English and Russian architectural and construction terminology: approaches to classification and systematization of terms

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Abstract. The rapid growth in the number of terminological units, the number of inaccuracies in the translation of architectural and construction vocabulary necessitated the streamlining and comprehensive unification of terms. However, effective unification of terminology should be based on preliminary linguistic research. In this regard, the approaches and classifications of architectural and construction terms in English and Russian in a comparative aspect are studied and systematized. The consideration of the architectural thesaurus contributed to the identification of its aspects: activities, physical characteristics, style and era, materials, elements and equipment. The research revealed such classifications as the name of the units of measurement of physical quantities, the name of symbols, designs with participles; classifications characterizing specific functional types of buildings, names of subject concepts, borrowed terms, which underwent significant overview during assimilation. Based on these classifications, emphasized is that the classification of architectural vocabulary is impossible without analysis, identification of information transmitted in a manner.

Key words: linguistics, language, English, Russian, vocabulary, terminology, term, unit, architecture, construction, approach, classification.

1 Introduction
The history of the development of architectural vocabulary begins with the Renaissance which was caused by innovations in the use of construction techniques and materials [1]. The changes in the architectural vocabulary of the Russian language became the basis for the development of construction terminology. Borrowings from the French language, names from the Dutch, German languages played a significant role [2-4]. Consideration of the architectural thesaurus contributed to the identification of aspects of the architectural thesaurus: activities, physical characteristics, style and era, materials, agents, elements and equipment [3]. The beginning of the history of construction includes the development of human society, the process of human struggle with natural conditions for protection [5-7]. The purpose of architecture is to create the necessary living environment for humanity. The term architecture is used as a complex phenomenon, being the bearer of history, not only restores the past with the help of an architectural idea, but also reflects everything that is characteristic of today [8-11]. The study of the concept of architecture helped to identify the difference between architecture and
construction [6]: architecture is understood as “architectural design”, and construction is the embodiment of the idea in construction. Architectural vocabulary denotes linguistic units that nominate the concepts of architecture and construction, its elements.

The study of construction terminology helped to identify the classification of architectural vocabulary [12], [13]. Based on the material on architecture, the following groups were identified: types of buildings, building structures, parts of buildings, basic construction concepts, engineering support of buildings [6]. The questions of the foreign presentation of the architectural project contributed to the identification of such classifications as the name of the lines and distinguished parts of the drawing, the names of points, the name of the units of measurement of physical quantities, the name of symbols, constructions with participles; classifications based on hierarchical relationships; classifications characterizing specific functional types of buildings, residential buildings by building material, names of subject concepts, borrowed terms which underwent significant overview during assimilation [14], [15]. Based on these classifications, it is advisable to emphasize that the classification of architectural vocabulary is impossible without analysis, identification of information transmitted in a manner [16]. Architectural vocabulary is 90% formed by internationally contemporary vocabulary [9]. The alternative to the formation of architectural vocabulary is still classical vocabulary [4]. The basis for the formation of construction glossary was common terminology of construction [17]. The feature of common terminology is that for many centuries it has been considered one of the uncertain labor processes in the construction of housing, construction was only one of the types of labor activity. Construction vocabulary has started to be formed with the development of building craft. Dictionaries of building crafts, architectural vocabulary of the time reflected a certain stage in the development of construction [1], [7]. The structure of construction vocabulary defines the names of buildings, building materials, specialties in the construction industry as well as descriptions of various buildings, the construction process, tools. According to D.Z. Gainutdinova architectural and construction language includes common vocabulary which serves as a connecting component of special units during the construction of professional communication, and a special one consisting of lexical units that reflect scientific concepts [12]. The currently growing interest in studying terminology is explained by a number of reasons, both non-linguistic (interstate relations) and intralingual (interaction and mutual influence of languages, searches of linguistic tools that are optimal for information exchange) [18-20].

The main source for the development of architectural vocabulary is the common vocabulary. Common words were used to denote some of the special concepts. So, in the specialized literature such terms as a wall, ceiling, brick, roof, frame, carpenter, and timber were differentiated.

2 Materials and Methods
The tasks and the general direction of the study determine the application of appropriate methods: component analysis of the lexical meaning, the method of comparison [2],[13],[14]. Methodological basis of the research contains works of domestic and foreign linguists. Problems of a systematic description of both Russian and English vocabularies have been successfully developed by many linguists (O.S. Akhmanova, V.G. Gak, A.S. Gerd, B.N. Golovin, S.V. Grinev, Yu.N. Karaulov, Yu.N. Marchuk, L.L. Nelyubin, L.A. Telegin, A.A. Ufimtseva, N.M. Shansky, D.N. Shmelev, L.V. Shcherba and a number of other scientists) [19].

3 Results
The sublanguage of modern architecture and construction has universal properties characteristic of a common language and differential properties that are not found in a common language.

The parts “Architecture”, “Building Design” allowed O.P. Kornienko to identify terms related to various areas of architectural activity and forming the lexical system of the sublanguage of architecture and construction. Based on material, O.P. Kornienko gives the following classification of architectural vocabulary:

1. types of buildings – edifice, skyscraper, high-rise, mid-rise, cellar, storm-cellar, bay, blindstory, areaway, front, balcony, false front.
2. building structures – slipped grid, structural pattern, structural design, factored load, secondary member, bearing, support condition, rigid joint, fixed and connection.

3. structural elements of buildings – abutment, abut, tie-rod, side cuts, beam, girder, fixed and beam, single acting door, jamb of window, slip sill, box head window, plain rail, balanced sash, single hung window, web, grain, continuous beam, nosing shaft, wagon vault, plain rail, stool, horn, yoke, stop.

4. parts of the building – house, corner brace, corner part, cripple, soleplate, joggle piece, box stair, housed string, basement wall, double roof, double framed roof, strip flooring, plank flooring, parquetry, bell bucket, fire wall.

5. basic building concepts – supports of structure, inner faces, supporting elements, clear span, outer faces, projecting angle, external shears, resistance, reentering angle, bottom, lop, curvature.

6. engineering support of buildings – prevailing, wind, sunlight, climate effects, protection of environment, heating [1; 11].

In the terminology of the construction industry, complex systemic relationships are revealed between its constituent components, which are a reflection of the type-hierarchical relations between the concepts accepted in this branch of science. The following classes of construction terminology are distinguished:

1. A class of terms that call the concepts associated with the designation of building structures and their functional types.

2. A class of terms used in the industry of technology and organization of construction production.

Classes of terms unite the largest groupings of terms in hierarchical relationships in construction terminology and reflect the conceptual categories of independent sections of the construction industry: "building structures – technology and organization of construction work". The first class of terminology denotes the concepts of types of building structures, their functional parts. The second class combines terms related to the organization of construction work and construction technology.

Turning to the foreign language activities of the architect-builder, O.P. Kornienko singles out a foreign-language presentation of an architectural project, the implementation of which, is possible only with knowledge of foreign-language elements of the project which are part of the sublanguage of architecture and construction:

1. Names of lines and selected parts of the drawing (horizontal axis, object line, dashed line, dotted line, straight line etc.). For example, "the horizontal axis wind turbine is the most efficient design for taking advantage of wind power" [9].

2. Names of points (diagonal point, distance point, vertex): the vertex of an arch [9].

3. Names of units of measurement of physical quantities (meter, hectar, square meter): a coin meter [9].

4. Names of plans and layouts (floor plan, tight fit, loose fit, roof plan): the design of a roof plan is considered only in the design process of a structure [9].

5. Symbol names (star, splat, slash, dot, full point): 7/2 can be read as “seven slash two” [9].

6. Participle constructions (curved arch, arced space, applied load, imposed load, raising plate, fixed device, raised structure, depressed surface, arched frames).

7. Derivatives of the main words (board: wall board, layer board, bargeboard; beam: hammer beam, dragon beam, built-up beam; tube: latticed truss tube, bundled tube, tube in tube structure).

8. Verbs denoting architectural and construction processes (resist, define, penetrate, flex, transfer, stand, lay, shed, chip, nail, disperse, extend, swing, screen, stiffen) [1].

The architectural language should not be ambiguous, the language in this professional field shows the principles and structures of the construction vocabulary. Classification of vocabulary cannot be without analysis and identification of information transmitted in a manner. Using images, the architect distinguishes between building elements (wall, roof) to which it gives the name.

Following O.P. Kornienko, we give a classification of S. Kacher, J.K. Bignon, G. Khalin, who divide the architectural vocabulary into four classes:

1. Constructive function, which includes parts of architectural structures that have a basic and specific function.
2. A material that includes wood and other building elements.
3. Product includes a component used to protect and decorate wooden elements.
4. The type of buildings includes the name of the buildings - school, one-room apartment [7, p. 232].

Based on this classification linguist offer the following three hierarchical levels of construction vocabulary.

1. The General Level (Current Level, CL) is the language from which it is structured, representing the names of specific elements. This level is also called the basic level, because it includes the names of the most important architectural concepts, terms in the field of linguistics.
2. The Superior Level (SL) includes terms that cannot identify the characteristic features of architectural concepts that belong to a common level, for example, the word table.
3. The low level (The inferior Level, IL) is a more specific identification of architectural concepts illustrated by images. This level, in contrast to the first level, describes the characteristics of the terms: form, structural mechanism, functional mechanism, number, direction, device [7, p. 233].

4 Discussions

The architectural language should not be ambiguous, the language in this professional field shows the principles and structures of the construction vocabulary. Classification of vocabulary cannot be without analysis and identification of information transmitted in a manner [20]. Using images, the architect distinguishes between building elements (wall, roof) to which he gives the name.

M.M. Bekmurodov in his dissertation combines terms that include the word “building”, based on lexical-thematic relations, reflecting the categorical relationship between the concepts and realities of the construction industry. The author described the terms in the following relationships:

1. Terms designating the classification features of the building for its intended purpose;
2. Terms denoting the quality and design features of buildings [15, p. 30].

For the first subtype the author identifies a group of terms that characterize specific functional types of buildings:

1. Terms designating types of civil buildings: block house, dining room, mess-room, building, detached-house, civil building, domestic building.
2. Terms that describe the types of industrial and agricultural buildings: hotbed, greenhouse, dairy farm, plant, brickfield, factory, works, factory, factory [15, p. 30].

A separate group characterizing residential buildings by building material is represented by
1. Adobe: adobe, co-house, clay-walled – cottage, wattle – house.
2. Wooden houses: block-house, log-house, ready cut – house, cabin, peasant – house.
3. Houses made of panels and concrete structures: tanet-tube – house, precast concrete house.
4. Stone houses: stone-building, granite building, marble building etc.
5. Awning structures: tent, marquee [15, p. 30].

The following classification is presented by N.A. Minakova:

1. Terms borrowed from a common language. The terms borrowed from the common language include tokens building, house, hospital, stone, ceiling, wall, renovation, board, door. Such words cannot be attributed to terminological vocabulary, since they refer to highly specialized building terms, i.e. such lexical units are considered as construction terms of “low degree of terminology”. They occupy a certain place in construction lexicology, as they function as construction terms, refer to construction concepts, construction elements.
2. Terms of construction are words that are dialectic in origin. Dialect vocabulary is a source of development of terminological vocabulary. The presence of dialectic terms indicates that this terminology dates back to ancient professional languages, or that the studied terms refer to long-time formation. So to the dialectic terms are such construction words as a joint – a thin board nailed to the door and window boards; a boiler – a foundation pit; roofer – a forest going to build a roof.

Although vocabulary that is dialectic in origin functions in construction terminology, it is not a constant source of the formation of architectural vocabulary.
3. Building terms borrowed from other languages. A significant part of architectural terminology borrowed terms from other languages. These architectural terms come into Russian terminology as ready-made language units with realities and definitions. Typically, borrowings are made in the process of international, commercial, technical contacts, through special literature. Since industry terminologies were formed under the influence of vocabulary of foreign languages, it is worth noting that in Russian construction terminology there are borrowed terms from English, French and German.

4. Building terms created on the basis of the international lexical fund. The International Lexical Fund is one of the main sources for the formation of construction terminology. An international framework is defined by the simultaneous use of a single word in several languages, similar to transcription and pronunciation. For example, the term instruction, standard, standardization, design, vibration [14, p. 127].

According to T.V. Minasyan architectural vocabulary consists of construction terms borrowed from the French language. The study of architectural vocabulary borrowed from the French language which has undergone significant overviews during assimilation allows us to propose the following classification:

1. Terms whose meanings are the same in terminological and non-terminological dictionaries. The author refers to this group terms that have the same amount of semantic content in explanatory and terminological dictionaries. These units include the following terms: arhitrav, merlon, dol’men, dortuar, mulyura, appartament, vitrina, gorel’ef, pinakoteka, kollonada. For a complete study of these terms, we consider in more detail the meaning of words. Pinakoteca is a collection of paintings; in Italian and German architecture, the pinacotheca denotes museums. By dungeon is meant a tower that stood in a medieval castle, which served as a refuge when an enemy attacked. Merlon is a tooth of a fortress wall located between two embrasures. The apartment is called a large luxurious room, consisting of several rooms. One type of sculptural image on a plane is called a bas-relief. By embrasure is meant a hole in a defensive structure intended for firing from guns.

2. Words with a wider palette of meanings in French. This group of words is the most extensive and includes terms such as avenyu, al’kov, fasad, fronton, inter’er, bassejn, bra, nervyura, kolonna, oranzhereya, pavil’on, shato, gobelen, zhalyuzi, zhirandol’, kuluary and others. The language is a borrower and has the ability to use a lexeme of foreign origin only as a term. The main source of terminology are words and phrases. The word and its phonetic, morphemic, derivational structure, when it becomes a term, does not undergo any major changes. The term zhalyuzi is understood to mean a sun protection device in the form of horizontally located planes installed in a window opening. Kuluar is a room in the theater, parliament, adjacent to the lobby and halls. The main front part of the building is called the facade.

3. Words acquiring additional meaning in the Russian language. Examples of this group can be attributed to the assimilated system of the Russian language since the acquired terms were subject to lexical assimilation. There were not so many terms that could be included in this group: impost, kazemat, salon. Kazematis understood as a long-term construction in fortresses designed to protect against bombs and shells. Salon is front living room or hall for receiving guests. The completion of a pillar, column or end of the wall, serving as a support for the arch is called impost.

4. Words acquiring additional terminological meaning. This group includes terms that have semantic content in the terminological dictionary and are not fixed in the French dictionary, i.e. terminological semantic overviewing of the Russian language. This group includes terms such as ampir, anfilada, buduar, markiza. Ampir is the style of architecture and decorative art that arose in France in the early 19th century based on imitation of antique patterns. Anfilada is a series of rooms communicating with each other with doorways located on the same axis. Markiza is an external canopy above the window or over the entrance to the house for protection from the sun.

5. Homogeneous words. Individual words that are borrowed from other languages but coincide with words of Russian origin and in sound, i.e. homonymy is the result of the coincidence of the sound of borrowed words. This group includes such words as blok, lozha, markiza, panno, parket, parter, tambur, friz [10, p. 144]. Blok is a complex part used as a finished part of a structure or mechanism. Lozha is the
place in the auditorium for several persons separated from the rest of the hall. The surface on the wall, ceiling, framed by an ornament, smooth or picturesque, is called a panel by sculptural images. Parquet is a material in the form of thin planks of hard wood, for flooring in the form of any pattern. Parter is seats in the auditorium located in rows parallel to the stage, stage, screen. Under the tambur it is understood the drum of the dome. There are two more meanings. 1. An extension at the front door, protecting the main room from the cold. 2. Closed area of a passenger railroad car at the entrance door.

The term friz has two meanings: 1. The middle part of the entablature located between the architrave and the cornice. 2. The border, the border of the wall, ceiling, floor, carpet are usually decorated with a solid ornament [10].

N.A. Minakova identified the following groups of architectural vocabulary similar in structure to the above classifications:

1. Terms denoting the names of devices, tools, materials in the construction industry: gnezdo, nasadka, pryanik.
2. Terms, foreign in origin and mastered by the Russian language: arhitavr, cokul', cement, shtuk.

Foreign terms, French and Latin in origin. This group includes a special vocabulary on architecture, parts of buildings characteristic of European buildings, mastered by the Russian language, entrenched in a system of special vocabulary: vestibul', gravij, perron [6, p. 27].

From the beginning of the 19th century new practical methods in construction began to develop. The construction of any building or structure is incomprehensible without calculating its strength. From the first quarter of the 19th century the Institute of Engineers has been studying construction issues about retaining walls, masonry, foundations, etc. Anticipating architecture, engineering science is developing in the first half of the 19th century. The first attempts are being made to create the production of artificial stones, interest in construction equipment is growing [16].

Construction terminology reflects the state of construction of a given period, the terms of the basic concepts of construction work actively. These terms are best represented in the names of subject concepts.

The main groups:

1. Names of building materials and parts: bulzhnik, vozduzhnaya izvest', doska, plastina, chetvert', but, nabroska, chistyedoski, glina, pesok, kirpich, chugun, izvestkovoe moloko, izvestkovyj rastvor. The functioning of these words in scientific articles helps to stabilize their position in the system of construction terminology. With the advent of new architectural terms, the development of construction terminology, more complete classifications of certain phenomena appear. In construction lexicology, the term phrase has been identified, which is a structural type of term: ogneupornyi kirpich, oblicovochnyj kirpich, pustotelyj kirpich, lekalyj kirpich. Each term has a main word (element), in the composition of which other terms can be noted. For example, the word gvozd' is a key element in which several compound terms are noted. This term is divided into bruskovye gvozdi, provolochnye gvozdi, shlyapnye gvozdi, kroveln'ye gvozdi, navesnye gvozdi.

2. Terms denoting construction tools: burav, buravchik, kirka, ushat, molotok, zabilo, trambovka, kuvalda, naugol'nik, pila, sverlo. This group also consists of phrases. Improvement of various construction tools is expressed by adaptation to changes for special works.

3. Terms denoting construction processes: moshchenie, vrubka, kladka, vrezka, ohteska, nastika, obreshhetka, pobelka, okraska, zatirka and others. This group of terms is represented by terms-phrases that reflect the generic relations of the corresponding construction concepts. For example, bulyzhnaya kladka, pravil'nya suhaya butovaya kladka, nakidnaya suhovaya butovaya kladka.

4. Terms designating building structures, their parts. The terms of this group are closely related to common vocabulary. This group includes single-word terms and phrases with a single-word term. This period is characterized by the functioning of structural varieties of parts of buildings, traditional single-word terms. The formation of terms and phrases based on borrowed language units reflects the further development of construction concepts: the main forms of roofs are odnoskatnaya i dvuskatnaya kryshi, shatrovaya i uglovaya kryshi, kirpichnaya i shiferovaya kryshi.

5. The next group is borrowed from dialect vocabulary: malka, v'yushka, zabivka chastokom, napilok, kladka pod lopatku [6, p. 38].
Thus, the sublanguage of architecture and construction differs from the common language in its differential properties; universal properties are a common feature. Architectural vocabulary was not the object of great attention; the classification of construction vocabulary is unique. In the study of the classification of architectural vocabulary, the following groups were defined: the type of the building, part of the building, structural elements; there were also identified classifications based on hierarchical relationships; classifications characterizing specific functional types of buildings, residential buildings by building material, names of subject concepts, borrowed terms, which underwent significant overview during assimilation.

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