To the question about age determination of the “Cross-in-square” type temples in the North Caucasus and in the Northern Black Sea Region

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Abstract. Based on the historical events’ analysis in the region and documentary evidence, in accordance with the “Cross-in-square” type temples’ three-dimensional compositions peculiarities, it is suggested that this type of temple was brought to Alanya from Abkhazia, and to Abkhazia - from Chersonesos and Trebizond. At the same time, the direct Constantinople influence, which could be due to the direct subordination of the Alan metropolis to Constantinople and the desire to repeat the features of metropolitan architecture and a number of compositional features in the Alanya temples, has not been excluded.

Introduction
Temples of the “Cross-in-square” type in the region under consideration include: Northern and Southern Zelenchuk temples in the Nizhny Arkhyz village, Shoainsky temple on the river Teberde (Karachay-Cherkessia); temple in the village Loo, the Church of the Blessed Virgin Mary in the city of Tmutarakan (Taman), Krasnodar Territory. In the Northern Black Sea region there are temples on the Bzyb River, in the villages of Lykhny, Alahadzy, Pitsunda, Simon Kananita in Anakopia (Novy Afon settlement) Abkhazia; temples No. 2, 4, 9 in Khersones (Sevastopol), St. John the Baptist Church in Bosporus (Kerch), Crimea, a temple near Sudak, Crimea, opened in 2014. A comparative analysis of the planning structure showed that these temples built on the basis of one sample or were the samples for each other. When comparing the spatial schemes of this type temples, there are some nuance differences in composition (in the depths of the altar and side apses, in the presence or absence of axial symmetry, in the form of supports (cross or rectangular section), construction equipment. External forms and decor are especially different among themselves, which may indicate the local craftsmen involvement in the construction work. However, in the external volumetric and spatial compositions of all the temples under consideration, the identity is also traced. The proportional structure of the buildings, the height ratio and the width volumes, the high drum of the dome, the presence of cornices and lunettes above the entrances are similar. The temples of this spatial composition in the North Caucasus and in the Northern Black Sea region are characterized by the characteristic open porticos from the north, south and west.

Discussion
The genesis of this type temples’ architectural forms has repeatedly become the discussion subject. V.A. Kuznetsov adheres to the point of view that the temple in the village was the model for the Northern Zelenchuksky temple Lykhny, the analogue of which, in turn, was the Trebizond churches of Chrysokephalos
and St. Sophia, the first construction period of which dates from the beginning of the 10th century [7, P.43-44]. The sequence of Lykhny - Northern Zelenchuksky temple was supported by K.N. Afanasyev, who conducted a comparative analysis of the temples’ sizes and modules [1]. The sequences of Iberia - Bzyb - Lykhny - Trebizond adheres to L.D. Rcheulishvili [12, P.77-80], who joined the opinion of G.N. Chubinashvili. In this sequence, G. N. Chubinashvili includes the Northern Zelenchuk Temple to the provincial version of Abkhazian architecture [14]. The chain of Byzantium - Northern Zelenchuksky temple - Lykhny offers L.A. Perfilieva [10]. A.Yu. Vinogradov in his latest study supports the hypothesis about the possible influence of the Trebizond architecture on the temple construction of the North Caucasus [2]. A.L. Jacobson in his works substantiated the possibility of the Trebizond influence on the Chersonesos and Abkhazia architecture [15].

When making the above-mentioned assumptions, the authors considered in their comparisons not so much a compositional scheme as external forms, and they found separate similarities with the Alanian temples. The compositional schemes’ coincidence was accepted by them as the basis for comparisons. The resulting scatter of opinions, in each case quite reasoned, about the source of samples for the temples of this type in the North Caucasus and the Northern Black Sea region, indicates that the source was not the only one. The compositional scheme of the six-pillar three-apse cross-domed church of the “Cross-in-square” type, with the narthex, is the most common in the Byzantine period in the Middle Byzantine period in all state formations. With some nuanced changes and additions, it is, in general, the unchanged present in the temple-building of Byzantium, Trebizond, other territories of Asia Minor, Chersonesos, Abkhazia, Bulgaria, Greece, Russia and the North Caucasus. At the same time, it is difficult to find individual similarities in external forms, consisting in the most general compositional techniques, for example, in the organization of sloping coverings, the height of the drum, the overall proportional structure, the meanness or splendor of the decor, and the coincidence of its individual details. A comparison of construction equipment in each case yielded more differences than similarities due to the local techniques and materials. The possibility of multiple influences on the Byzantine states’ part on the temple-building in the North Caucasus during this period is confirmed by a number of factors. First of all, these are the broad dynastic, political and economic ties between the states of the Northern Black Sea Region and the North Caucasus between themselves and with Byzantium and its eastern provinces, due to their location on the trade routes. The second factor is the documented participation of several established confessional centers (Constantinople, Trebizond, Abkhazia, Khersones) in the Christianization of Alanya and its church life. Multiple influences could also be introduced with the construction equipment, taking into consideration the fact that during this period there was a practice of attracting craftsmen for the construction of temples throughout the East Byzantine world.

Material and method
Analysis of the historical events of the IV-XI centuries in the region is contrary to the L.D. Rcheulishvili’s assumption of Iberia predominant influence on Abkhazia and indirectly on Trebizond. From the 7th to the end of the 10th centuries Iberia was ruled by Arabs, and the Georgian Church was subordinate to the Antioch Church, which was located on the territory of the Caliphate. At the same time, the Sebastopol Autocephaly and the Laz Metropolis are still subordinate to the Patriarchate of Constantinople. Only in 1071 the Georgian Church defends the right of autocephaly in Antioch, Iberia is freed from the Arab invasion and subjugates the Abkhaz church [3, P.222]. Thus, only from the end of the XI century Iberia could actively influence the temple-building of Abkhazia and the neighboring territories. However, the subsequent part of the chain proposed by L.D. Rcheulishvili, consisting in the fact that the Bzyb temple served as the prototype of Lykhnensky and the church of Simon Kannanit in Anakopia, seems very justified. This idea is indirectly supported by L.G. Khrushkova, determining the sculptural reliefs’ age of the Bzyb temple to the 9th century, and the Lykhny temple and palace – to the 11th century. [13, 9]. It is reliefs, decoration and construction equipment that are the main arguments of L.D. Rcheulishvili in determining the predominant influence of Georgian architecture in the temples of Abkhazia, however, he notes the lack of full compliance with Georgian constructive techniques. For example, the dome in the Lykhnensky temple is made in a ribbed structure, which has no analogues in Georgia [12, P.44], but it is well known in the monuments of Byzantium and, especially, Constantinople. In four monuments (temples in the villages of Lykhny, Bzyb, Alahadzi, and...
Anakopiya), the use of plinths in the arches’ laying is noted. Thus, there is an assumption that Georgian masters among were invited for the construction of a number of temples in Abkhazia, who obviously performed the above-described reliefs, ornaments and worked in the usual masonry technique for walls.

The following hypothesis about this type sample’s penetration into North Caucasus from Trebizond has two aspects. L.A. Perfilieva insists on the direct influence of Trebizond on the architecture of the temples of Alanya, V.A. Kuznetsov states that it was indirect, through Abkhazia. Both authors use the cross-domed churches of Trebizond - Chrysokephalos, Eugenia and Sofia as analogues. The planning schemes of the plans of Trebizond Sofia, Chrysokefatos, the church of Eugenia and the temples of Anakopia, Lykhnensky and Northern Zelenchuksky are identical. Of particular note is the domed squares’ proximity to the altar, the cross western arm elongation, giving some basilica traits to the composition as a whole, the presence of open porticoes from the north, south and west. The portals of the Trebizond churches are more complicated - they are decorated with triple arcades on the columns on the facade, but there is another important detail. In the North Zelenchuksky, Lykhnensky and, presumably, in the Anakopia churches, the porticoes are displaced from the north-south axis: the south - to the east, the north - to the west. A similar shift takes place in the Sofia temple in Trebizond. In addition, as noted by V.A. Kuznetsov, research by S. Balance showed the porticoes simultaneity and the original building composition of the tenth century [7, pp. 44-46; 10, P. 196-198]. It has already been said above that the porticoes displacement in several objects of the considered churches series seems to be an important argument in favor of following a certain pattern. In addition, there are a number of similar features: open lunettes above the horseshoe-shaped entrances, simplicity of appearance and parsimonious decor, the principle of the external forms’ compositional construction. Of particular note is the technique of Trebizond churches’ masonry, similar to the Kherson and masonry of the Northern Zelenchuksky temple.

The absolute dimensions of the Trebizond churches significantly exceed the Abkhaz analogs’ sizes and the Northern Zelenchuk temple. The module size - the dome square (apse depth) in the temples of Sofia, Chrysokephalos and Eugene is 5m, and it is very common in Byzantium IX-X centuries; the size is equal to two “grape” δρυμα of 2.5 m each. In the churches in Anakopia, Lykhny and Northern Zelenchuksky this parameter is from 3.2 to 3.4 m, which roughly corresponds to the earlier δρυμα, άκαινα (3.1 m). But this fact is not a counterargument, since it should be taken into account that Trebizond, as well as Constantinople for the provincial Alanya and Abkhazia, were capital cities. Their temples, in accordance with the concept of hierarchy inherent in Christian cultures, had a higher status than those built in the provinces, which should have been reflected in the buildings’ scale. At the same time, Alania and Abkhazia were an equal position between themselves, which also applies to Chersonesos. They did not obey each other in church-administrative terms, on the contrary, each of the subjects sought to show their importance to the rest and to the empire. Perhaps this explains the almost identical dimensions of the module (the dome square) and the overall dimensions in a number of temples in the North Caucasus and the Northern Black Sea region, indicated above. However, it is necessary to admit that the Trebizond temples have significantly different appearance from the considered Abkhaz and Alan counterparts. Meanwhile, the latter are similar to each other not only in the spatial organization of the plan, but in the external forms. In addition, the intensive participation of Abkhazia in the Alanya Christianization in the light of recent studies seems indisputable [2].

The temples of Abkhazia still have a number of features, indicating their resemblance to the Trebizond temples. Many of these features can be attributed to the Transcaucasian architecture influence, but it is known that, starting from the early Middle Ages, Trebizond had very close contacts with Transcaucasia. These features include faceted apse (Bzyb, Anakopiya, Loo), faceted dome (Lykhny), horseshoe-shaped apse in plan (Lykhny, Alahadzi), the absence of central apertures and side apse openings (Anakopiya, Pitsunda), the upper masonry.

Taking the above-mentioned into consideration, as well as relying on the comparative analysis of volumetric-spatial compositions and historical data, the author of this work suggested that the temple for Simon Kananit in Anakopia served as a model for the Northern Zelenchuksky temple [11]. In favor of the assumption made, the geographical position of the temples is of great importance. The Temple of Simon Kananit is located in the tract of the Gumista River, near the Sancharsky Pass, directly leading to the basin of the Bolshaya Zelenchuk and Nizhny Arkhyz rivers. Anacopia in the VIII century was the capital of the
Abkhaz kingdom. Its status in the X century is not exactly known, but many historians suggest that it could remain the seat of the Sebastopol bishops [8]. Nearby, in Lykhny was the residence of the Abkhaz kings [13]. In any case, Anacopia was a major strategic point, had a seaport, and since 1033 it has been a Byzantine Tema [6, P. 242]. The planning schemes, the external dimensions and the dome square size in the temples of Simon Kananit and Northern Zelenchuksky coincide. In the current state, there are no porticoes at the temple of Simon Kananit. However, the temple was described in detail by P.S. Uvarova, who published its plan with the porticoes remains at the northern and southern temple’s walls, offset from the transverse axis of the entrances similarly to the Northern Zelenchuksky temple. L.D. Rechulishvili gave a detailed description of the temple and links to photos of the 19th century church made before the “restoration”, which show the vaulted vestibules similar to the Northern Zelenchuksky temple [12]. In addition to the overall dimensions and the dome square, the plans coincide with the side entrances’ placement and the windows’ location in the narthex. However, there are some differences in spatial patterns, probably due to the local factors. In the North Zelenchuksky temple, the depth of the altar and pastophory was increased, and the altar has a three-stage syntron. Pastophories are connected to the altar by the side passages, which does not have a place in the temple of Simon Kananit. The total length of the Northern Zelenchuksky temple is slightly greater than the length of the Simon Kananit temple with the same width. Three ceremonial entrances, separated by the steps, lead from the narthex to the temple. All this is explained by the fact that the Northern Zelenchuksky temple was built as a cathedral of the Alani diocese, and the service ceremony had some differences from the one that took place in the Ankopia church. Narteks in the North Zelenchuksky temple is much deeper than in the Simon Kananit temple. The increase in the narthex is undoubtedly associated with a larger number of newly converted to Christianity than in Anacopia. In the northwestern corner of the narthex, V.A. Kuznetsov discovered an ancient baptismal [7, P. 51].

The semicircular central apse of the Northern Zelenchuksky temple compared to the five-sided in the Simon Kananit temple can be explained by the subjective circumstances, for example, orientation in this part to some other temple, say, to Pitsunda. The striking “sculptural” lines of the temple, the lack of axial symmetry, the replacement of cross supports with simpler rectangular sections by pillars - all this most likely indicates the involvement of local unskilled masons in the construction work.

The current appearance of the Simon Kananit temple is the result of the reconstruction in the XIX century. However, relying on the archival photographs taken before its restoration, we can conclude that the external forms are recreated quite correctly. In the external volumetric and spatial compositions of the temples being compared, the identity is clearly traced. In both temples the narthex was isolated by lowering the slope over it, which is not observed in the Lykhny temple, which some researchers call the Northern Zelenchuk temple model. The general proportional structure of buildings, the ratio of the volumes’ height and width, the high drum of the dome (low in Lykhny), the presence of lunches above the entrances and eaves are similar. The lunettes of the Northern Zelenchuk Temple are open and have a horseshoe-shaped shape, but this feature is a characteristic of Alanya architecture. The same lunettes have the Middle Zelenchuksky temple, as well as the Zrugsy temple in Dvaletia. It was noted above that there are also horseshoe-shaped lunettes in the Trebizond temples, but there they are closed.

The prototype for the temples of this series in the Northern Black Sea region could be the Bzyb temple. The same point of view is expressed by L.D. Rechulishvili [12, P. 10-16]. The basis for such an assumption is the domed square size, the general spatial scheme, with the exception of the narthex, the volumetric and spatial composition, the masonry technique and the presence of open porticoes similar to the Likhnensky, Ankopia and Northern Zelenchuksky temples. However, the porticoes in the Bzyb temple do not have a bias, as in the above-mentioned examples. The Bzyb temple is an option for finding the optimal constructive solution to the composition “Cross-in-square”, and this is one of the arguments in favor of its earlier construction than other Abkhaz temples of this type. Indeed, the outer walls’ thickness does not correspond to the supports’ thickness - the walls are very massive, their thickness is 120 cm, and the supports are very thin, only 62 x 62 cm. In addition, the sides of the dome square are not equal to each other - 3.4 m in the transverse direction, 3.7 m - in the longitudinal direction. L.D. Rechulishvili also draws attention to a number of inaccuracies and shortcomings made during the temple construction [12, P. 17]. In our opinion, these inaccuracies can be explained by the fact that the Bzyb temple is the first temple of such a composition in the
territory of the Abkhaz kingdom. In this case, the sample may have been introduced by a simple breakdown of the planning scheme according to some sample from Trebizond or Chersonesos, but the construction itself was carried out under the guidance of a local master who did not know the principle of the cross-dome system and built the volume intuitively.

The temple of Simon Kananit could serve, in our opinion, as a model for the Lykhnenovsky temple. Their plans are almost identical, the apse have a complex design with vims and ledges. The domed pillars are cross-shaped. But in the volumetric-spatial composition of the Lykhnenovsky temple, the narthex is not revealed and there is no that verticalism that is present in the Anacopia temple. In addition, the “choirs” appear in the church in Lykhny - the second floor above the narthex, the purpose of which many researchers rightly associate with being in the nobility service, and Lykhny was the suburban residence of the Abkhaz kings. However, another, more significant temple - Pitsunda, or a temple located nearby from it in the Alakhadzi village could serve as an additional reference point for the Lykhnenovsky temple.

Similar features of the compositional construction in the plan has a temple over the Loo village, examined in detail by B. B. Ovchinnikova [9]. A feature of the temple in the Loo village is the presence of a pentagonal central apse with semicircular lateral. This combination is typical for the numerous temples of this period in the eastern provinces of Byzantium, for example, in the Crimea and Bulgaria, in Trebizond, the basilicas of the Northern Black Sea region of the 6th century (for example, the basilica in Tsandripsha), but in the temples of the indicated series we see a similar technique only in the Anakopia church of Simon Kananit. The ends of the walls separating the apses are decorated with pilasters, similar to the Bzyb, Lykhnenovsky, Anakopi churches and the temple number 9 in Chersonesos. The western part of the temple is separated by a pair of pillars from the prayer hall. Narteks as such was not, what is the similarity of this temple with the temple in the village. Alahadzi. The temple was illuminated by narrow (0.4 m) window openings with a wedge-shaped arched finish made of lime slabs and limestone slabs. From the outside, in the design of the walls of the temple in some places, the remains of the cladding, similar, for example, used in the temples of Bzybsky and Simon Kananit in Anakopia, have been preserved. Another feature of the temple is the internal facades’ fragmentation on the southern, northern and western walls with pilasters, which could turn into the arched semicircles. A similar interior interpretation is a characteristic of the Zrugsky church of North Ossetia, XI century. It was widely distributed in the Caucasus in the XI-XII centuries. There were no traces of carved decor on the temple walls, however, several fragments with carved ornaments were found during the excavation, including the fragments with ornaments found in the existing building’s walls cladding. The found cladding block was with individual Greek alphabet letters [9, P.14].

The South Zelenchuksky Temple is special in this group of North Caucasian temples, which, due to its peculiarities, primarily, in deviations in size and proportions with respect to the established type, was put by the researchers either at the beginning or at the end of the “Cross-in-square” temples’ shaping process in the North Caucasus [7, 10, 2]. The features of the Southern Temple are: the latitude of the construction of the main room for prayer; the rectangular shape of the domed square and the associated elliptical shape of the drum; gable cover and lack of emphasis on the arms of the cross, which brings the building closer to the basilica; the nature of the masonry, indicating the presence of two construction periods; the plinfa absence and the poor quality of the solution, the central window orientation in the middle apse to the gorge axis and its deviation from the axis of the temple. Among the features noteworthy is the temple openings’ processing. Above the western entrance there is a completely machined semicircular lintel similar to that made over the window of the Narshkaya Church (North Ossetia). Some semicircular windows in the drum and on the facades received this form also thanks to the integral lintels with shoulders, similar to those used in Ingush towers and crypts. A number of windows are generally laid out in the technique of false arch and has the form of slots with lancet completion. Perhaps in this temple we see traces of the missionaries’ activities at the very first stage of the Alanya Christianization (905–914), when the Christian temple buildings had not become the state policy yet, and the first objects had been built by the missionaries.

In addition to the land route from Constantinople to Abkhazia through Trebizond, there was also a sea route, which was followed by Bishop Theodore at the beginning of the 13th century. [5]. This path existed before; it was described by Konstantin Bagryanorodny in the 9th century [6, p. 47]. This is the way from Constantinople to Kherson (Khersones), then to the Bosphorus (Kerch), then either by sea to Abkhazia (Pitinsut
or Anakopia), or to Tamatarha and further along the foothills to Alanya. Thus, the temple architecture samples from Chersonesos and Bosporus with missionaries could penetrate into Abkhazia and Alania. This coincidence is suggested by the coincidence of the external dimensions and the domed squares of the St. John Baptist Church in Kerch and the Shoanin Church. However, in general, even the planning compositional schemes of these two temples are very different, not to mention the external forms. Many scholars of the Shoanin Temple date back to the 10th-11th centuries. The question of its analogues was raised by V.A. Kuznetsov and L.A. Perfilieva, who come to the conclusion that the Shoaninsky temple is in close typological relationship with the Northern Zelenchuksky temple [7, P. 67; 10, P. 200-205]. However, square domed pillars are also present in the Kherson temples No. 2 and No. 9. The volume composition of the Shoaninsky temple differs from the Northern Zelenchukskyy temple’s composition - the side naves are not distinguished in height, in addition, the temple does not have a narthex, and the sloping one is not clearly marked in it covering the Cross-in-square side cells. The temple is outside a solid rectangular volume with side porticoes. Porticos are not similar to the Northern Zelenchuksky temple - they are closed. However, open lunettes arranged above the entrances to the porticoes above the lintels made of solid stone are similar to those that we see in the Northern and Middle churches of the Lower Arkhyz hillfort. But their shape, clearly visible in the photo of 1867, was not horseshoe-shaped, as it is now restored - it had a more complex shape, which again gives the originality to the temple. A feature of the Shoanin temple is also its faceted dome, decorated with an arcature belt, which brings it closer to the Trebizond temples.

**Summary**

The “Cross-in-square” type cross-domed temples architecture formation features in the Northern Black Sea Region and the North Caucasus — the choice and widespread use of a particular type of pattern, the use of copying its layout scheme principle, imitation of volumetric-spatial composition, the use of a similar building module — indicate a significant influence local government on the temple construction processes during this period. However, the variety of a certain compositional type sample external forms’ interpretations precludes the regional “school” formation question. It can only be a matter of multiple influences on the process of this type temples architecture formation in the designated regions. The multiplicity of influences was due to a number of factors: the location of the regions in the places of passage of the most important trade routes, the strengthening of the state entities during this period, united by a common Christian culture, military and economic unions, the leading role of the customer - the head of state, the existing practice of creating the interstate construction cooperatives and involving the local craftsmen. In this case, the concept of the sample should be divided as a spatial-planning scheme, and as a spatial-spatial composition. The source of the spatial-planning scheme could be one, and in the spatial-spatial compositions manifested multiple influences.

Regarding the age determination of the “Cross-in-square” type temples in the region under consideration, on the analysis basis, the author had the following opinion: in the North Caucasus, the Northern Zelenchuk temple refers to the end of the 10th century, the South Zelenchuk temple - to the middle of the 10th century, the Shoaninsky temple on the river Teberde (Karachay-Cherkessia) – to the XI-XII centuries; the temple in the village Loo – to the XI century, Church of the Blessed Virgin Mary in the city of Tmutarakan (Taman), Krasnodar Territory – to the X century. In Abkhazia there is a temple on the Bzyb river of the 9th century, in the village of Lykhny – of the 11th century, Alahadzy – of the 10th century, Simon Kananita in Anakopia (Novy Afon settlement) – of the X century; in Crimea – the temples No. 2, 4, 9 in Khersones (Sevastopol) – of the IX century, the Church of St. John the Baptist in Bospor (city of Kerch) – of the IX century, Crimea, a temple near the city of Sudak, Crimea – of the X century.

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