Shapes of Tursiannotko History

Sarah Viliod Martins . Master´s Thesis . Tampere University of Technology . 2018

Tampere University of Technology

School of Architecture

Master´s Thesis

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Shapes of Tursiannotko History

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Abstract

Archaeological excavations in Tursiannotko region - located in Pikkalankylä, Pirkkala - show evidence that there were people living in that area since the late Iron Age. The findings give us some information on how people could have lived there in the previous centuries. Recently researchers demonstrated interest in seeing how Tursiannotko village could have looked like during the Iron Age and Middle Ages.

Architects can visually describe how spaces were planned, how buildings were constructed and give shape to non-existing buildings. The idea of this project started in the summer of 2016 when researchers working on Tursiannotko and TUT School of Architecture together proposed a course in which architecture students could work on a virtual model of the village. The result would take part at Vapriikki Museum exhibition about Tursiannotko´s Viking Age in the summer of 2017.

This master´s thesis work is related to the exhibition. The main results of this project are two virtual models of Tursiannotko – one depicting the village in the Iron Age and the other in the Middle Ages – presented in a video at Vapriikki Museum exhibition *Birckala 1017* from June 2017 to May 2019.

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1. Introduction

Recent archaeological research in Tursiannotko – Pirkkala, Finland – shows evidence that this area has been occupied for many centuries. The region is relevant to archaeology and history research due to the well-preserved evidence that date since the late Iron Age[1] and the assumption that there existed a market place until the 13th century. The new findings are helping archaeologists and historians to understand how people lived in different periods in that area, which is similar to others in Finland.

Archaeology reveals historical pieces that remain[2]. The evidence from the past involve the built-environment and architects can contribute in analyzing or visually describing how spaces (e.g. a building, a village or a city) were built and experienced during a specific time.

Buildings from the Iron Age or Middle Ages no longer exist in Tursiannotko area and there is not exact information on how their architecture was. From the excavations findings (objects and a few parts of building structures), history studies and historical maps, it is possible to assume how the local architecture looked like in different historical periods.

The current interest on Tursiannotko region also involves an exhibition about its Iron Age and Middle Ages at Vapriikki Museum, in Tampere, called Birckala 1017. Their interest was to present to the public how Tursiannotko village probably looked like during the Iron Age and Middle Ages.

This master´s thesis project aimed to give shape to Tursiannotko´s architecture in the Iron Age and Middle Ages periods to communicate to the museum's public characteristics of the local architectural heritage. The work also involved interdisciplinary collaboration with archaeologists and historians[3].

The study of the Finnish and Pirkkala´s historical and architectural aspects guided the virtual construction of buildings that we assumed that existed. The analysis of maps of Pirkkala region - in different decades and centuries - and Tursiannotko´s archaeology research maps were the starting point to interpret how many farms and buildings possibly existed, where the constructions could have been located and how the village could have developed along the time. The following step was the identification of what type of buildings existed and their architecture during various times in order to give shape to the constructions. In the end of the process, images and a short video were produced to be presented close to current images of the excavations area in the entrance area of the exhibition.

[1] The area´s clay soil has preserved, for example, animals' bones, pieces of jewelry and parts of wooden building structures.

[2] "(…) archaeologists and architects have identified much common ground: the demands of cultural heritage management, and the realization that "the monument" as much the landscape (or cityscape) as an individual building" (Keith Emerick, 1997).

[3] Vappriikki Museum researchers Kreetta Lesell, Marjo Meriluotto, Sami Raninen and archaeology student Nikolai Paukkonen.

The virtual models are one first idea of what Tursiannotko might have looked like. The studies on that region continue and future discoveries will maybe provide new and more precise information that might change the contents.

2. Tursiannotko and its history

2.1. Tursiannotko region

Tursiannotko, located in Pirkkala (Images 1 and 2) approximately 19 Km from the center of Tampere, is an area occupied for many centuries and recent excavation work show evidence from the Iron Age and Middle Ages. The Iron Age settlement was discovered in 1971 when archaeologists Pekka and Mirja Miettinen worked on its archaeological inventory[4]. Almost 20 years later, the research continued on the area and it is currently ongoing.

Image 1: Aerial image of Pirkkala and Tursiannotko. The yellow circle marks the archaeological excavations area, which is located near the shore Pyhäjärvi shore. Source: Google Maps

[4] Birckala 1017 exhibiton at Vapriikki Museum.

Image 2: Aerial image of Tursiannotko in Pirkkalankylä. The yellow circle marks the excavations area and the orange circle points the old church (Pirkkalan Vanha Kirkko) location. Source: Google Maps.

Tursiannotko is a rural region and presents an agrarian building and architecture features[5] (Images 3 and 4). Part of the buildings is located close to the shore of lake Pyhajärvi. Forests and agricultural fields are part of the landscape. The main road (Image 5) connects the region to the center of Pirkkala and archaeologists and historians conjecture that the route might have existed since the Iron Age.

Image 3: The excavations take place in a rural area. Farm wooden constructions are part of the landscape. Picture: Sarah V. Martins

[5] "Finland is historically an agrarian nation, where agriculture and forestry have played a major role in forming the society and its identity" (Lähdesmäki, 2013; 83).

Image 4: Wooden building on the side of the road (Anian rantatie).

Picture: Sarah V. Martins

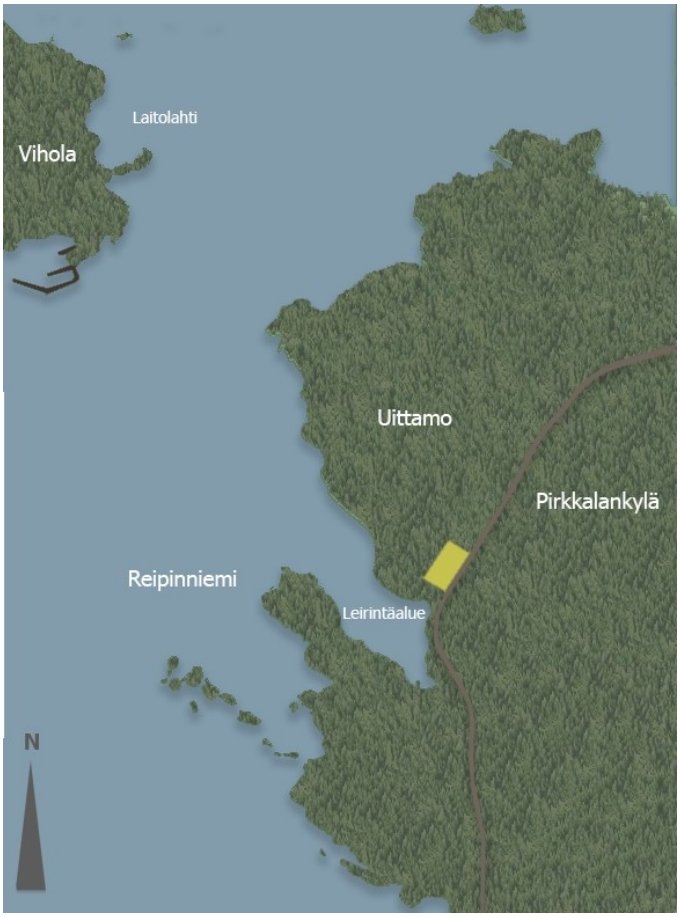


Image 5: The yellow rectangle marks the excavations area in 2016 and 2017. The road marked in brown is presented in historical maps of Pirkkala (no scale represented in this image).

2.2. History

The Finnish Iron Age period (500 BC – AD 1200) is divided in different periods[6]. The Late Iron Age is formed by the Viking Age (800-1050) and the Crusade Period (1050-1150)[7]. The Middles Ages lasted from 1200 to 1500, being part of the Swedish rule period (1200 – 1800).

The settlement in Tursiannotko probably took place in 800 BC - or latest in 900 BC[8] on the shore of Kotolahti bay on Pyhäjärvi lake. At that time, most settlements in Finland were formed near the water because fishing was one of the people´s main activities and lakes were the fastest travel routes. During the Viking Age, Finnic people – Tavastians – lived in the area.

From the Late Iron Age, this village formed by farms developed until the Middle Ages (1200-1500). During the Iron Age period, there were less farms and constructions and the fields were smaller than in in the Middle Ages. Grain cultivation and hunting were part of people´s main activities in both periods.

Historical maps or Pirkkala from the 18th (Images, 6, 7 and 8) to the beginning of 20th century (Image 9) present information on how Tursiannotko´s region village was settled[9], indicating the existing farms and fields on those periods.

Image 6: Tursiannotko map by David Hall. Year: 1768. The road is represented by a dashed line. This map was one of the references for the Middle Ages virtual model. Source: Tursiannotko: tutkimuksia hämäläiskylästä viikinkiajalta keskiajalle. Tampere: Vapriikki.

[6] Raninen, Sami; Wessman, Anna. 2014. Finland as a Part of the ´Viking World´. *Fibula, Fabula, Fact: The Viking Age in Finland*. Helsinki: Studia Fennica Historica. Pp 327-328.

[7] Vanhanen, Santeri. 2012. *Archaeobotanical study of a late Iron Age agricultural complex at Orijärvi, Eastern Finland*. Article available at: http://www.sarks.fi/fa/PDF/FA29_55.pdf

[8] Raninen, Sami. 2017. Pirkkalan Tursiannotkon ja lähiseudun asutus myöhäisrautakaudella (800-1200). *Tursiannotko: tutkimuksia hämäläiskylästä viikinkiajalta keskiajalle*. Lesell, K., Meriluoto, M. & Raninen, S. Tampere: Vapriikki. Pp.11-13.

[9] "The physical structure of the villages was determined by enclosed compounds along the service road; this type of agrarian settlement is found everywhere in the world with variations due to the climate and local building materials and technology" (Nevanlinna, 1986; 8).

Image 7: Tursiannotko map by David Hall. Year: 1796. The road is represented by dashed line.

Source: www.pirkkala-seura.fi

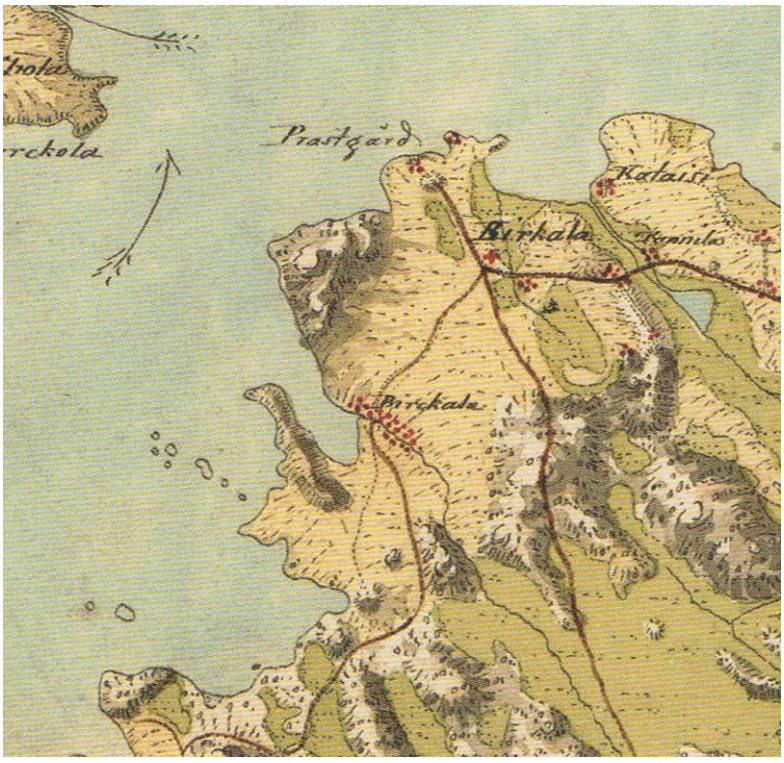


Image 8: Tursiannotko and Pirkkala map. Year: 1780. The red dots represent the properties and the roads are marked by the red lines.

Image source: *Tursiannotko: tutkimuksia hämäläiskylästä viikinkiajalta keskiajalle*. Tampere: Vapriikki.

Image 9: Pirkkala region map. Year: 1903.

Image source: www.pirkkala.fi/site/assets/files/11699/pirkka_3_iso.jpg

Water level on lake Pyhäjärvi has changed since the Iron Age (Images 10 and 11). Archaeological findings in Pirkkala region show that the level quickly decreased during the 19th century due to human activities in the region. During the Iron Age and Middle Ages, farms were located closer to the lake for easier access to water.

Image 10: Archaeologist Kreetta Lesell´s draft on map. The blue line indicates the lake shore during the late Iron Age. Archaeological findings and historical maps show that the water level was higher and possibly there was a small island near the church area – marked in green on the map.

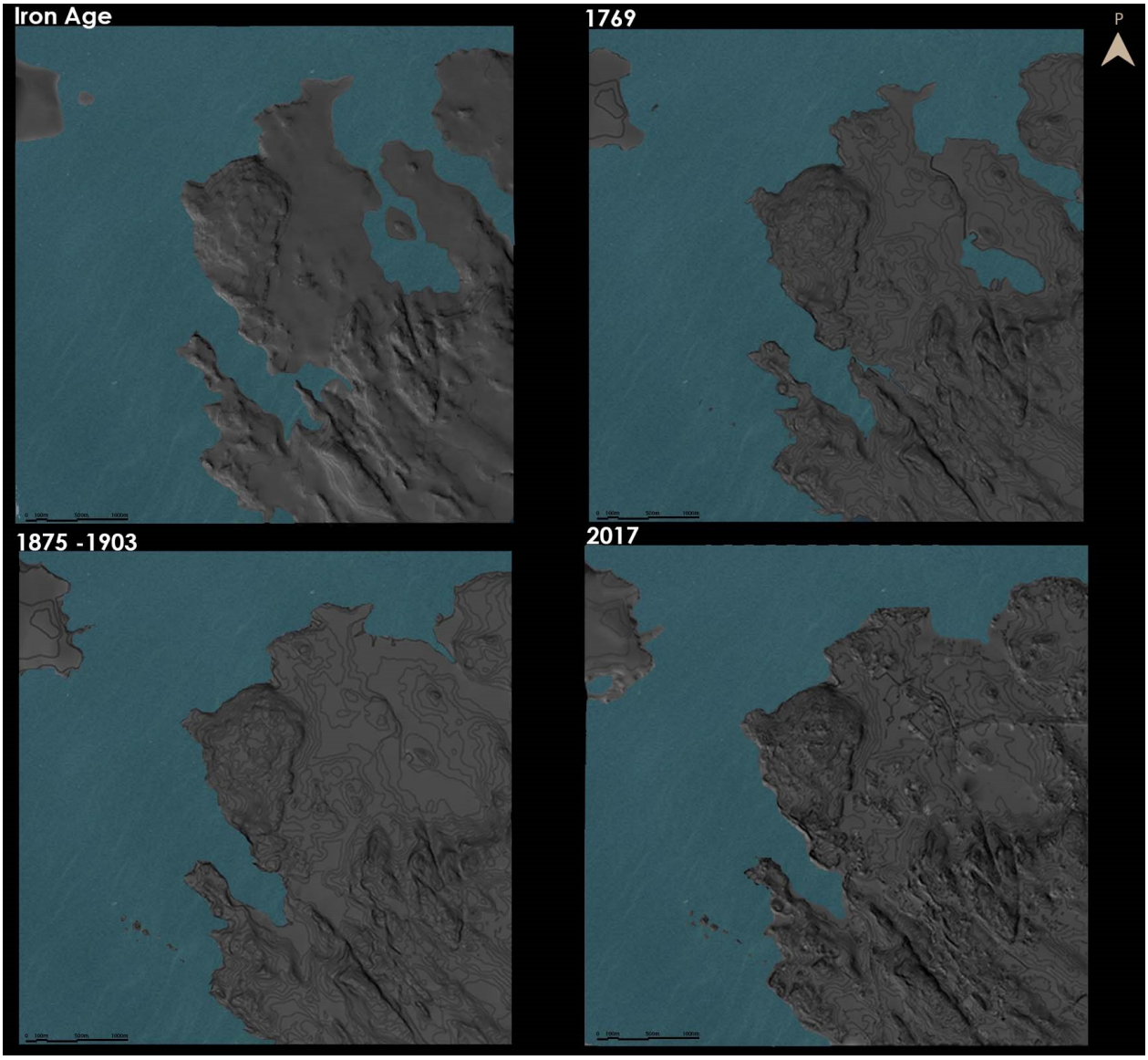


Image 11: Topography virtual models show the water level in four different periods. The models were developed in 3DS Max after analysis of historical maps.

2.3. Tursiannotko´s current excavations

This area is being studied by archaeologists and its content needs to be revealed to the people in order to inform them about their cultural heritage. The archaeological excavations occur during the warmest periods of the year (Images 12 and 13).

During Tursiannotko site visit on 29.07.2017 archaeologist Kreetta Lesell explained that objects might not be preserved for a long time in Finland due to the soil pH (acid). However, in the clay soil in Tursiannotko has preserved many pieces of evidence from the Iron Age and Middle Ages.

According to MA Ulla Lähdesmäki (Pirkanmaa Provincial Museum), "the excavations conducted there have been one of the most prominent instances of archaeological investigations in recent years in Finland"[10]. The site presents archaeological values and the work on the excavations attracted the public's attention: students had the chance to participate in the excavations in Tursiannotko in the summer of 2017, revival of the local museum and organization of exhibition on Viking Age – Birckala 1017 - by Vapriikki Museum[11].

Image 12: Excavation work in Tursiannotko next to Anian rantatie. The group of people is located close to where they found evidence of a Viking Age house. Site visit on 29.07.2017.

Picture: Sarah V. Martins.

[10] More information about the excavations in the area can be found at: https://www.e-aa.org/EAA/Navigation_Publications/TEA_content/Annual_Meeting_Reports.aspx?WebsiteKey=59c4f6fb-bee0-4278-9c2f-9529288deb09

[11] In the summer of 2016, researchers working on Tursiannotko and TUT School of Architecture together proposed a course in which architecture students could work on a virtual model of the village.

Image 13: Excavation site in Tursiannotko next to Anian rantatie.

Picture: Wesa Perttola, Helsingin yliopisto.

3. Findings in Tursiannotko

3.1. Objects

Different objects were found during the excavations in Tursiannotko in the past years. Some examples are: bone spoon, bone handle and penannular brooch needle (Images 14, 15 and 16). These pieces show facts about people´s lives in that area.

Image 14: This completely intact bone spoon was found near the remnants of a crusade-era building wall in Tursiannotko. The object is decorated with round-shaped ribbon ornaments and it is dated in the 12th century or around year 1200. Picture: Ulla Moilanen, Pirkanmaan maakuntamuseo.

Image 15: This piece of burnt bone handle was found in Tursiannotko and might have been part of a spoon. It was found in a mixed layer, so its dating will remain unclear. The type of ornamentation was common during the Viking Age in Nordic objects made of bones, wood and birchbark. Picture: Hanna-Riikka Tamminen, Pirkanmaan maakuntamuseo.

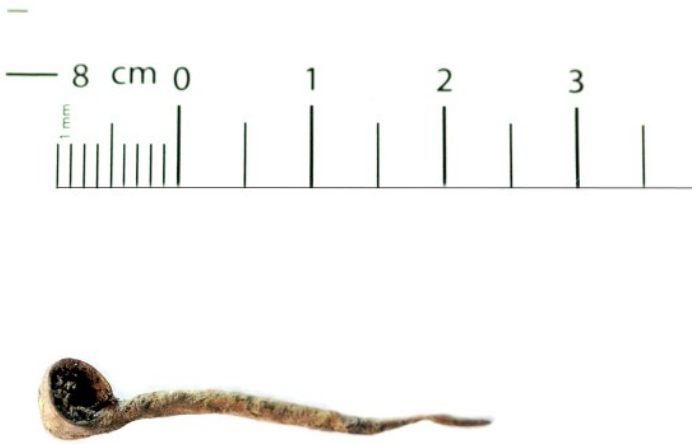


Image 16: Bronze penannular brooch needle found in July of 2017. The penannular brooch was a common piece for capes, shirts and dresses during the late Viking Age and Crusade period. It was manufactured in different locations around the Baltic Sea and in Finland. Picture: Ulla Molainen, Pirkanmaan maakuntamuseo, https://tursiannotko.fi/2017/09/01/soljen-neula/

3.2. Evidence of buildings

Wooden buildings disappeared along the past centuries and only some small parts still exist, such as the fireplaces stones, pieces of foundation / wall timbers and deteriorated wood floor, indicating the occupation in different time periods. In the case of buildings, even if the findings are small remaining parts, they are still very relevant to interpret how the village in Tursiannotko could have looked like in different periods.

In 2012, the remains of a Viking Age building and a stone structure – interpreted as the base of a smoke stove - were found in the area (Image 17). Radiocarbon dating estimated that the construction was from the 10th century and the amount of coal and soot indicate that it was probably destroyed in a fire.

Image 17: Corner of a Viking Age building, which is interpreted to be a smoke cabin. It is located next to Anian rantatie. Picture: Sami Raninen, 2012, Pirkanmaan maakuntamuseo.

The location of the historical farms was indicated by researchers on maps (Images 18, 19 and 20) at Vapriikki Museum. Until this moment it is not possible to define exactly where all the buildings were located, since there are not many pieces of evidence yet. The number of buildings probably increased from the late Iron Age to the Middle Ages. During the Iron Age there were four farms and during the early Middle Ages, the number increased. According to Vapriikki Museum researchers, until this moment it is not possible to precisely define the quantity of buildings and their exact positions.

Image 18: The black squares indicate the farm location during Iron Age[12].

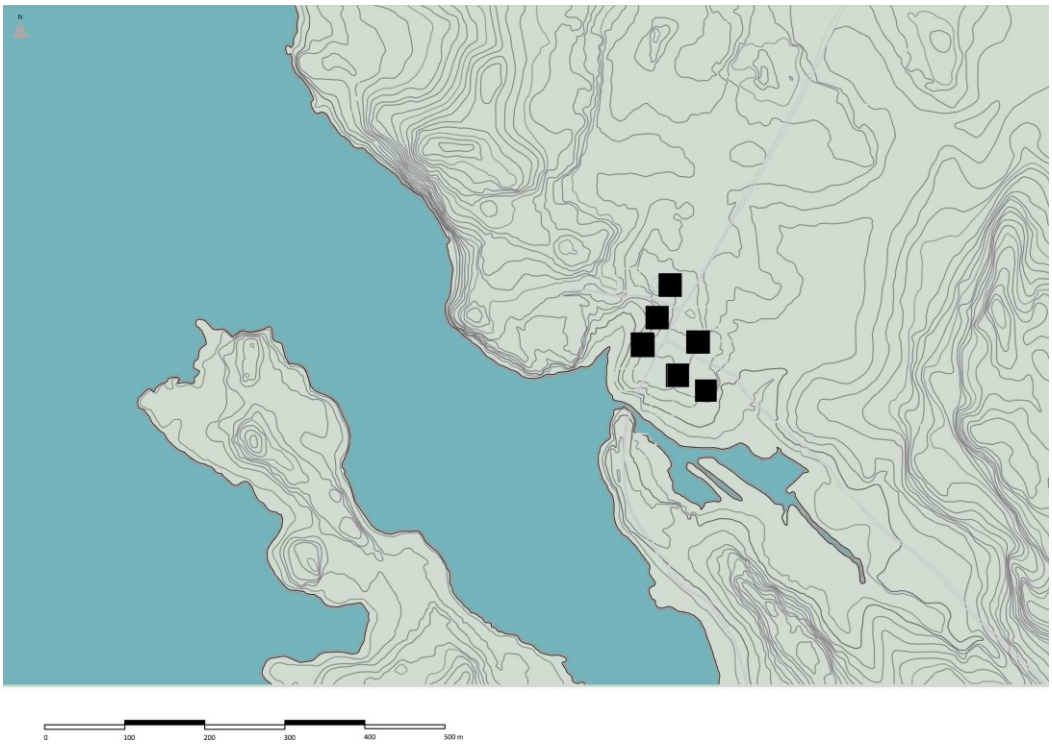


Image 19: The black squares indicate the farm location in 1400[13].

[12] Information provided by Sami Raninen at Vapriikki Museum.
[13] Information provided by Sami Raninen at Vapriikki Museum.

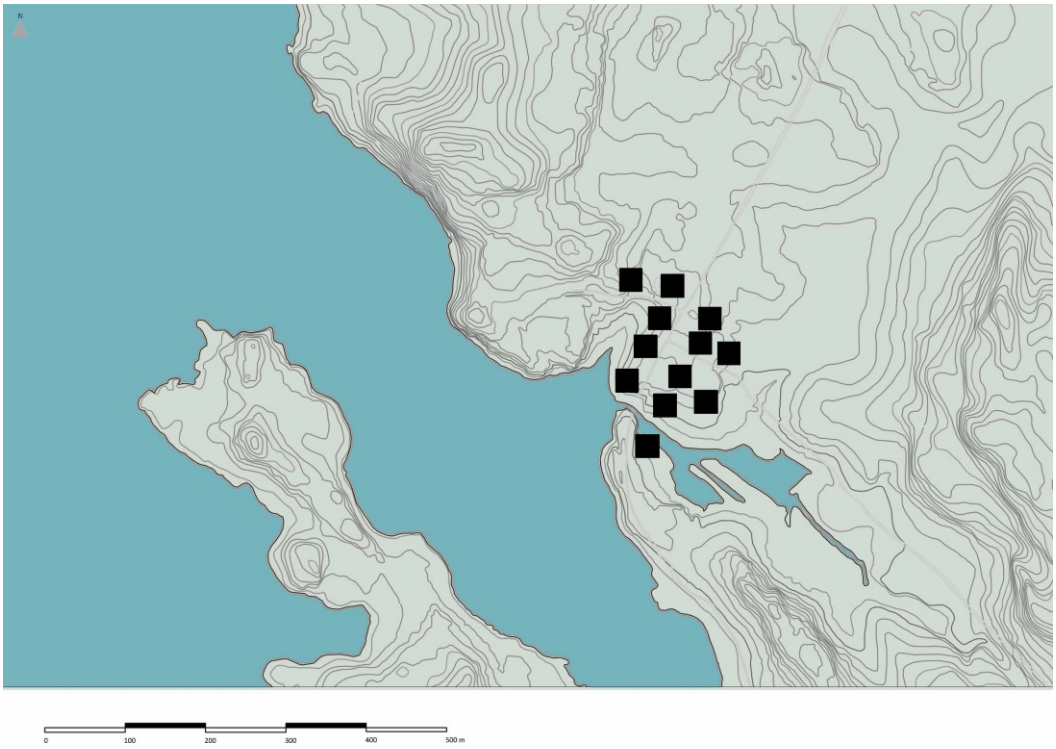


Image 20: The black squares indicate the farm location in late Middle Ages[14].

4. Tursiannotko village during Iron Age and Middle Ages

This item presents the main aspects and references about the Iron Age and Middle Ages that guided the virtual model development. The findings in Tursiannotko and facts about Finnish Architecture History were the main source of information for the assumption of the settlement in different periods. The sequence of information in this topic demonstrate the order of how they were incorporated for the model creation.

Currently there is some archaeological information about existing farms during Iron Age and Middle Ages, however the exact quantity and locations of the buildings are not known yet (Image 21). In this project, the positions of the constructions follow the farms situation and the number of buildings does not represent the exact amount that existed.

[14] Information provided by Sami Raninen at Vapriikki Museum.

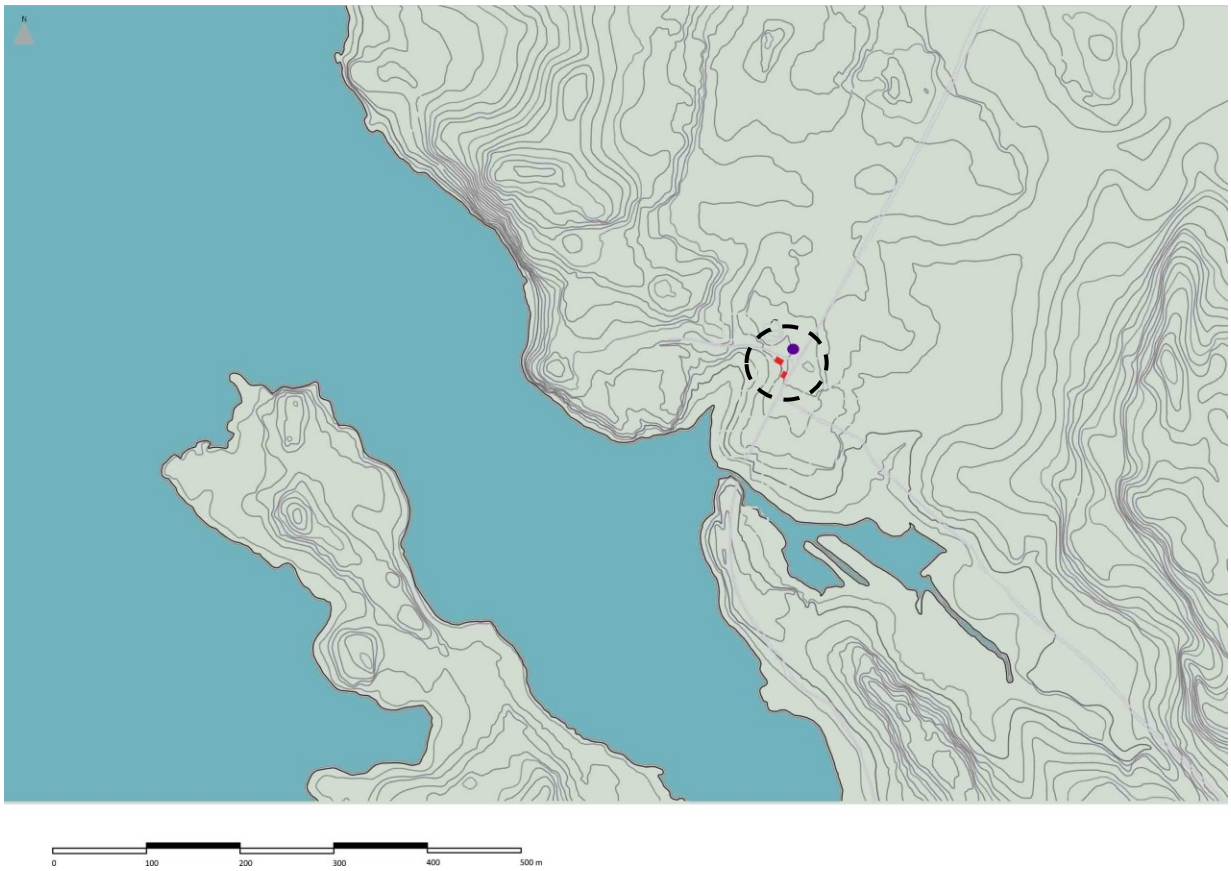


Image 21: The excavations in the summer of 2016 found construction evidence on the places marked with red squares. In the summer of 2017, the work moved to the other side of the road. These positions were taken into consideration for the models.

4.1. Iron Age village

Primitive dwellings usually consisted in one room and they served for a variety of uses: room for living, sleeping, cooking, storing, bathing, drying grains and animals shelter. Larger storages, when existed, needed to be placed in a separate storehouse (barn or shed) located near the dwelling[15].

During the Iron Age period each farm in Tursiannotko probably had three buildings, which were structured by logs, and they could function as house or small storages supporting the agricultural activities[16]. The constructions were close to each other and grain fields were located near them. Wooden fences were placed around the fields to prevent the animals from scaping or eating the plantations (Image 22 and 23).

[15] Silerius, U.T.1989. Suomen Kansanomaista Kulttuuria. Volume II. Helsinki: Kansallistuote Oy. Pp. 207 - 208.
[16] This number of buildings was also common in the Middle Ages and according to Vapriikki Museum researchers, this could have been also the amount of constructions per each farm in the Iron Age. Björkman, S; Bade, C; Bade, V. 2008 Kylä: Keskiaikaa Itämeren Rannalla. Espoon Kaupunginmuseo.

There is not evidence that wooden goahti dwellings (kota) were also built in Tursiannotko Iron Age farms, but since it is a traditional type of hut in Finland, they could have also existed in Tursiannotko (Image 24).

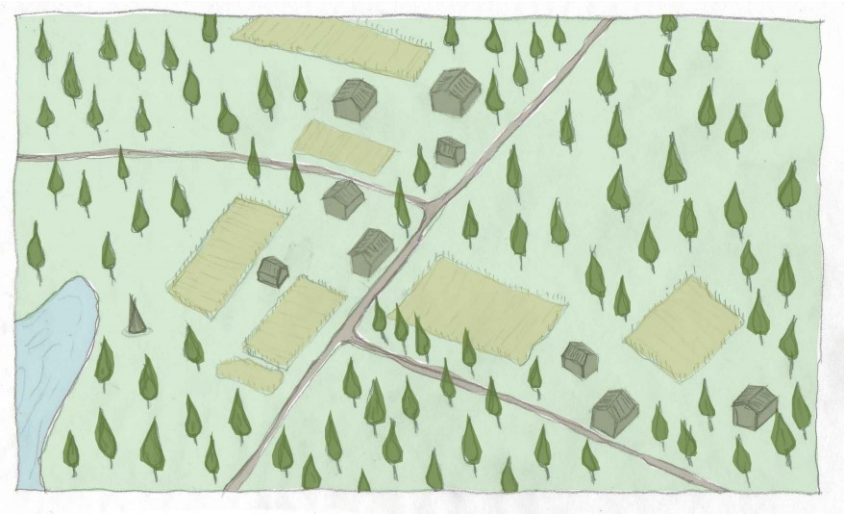


Image 22: The sketch presents the first idea of the Iron Age village based on the farms situations at the time.

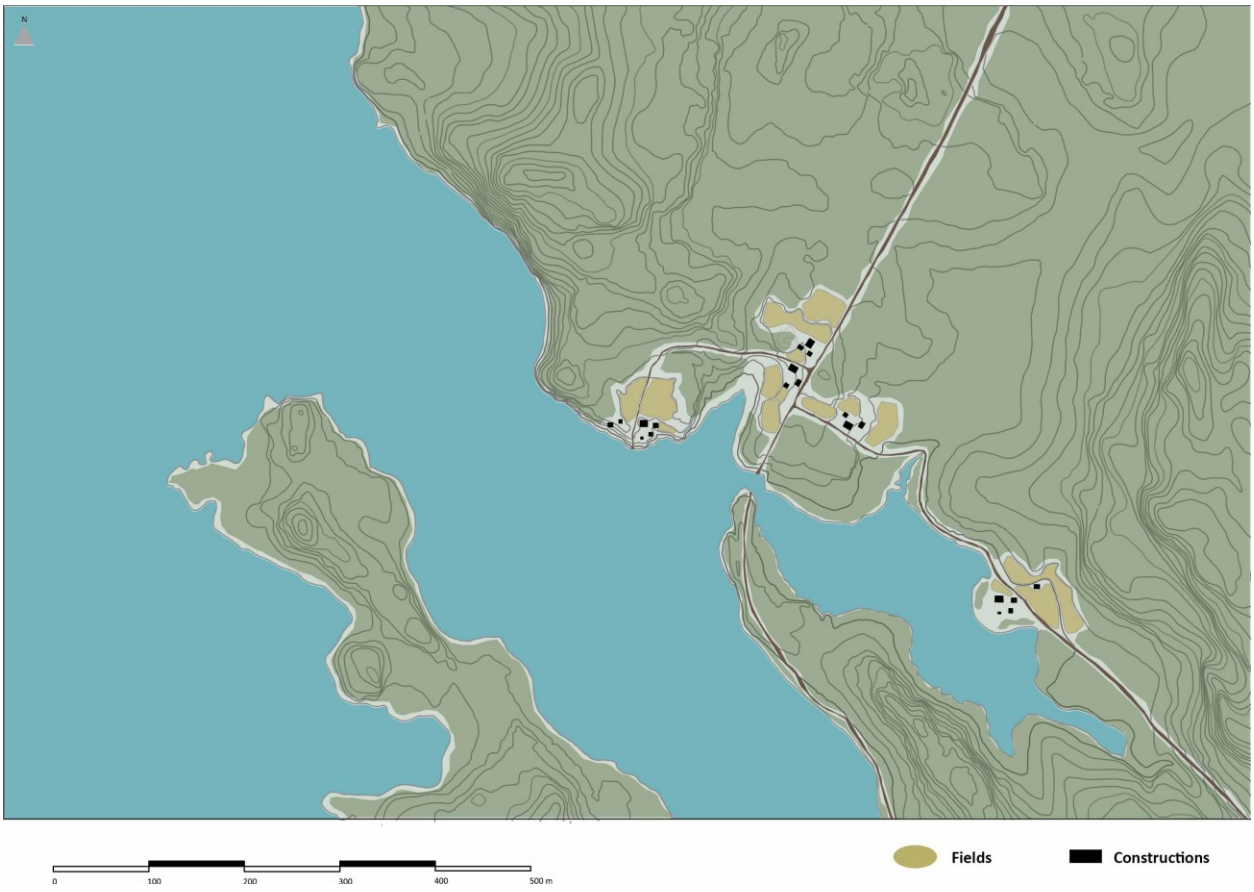


Image 23: The black squares indicate the buildings that possibly existed during the Iron Age. Until this point the researchers believe that there were four farms and each farm had three buildings.

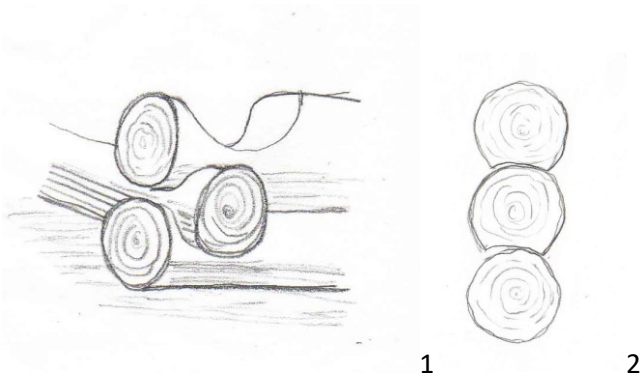
Image 24: The sketch represents the first idea of how an Iron Age farm in Tursiannotko could have looked like.

From the Viking Age building found in Tursiannotko, archaeologists were able to identify that the buildings in the area were structured in logs (Images 25 and 26), measured four by six meters and inside smoke stove was constructed with stones. Glass windows or openings did not exist on the walls and the smoke stove was used to warm the interior space – at some point, they might have started to use small openings on the wall or close to the roof to let the smoke come out of the interior space[17]. Doors and small openings were maybe opened towards the south because of the light.

There is not any kind of information yet on how roofs were structured. The Iron Age buildings were constructed on the clay soil and there was not a separate floor made for example of wood or stones. Near the Viking Age building, signs of a younger building were found – it was probably in use during the 12th century and it had a timber floor.

Due to the small number of findings closely related to architecture and building structures until this moment, the Iron Age village models should present the houses with some differences in order to show several possibilities. All the constructions were presented as log houses without wooden floor, but with different roofs and position of doors and windows (Image 27.1 and 27.2 and 28).

[17] Pajuste, Viire. 2012. Noorema Rauaaja Eluhoone Rekonstrueerimine. Arheoloogiline Eksperiment Rõuges 2010–2012. Tartu Ülikool, Filosoofiateaduskond Ajaloo ja Arheoloogia Instituut. Pp.103-120.



1 2

Image25: Building corner (1) and wall (2) wood details.

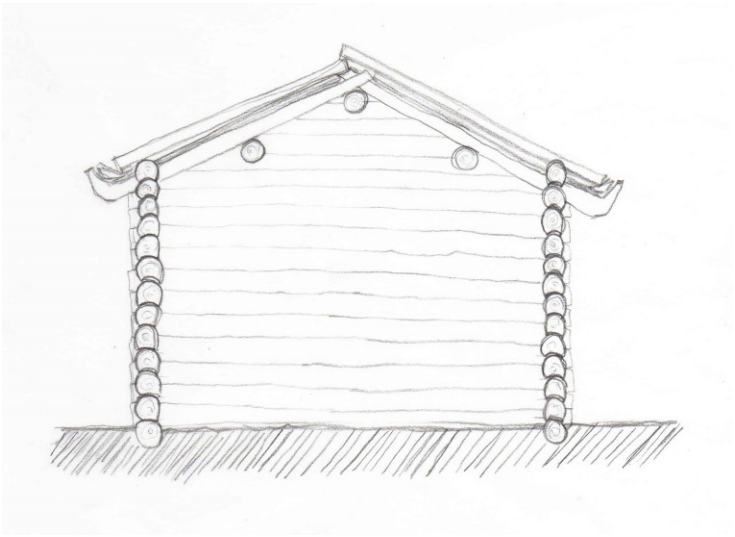
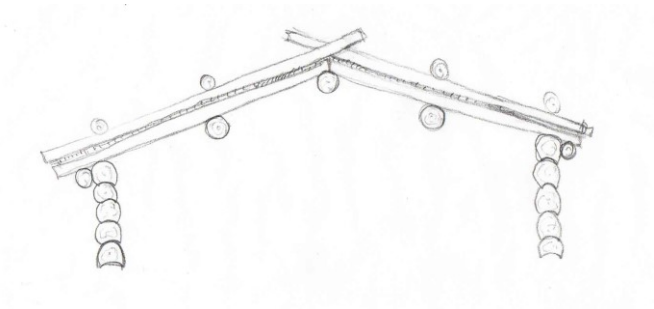
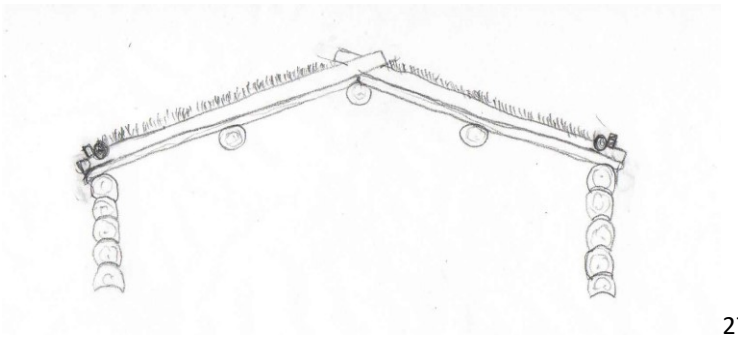


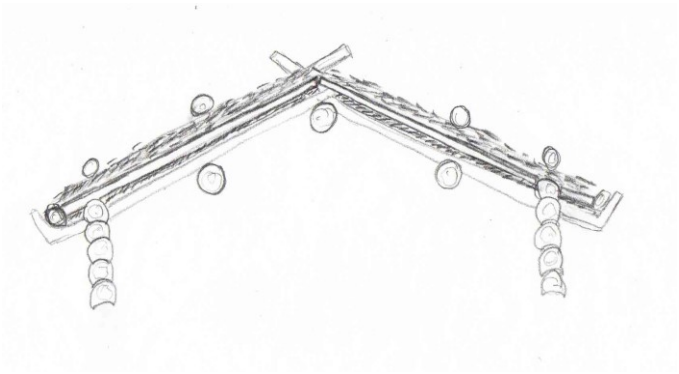
Image26: Iron Age house section sketch. In the Iron Age, houses in Tursiannotko did not have a separate wooden floor and the main material for the house constructions was wood.



27.1

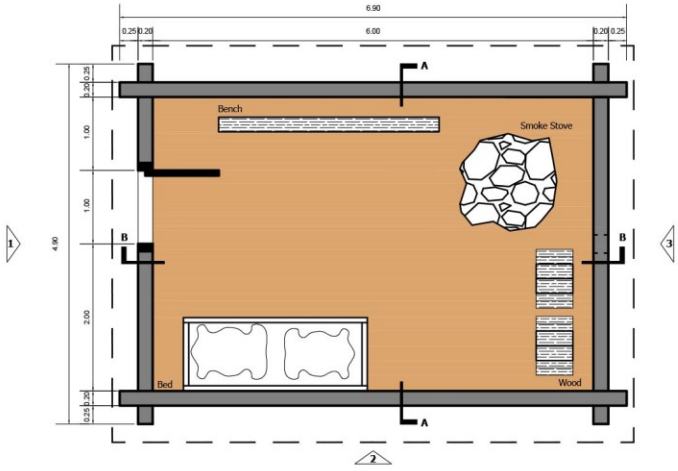


27.2

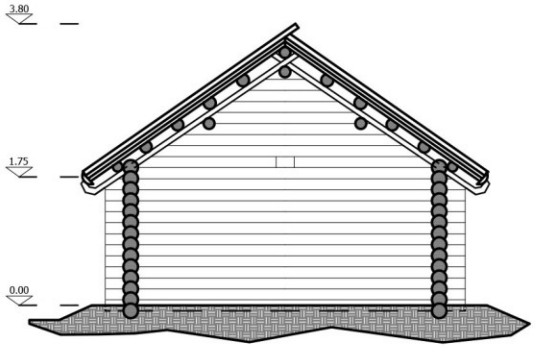


27.3

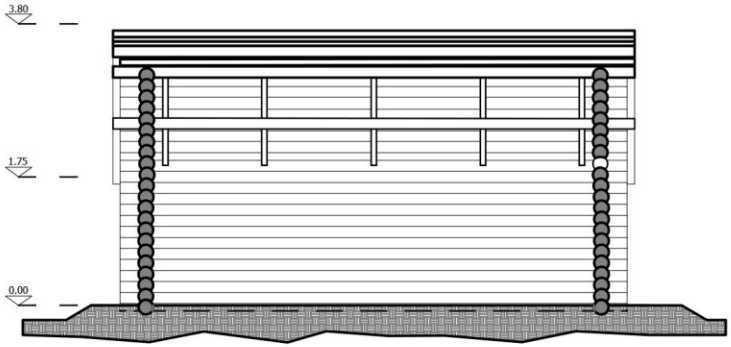
Image 27: There is no evidence yet of how roofs could have been during the Iron Age in Tursiannotko. The possibilities are that they were covered in wood, straw or turf.



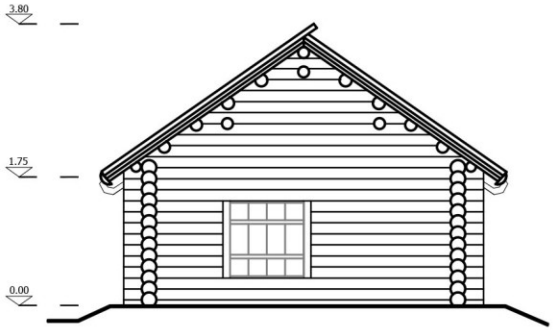
Iron Age House - Plan
1:100



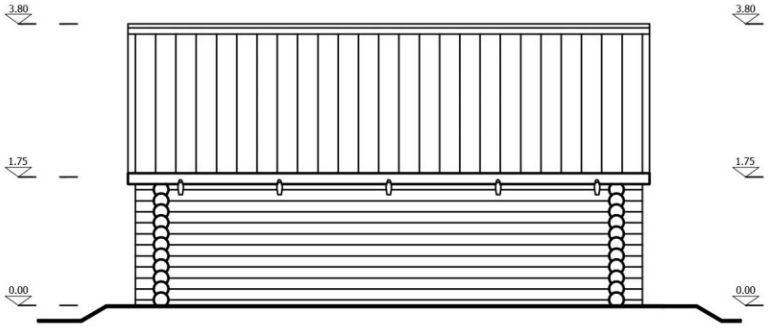
Iron Age House - Section AA
1:100



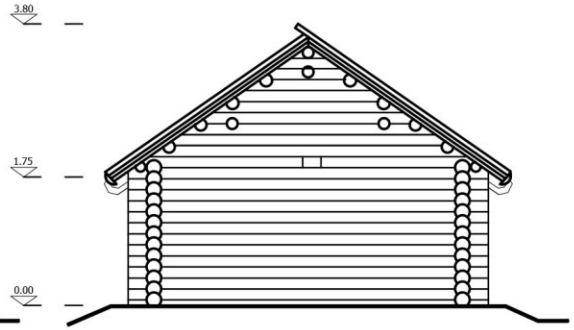
Iron Age House - Section BB
1:100



Iron Age House - Facade 1
1:100



Iron Age House - Facade 2
1:100



Iron Age House - Facade 3
1:100

Image 28: Plan, sections and facades drawings of an Iron Age house. This drawing guided the virtual model development and was based on Pajuste, Viire. 2012. Noorema Rauaaja Eluhoone Rekonstrueerimine. Arheoloogiline Eksperiment Rõuges 2010–2012. Tartu Ülikool, Filosoofiatea duskond Ajaloo ja Arheoloogia Instituut. Pp.103-120.

4.2. Middle Ages village

At that period, the farms were also located close to the lake. Grains and animal fields were situated near the constructions[18] (Images 29, 30 and 31). The number of constructions in each farm remained basically the same, which was similar to other regions in Finland[19].

The farms had the agriculture buildings according to their type of production. Each farm had at least a barn and a storage building (Images 32.1 and 32.2). In some cases, the amount of buildings might have been bigger since this condition was also related to the status and wealth of the farm. Medieval writings mention that certain needs might have been satisfied by constructing specific buildings, such as barns, stables, piggeries, sheep barns, workshops, granaries and storehouses. On the other hand, there might have been small farms where the cattle were kept in the cabin with people. Certain buildings were constructed far from the village because of fire safety reasons – it was safer to locate drying barns and saunas far from where the houses were concentrated[20] (Image 33).

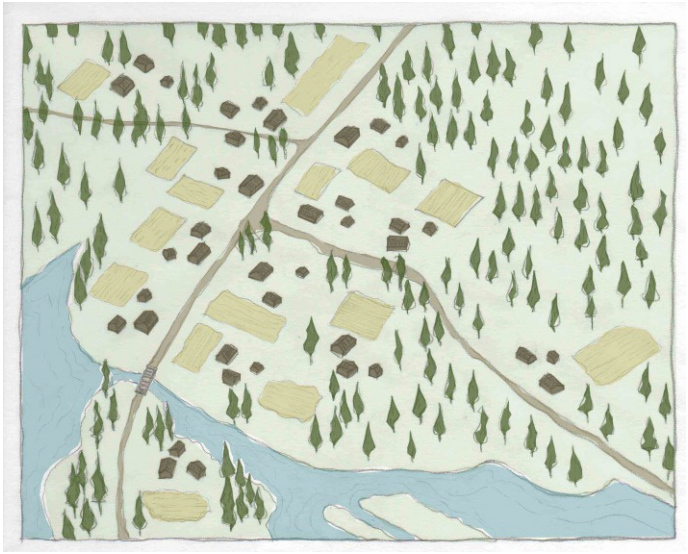


Image 29: The sketch presents the first idea of how the buildings and fields were distributed during the late Middle Ages.

Björkman, S; Bade, C; Bade, V. 2008 Kylä: Keskiaikaa Itämeren Rannalla. Espoon Kaupunginmuseo. Page: 96

[18] The fields during the Iron Age were smaller than the ones during the Middle Ages due to the type of tools that existed at the time. Some of these areas were surrounded by wooden fences in order to keep animals in a specific place or to avoid them to invade a space.

[19] Björkman, S; Bade, C; Bade, V. 2008 Kylä: Keskiaikaa Itämeren Rannalla. Espoon Kaupunginmuseo. Pp 94-95.

[20] Björkman, S; Bade, C; Bade, V. 2008 Kylä: Keskiaikaa Itämeren Rannalla. Espoon Kaupunginmuseo, Pp 94-95.

Image 30: The black squares indicate the buildings that possibly existed during the Middle Ages. During that period there were 12 to 17 farms and each farm had at least three buildings that supported the agricultural activities. The amount of buildings was estimated for the model development and future discoveries might indicate other locations and quantity.

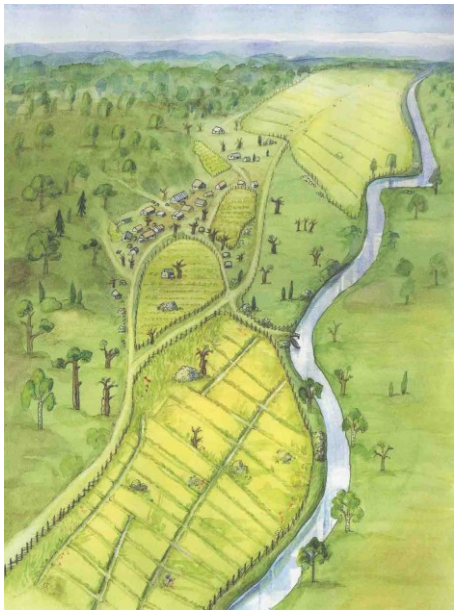
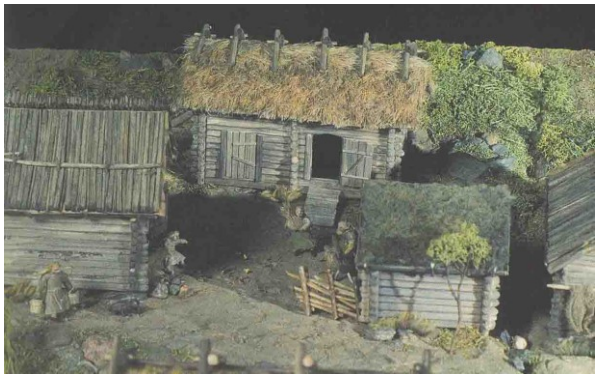


Image 31: View of Middle Ages Mankby village, which was used to understand relations between the constructions and fields.


1


2

Images 32.1 and 32.2: The models present types of constructions during Middle Ages. At that period, some constructions in Tursiannotko might have had more than one interior space. Source: Björkman, S; Bade, C; Bade, V. 2008 Kylä: Keskiaikaa Itämeren Rannalla. Espoon Kaupunginmuseo.

Image 33: View from the road, which is nowadays is called Anian rantatie. This sketch shows the first idea of how the Middle Ages village could have looked like and it was based on the description and districution of the farms in Tursiannotko.

During the Medieval period, the architecture buildings in Tursiannotko were also structured in logs. Until this moment there is no information on the type of roofs or materials that could have existed on the buildings and researchers still speculated that there could be diverse types (Images 34 and 35). The constructions were closed to the fields and these were surrounded by wooden fences to prevent animals invading or eating the plantations (Image 36).

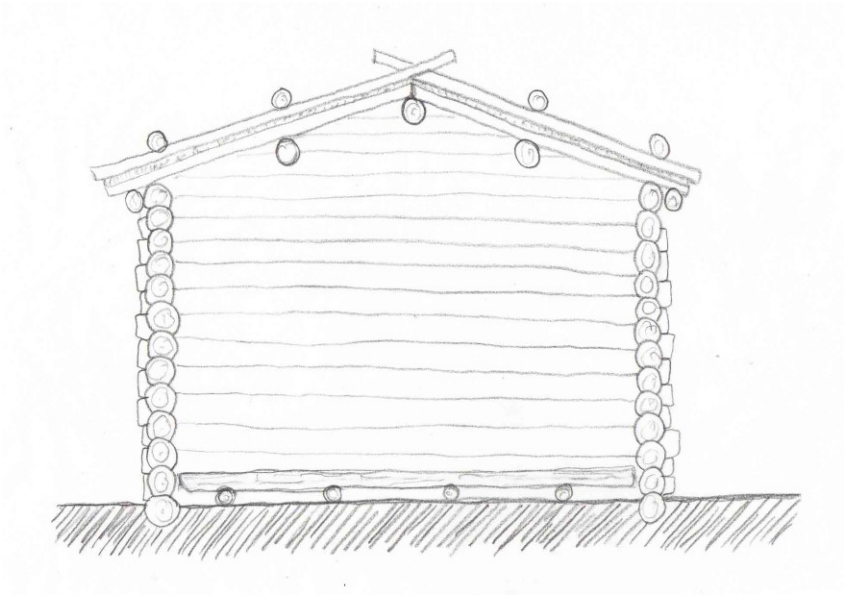


Image 34: This section sketch presents walls, roof and floor structures. Wood was the main material for the house construction.

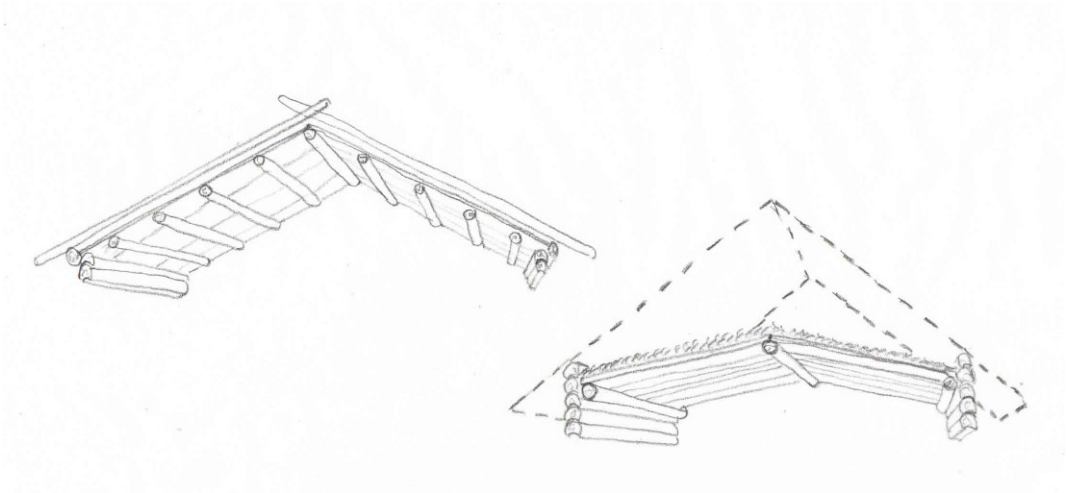


Image 35: Until the moment, researchers do not know what kind of roofs existed during the Middle Ages in Tursiannotko. This sketch presents two types of roof structures that could have existed that time. Source: Valonen, N; Vuoristo, O. 1994. Suomen Kansanrakennukset: Seurasaaren ulkomuseon rakennusten pohjalta. Museovirasto. Pp. 68-69.

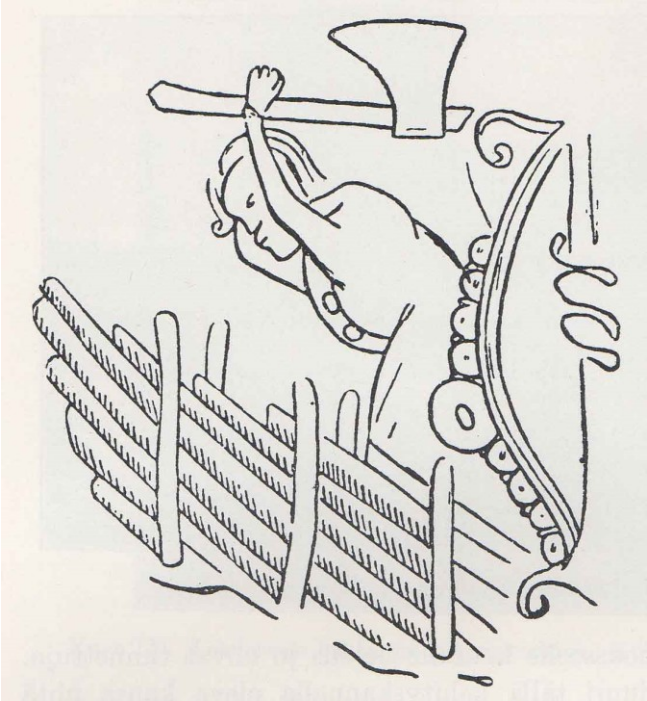


Image 36: 15th century wooden fence. Image: Silerius, U.T.1989. Suomen Kansanomaista Kulttuuria. Volume I. Helsinki: Kansallistuote Oy. Pp.298-299.

During the late Middle Ages in Tursiannotko there might have existed constructions with more than one interior space. The main requirement for the growth of the dwelling was the establishment of settlement and living conditions. Once people start to live longer in a specific place, they start to adapt the constructions or to build their houses according to their needs. For example: in some cases, people might reserve the closest space of the house for a storage, but others for a sauna[21]. One later example was used as reference for the virtual model (Images 37, 38 and 39).

The type of building composed by cabin, porch and storage room was spread earlier in Russia than in Finland. Along the time the storage room was transformed into a residential room. In many cases the storage function was kept.[22]

[21] Silerius, U.T.1989. Suomen Kansanomaista Kulttuuria. Volume II. Helsinki: Kansallistuote Oy. Pp. 207 - 208
[22] Silerius, U.T.1989. Suomen Kansanomaista Kulttuuria. Volume II. Helsinki: Kansallistuote Oy. Pp. 207 - 208

Image 37: Koukolan Niemelä. The set that tends to a rectangular shape was one of the references for the Middle Ages virtual model. Source: Valonen, N; Vuoristo, O. 1994. Suomen Kansanrakennukset: Seurasaaren ulkomuseon rakennusten pohjalta. Museovirasto. Page: 125.

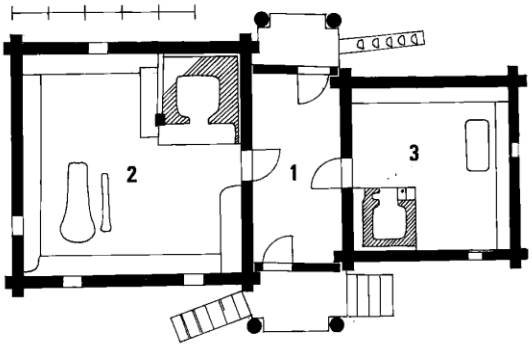


Image 38: The smoke cabin is located on the left, the sauna is situated on the right side and the porch is in the middle. Source: Valonen, N; Vuoristo, O. 1994. Suomen Kansanrakennukset: Seurasaaren ulkomuseon rakennusten pohjalta. Museovirasto. Page: 124.

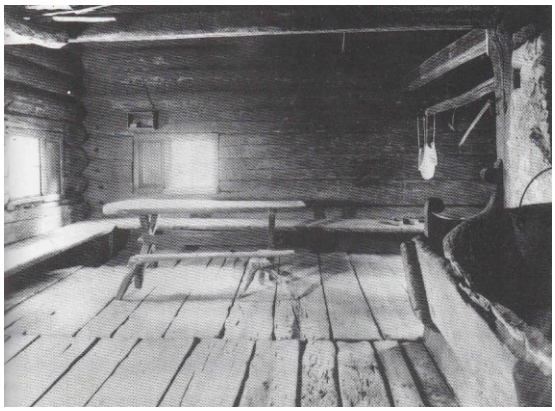
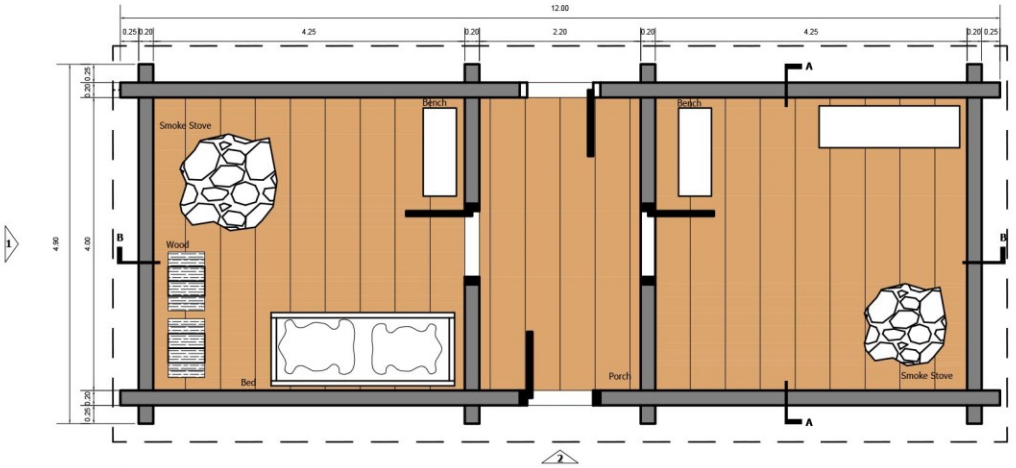
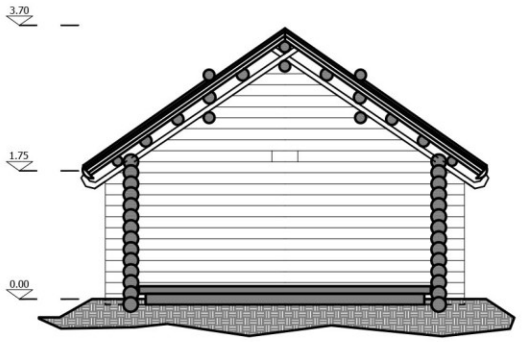


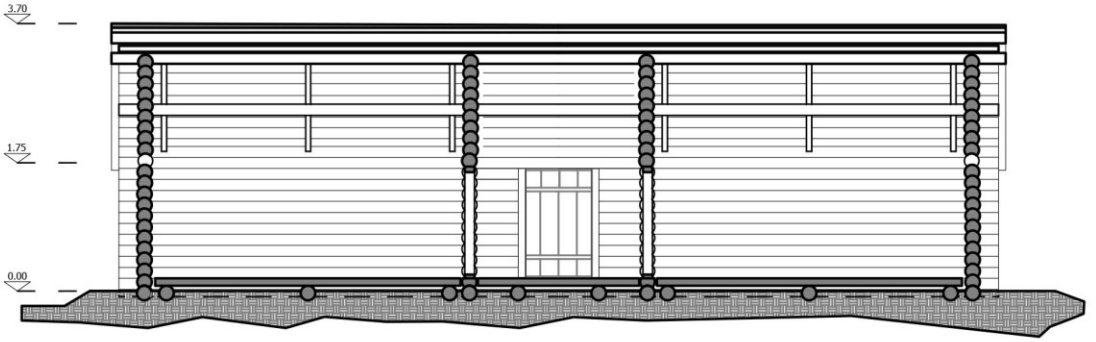
Image 39: Cabin interior space was one of the references for the model. Source: Valonen, N; Vuoristo, O. 1994. Suomen Kansanrakennukset: Seurasaaren ulkomuseon rakennusten pohjalta. Museovirasto. Page: 123.



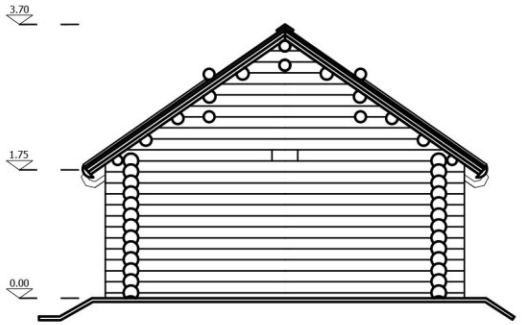
Middle Ages House - Plan
1:50



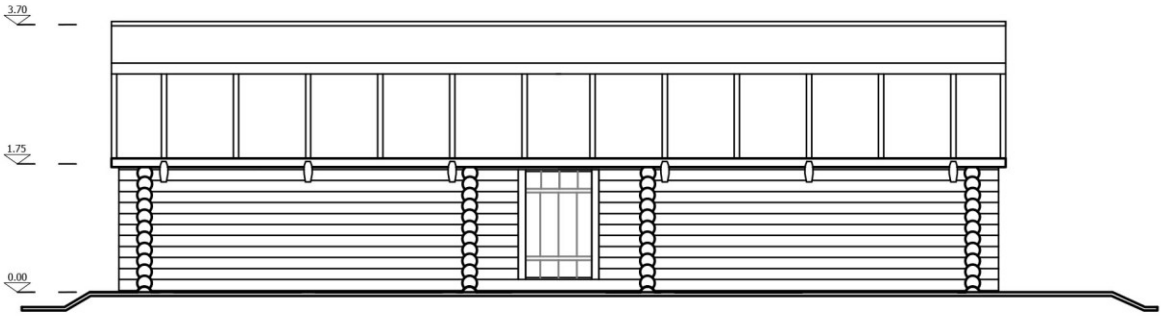
Meddle Ages House - Section AA
1:100



Middle Ages House - Section BB
1:100



Meddle Ages House - Facade 1
1:100



Meddle Ages House - Facade 2
1:100

Image 40: Plan, sections and facades drawings of a medieval house. This drawing guided the virtual model development.

5. Presentation

History is a constant process of changes[23] and the information about these transformations needs be clear to the public. It is possible to present changes that happened in a specific area comparing different periods using results[24] of a virtual model. According to Centofanti, Brusaporci and Lucchese (2014), a model "in its role as a mediator between the intellect and tangible reality, is the tool people use to organize their mental representations of perceptible, phenomenal reality"[25].

For Vapriikki Museum, it was relevant to show to the public how Tursiannotko village could have changed in size along the time and how the buildings were constructed. The content needed to be created using examples of material and knowledge of what existed in Finland or other regions in Scandinavia and Baltic sea region during the Iron Age and Middle Ages.

It was also important to represent the road, interior spaces and construction. Architectural drawings would not be presented because an actual size house was built in the exhibition. Visualizations would be more interesting to the public.

The village during late Iron Age and late Middle Ages was created in the virtual models. No specific year was considered due to the current available information about the area. The differences between Iron Age and Middle Ages considering size and buildings can be seen via path animation and visualizations of the buildings and interior spaces. Information about construction was presented on a sequence of building elements raising an Iron Age house and images of sections of a Middle Ages house.

The results were put together on a video and its sequence first shows the Iron Age Period and changes to the Middle Ages Period (Images 41 to 52).

Land transformations is also a relevant topic to be presented to the public[26]. This information was going to be presented in a separate feature at the exhibition (touch-screen computer), but the final decision was to simply present this fact in the video via the images from the virtual model.

[23] Kubler, George. The Shape of Time. 1962. Yale University Press.

[24] For example, images and animations.

[25] Still according to Centofanti, Brusaporci and Lucchese (2014:32): "Architectural heritage´s 3D modelling is conceptually related to knowledge: it´s required the values understanding and their appropriate documentation and representation". This means that it can be used for architecture documentation. However, since there are not many concrete evidences of ancient buildings in Tursiannotko, a 3D model can be created to express an idea of how the area could have been in the past.

[26] Stephen Fai, Katie Graham, Todd Duckworth, Nevil Wood, Ramtin Attar. 2011. Building Information Modelling and Heritage Documentation. CIPA 2011. Article available at: https://d2f99xq7vri1nk.cloudfront.net/legacy_app_files/pdf/Fai.pdf

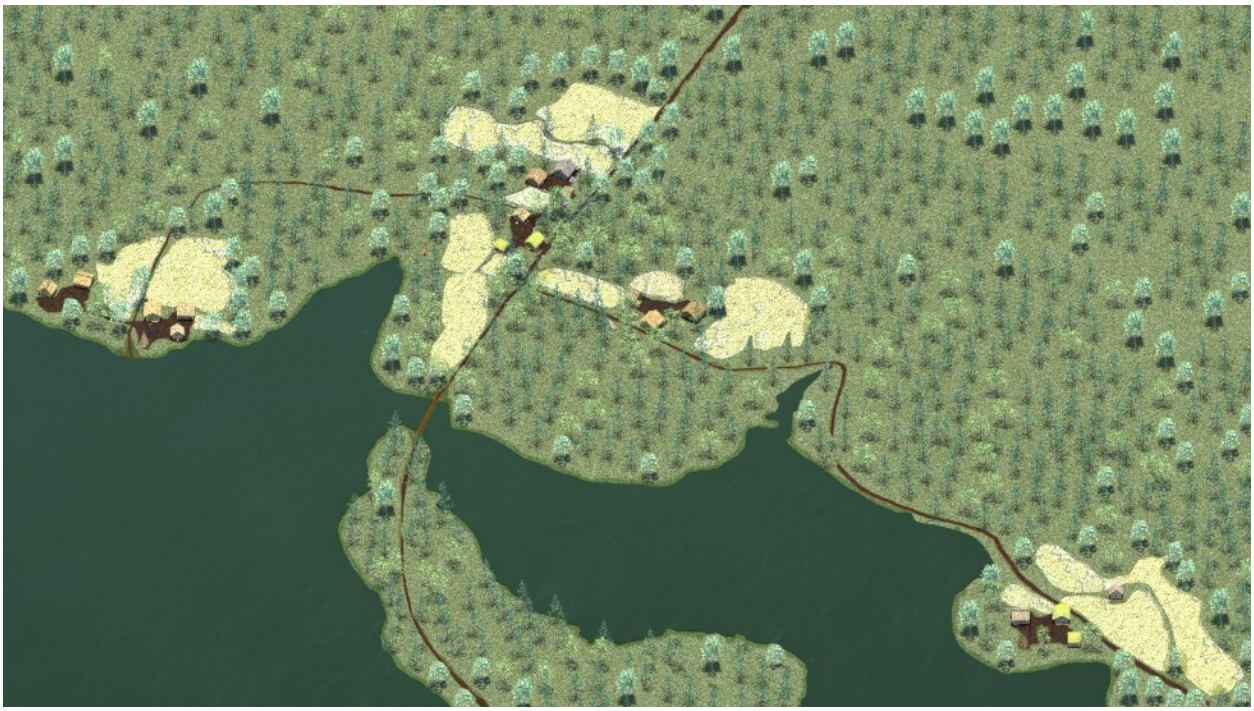


Image 41: View to late Iron Age. The current information is that four farms existed during that time.

Image 42: View one of the Iron Age farms. Each farm possibly had at least three buildings.

Image 43: View to construction model placed on the same area where they found the Viking Age house in Tursiannotko. The building was modeled based on information about the discovery.

Image 44: View to Iron Age house interior space.

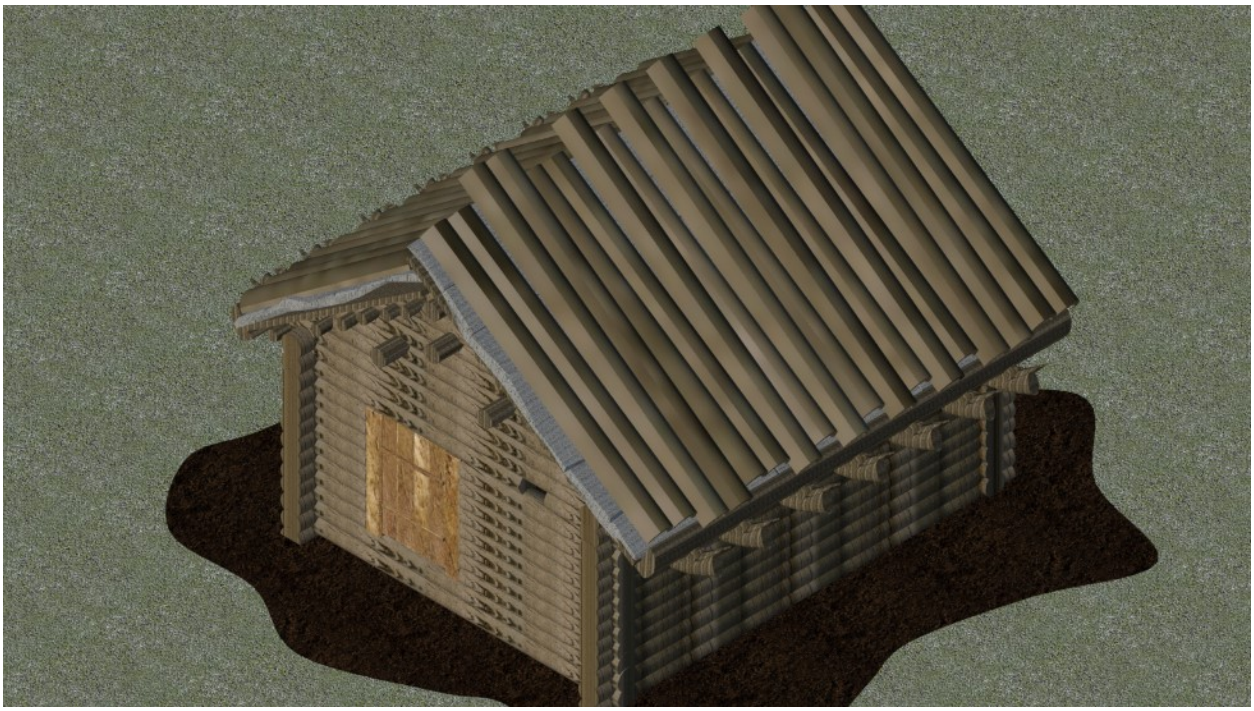


Image 45: View to Iron Age building of construction sequence.

Image 46: View to the twelve Tursiannotko Middle Ages farms represented in the model. Some buildings, such as saunas, might have been constructed closer to the lakes due to the risk of fire.

Image 47: Image of Middle Ages model path animation. The road connects the village,

Image 48: Middle Ages farm construction.

Image 49: Building with more than one interior space that could have existed during the Middle Ages in Tursiannotko.

Image 50: Section helps the public to understand how the construction might have been structured.

Image 51: Interior image of a Middle Ages house. Until that period, the houses did not have glass windows.

6. Model creation method

The model creation was completed in four different steps:

a. Analysis of Maps

The study of the historical and archaeological research maps was the first step to understand the differences between the years. Approximate locations of the buildings, main road and water level [27] in different periods were analyzed. The maps were available at Vapriikki Museum, internet sites and books. They are presented in this text in the items "2.2 *History*", "3.2 *Evidence of buildings*" and *"4. Tursiannotko village during Iron Age and Middle Ages"*.

For this analysis, AutoCAD was the main tool to create a base that could be used for the virtual models. Pirkkala terrain AutoCAD file was acquired from the municipality and contained information about topography, main roads, fields and constructions, being easily transferred to 3ds Max.

[27] For the virtual model development, this analysis was important to verify if it would had influenced on the location of the wooden buildings.

b. Analysis of Architecture

The information about architecture was collected from books, articles and images. Sketches and AutoCAD drawings were essential to understand construction techniques and dimensions to be used in the models.

c. Model

The terrains were modeled in 3ds Max considering the lake Pyhäjärvi water level in different periods. Buildings and its objects (e.g. fences, wood, smoke stove, doors and bed) were modeled in this same program. Materials were created in Photoshop and applied on the texture-mapped surfaces.

d. Video

The Iron Age and Middle Ages videos were made via path animation on 3ds Max and, in both cases, the frame sequences were rendered and later put together using Adobe Premier. The rendering process was usually long and some sequences of 300 frames took approximately 24 hours to be completed.

The construction video was completed rendering frames in which the position and opacity of elements changed (Image 52).

Visualizations of the constructions and interior spaces were added to the final presentation video using Adobe Premier.

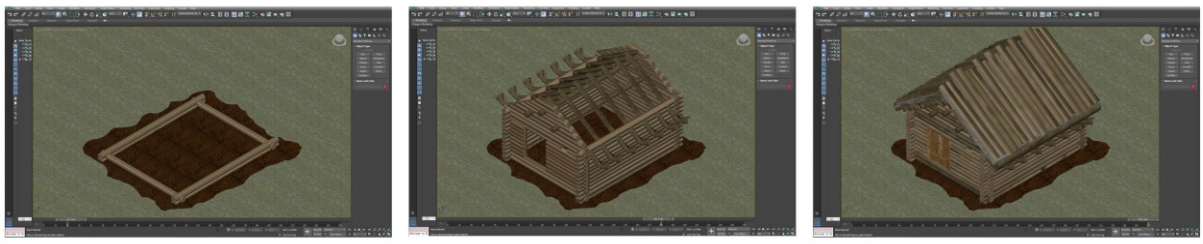


Image 52: Construction sequence in 3ds Max.

7. Exhibition

Vapriikki Museum planned an exhibition about Tursiannotko´s Iron Age and Middle Ages to start in the summer of 2017. The objective was to gather information about recent and older discoveries from the area (Images 53, 54, 55 and 56) and present to the public archaeological findings and the village´s historical facts. The final video presentation was placed at the entrance area next to images of the excavations (Image 57).

Image 53: Iron Age typical outfits at Birckala 1017 exhibition. Picture: Sarah V. Martins

Image 54: Objects found in Tursiannotko and other regions in Finland are presented at the exhibition. Picture: Sarah V. Martins

Image 55: Weapons used during Iron Age and Middle Ages. Picture: Sarah V. Martins

Image 56: Typical Iron Age house at Birckala 1017 exhibition. Picture: Sarah V. Martins

Image 57: Video presented on exhibition entrance area. Picture: Sarah V. Martins

8. Conclusion

Besides the museum´s interest, the time of three months provided by the museum in order to create the virtual models was also one of the reasons that steered the process focus towards the settlement and its buildings rather than other aspects, such as environment or animated elements – these features would have required allocating more time on the modelling work.

This work must be interpreted as one first idea of Tursiannotko village during Iron Age and Middle Ages. Researchers are still discovering new evidence in the area and more information related to architecture will probably appear in the next years.

People will be able to continue giving shape to the area´s architecture and expand the visual content of Tursiannotko village. One of the possibilities is, for example, to analyze the settlement in different centuries.

In architecture, we are able to understand how a space should be designed and constructed, but history and archaeology are not necessarily part of our expertise. For this project, the collaboration of archaeologists and historians were essential to assume and represent Tursiannotko village.

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