ON PERSISTENCY OF THE MAIN COMMUNICATION ROUTES FROM PREHISTORY UNTIL TODAY

PREHİSTORİK DÖNEMDEN GÜNÜMÜZE ANA İLETİŞİM YOLLARININ SÜREKLİLİĞİ ÜZERİNE

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ABSTRACT

The present study examines the persistency of routes for the main communications in the territory around the Iznik Lake (Ascania Lacus) in a diachronic perspective: from prehistory until today. The whole problem is approached on two levels: whereas the micro-regional one targets the eastern shores of the Iznik Lake, the macro-regional one examines the entire shoreline and its interconnectivity with the main centres situated across the mountain ridges in the North and South. Based on the spatio-temporal analysis of the settlement patterns, ancient authors, as well as remnants of roads and/or finds connected with their existence, such as milestones and bridges, the most feasible routes of the main roads in selected periods are estimated. The Least Cost Path Analysis is also used when appropriate, especially for establishing the courses of the mountain routes. The results of the two approaches are compared, and the observable patterns discussed. Principally, one can state a high persistency for the routes, all the way from the Early Bronze Age till the modern times.

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ÖZET

Elimizdeki araştırman, İznik Gölü (Ascania Lacus) çevresindeki yolların sürekliliğini ana iletişim yöntemi olarak, art zamanlı bir perspektif içinde prehistorik dönemden günümüze ele almaktadır. Tüm probleme iki seviyede yaklaşılmıştır. Mikro bölgesel anlamda İznik Gölü'nün doğu kıyıları ele alınırken, makro bölgesel yönden de tüm kıyı hattı, Kuzey ve Güney dağ yamaçlarındaki merkezler ile birlikte ele alınarak incelenir. Yerleşim modelleri, antik yazarlar yanında mil taşları ve köprüler ve/veya bunların varlığına işaret eden yolların kalıntıları ile seçilmiş olan dönemlerin mekan-zamansal analizi yapılmıştır. Bu şekilde yolların en olası rotaları belirlenmiştir. The Least Coast Path Analysis yöntemi gerektiğinde, özellikle de dağ yollarının rotalarını belirlemede kullanılmıştır. iki yaklaşım da karşılaştırılmış ve gözlemlenebilen modeller tartışılmıştır. Esasen, yolların yüksek sürekliliği, Erken Tunç Çağ'ından günümüze uzanan süreç içinde gözlemlenebilir.

INTRODUCTION

The study examines the most feasible routes of main communications in the antiquity and their possible persistency from prehistory until today, using a case study from the vicinity of the Lake Iznik. The initial idea has been evoked by the universally accepted theory that the Roman roads depended upon their Persian and Hellenistic predecessors. The assertion is based on the description of the Persian 'Royal road' route by Herodotus[1] which in his words explicitly coincides with the route of the Roman road[2]. Moreover, based on the distribution of settlements along the 'Royal road', its route clearly predates the Persian Empire and very likely existed since the 2nd mill BC[3].

However, is it possible that the persistency of the 'Royal road' route is solely a coincidence and not an overall tendency? The present study focuses on validation of the theory within two-scales approach carried out in the area of Bithynia, more specifically in the region of the Iznik Lake. The micro-regional case study is situated on the eastern shores of the lake and encompasses a section of a supra-regional road, generally known under the name 'Pilgrim road'[4]. Due to favourable living conditions, the area has been inhabited since the prehistory and thus offers an ideal material for the case study. The selected macro-region primarily examines persistency of regional roads within the entire shoreline of the Iznik Lake and in the West it reaches as far as the Marmara Sea.

The present study tends to answer two questions stemming from the previous postulations. Firstly, 'How can we date the oldest routes, which were later on taken up and turned into 'real roads' by paving[5] and other engineering works during the Roman Empire?' and secondly, 'Are the modern roads still following the initial routes, or has their course changed, and if so, how?'

DATA SOURCES

The study brings together all kinds of data useful for the reconstruction of communication routes. Principally, the sources concern two main types of evidence: The first type consists of archaeologically proven facts, such as spatial distribution of settlements with dating based on material culture and geographic allocation of road remnants, both direct and circumstantial, i.e. bridges or epigraphic evidence on milestones. The second type of evidence stems from ancient historiographical sources, as well as Itineraria[6], describing individual road stations. The specific sources differ period by period, eventually road by road, and are described in more detail within the relevant subchapters.

Concerning the prehistoric routes there is the implicit lack of any written sources or actual road remains and the suggested model is therefore based solely on the geographic position of the known sites, in most cases tell settlements. Of crucial importance is also the date of the habitation strata at any of the sites in the region. Some of the sites are excavated and published to various degree, others are known from surveys only[7]. The dates for the pre-bronze age periods were taken from more recent literature[8], the EBA dates from the TAY Database, the MBA and LBA dates were postulated on typological bases by PP (in absence of better anchoring for the region) and are used here for the first time[9].

Geographic precision of analysed data differs depending upon the scale. On one hand, the micro-region was surveyed by the Iznik Survey Project (henceforth ISP)[10] in 2015 and geographic position of all the discussed settlements and bridges was rectified in the terrain. On the other hand, the data for the macro-region comes either from the original publications or from the Tübinger Atlas des Vorderen Orients (B II 14)[11], and the Barrington Atlas of the Greek and Roman World[12] and their precision is therefore not as accurate as one would wish. However,

[1] Herodotus 5, 52.

[2] On the discussion of 'Royal road' see for example Ramsay 1962, 29-35 and French 1998.

[3] How/Wells 1957, 21-22; for the prehistoric periods the study complements the already existing studies on the communications routes and extends the region somewhat northwards (Barjamovic 2011; Massa 2016).

[4] Although the name clearly points to the utilization of the road during the Late Roman/Early Byzantine period, we use it as a general term, as there is lack of any other name.

[5] Interestingly, the first document to be possibly interpreted as indication of road paving is found on a milestone from Via Sebaste dated not earlier than 6 BC (French 1997: 182). We may thus assume that for the first 120 years of the Roman presence in Asia Minor, the roads were tracks only, with no pavement. This observation further supports the theory that the Roman roads in the first place simply followed their Hellenistic predecessors.

[6] For 'Pilgrim road' see Tabula Peutingeriana (Miller 1916: 658), Itinerarium Antonini (Cuntz 1929: 20) and Itinerarium Burdigalense (Cuntz 1929: 92); deviations in distances between the single road stations compared in detail for example by Rennell 1831: 179-190 or by Şahin 1981: 6.

[7] Mellaart 1955; French 1967; Pavúk 2015; TAY Project Database (accessible at http://www.tayproject.org/).

[8] The aim of the paper is on the GIS analysis, so we refer only to the more general works: Düring 2011; Efe 1988; Rosenstock 2009; Schoop 2005; Seeher 1987.

[9] Pavúk 2014; Pavúk 2015.

[10] For detailed report concerning results of the project see Weissova/Altin (in print).

[11] Kull 1991. Kindly digitized by Peter Jablonka.

[12] Talbert 2000: 52; commentaries compiled by Foss 1997: 785-795.

comparison with the verified data for the micro-region shows that the error should not exceed 3km in the macro-region either. As we cannot rely on the precise position of the settlements, we use Least Cost Path Analysis within the macro-region for establishing the most cost-profiting routes of possible roads.

To avoid any confusion caused by multiple names indicating one place, especially talking about urban settlements inhabited since the Hellenistic period until now, we use modern names with preferably Roman name in brackets when first mentioned, if not stated otherwise. Within geographical terms we incline to the same system, giving the ancient name in brackets if known.

LEAST COST PATH ANALYSIS (henceforth LCPA)

The cost surface analysis we performed in GRASS GIS[13] is solely determined by the slope of the land and thus might be characterised as an anisotropic one. Yet, we excluded the Marmara Sea and the Iznik Lake from the principal raster as utterly impossible to be crossed. The ASTER digital elevation model[14] was recalculated in order to produce a relative cost raster[15], which we further used as a basis for the route equations between the nodal points, calculating the accumulated cost raster and following the drain between each pair of settlements we expected to be inter-connected.

MICRO-REGION (map Fig. 1)

The analysed territory is situated on the eastern shore of the Iznik Lake and encompasses fertile lowlands and foothills of the mountain ridges, naturally protecting the area. The northern and north-eastern borders are formed by the Samanli Mountains, the southern border by the Katirli Mountains. To the East, the territory opens up to a plain. Two rivers dominate the area: the Kiran Dere and the Karasu Dere (Pharmutios). Both originate in the Samanli Mountains and empty into the Iznik Lake.

ROUTES IN PREHISTORY

The territory discussed here has been intermittently settled since the Neolithic period, but a clear occupational continuity can be postulated for the local periods EBA II till LBA I, covering thus roughly one-thousand years[16]. The specific micro-region encompasses four tell settlements. Two of them are situated at the shore of the Iznik Lake, Çakirca in the North, right by the estuary of Kiran Dere, and Yügücek in the South, by the estuary of the Karadin Dere. The remaining two tells, Üyücek and Karadin, are situated further East, both by the Karadin Dere[17].

The first phase of three of the settlement tells congruently dates back to the EBA II. Therefore, we may suggest that the first inter-connectivity of the tells, and respective routes, appeared during the EBA II. The route's plausible reconstruction coincides with the Roman road and thus only the settlement tells are depicted on the map.

ROUTES/ROADS FROM ANTIQUITY UNTIL TODAY

The first habitation on the eastern shore of the Iznik Lake preceding the modern town of Iznik is dated to the 4th Century BC. It is connected with the Greek settlers who gave it the name Helikoré[18]. Yet, most likely, we cannot speak about the existence of a polis[19] in the territory until BC 301 when the settlement was re-established by Lysimachos under the name Nicaea[20]. Apart from several destructions, re-foundations and re-names[21], we can consider the place an important urban centre or even a transportation node since the Hellenistic period onwards.

The roads themselves radiate from Iznik towards all the four cardinal points, presumably likewise since the Hellenistic period. Northwards, across the Samanli Mountains to Izmit (Nicomedia); westwards to Gemlik (Kios ad Mare)[22] situated on the shores of the Marmara Sea; southwards towards village Hayriye (considered to be the most probable allocation of Otroia)[23]; and finally eastwards to the rather extensive hinterland of Iznik, establishing thus an artery interconnecting north-western territories with south-eastern Asia Minor.

As the distribution of urban settlement in the territory has not undergone any dramatic changes since the

[13] Free software, possible to be downloaded at https://grass.osgeo.org/download/.

[14] The digital elevation model is smoothed by 9, as it appeared to be the most suitable for the quality of the raster available for the studied macro-region.

[15] Using an equation 'tan (Slope) / tan (1)' published by Bell and Lock 2000: 89.

[16] French 1967; Pavúk 2015; TAY Project Database.

[17] French 1967: 49-100.

[18] Merkelbach 1987: 10; Şahin 1987: 1.

[19] Avram 2004: 976.

[20] Strabo XII 4, 7.

[21] The history of the town based on historio-graphical sources and inscriptions is described in detail by Şahin 1987: 1-22.

[22] For detailed study concerning Kios see Corsten 1985.

[23] Şahin 1987: 134-135, T 60 a-b.

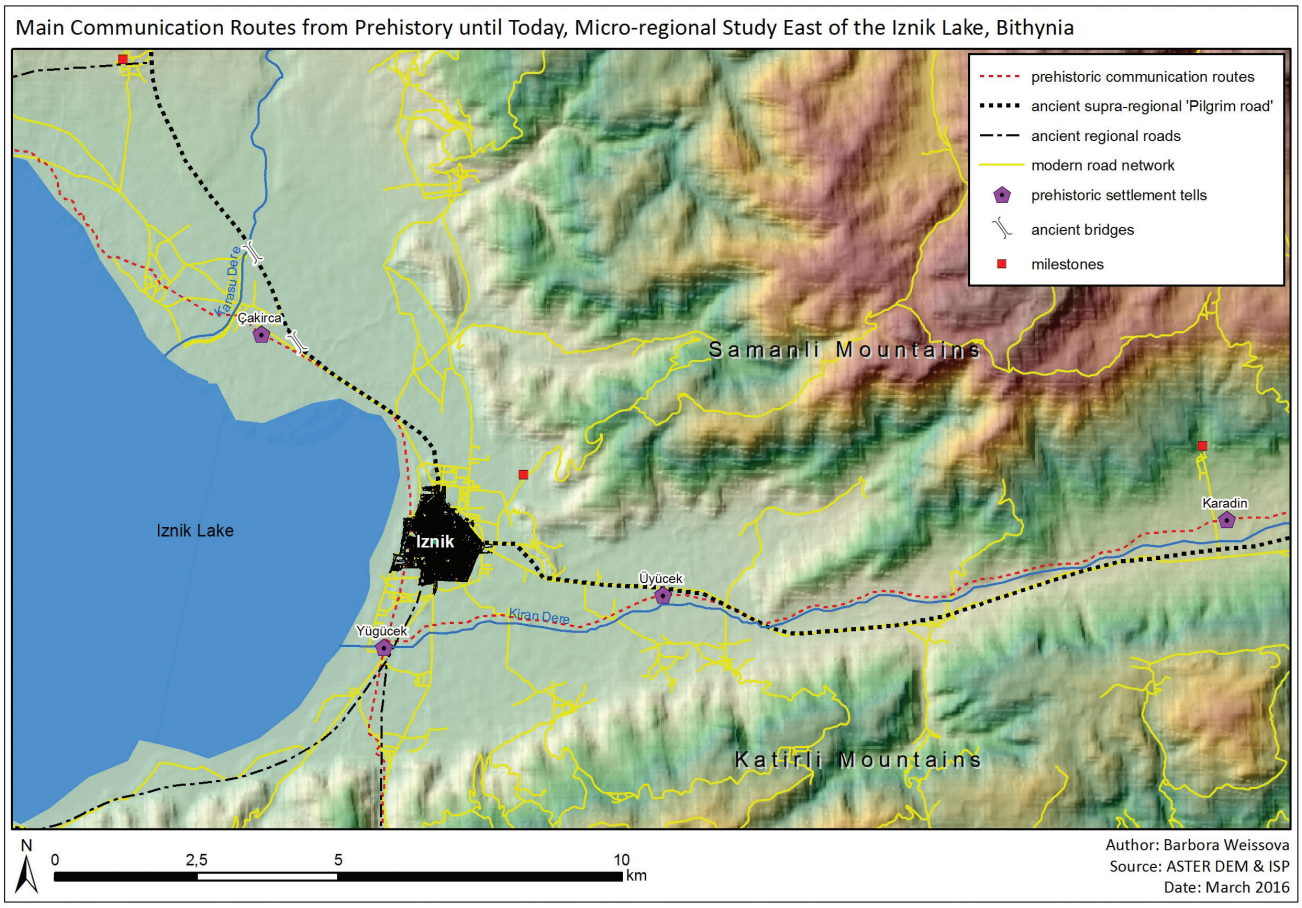

Figure 1: Main Communication Routes from Prehistory until Today, Micro-regional Study East of the Iznik Lake, Bithynia / *Prehistorik Dönemden Günümüze Ana iletişim Yolları, İznik Gölü'nün Doğusundan Mikrobölgesel Çalışma, Bithynia*

Hellenistic period, we may expect the roads to follow the same courses as well. The changes in the appearance of the roads, as well as minor alterations in their routes within the micro-region, are described below. An extended picture encompassing all the above mentioned roads is introduced in the macro-regional study.

The earliest archaeological evidence mentioning any road-building activity in the analysed micro-region (as well as in the entire Bithynia) is connected with the reign of Caesar Nero (AD 57/58). An inscription cut into a rock-face beside the road[24], leading from Iznik to its seaport Gemlik, or even as far as Mudanya (Apamea Myrlea)[25], gives an account of the reparation/reconstruction works conducted on its course[26]. This ancient route is repeated also in the course of the modern road connecting Iznik with Gemlik.

The road coming from the North and leading to the East, the so called 'Pilgrim road', increased considerably in importance especially in the Late Roman/Early Byzantine period, being used by the pilgrims going to Jerusalem[27]. Out of three milestones found within the territory, two can be dated and both coincide with the time of an increased importance of the road; the earlier one to the middle of the 3rd Century (238–244 AD)[28], and the later one to the turn of the 3rd and 4th Century (293–305 AD)[29].

As for the exact course of the road, there are several potential indications. One of them is the location of a road station, mutatio Ad Schinae[30], situated 13km East of Nicaea, directly on, as well as East, of the Karadin Tepe

[24] More accurately, the inscription was located in the territory called Sarıkaya (Texier 1862: 108-109), but it was destroyed ca. 40 years ago and thus it is no more to be found in situ (French 1980: 707).

[25] Road leading as far as Apamea Myrlea was suggested by Texier 1862, 108; confirmed on Tabula Peutingeriana (Miller 1916: 694).

[26] CIL. III – 1.346; the whole text published with commentaries by French 1980: 715.

[27] French 1981: 13.

[28] Found 2.5 km SE of Iznik in the ancient cemetery, for details see French 2013: 121-122.

[29] Found in the fields 1km South of Karadin village, confirms the existence of the road station Ad Schinae supposed to be situated 13km East of Nicaea (acc. to Itinerarium Burdigalense); for details concerning the milestone see French 2013: 122-123.

[30] Mutation Ad Schinae is listed in Tabula Peutingeriana (Miller 1916: 657) and Itinerarium Burdigalense (Cuntz 1929: 92) mentioning the distance between Nicaea and Ad Schinae to be eight Roman miles, i.e. 13km. The identification with the place confirmed by French 1981: 29 and Şahin1981: 10; Şahin1987: 145.

situated 1km South of village Karadin[31]. Yet the precise route of the road is rather marked by two ancient bridges, Kuru Köprü[32] and Karasu Deresi Köprüsü[33]. Both are still to be found, standing in the fields north-west of Nicaea, with only 1.77km distance between them, and currently not arching over any actual river. Because they have been rebuilt several times, their first construction phase is not clearly identifiable. Literary sources, possibly to be linked with the existence of the road, indicate problems with crossing the river. According to Strabo[34], one had to wade through the river 24 times on the way between the two settlements. Therefore, clearly, there was no bridge during the period between the 1st Century BC and the 1st Century AD. The likely construction of one of the bridges can be dated to the reign of Caesar Trajan[35], in all probability to be linked with the reparations of the entire south-eastern artery conducted during his reign[36]. Later on, Procopius[37] describes construction of a new bridge during the reign of Caesar Justinian in the place of the old and entirely destroyed one. Procopius' description of a monumental construction suggests identification with the Karasu Deresi Köprüsü as more feasible. Another literary documented renovation of the bridge is dated as late as the 13th Century AD[38]. Thus, we may postulate the exact course of the Roman road was still followed during the Late Byzantine period. The course of the modern road, however, underwent some changes. The utmost shift of the road is to be observed North of Nicaea, most probably as a result of changes in the flow of the Karasu River as suggested by the ancient bridges. Both of the bridges are nowadays standing in the middle of fields. Karasu Deresi Köprüsü is still in use by the local dirt road leading to the fields but only to cross the dry ancient river bed. The river flow change was most probably caused by an extensive irrigation system built in the last several decades that incorporates river water and thus regulates and reduces its course.

Nevertheless, the modern road coincides with the 'Pilgrim road' with a maximal deviation below 1km.

SUMMARY OF THE MICRO-REGION

The micro-regional study shows the persistency of a section of a route coinciding with the 'Pilgrim road' in the broad time span from EBA II until today. The character of the communication route naturally varied during the discussed periods; from unpaved pathway in prehistory, through supra-regional Roman road using two large bridges within less than 2km, to present-day modern main road. Nevertheless, the maximal deviation in its course does not exceed 1km within the broad time span covering at the very least four Millennia.

Persistency and possible deviations in the courses of the regional roads leading West and South are discussed in detail within the macro-regional study, as the evidence connected with their existence extends beyond the extent of the micro-region.

MACRO-REGION (map Fig. 2)

The territory extends the micro-region to the West along the entire shoreline of the Iznik Lake and all the way to the Marmara Sea coast. The northern and southern borders are created by the Samanli and Katirli Mountains respectively, leaving only a narrow stripe of land between the lake and their foothills for the disposal of the present analysis. The western shores open into a fertile flatland, not unlike the situation in the eastern part. The flatland is further westwards connected with the sea through a valley dominated by the Garsak Dere (Ascanios), draining waters from the Iznik Lake.

ROUTES IN PREHISTORY

The prehistoric habitation sites identified in the macro-region cumulate in the mentioned fertile flatland West of the lake (Fig. 2). More specifically, there are three tell settlements. The earliest occupation of Ilipinar tepe dates back to Late Neolithic but continues till the beginning of the MBA, followed by Hacilartepe covering the whole EBA and Yeniköy starting only in the EBA II. None of the sites survives past the local MBA, it seems. However, the period when all of the tells are actively in use is the EBA II, which corresponds well with the evidence on the eastern shore of the lake. We may thus suggest the first communication inter-connecting the settlements to be dated accordingly. Based on the spatial distribution of the settlement tells and LCPA, we reconstruct the communication route leading along the northern shores and reaching most probably as far as the Marmara Sea.

The existence of a communication route leading South across the Katirli Mountains is also suggested. Reconstruction of its course is based on the geographic position of Köprühisar tepe situated South of the

[31] For detailed description of the scatter possible to be connected with the road station see Weissova/Altin (in print).
[32] Yalman 2000: 102.
[33] For current state and description of the bridge see Ermiş 2009:246-248; Weissova/Altin (in print).
[34] Strabo XIII 1, 10.
[35] Şahin 1987: 50.
[36] French 1980: 709.
[37] Procopius Buildings V, 3, 4-5.
[38] Lefort 1995: 214-215.

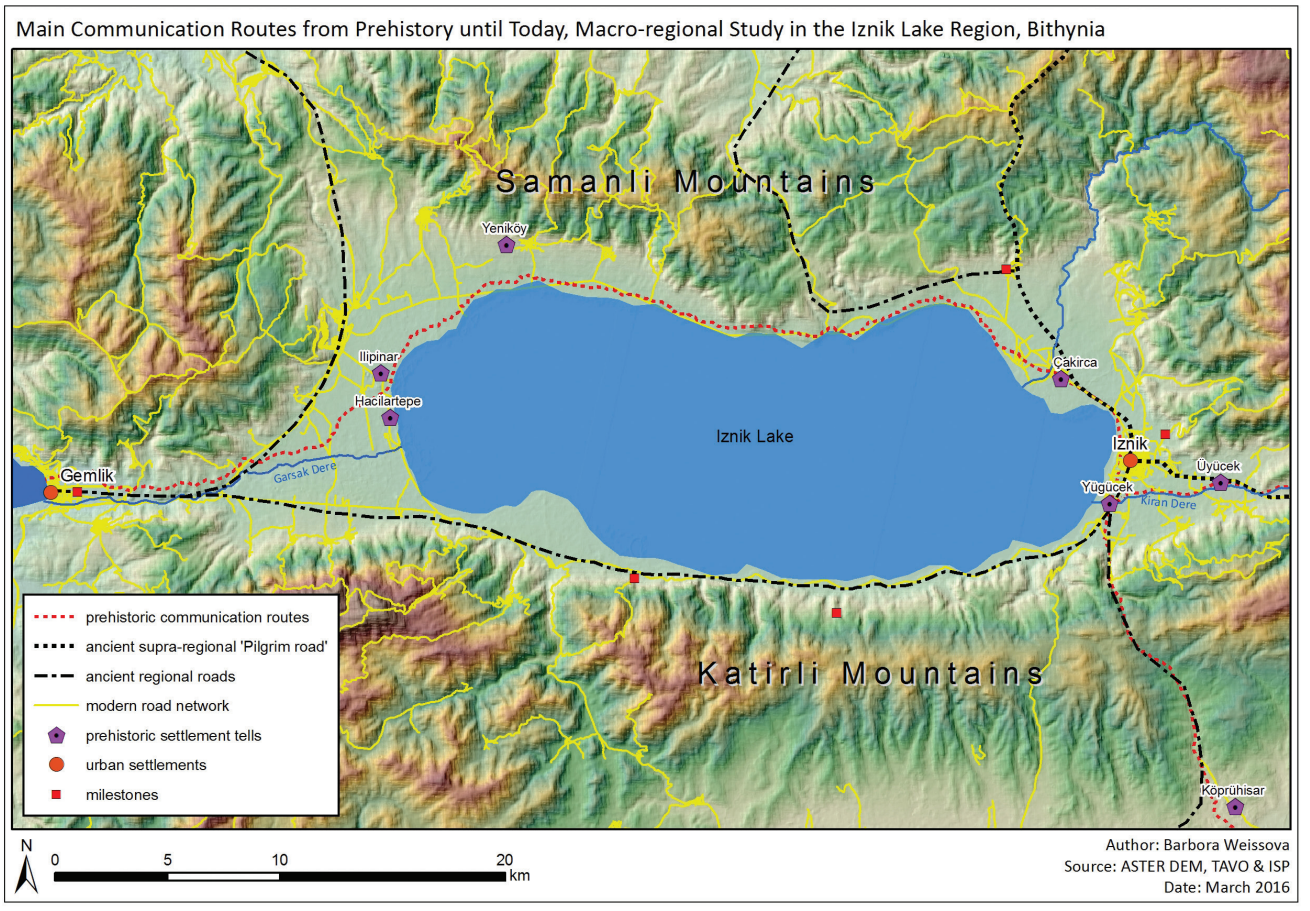

Figure 2: Main Communication Routes from Prehistory until Today, Macro-regional Study in the Iznik Lake Region, Bithynia / *Prehistorik Dönemden Günümüze Ana İletişim Yolları, İznik Gölü Bölgesinde Makrobölgesel Çalışma, Bithynia*

mountain ridge. The existence and data of the communication route is again confirmed by striking number of sites situated further along southern slopes of the mountains. As most of the settlements were in use during the EBA II (though some of them also before and/or after), we date the first phase of the road accordingly, i.e. to the EBA II.

ROUTES/ROADS FROM ANTIQUITY UNTIL TODAY

As mentioned above in the micro-regional study, the territory situated on the eastern shores of the Iznik Lake was connected with the surroundings by communications leading in all four cardinal directions (Fig. 1). The sections of supra-regional 'Pilgrim road' covering northern and eastern ways have been discussed in detail, yet the regional roads leading South, West and North were only outlined and are examined below.

Northern shores of the Iznik Lake

The route leading along the northern shores of the lake, indicated as the main communication route during the prehistoric period, has been most probably used since the Hellenistic period as a local road, connecting Nicaea with its fertile flatlands in the West. The assumption is sustained by numerous inscriptions concerning possessions of fields and existence of rural settlements, found in its vicinity, but lack of urban settlements, milestones or other archaeological evidence suggesting existence of a regional road[39]. We may expect the local road led as far as the Garsak Dere, and joined the regional road going along the southern shore of the lake (see below in relevant sub-chapter), i.e. as far as Gemlik. Certain sections of the local road underwent changes within their character as early as the Roman period. Namely, the local communication route was influenced by two regional roads partially coinciding with its course. Both of the roads lead in a north-south direction across the Samanli Mountains, one from the western side of the lake and the other one from the eastern one[40]. The western road led from Gemlik to Çiftlikköy (Pylai)[41] situated East of Yalova, the eastern route from Iznik through Boyalica (village situated on the Iznik Lake shore) to Karamürsel (Prainetos) and

[39] Şahin 1981: 3.

[40] Both are depicted on Tabula Peutingeriana (Miller 1916: map 693-694).

[41] Corsten 1985: 13.

Hersek (Helenopolis)[42]. The section remaining between the two regional roads most probably retained its local character. The modern course of the road likely coincides with the ancient one, as there is not much space left for deviations between the lake and slopes of the mountains. Yet, as there is no more precise data concerning the location of the ancient course, we do not estimate the possible deviations for this road and let its course follow the prehistoric route based on LCPA.

Southern shores of the Iznik Lake

The establishment of the road connecting Iznik with its seaport Gemlik dates back to the 4th century BC, when the Greek colonisers appeared in the territory and founded a settlement on the eastern shore of the Iznik Lake[43]. However, the first archaeological evidence is the rock cut inscription dated to the time of Nero (see above). Out of two milestones identified along the course of the road, one was most probably found in situ, 16km West of Iznik, in the agriculture field, ca. 300m South of the present road[44]. Compared to the course of the modern road, analogically to the road leading along the northern shore, there is not much space left for any greater deviations between the slopes of the mountains and the lake. As suggested by the milestone, the deviation might reach about 300m.

The course of the route leading to the South across the Katirli Mountains is discussed only briefly here, as it lies already outside the analysed territory. Based on the settlement distribution, its existence might be suggested since the Hellenistic period[45]. During the Roman period, the road gained in importance, as it became an artery leading through the road station Agrilion and further southeast to Dorylaion[46]. This phase of the road is confirmed by one milestone found between Nicaea and Yenishehir and dated to AD 236-238, however the original find spot is unfortunately unknown[47].

[42] The importance of the eastern road increased considerably during the reign of Justinian who, in order to avoid the long way along the Gulf of Nicomedia, ordered the change of cursus publicus; instead of walking along the shore using 'Pilgrim road', the main communication route was based on boats going from Constantinople to seaport in Helenopolis and then using the road going directly to Nicaea (Procopius, Historia Arcana [Anecdota]30, 8-9); Şahin 1981: 7-9.

[43] Merkelbach 1987: 10.

[44] French 2013: 71-72.

[45] As the identification of Hellenistic Otroia with modern village Hayriye is rather questionable, the LCPA uses as a nodal point road station Agrilion.

[46] Miller 1916: 687-688.; Şahin 1981: 20.

[47] French 2013: 68.

SUMMARY OF THE MACRO-REGION

The most cost-profitable route based on the spatial distribution of prehistoric settlement tells and LCPA leads along the northern shores of the Iznik Lake, branches off at the Garsak Dere and continues along its right bank as far as the Marmara Sea. It dates back to the EBA II and thus creates a natural continuation of the route leading along the eastern shore of the lake.

During antiquity the road was of rather local character, connecting rural settlements situated in the fertile fields with urban settlements in their vicinity, i.e. Iznik and Gemlik[48]. The same communication route has been used until the present time, yet the deviations in the course are hardly to be assessed.

Since the 4th Century BC, the route along the southern shores of the lake gains in importance in comparison to the one leading in the North and turns into a road of regional significance, connecting Iznik with the seaport in Gemlik. Collating the present course of the road with an ancient one estimated by a milestone found in situ shows the deviation of the road does not exceed 300m.

The road leading southwards and crossing the Katirli Mountains might be dated to the EBA II and its utilisation is evidenced from then onwards. As we lack more precise information about the course of the road, it is estimated based on LCPA with no deviations determined.

CONCLUSIONS

This case study shows a high degree of continuity in the communication routes within the studied area. It sustains the tendency observable in case of the 'Royal road'; origins of the Roman road system are not only traceable back during the Persian period, but their origins date back to prehistory. LCPA based on the distribution of settlement patterns indicates routes coinciding with the Roman roads that exist as early as the EBA, remarkably, continue till today.

The study area was approached on two scales. The micro-region along the eastern shores of the Lake Iznik was studied in more depth, especially concerning the rectified location of the individual features discussed. The courses of roads were thus estimated based on the geographic positions of the settlements as well as other archaeological evidence, namely remains of two

[48] For detailed information about the rural settlements on the western shore see Şahin 1981: 3-4.

ancient bridges. The macro-regional study expanded the territory to the West, encompassing the entire shoreline of the Iznik Lake and reaching the Marmara Sea shore. The study was based solely upon published data, yet, as estimated upon the comparison within the micro-region presented, the error in geographic positions of analysed settlements does not overreach 3km. As we cannot rely on the precise geographic position of the settlements, the roads were estimated based on LCPA, estimating the most profitable cost-of-passage routes in the territory leading between the well rectified nodes.

Within the whole study only one of the roads, that which leads along the southern shore of the lake, lacks the evidence in prehistory. All other routes in the Iznik Lake region are already traced as early the EBA II. However, the initial data is more a result of the nature of the evidence. Namely, it is difficult to postulate, how 'prehistoric' the road system actually is in reality. The number of known pre-Bronze Age sites in the area is not dense enough to be more specific about the routes, but starting from the EBA II, or more generally from the first half of the 3rd Mill. BC, their quantity and spatial distribution enable us to make statements that are more than a speculation. Continuity during prehistory also plays a role in our scenario. Most of the sites show continuity for certainly a millennium and maybe even more. The problem with the 2nd Millennium BC is that we have a rather unclear idea of what the ceramic typology of the developed section part of the LBA consisted of, and we tend to recognise the MBA and the Earlier LBA in the sherd material from surveys. So whereas the fate of the Iznik Lake surroundings in the developed LBA is unclear, the continuity from the EBA II till the LBA I is beyond doubt and would certainly facilitate development of standardised communication routes.

Because of missing clear occupation from the final Bronze Age and most of the Early Iron Age in the area, it is hard to postulate a clear-cut habitual continuity for the routes identified. However, the fact that the prehistoric evidence matches with the Persian and Roman one cannot be a complete coincidence. We therefore suggest as possible assumption that the actual course for the communication routes in the Roman period is based more on a natural terrain-accessibility rather than memories of where the Persian royal roads once led.

Based on the present results, we may state that the estimated deviations between the prehistoric routes and modern roads do not overreach 1 km within the analysed macro-region. However, the study brings the first estimations only and needs to be verified in the scope of an enlarged area. Namely, the areas situated across the Katirli and the Samanli Mountains offer an ideal expansion for possible future studies.

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