NODE 1999; SS 2006–2016; SSW 2017). Besides, our research is based on the current data obtained in the sphere of the theory of embodied meaning and in the contemporary linguistic studies of synesthesia, and on the theory of linguocultural modelling of phraseological meaning elaborated in our works (Zykova 2015, Zykova 2016).

Thus, our understanding of synesthesia and of its relation to phraseology rests on the following main interlinked pivotal points, which form foundations of the theory we have elaborated:

1. Synesthesia results from the interactive integration of a number of various perceptual sensations. From this it follows that synesthesia is based on multimodality rather than bimodality (and can be considered a multimodal phenomenon), which presupposes the involvement of more than two different perceptual sensations (or modalities). We cannot but agree with C. Cacciari's claim that "human perceptual experience involves in fact simultaneous stimulation through multiple sensory channels whose information is integrated by the brain in multisensory integration sites" (Cacciari 2008: 430). Thus, synesthesia

is based on a complex interaction of several perceptual sensations forming a perceptual network where, in each particular case, one sensation serves as an "inducer" while other sensations work as "concurrents". These sensations (inducers and concurrents) function differently in the creation of figurative language means.

2.1. The distinction between the sensations-concurrents and the sensations-inducers has a relevant implication for the process of phraseologism-formation. We claim that in the production of phraseological units concurrents act as "donors" of conceptualization and categorization, more specifically of the figurative conceptualization and figurative categorization, and, therefore, can be called 'metaphorizers' or, to be more exact, 'conceptual metaphorizers'. In other words, perceptual sensations-concurrents perform the leading role in figurative conceptualization, and in the construction of figurative meaning. For example, on hearing particular words, certain taste sensations arise. The gustatory sensations stimulate the creation of a gastronomic metaphor, on the basis of which a phraseological unit, e.g. *sweet talk*, is created. Thus, taste (= concurrent) performs as a 'conceptual metaphorizer', providing the formation of a particular figurative language item. As a whole, such understanding of the process in question results in the re-evaluation of the status of synesthetic metaphor, which can be regarded as a specific and at the same time fundamental perceptual-cognitive technique (or perceptual-cognitive principle) aimed at producing various language signs (and figurative language in particular) rather than one of the types of metaphor.

2.2. By promoting the development of heterogeneous metaphors (as well as other tropes), synesthesia in general and perceptual sensations that act as 'conceptual metaphorizers' in particular provide the creation not only of images that underlie meanings of various categories or dimensions of figurative language, but all the levels (or strata) of figurative meaning. According to the approach elaborated in our research (Zykova 2015), phraseological meaning is a two-strata formation that consists of the surface stratum (i.e., the actual meaning of phraseological units registered in dictionaries) and the deep stratum. The deep stratum encloses the phraseological image and its underlying conceptual foundation – a very complex conceptual structure defined as the macro-metaphorical conceptual model. For instance, the deep stratum of the idiom *sweet talk* is the image, which reflects the idea of flattery (a particular verbal act) as something having the pleasant taste characteristic of sugar or honey. This image arises from such a generalized and very complex conceptual structure as the macro-metaphorical conceptual model VERBAL COMMUNICATION IS GASTRONOMY. Perceptual experience (including synesthesia) finds its way consecutively into all the strata of phraseological meaning. Starting from

the deep stratum it transforms into the content of the surface stratum (see also Zykova [2018]).

3. Due to its multimodal character, the phenomenon of synesthesia is not confined predominantly or exclusively to the interaction of the five basic external senses (touch, vision, hearing, taste, smell), but embraces all the varieties of perceptual sensations.

It should be especially emphasized that for obvious reasons, the perceptual continuum is rather hard to explore, to structure, and to formalize. Therefore, in modern science there is no agreement with regard to the typology of perceptual sensations. The existing approaches differ (sometimes significantly) both in the established types of perceptual sensations (and their modalities and submodalities) and in their number. In the present research, we apply the typology of perceptual sensations as presented originally in Ch. Sherrington's works, and also build upon the ideas developed by B.G. Anan'ev in his scholarly writings. According to this typology, there are three main types of perceptual sensations: 1) *exteroceptive sensations*, which arise from the external environment and embrace visual, auditory, haptic, gustatory and olfactory sensations; 2) *proprioceptive sensations*, which refer to sensations produced by the body itself and include various sensations of (body, limb) movement and (body, limb) position, muscle force and their (sub)modalities. In accordance with some scholars, the vestibular system can also be referred to this type of sensations. For example, as it is indicated in EPs (2000: 323), "the term 'proprioception' is now often used interchangeably with kinesthesia, although the former is more encompassing in that it includes the vestibular system in addition to sensations of movement, position and muscle force"; 3) *interoceptive sensations*, which arise from the internal organs such as heart, lungs, stomach, veins, etc. and may also embrace the sensations of hunger, thirst, tiredness, and some others. Besides, sensations of pain, or *nociceptive sensations*, are singled out as a separate type. However, owing to their specific character, they can be simultaneously referred to one of the given three main types of perception. All four types of sensations correspondingly represent the main varieties of perception, i.e., exteroception, proprioception, interoception and nociception.

Thus, synesthesia implies a much broader scope of cross-perceptual transfers including such kinds of perceptual interactions or perceptual associations as, for instance, 'sensation of heart (interoceptive)→temperature (tactile, exteroceptive)' (*hot/cold heart*), 'vision (exteroceptive)→muscle force and position (proprioceptive)' (*keep an eye on somebody*), 'sound (exteroceptive)→weight (gravitation force, proprioceptive) (*heavy sound*).

4. For the study of the role of synesthesia in the process of phraseologism-formation it is necessary to take into account the fact that in accordance with

perceptual associations synesthetic transfers may be distinguished into those that are based: 1) on associations between different types of main perceptual sensations (e.g., associations between exteroceptive and proprioceptive sensations, such as taste and muscle force); 2) on associations between sensations of one and the same perceptual type (e.g., associations between exteroceptive sensations, such as taste and smell); 3) on associations within specific sensations (e.g., within visual sensations, such as color and shape). From B.G. Anan'ev's standpoint, the last two cases can be termed 'cross-modal' associations, more specifically inter-modal and intra-modal associations (Anan'ev 1960). This is indicative of the fact that the term 'cross-perceptual transfers' is more general with regard to the more specific term 'cross-modal transfers'.

5. Synesthesia is not restricted to minority. Though it may, undoubtedly, manifest itself in varied degree and specific forms in different individuals, it is likely to be a fundamental trait (or property) of the human perceptual system, which provides a human with a specific possibility to cognize the world through sensing or feeling it in a particular way. Hence, synesthesia is in essence a universal perceptual-cognitive "mechanism" that is involved in the process of producing language signs of various types, in particular figurative ones, and more specifically phraseological units. However, like the whole perceptual continuum, synesthesia is culture-dependent and culturally ordered (see, e.g., Bull and Back [2015]; Classen [1993]; Howes [2006]). Synesthesia is a result of interacting perceptual sensations or senses, which, according to D. Howes, "mediate the relationship between idea and object, mind and body, self and society, culture and environment. Each culture elaborates its own ways of understanding and using the senses" (Howes 2013). Thus, underlying the formation of phraseological signs, synesthesia shapes them in a specific way both linguistically and culturally, and makes them the transmitters of valuable cultural knowledge about the world felt or experienced through a human perceptual system unprecedented in its complexity (Zykova 2017).

To see all these theoretical grounds at work in the analysis of phraseological units, let us consider the Russian phraseologism *топтаться на одном месте* (lit. 'to make the movements of marching while remaining in the same place; not moving ahead'), which means 'not to make progress in the course of a discussion, or a conversation; not to give further development to some ideas, thought, opinion, etc. while talking'.

According to the analysis, the meaning of this idiom is based on a set of different perceptual sensations interacting in a certain way, first of all the proprioceptive sensations characteristic of speech production such as the sensations of particular movements, positions and muscle force of speech organs (lips, tongue, jaws, uvula, lungs, throat). These proprioceptive sensations ensure the process of

speaking, or, in other words, are employed in uttering words to convey particular information. Besides, the fact that words are audible entities and have various sound forms also suggests the relevance of auditory sensations in the construction of the meaning of the idiom in question. Modern psychophysiological studies hold that the perceptual sensations described above evoke an image of the characteristic features of communication (which 'does not make progress in the course of a discussion, or a conversation'), thus forming the meaning of the given phraseologism. In the process of phraseologism-formation, these sensations get combined with sensations of another kind. These are such proprioceptive sensations as the sensations of body static position in space (which is implied by the use of the components *на одном месте*), the sensation of muscle force of legs (implied by the use of the component *топтаться*) that is required for walking and movement across or along some territory in order to cover some (necessary) distance and reach a certain destination. The proprioceptive sensations of a specific position in space, of the absence of movement and the remaining in the same place are also connected with the visualization of space, or with visual sensations, and evoke particular temporal associations (cf.: *while remaining in the same place* **vs.** '[...] in the course of a discussion [...] while talking').[4] Similar perceptual sensations are experienced by the listener, thus ensuring the understanding of the meaning of the phraseologism *топтаться на одном месте*.

Thus, the meaning of the idiom *топтаться на одном месте* is derived, at least,[5] from such kinds of perceptual sensations as: proprioceptive and exteroceptive (i.e., audial) sensations related to speech and proprioceptive and exteroceptive (i.e., visual) sensations peculiar to the body. In the complex merger of all these perceptual sensations, the former refer to 'inducers', while the latter refer to 'concurrents'. Among both 'inducers' and 'concurrents', the proprioceptive sensations play the leading role in the process of creating the phraseologism in question. It means that the meaning of the phraseologism stems from the synesthetic transfer 'verbal proprioception→corporeal proprioception'. The corporeal proprioception (more specifically the sensation of body static position in space and body muscular tension, in particular muscle force of legs) acts as a 'conceptual metaphorizer', which helps to perceive an ineffective talk through bodily motions that produce no result and do not signal any movement ahead, and which brings about the formation of the phraseological image of the idiom *топтаться на*

4 We would like to emphasize that when deducing the perceptual basis of a phraseological unit, the literal meaning of the word combination that gave rise to this unit is of particular importance.
5 We recognize the fact that the spectrum of perceptual sensations involved in the construction of meaning of this idiom may be (much) wider.

одном месте. Importantly, the synesthesia under study (in particular the corporeal proprioception) is engaged both in the construction of the image and in the formation of the conceptual foundation of this image. It facilitates the development of a more general idea of verbal communication as a travel (or journey) that results in the creation of the macro-metaphorical conceptual model VERBAL COMMUNICATION IS TRAVEL.

Of special importance are also the cultural entailments that this type of synesthesia (i.e., 'verbal proprioception→corporeal proprioception') may have. The comparative analysis makes its cultural specificity evident. In the Russian language, this synesthetic transfer gives rise to the phraseological unit (i.e., *топтаться на одном месте*) with negative connotation, while in English it is involved in the production of idioms with the opposite cultural evaluation. For instance, the analysis of the English phraseological unit *to stand one's ground* ('to keep expressing one's own point of view in an argument or dispute') shows that the same proprioceptive sensations (i.e., the sensation of body static position in space and of muscle force that helps to keep this position) underlying the construction of its meaning are estimated positively from the cultural point of view.

Thus, the results of the analysis of the Russian phraseological unit *топтаться на одном месте* bring out the validity of the theoretical points given above that constitute the whole theoretical framework of our research. To get more empirical evidence, we test these assumptions by means of the analysis of a representative corpus of Russian and English phraseological units.

4 Case study

4.1 Material under investigation

The study involves Russian and English phraseologisms that denote various aspects and forms of verbal communication, for instance: *ходить вокруг да около* (lit. 'to go around and nearby') – 'to speak in a roundabout way; avoid expressing something directly'; *масло масляное* (lit. 'buttery butter' or 'oily oil') – 'the repetition of something already said in different words without clarifying anything'; *язык прилип к гортани у кого* (lit. 'the tongue stuck to the larynx') – 'someone suddenly lost the ability to speak (from surprise, amazement, fright etc.)'; *to dip into a book* – 'read parts of a book, but not all'; *a slip of the tongue* – 'something that you say by accident when you intended to say something else'; *to make a noise about something* – 'to talk about or complain about something a lot'.

The total amount of the phraseologisms under analysis is about 3,000 items, among which more than 2,000 units are English idioms and approximately 1,000 units are Russian phraseological units. They have been extracted from more than 35 well-known contemporary Russian and English phraseological as well as monolingual explanatory and bilingual (translation) dictionaries that offer a broad collection of Russian phraseologisms and English (British and American) idioms that are in use nowadays (e.g., AHDI 2003; BFSRYa 2006; CALD 2003; CID 2006; CIDI 1999; FSRLYa 2008; OxDEI 2002; REDI 2013; RFSS 2001; TEI 2006).

4.2 Method and basic results of the research

Taking into account the denotational sphere, which all the phraseological units under study are used to describe (i.e., *verbal communication*) as a point of departure, it is necessary to consider the main perceptual sensations peculiar to this phenomenon.

The verbal communication is characterized by such basic perceptual sensations as: 1) exteroceptive sensations, more specifically audible and visual sensations alongside their various (sub)modalities (e.g., loudness, pitch, tone, frequency, intensity, definition, etc.); 2) proprioceptive sensations, in particular speech kinesthesia that encompasses sensations of certain movements, positions, muscular tension of organs of speech as well as different (sub)modalities of these sensations; 3) interoceptive sensations, more specifically the sensations of internal organs involved in the process of speech production such as tongue, lips, throat, lungs, etc.; 4) nociceptive sensations that embrace the whole variety of pain sensations of the speech organs that may be connected with disorders of various kinds that impair human speech (see Anan'ev [2001]; EB [2018]; EPs [2000]).

According to the research findings, several of these perceptual sensations are integrated in different ways in the process of phraseological conceptualization. However, each time one of them appears to be activated to a greater degree than the rest when a particular aspect of verbal communication finds its way into phraseologism-formation. For instance, in the course of the formation of the English idiom *sweet talk* ('flattery, cajolery') the pleasant audible sensation evoked by hearing particular words comes to the fore. To compare, in the process of formation of the Russian phraseological unit *класть на бумагу* (lit. 'to put on paper'; i.e., 'to write down') the visual sensation of words produced in a graphical form becomes more relevant. The 'profiling' sensation caused by the perception of a particular aspect of verbal communication triggers a number of concurrent

perceptual sensations or sensory (sub)modalities that are not peculiar to verbal communication. Among all of such sensations one serves as a 'donor' providing a synesthetic transfer and, thus, as a 'conceptual metaphorizer'. For instance, in case of *sweet talk* the conceptual metaphorizer is the sensation of taste and more specifically the sensation of something sweet; while in case of *класть на бумагу* the proprioceptive sensation of movement and muscle force of the hand forms the basis of metaphorical transfer.

The analysis makes it evident that synesthetic transfer is a complex process that may include different levels of description and on each of the levels its particular types can be singled out. As far as the phraseologisms *sweet talk* and *класть на бумагу* are concerned, the synesthetic transfers underlying their semantics can be firstly defined as: 1) the synesthetic transfer 'verbal exteroception→non-verbal exteroception' and 2) the synesthetic transfer 'verbal exteroception→corporeal proprioception', correspondingly. Then these types may be further specialized in terms of modalities in the following way: 1) 'audible sensation→gustatory sensation' and 2) 'visual sensation→tactile sensation', correspondingly. Consequently, synesthetic transfers that underlie the meanings of the Russian and English phraseological units under study may be analyzed, at least, on two levels: on a more general level of cross-perceptual transfers and on a more specific level of cross-modal transfers (see Table 1).

Thus, in the analysis of Russian and English phraseological units (about 3,000 items) we apply two main criteria: 1) the distinction between perceptual sensations peculiar to the denotational sphere (i.e., verbal communication) and perceptual sensations not peculiar to the denotational sphere; as well as the distinction within one and the same variety of perceptual sensations between (sub)modalities peculiar to verbal communication and (sub)modalities not peculiar to verbal communication (see chapter 3, point 4); 2) two interrelated levels of synesthetic transfer (more general and more specific).

Tab. 1: Levels of the description of synesthetic transfers underlying the phraseological meaning construal

Phraseologism	**Sweet talk**	**Класть на бумагу**
the level of cross-perceptual transfer	'verbal exteroception→ non-verbal exteroception'	'verbal exteroception→ corporeal proprioception'
the level of cross-modal transfer	'audible sensation→ gustatory sensation'	'visual sensation→ sensation of hand action'

Resting on these criteria, the following main *general types* of synesthetic transfers underlying the semantics of the phraseological units in question have been singled out:

- 'verbal exteroception→non-verbal exteroception', e.g.: *sweet talk* – 'flattery, cajolery'; *кислые слова* (lit. 'sour words') – 'words that express displeasure';
- 'verbal exteroception→non-verbal proprioception', e.g.: *a knock-down argument* – 'an argument that affects someone very strongly'; *упасть на колени* (lit. 'to fall on the knees') – 'to entreat a lot; to belittle oneself by begging';
- 'verbal exteroception→non-verbal interoception', e.g.: *be close to the bone* – 'telling the truth about a subject that people prefer not to think about, in a way that may offend or upset people'; *быть в печенках* (lit. 'to be in the liver') – '(about words, conversation) be very annoying';
- 'verbal exteroception→non-verbal nociception', e.g.: *a slap in the face* – 'criticism that is unkind and makes one feel sad or disappointed'; *задевать за живое* (lit. '~ cut someone to the quick') – 'to hurt someone by saying something that is particularly painful for him';
- 'verbal proprioception→non-verbal exteroception', e.g.: *chew the fat* – 'to have a friendly conversation, often for a long time'; *масло масляное* (lit. 'buttery butter') – 'repeating in different words one and the same thing without adding any details or anything new about it';
- 'verbal proprioception→non-verbal proprioception', e.g.: *to stand one's ground* – 'keep expressing one's own point of view in an argument or dispute'; *топтаться на одном месте* (lit. 'to make the movements of marching while remaining in the same place; not moving ahead') – 'not to make progress in the course of a discussion, or a conversation; not give further development to some ideas, thought, opinion, etc. while talking';
- 'verbal proprioception→non-verbal interoception', e.g.: *to have a lump in one's throat* – '(of words) be difficult or impossible to say'; *слова застряли (застревают) в горле* (lit. 'the words stuck in one's throat') – 'one cannot speak because of strong excitation or agitation';
- 'verbal proprioception→non-verbal nociception', e.g.: *to hit the raw nerve* – 'to say something that annoys or hurts someone because they are sensitive about it'; *наступать на больную мозоль* (lit. 'to step on someone's corn') – 'to speak about something that hurts someone; makes one feel uneasy'.

Each of the established general types is further analyzed in accordance with more specific types of synesthetic transfers that constitute it. As an example, the synesthetic transfer 'verbal exteroception→non-verbal exteroception' can be

considered. The following more *specific* (i.e., cross-modal) *transfers* may be distinguished within it:

- 'audial sensation→audial sensation', e.g.: *(as) clear as a bell* – 'very easy to hear'; *петь под (чью-либо) дудку* (lit. 'to sing to the tune of someone's pipe') – 'to repeat someone's words';
- 'audial (or maybe visual) sensation→visual sensation', e.g.: *to cast a mist before someone's eyes* – 'to deceive, delude someone'; *открывать глаза на что-либо* (lit. 'to open one's eyes to something') – 'to explain someone something';
- 'audial (or maybe visual) sensation→tactile sensation', e.g.: *to be in touch with someone* – 'in or into communication'; *колкое слово* (lit. 'a sharp word') – 'offensive remark';
- 'audial (or maybe visual) sensation→gustatory sensation', e.g.: *sour grapes* – 'criticism of something that you make because you are annoyed that you cannot have it'; *с солью <и> с перцем* (lit. 'with salt <and> pepper') – 'caustic and witty (of words, speech, article, etc.)';
- 'audial (or maybe visual) sensation→olfactory sensation', e.g.: *a red herring* – 'a diversionary topic in the discussion'; *курить фимиам* (*кому-либо*) (lit. 'to smoke incense to someone') – 'to praise someone very much, to extol'.

Taking into account all the types of synesthetic transfers established in the research, two basic inferences can be made. Firstly, the synesthetic transfers underlying the meanings of the English and Russian phraseologisms under analysis are based on three kinds of the associations (see chapter 3, point 4): 1) associations between different types of the main perceptual sensations (e.g., 'verbal exteroception→non-verbal nociception'); 2) associations between sensations of one and the same perceptual type (e.g., 'verbal proprioception→non-verbal proprioception'); 3) associations within specific sensations (e.g., within audial sensations, shaping the opposition 'audial sensation→audial sensation'). Secondly, in the majority of cases the sensations related to verbal communication are integrated with the sensations not related to it (e.g., 'verbal proprioception→non-verbal nociception'). However, in some rare cases the synesthetic transfer is based on the interaction of perceptual sensations and modalities that are peculiar to verbal communication (e.g., the meaning of the idiom *прикусить свой язык* (lit. 'to bite one's tongue' – 'stop talking') stems from the synesthetic transfer 'verbal proprioception→verbal interoception').

In addition to the typology of synesthetic transfers, special attention has been paid to the analysis of the role they play in the formation of the conceptual foundations of meanings of the phraseological units under consideration,

i.e., of macro-metaphorical conceptual models. According to the data obtained, in the synesthetic transfers the perceptual sensations and modalities that are defined as 'concurrents' and serve as 'conceptual metaphorizers' determine the source domain of the phraseological conceptualization of the denotational sphere (i.e., verbal communication) that leads to the construction of a particular macro-metaphorical conceptual model. To give an example, the Russian idiom *переступать границы* (lit. 'to cross over the boundaries') – 'to speak without complying with the speech norms; violating the accepted verbal standards' can be considered. The analysis of this phraseologism has shown that its meaning arises from the synesthetic transfer 'verbal exteroception→non-verbal proprioception', more specifically 'audial sensation→sensation of body/limb movement'. As a conceptual metaphorizer, the sensation of body/limb movement together with a more specific sensation of body position in space, and the sensation of muscle force evoked by going in a particular direction re-shape the denotational domain of verbal communication, presenting it as a process of travelling, which gives rise to the construction of the macro-metaphorical conceptual model VERBAL COMMUNICATION IS JOURNEY. In accordance with the analysis conducted, in the formation of any macro-metaphorical conceptual model one sensation can acquire more relevance and frequency as a conceptual metaphorizer than others, for example: visual sensations in the macro-metaphorical conceptual models VERBAL COMMUNICATION IS THEATRICAL PLAY and VERBAL COMMUNICATION IS PAINTING (e.g., *to turn the spotlight on something*; *to paint something in false colors*), manual sensations in the macro-metaphorical conceptual model VERBAL COMMUNICATION IS CRAFT (e.g., *left-handed compliment*), gustatory sensations in the macro-metaphorical conceptual model VERBAL COMMUNICATION IS GASTRONOMY (e.g., *bitter truth*), and various modalities of interoceptive and nociceptive sensations in the macro-metaphorical conceptual model VERBAL COMMUNICATION IS MEDICINE-RELATED ACTIVITY (e.g., *to have a lump in one's throat*) (see also Zykova [2015], Zykova [2017]).

To conclude, a wide variety of synesthetic transfers underlies the process of creating the meanings of the phraseological units that denote different aspects of verbal communication in the Russian and English languages. The perceptual sensations that are involved into the formation of these synesthetic transfers and are qualified as 'concurrents' serve as conceptual metaphorizers determining a particular direction of the process of phraseologization and facilitating the creation of macro-metaphorical conceptual models that generate, in their turn, whole clusters of phraseological images shaping phraseological semantics. According to the research, phraseological meaning is rooted in the synesthetic experience whose "traces" can be detected in all its strata (i.e., deep and surface), and whose influence determines its formation and organization.

To supplement the research presented we should make mention of certain difficulties one might encounter in conducting research of this kind. It should be specially emphasized that in general, and particularly in cases with separate phraseologisms, the task of establishing the whole scope of perceptual sensations involved into the process of phraseologism-formation and of defining their ranking position in this process, and therefore, determining the type of synesthetic transfer, is rather challenging. This challenge is caused by two main factors that should be taken into account while studying synesthetic transfers: the linguistic (i.e., the material itself – phraseological units) and the psychophysiological (the specificity of multimodal perception) factor.

We draw our inferences about the relevance of certain perceptual sensations in the process of forming phraseological units resting on the analysis of their phraseological meanings. However, the phraseological meaning is rather complex and diffusive and thus may have varied interpretations in different lexicographical sources. This fact makes it sometimes difficult to decide what semantic component acquires the status of the focal one and, therefore, what perceptual sensations are more prominent. Another difficulty that should be pointed out is rooted in the fact that from the psychophysiological point of view, one of the distinctive features of multimodal interaction characterizing synesthesia is that there is no clear demarcation line between the perceptual sensations involved in it. They are interwoven and interact in a way where one presupposes the other. For instance, vision sensations are dependent on the proprioceptive sensations of the eyes' movement, speech sounds are dependent on speech kinesthesia, etc. Therefore, sometimes it is difficult to delineate the leading perceptual sensation.

5 Conclusion and some further prospects

This paper has examined how synesthesia is involved in the process of phraseologism-formation. In the course of the research, a new approach to the understanding of the link between phraseology as a phenomenon of the language and synesthesia as a phenomenon of the human perceptual system has been elaborated. The present work proceeds from a broader conception of synesthesia, within which synesthesia is defined as a multimodal perceptual experience characterized by the interactive integration of all perceptual sensations and their (sub)modalities, i.e., exteroceptive, proprioceptive, interoceptive and nociceptive. The study conducted has shown that synesthesia is a special "mechanism" giving rise to the process of phraseological

conceptualization rather than a peculiar type of linguistic metaphor. The data obtained shows that multiple synesthetic transfers underlie the meanings of the phraseological units of the word field of verbal communication in the Russian and English language (more than 3,000 items). The study of these synesthetic transfers on two levels (more general and more specific) helped to establish the main types of cross-perceptual as well as cross-modal transfers that provide the creation of the surface and deep strata of the phraseological meanings under consideration. The theoretical basis we have worked out holds that the formation of phraseological meaning is triggered when perceptual sensations typical of the denotational sphere get combined with the perceptual sensations of the sphere acting as metaphorizers. So, according to the research findings, sensations-concurrents serve as 'donors' of the conceptualization and categorization and function as conceptual metaphorizers that provide the formation of (1) macro-metaphorical conceptual models, i.e., complex conceptual structures constituting the deep stratum of the phraseological meaning, (2) phraseological images that are generated by the macro-metaphorical conceptual models, and finally (3) semantics that is based on the phraseological images and makes up the surface stratum of phraseological meaning. The results obtained lead us to the general deduction that the synesthetic basis underlies any phraseologism irrespective of its thematic reference (or denotational sphere) and language.

Overall, the research offers further evidence of the perceptual, more specifically synesthetic, "roots" of the phraseological semantics and brings out the ways in which perceptual experience is translated into the contents of phraseological signs. It could be shown that it is the cognitive mechanism we described above that accounts for the emergence of the emotional coloring of phraseologisms and makes them culture-bound. This cultural aspect appears to be of particular relevance, and therefore, steps should be undertaken to explore it more deeply. It would be of much interest to conduct contrastive linguo-cultural studies in order to evaluate the cultural-linguistic significance of different synesthetic transfers and, in this connection, to specifically explore the perceptual styles characteristic of different cultures and the ways in which these perceptual styles manifest themselves in the process of creating various dimensions of figurative language. We assume that the results obtained could be proved on the experimental basis of the psycholinguistic methodology, which should be elaborated in further investigations. This would help in obtaining deeper insights into the nature of synesthesia in its relation to the language process and the production of phraseological signs. Moreover, it could refine the elaborated theoretical framework and give a new impetus to the development of phraseological theory.

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