AN APPLIED RELEVANCE OF THE CROSS SYMBOL IN THE
ORTHODOX CHURCH ARCHITECTURE

Abstract: the article examines the problem of analysing the symbolism in the architecture of Orthodox churches. Scientific works were analysed in the study of the cross symbol in material culture, including architectural objects located on the territory of Ukraine. It was determined the interrelation of the form and meaning of the symbol. The perception diversity of the cross symbol was described depending on its functional purpose and popular culture interpretation of Christian images. The semantic difference has been revealed between the notions "sign" and "symbol". The philosophical aspect of the symbol meaning and its influence on the temple sacred core formation has been analysed. Three main periods in the development of the auxiliary historical discipline of staurography have been determined which were characterised by the gradual increase of scientific content in the studies. The article reveals the lack of studies of the cross symbol in architectural theory, despite its wide use in the Orthodox sacred architecture. Proposed to study the applied meaning of the symbol in the architectural staurography framework, as part of architectural theory. Scientific literature was analysed in relating to the field of architecture to identify the process of formation of architectural staurography. Author's findings were implemented in the educational process of the fifth year during the design of the Orthodox Church complex. Architectural and constructive component, volumetric and spatial decision was modernised for a sacral building. The image and semantic perception of the cross symbol was analysed as a part of the architectural sacral space of the temple. The process of enhancing the visual component of the temple complex architecture was described in the ensemble and temple-dominant relationship. Examples of architectural and restoration aspects and visual harmonization of Orthodox churches were demonstrated within the Christian traditions.

Key words: Orthodox churches architecture; staurography; architectural theory; cross symbol; architectural design.
**Formulation of the problem.** In the architectural designs of religious buildings, including Orthodox churches, special attention is paid to sacral symbolism. The cross, as one of the main symbols of Christianity, is used in many Orthodox sacral buildings. This symbol is used in architectural elements endowed with both decorative and functional properties. Also the cross symbol is embedded in some architectural designs of churches. Unfortunately, architectural theory does not deal systematically with the above-mentioned symbol. Theological and historical disciplines, on the other hand, pay particular attention to it. From the early nineteenth century to the present day has developed an auxiliary historical discipline called staurography. One of the main tasks of scientific research, is to study the features of this symbol for practical application during the architectural design of Orthodox churches and its elements.

**The objective of the article** is to identify the architectural and staurography aspect in the Orthodox church architecture.

**Analysis of recent research and publications.** The available scientific studies of the cross symbol were carried out according to historical-comparative and structural-functional methods. The symbol was also associated with the sacrifice of Christ on the cross. In the book "The image of the cross" [17], Yu. A. Fedorov studied the symbolism of Orthodox breast crosses. The main part was devoted to the iconography of the cross and its functional purpose. The quadrifolium symbolizes faith, the Second Coming of the Lord in glory, in power, and in eternal life in the city of Heaven. German scientist Kurt Eberhart and O. B. Kuznetsova studied the rare iconographic plot “fruits of Christ's sufferings”. In the article, A. B. Kuznetsova noted in iconography the sprouted cross that connects the Earthly Church and the Heavenly Church [23]. The Jurgaichu mound (Krestova Gora) in Lithuania was explored by Hubertas Smilgas. On the mountain there were more than fifty thousand crosses and statues of Saints, which differ in shape and country of origin. The fact of an international monument also has a negative impact on the symbol interpretation of the cross, which takes on pilgrimage significance [25]. In his monograph, Mihas Ramanyuk described monumental crosses found on the territory of Belarus. Much attention was paid to the general classification of crosses, which were generally divided into canonical and folk. Folk crosses could differ from the Christian tradition ideas and were mostly dualistic. The cross symbol was interpreted by a combination of pagan and Christian ideas about the universe [8].

Analysing the church archaeological finds of Taurida, V. Yu. Yurochkin noted that, first of all, it was necessary to study the cross symbol, based on its internal meaning [20, p.21]. The cross symbol has changed and been enriched, starting with its reinterpretation as a roman weapon for execution as a salvation symbol; from Old Testament prophecies to the miraculous discovery of the life-giving Cross of the Lord
The iconography development of the symbol began with catacomb Christianity, such as T-shaped St. Anthony, four-pointed, monogrammed types, and not in the Constantine the Great era. According to the archaeological sites found, it can be concluded that the Christians of Taurida used the cross symbol in the first half of the 3rd century AD [20, p.50]. Scientists S. L. Yusov and N. N. Yusov studied more than two hundred monumental crosses of non-burial type in Bukovina Podillia. The cross symbol manifests itself in the following meanings: places sacralisation, glory and miracle of the Lord, gratitude, petition, memorial, protection [21]. Creating the Christian breast crosses catalogue from the period of Kievan Rus, V. V. Nechitailo studied various interpretations of the symbol. In the medieval period, the meaning of the cross symbol was dominated by protection [9]. The semiotics of Christian images of the plant world in folk culture was studied by A. V. Chasovnikova. Common patterns and principles for folk and Christian culture as a whole were revealed [18, p. 6]. The symbol of the cross manifests itself in images of eternal life, immortality and grace. The analysis of the cross symbol in Orthodoxy in church decorative and applied arts was conducted by S. V. Gnutova. The symbol interpretation takes on the soteriological significance of Christ's sacrifice on the Cross, and the biblical subjects image, and even the material from which the Cross was made can symbolise the seven biblical trees [4].

The altar of ancient churches in the period of the end of the X – first third of the XIII century was explored by T. A. Chukova. Architectural forms included: throne, ciborium, altar partitions and synthronon. The floor decoration was also analysed in detail. At the beginning of the adoption of Christianity, the process of perception and regional adaptation of the Byzantine tradition began, which took place in the old Russian material and non-material culture [19, p. 141-144]. As for the direct relationship between the liturgical rite and the architectural elements of the interior, already in the VII – XI centuries, the process of indirect influence of the liturgical ritual on the architectonics of the church as a whole began, through the same symbolic interpretation of various architectural forms and plans [19, p. 146]. The symbol of the Cross was an image of the altar throne, namely the cardinal directions to which the teaching of the evangelists extends; with the established ciborius, which symbolizes heaven, was an image of the Earth on which the Holy Spirit descended; the sacrifice of Jesus Christ on the cross. The culture of creating crosses was studied by S. L. Yavorskaya. It was determined that an outstanding sacred place for the installation of memorial crosses was the “mountain of crosses”, that means an all-confessional sacred complex without hierarchical organization [22, p. 368-370]. These complexes were analysed in Latvia, Estonia, Poland, Ukraine, Slovakia, Russia, Armenia. The following features were identified: the term “mountains” was not used in the geological sense, there may be hills, fields, forests, mounds; more
than three crosses were installed; location in hard-to-reach places, near springs, possible location on past pagan temples; were not burial sites; a sacred place created for communion with God; the construction of a chapel or temple means regulating the activities of such a place; the lack of a hierarchical principle of creating a sacred place, without the main cross and recording the installation of the first cross; not confessional and national character; a significant number of crosses means holiness and fullness of the great prayer power of the “mountain”. Such sacred places were a phenomenon of folk hierotopia, that is, they were created and preserved thanks to the people. The symbol of the cross takes on the meaning of a pilgrimage, a sacrifice to God, a personal request.

Artistic wood products in Ukraine from the XVI to XX centuries were analysed by Mikhail Stankevich. The following typological groups of crosses were systematized: icon crosses, tomb and road crosses, and liturgical crosses. The classification of hand crosses by shape was given: Greek, Roman, six-pointed, seven-pointed with the same crossbars and seven-pointed with a longer Middle cross, eight-pointed, three-part (consist of a central seven-pointed cross and two smaller seven-pointed crosses that were located on the crossbar below), gamma, anthropomorphic and phytomorphic. The symbol of the cross means salvation, the sacrifice of Jesus Christ on the cross, eternal life, and the evangelists [7]. The interpretation of the symbol of the cross as The Tree of life was studied by N. I. Troitsky. It was determined that the tree of life and other symbols of the Old Testament were the prototype of the cross. An analogy was drawn with the Assyrian Tree of life, which was also an image of eternal life [16, p. 16-17]. Examples of a sprouted Cross were the following: the gamma cross on the catacombs of Pontian VI century in Rome, the fresco of the Assumption Cathedral in Vladimir on Klyazma, the Tomb of Yaroslav the wise in Kyiv-St. Sophia Cathedral, the Byzantine cross of the XI century on the bronze gate of St. Paul's Basilica in Rome, the Korsun gate in Novgorod-St. Sophia Cathedral, the Tomb of King James III of Scotland and his wife Margaret of the XV century, the cross on the window of the cathedral in Burge, France [16, p. 24-27]. The study of the Chersonesos cross-shaped church determined its symbolism, which was an image of a single World Tree of Life, which was comprehensive for all members of the Church of Christ [16, p. 39].

From a philosophical point of view, N. V. Ostashova, studying the cross symbol, concluded that the cross expresses the idea of the unity of the directed energy distribution in all directions, which were determined by the four sides of the cross, and the foundations of being. Also, the cross symbol has a sign of dualism and solves the contradiction of the eternal philosophical question about the spirit or matter primacy, because it was the intersection point of the cross that unites them [11, p. 56].
In general, the cross symbol interpretation depends on the shape of its crossing and the mutually perpendicular cross arms. The figurative-symbolic meaning of the object-defined symbol type additionally reveals the use of a certain material and the depicted iconography.

**Main part.** Starting the cross symbol analysis, it was necessary to investigate and determine the meaning of the concept of “symbol”. In the philosophical problems of psychology and theology, Hans-Georg Gadamer described the symbol as the knowledge of symbolic meaning, which implies that a single, special one appears as a fragment of being that can connect with the corresponding fragment into a harmonious whole, or that it was a long – expected particle that complements our fragment of life to the whole [3, p. 299]. Plato in the myth of androgens [12] described the symbol as the acquisition of initial wholeness [14], and Aristotle comparing the name and signs believed that names have meaning by virtue of agreement, because by nature there was no name. And a name appears when it becomes a sign, because articulate sounds, although they express something, as, for example, in animals, but none of these sounds was a name [2, p. 94]. The sign is a stable grapheme of the name [10]. In Phenomenology, E. Husserl believed that the symbol itself is only available, and what it symbolizes is presented [1, p. 90]. This feature characterizes the originality of symbolic relationships. S. V. Nikonenko studied the relationship of a sign and a symbol. A sign is an artificially established unambiguity and elimination of discrepancies. The symbol represents not a sensual, but an eidetic experience, in the meaning of the existence of an object [10]. In philosophical theories, T. Prots, studying the concept of “symbol”, concluded that it is balanced with the essence of a person, acts as the main result of his activity. In social theories, the symbol is a way of influencing social acts on mass consciousness, as well as a special value and capital that various subjects of power strive to possess in the course of the struggle to legitimize the social world-view [14]. The symbol in its original meaning was a potsherd, which breaks in two parts and was given to a person as a friendly relations sign. Thanks to this, friendship could be preserved in posterity [14]. The importance of embedding a symbolic architectural space in the Orthodox church sacred core is reflected in the spiritual reunification of the person who came to the church and the Church of Christ.

The symbol of the Cross is studied by staurography [15, p. 2] and staurology [6]. Staurography (from others. σταυρος - "tree, Cross" and γράφω -"I write") is a special historical discipline that studies the history, iconography, origin, forms, types and types of the cross. Staurography (from others.- Greek σταυρος - "tree, Cross" and λόγος -"word") is a theological and philosophical science that studies the interpretation, meaning, meaning, and spiritual essence of the cross. Staurography and staurology are in contact with art history, archeology, ethnography, religious
Studies, epigraphy and materials science. Staurography began its development in the 1820s. In the study of P. I. Keppen and K. Averin, the image of crosses was analysed for the first time from a historical and epigraphic point of view. In the mid-19th century, G. D. Filimonov analysed the semantics of the Cross, based on the study of the Athos collection carved crosses of the 17th century. I. P. Sakharov described various types of crosses, their location and origin, inscriptions on them. One of the areas that I. Z. Krylov, F. Yakovlev; K. N. Tikhonravov, A. Yastrebsky; N. I. Suvorov, V. V. Zavitneveich were engaged in, was a study of church traditions about the Life-Giving Tree of the cross, miraculous crosses and crosses of historical figures and Saints. The ecclesiastical and archaeological direction includes the study of Archimandrite Makarii (Mirolyubov), which was one of the most complete in the 19th century. Thanks to the huge reliable informative material, which presents already lost monuments, it is still used today. Further research by Makarii marked the beginning of the scientific direction of staurography. I. I. Malyshevsky continued this direction through historical and cultural studies of crosses. They used the historical and artistic method, part of which was ethnographic and philological analysis. Slavonic philologists I. S. Palmov and M. N. Speransky studied crosses in the context of the missionary work of Saints Cyril and Methodius on the territory of Slavic countries. In general, in the second half of the 19th century, the publishing of catalogues, descriptions, albums of private collections and museum collections, church and monastery vaults began in large numbers. A. K. Zhiznevsky, thanks to the help of the archaeologist count A. S. Uvarov, was engaged in the systematization of crosses by type and purpose. In the late 19th and early 20th centuries, many archaeological excavations were carried out along the Dnieper river. Collections appear that describe the sights found. Important research belongs to Bogdan and Varvara Khanenko, A. S. Uvarov and N. V. Pokrovsky. The theological direction on the true shape analysis of the Cross was represented by the study of I. Kronstadt and E. E. Golubinsky. In the 19th century, staurography was born as a science. The main directions were theological and historical, in which church scientists were engaged in the study of crosses and their symbolic significance. Already at the beginning of the 20th century, staurography was a part of historical science, which included epigraphy, church archeology, ethnography. Since the second half of the 20th century, staurography has become a sphere of art history interest, which was demonstrated in the research of V. N. Lazarev, N. E. Mnev, N. G. Porfirov, A. V. Ryndin, V. N. Zalesskaya, V. G. Putsko, I. A., Sterligov, M. I. Milchik. The new stage began with the revival of 19th-century traditions. Staurography was developed as a branch of church archeology, but, in addition, interacts with art history. In addition to the above-described researchers, S. I. Dmitriev, T. V. Levin, O. V. Ovysyanikov, V. P., Orfinsky, S. V. Gnuto were engaged in it [15].
Architectural staurography was developed from early Christianity mainly as part of theology. The question of the cross symbol was dealt with by Saint Paul, Gregory Palamas, Irenaeus of Lyon, St. John the Baptist. Gregory the theologian, St. Gregory the Theologian, John Chrysostom [13]. This stage was characterized by the merging process of symbolic and functional parts in the architectural space, that is, the meaning of the cross symbol and the rules approval for holding the liturgy, which was demonstrated in the architectural canons formation of Christian churches. Since the 16th century, architectural staurography has been a part of urban planning. Pope Sixtus V used the sign of the cross as a recognition of the strength or Church power. In any city that had a Quadrivium (quadrivium), in the meaning of a crossroads, the church authorities celebrated the cross as a Christian symbol. R. Ricart in 1506 provided one of the earliest plans to Bristol, which depicts a monumental cross marker (alta crux) at a road intersection. In the Middle Ages, this area was transformed into a fortified city with four gates. The next stage began with the development of staurography as a science in the 19th century. Archimandrite Makary analysed the forms and typologies of dome crosses, made a conclusion, arguing one of the applied staurography aspects, of which Architectural was a part. The researcher noted that four-pointed and eight-pointed crosses, at the ends of which there were smaller crosses without them, with or without a crescent moon at the foot, can be placed on temples. Also, the cross drawing can be borrowed from famous and ancient temples and their images in printed publications, and the crosses shape should not deviate from the common one. In general, the further development of architectural staurography took place in conjunction with the scientific achievements of church archeology. In the above-mentioned study of T. A. Chukova determined the connection between the cross symbol and the architectural form of an Orthodox church [19]. In the 21st century, due to the influence of architectural and art history, there were qualitative changes in architectural staurography. In 2002 O. M. Lidov [5] proposed the hierotopy concept as a special field of historical and cultural research, which reveals examples of the creative process of architectural space formation that evokes a certain emotion in sacred structures, including Orthodox churches. Studying the cross properties as a symbol in architecture, M. Kuilman [24] believes that the spatial imagination development is demonstrated in the gradual change of circle, cross, square, polyhedron geometric shapes. Also, M. Kuilman noted that when designing a church, there are two methods. The first is"external", by filling the imaginary space with the volume of the future building. The second is "internal", using certain features of the relief and/or symbolic idea as the basis for the development of volume and shape. In further analysis, the researcher relied on the second method. The cross was one of the examples of the symbolic idea development in the temple architectural space. The result of the scientific research analysis in this
area was the implementation of the author's developments in the course discipline of the course architectural design of the Orthodox church at the Department of Architecture Fundamentals and Architectural Design for fifth-year students S. El Mukhtazh (Fig. 1) and D. N. Suschenya (Fig. 2).

Fig. 1 – The cross symbol analysis as part of the architectural sacred space, scheme by authors, visualisation by S. El Mukhtazh.
The dominant feature of the architectural ensemble of both architectural designs is cruciform-centric Orthodox church. The compositional solution of the first temple complex is designed to harmoniously introduce the dominant temple in the ensemble, preserving as much as possible the form and number of architectural objects. The purpose of the practical work is to modernise the sacral building, taking into account the regulations and sacred symbolism.

1) Architectural and structural modernisation was carried out.
2) The volumetric and spatial characteristics of the temple were improved.
3) The architectural and restoration aspect has been defined in the architectural sacred space organisation. To improve the temple perception, the architectural space of the central square has been increased by moving the entrance group with belfry closer to the storage area and part of the circular sections in front of the apse to the workshops. The stepped, ascending volume of the temple and the pastel colouring have improved the architectural unity and its visual perception as the dominant feature of the complex.

The second temple complex was designed to solve the problems of harmonious visual perception of the dominant ensemble. Also, the purpose of the practical work was to modernise the Orthodox church.

1) The architectural and structural component of the sacred structure has been modernised.

2) The three-dimensional characteristics of the temple have been improved.

3) The architectural and staurographic aspect of the architectural sacred space creation was defined. The temple perception was improved by increasing the architectural space of the central square through geoplastics, that means some artificial changes in the terrain. The architectural volume of the temple was gradually reduced upwards. The dominant feature of the complex is influenced by pastel colours which also improved an architectural unity and its visual perception.

Summary. It is stated that the architectural staurography development is divided into three periods. The early period is characterized by an empirical knowledge level, mainly the theological research orientation and the appeal of architects to the architectural heritage. The scientific period is characterized by a theoretical knowledge level and a historical and archaeological focus of research. The compilation period is characterized by the research results integration from previous periods and an innovative approach to the Orthodox churches design. Thanks to the interdisciplinary influence and scientific experience accumulation, it becomes possible to study formative and fundamental problems of Orthodox church architecture on the basis of architectural staurography and continue its development as part of the architectural theory.

The acquired scientific knowledge in the study of staurography made it possible to put into practice the author's finding in the educational process of the fifth year by carrying out a competent symbol analysis to create an Orthodox church and complex architectural design.

List of resources

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Аннотация

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Прикладное значение символа креста в архитектуре православного храма

В статье освещается проблема анализа символики в архитектуре православных храмов. Проведён анализ научных трудов в области исследования символа креста в материальной культуре, включая архитектурные
об'єкти, розташовані на території України. Опреділено взаємозв'язок форми та значення символа. Описано різноманітність восприяння символа креста, залежно від його функціонального призначення та трактування народної культурою християнських образів. Виявлено семантичне різницю понятій «знак» та «символ». Проаналізовано філософський аспект значення символа та його вплив на формування сакрального ядра храма. Опреділено три основних періоди розвитку вспомогательної історичної дисципліни ставрографії, характеризуючихся поступовим зростанням наукової активності в ісследуваннях. Виявлено недостаткове зусилля в області розуміння символа креста в сфері архітектури, нещодавно на його широке використання в православній сакральній архітектурі. Під正常使用не розглядаємо scientists, та теорію архітектури, ставрографії, архітектури для вміння процес формувало архітектурної ставрографії. Авторські наработки використано в учебний процес п'ятого курса во время проектирования православного храмового комплекса. Модернізовано архітектурно-конструктивну структурну та об'ємо-просторове розміщення сакрального сооруження. Проаналізовано образов-смислове восприяння символа креста в структурі архітектурного сакрального простору храма. Описано процес улучшення визуальної структури архітектури храмового комплекса во взаємосвязи ансамбля і храма-домінанти. Продемонстровано примеры архітектурно-ставрографічного аспекта і визуальної гармонізації православних храмов в рамках християнських традицій.

Ключеві слова: архітектура православних храмов; ставрографія; теорія архітектури; символ креста; архітектурне проектирование.

Анотація

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Прикладне значення символу креста в архітектурі православного храму

У статті досліджено проблему аналізу символіки в архітектурі православних храмів. Проведено аналіз наукових праць, дотичних до поділу символу креста в матеріальній культурі, включаючи архітектурними об'єктами, розташованими на території України. Визначено взаємозв'язок форми і значення символу. Описано різноманітність сприйняття символу креста, залежно від його функціонального призначення і трактування народною культурою християнських образів. Виявлено семантичні відмінності
понять "знак" і "символ". Проаналізовано філософський аспект значення символу і його вплив на формування сакрального ядра храму. Визначено три основні періоди розвитку допоміжної історичної дисципліни ставрографії, які характеризуються поступовим зростанням наукової змістовності в дослідженнях. Виявлено недолік вивчення символу хреста в сфері архітектури, незважаючи на його широке застосування в православній сакральній архітектурі. Запропоновано вивчення прикладного значення символу у рамках архітектурної ставрографії, у складі теорії архітектури. Проаналізовано наукову літературу, яка стосується сфери архітектури, для виявлення процесу формування архітектурної ставрографії. Авторські напрацювання впроваджено в навчальний процес п'ятого курсу під час проектування православного храмового комплексу. Модернізовано архітектурно-конструктивну складову і об'ємно-просторове рішення сакральної споруди. Проаналізовано образно-смислове сприйняття символу хреста в структурі архітектурного сакрального простору храму. Описано процес поліпшення візуальної складової архітектури храмового комплексу у взаємозв'язку ансамблю і храму-домінанти. Продемонстровано приклади архітектурно-ставрографічного аспекту і візуальної гармонізації православних храмів у рамках християнських традицій.

Ключові слова: архітектура православних храмів; ставрографія; теорія архітектури; символ хреста; архітектурне проектування.