# Modelling the Past of Häme Castle

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This article presents a project called *Through the Gate Tower – Modelling the Past of Häme Castle*, which will be carried out in co-operation with the University of Turku, Hämeen Wanhan Linnan Kilta and the Finnish National Board of Antiquity. It is an ongoing component of *The Finnish Virtual Archaeology* -project and is part of the larger research project about the Centres of Power in medieval Finland.[1] In this project our first goal is to make a close study of Häme Castle (Sw. Tavastehus slott) and its environment from the Middle ages to the early nineteenth century by using computer aided techniques, especially 3-dimensional modelling. This process is meant to aid both researchers and the interested public. The main aim of our project is to produce new multidisciplinary research about Häme Castle. Another goal is to publish a multimedia presentation for the museum's use.

Although the purpose of the project is to encourage young researchers and offer possibilities for new studies, one of the main reasons why Häme Castle was chosen as the modelling target is that it is one of the most studied castles in Finland. Information about Häme Castle has been published in two doctoral theses and it is treated in many other academic works and articles.[2] All this earlier research, even critically considered, forms a basis for

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[1] Further information about projects mentioned in this article can be found at http://www.hum.utu.fi/arkeologia/suvi/lapilinnanportin/index.html.

[2] See e.g. Drake, Knut, *Die Burg Hämeenlinna im Mittelalter: Eine Baugeschichtliche Untersuchung*. Suomen Muinaismuistoyhdistyksen Aikakauskirja 68, Helsinki 1968; Drake, Knut, Die Bauherre der Burg Hämeenlinna im Mittelalter. In: *Castella Maris Baltici* III–IV, eds. Kaur Alttoa, Knut Drake, Kazimierz Pospieszny and Kari Uotila. Archaeologia Medii Aevi Finlandiae V: Gdańsk 2001, pp. 209–215; Hiekkanen, Markus, Hattula Church and Häme Castle. In: *At Home Within Stone Walls: Life in the Late Medieval Häme Castle*, eds. Terhi Mikkola & Anna-Maria Vilkuna. Archaeologia Medii Aevi Finlandiae VIII: Saarijärvi 2003, pp. 165–168; Kanerva, Mirja, Hämeen linnan kruununleipomo. *Arx Tavastica* 5 (1980), pp. 12–23; Luppi, Päivi, The Outer Bailey of Häme Castle. In: *At Home Within Stone Walls: Life in the Late Medieval Häme Castle*, eds. Terhi Mikkola & Anna-Maria Vilkuna. Archaeologia Medii Aevi Finlandiae VIII: Saarijärvi 2003, pp. 145–150; Mikkola, Terhi, In the Rooms of Häme Castle. In: *At Home Within Stone Walls: Life in the Late Medieval Häme Castle*, eds. Terhi

our work. But Häme Castle, not to mention its environment, is a very large research object. And there are naturally questions and materials which have not yet been thoroughly studied: like the archaeological findings, ceramic, glass, metal and other artefacts, which were collected when the castle was being restored from 1953 to 1988. Also there are still some unpublished excavation reports, especially of the castle's outer wards, which have untouched information. As well as there is still a need for a survey on how the variation of water levels in Lake Vanajavesi has influenced the size of the area of the castle and how the elevation of the yards between the main castle and the surrounding wall was changed from the Middle Ages to the sixteenth century.

So, some of the new research questions have risen out of unused information, but there are also questions which are result of the development of the framing of the scientific question. In Europe, castles have been of interest to researchers since the middle of the nineteenth century. Häme Castle has been a subject of study for over two hundred years. Traditionally, researchers have been interested in questions concerning the castle's age and founder. More recent studies have investigated the castle's housekeeping and everyday life, as well as the power of the lords of the castle.[3] Of course we, in our project, find knowledge about the building history of the castle essential, but we will lay stress on the whole milieu of what the medieval residence of power formed.

And what is new in our work is virtual archaeology, which is a quite new and developing way of treating archaeological information. Archaeologists have used information technology in their analyses practically from the beginning of the history of computers. But the title virtual archaeology has been more typically used since it came technically possible to reconstruct on the computer desktop the reality of what

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Mikkola & Anna-Maria Vilkuna. Archaeologia Medii Aevi Finlandiae VIII: Saarijärvi 2003, pp. 133–141; Onnela, Johanna, Crop Plants in Häme Castle in 16th and 17th Century. In: *At Home Within Stone Walls: Life in the Late Medieval Häme Castle*, eds. Terhi Mikkola & Anna-Maria Vilkuna. Archaeologia Medii Aevi Finlandiae VIII: Saarijärvi 2003, pp. 151–164; Uotila, Kari, *Medieval Outer Baylies in Finland: With Special References to Turku Castle*. Archaeologia Medii Aevi Finlandiae III: Kaarina 1998; Vilkuna, Anna-Maria, *Kruunun taloudenpito Hämeen linnassa 1500-luvun puolivälissä*. Suomen Historiallinen Seura, Bibliotheca historica 31: Helsinki 1998; Vilkuna, Anna-Maria, Financial Management at Häme Castle in the Mid-Sixteenth Century (1539–about 1570). In: *At Home Within Stone Walls: Life in the Late Medieval Häme Castle,* eds. Terhi Mikkola & Anna-Maria Vilkuna. Archaeologia Medii Aevi Finlandiae VIII: Saarijärvi 2003, pp. 15–132.

[3] See the previous reference.

archaeologists tear down by excavating different kinds of sites. Transforming the documented information, measures, scale maps and explanations to the functioning virtual model in a satisfactory way is not simple. Usually, the target of the modelling is some kind of building or landscape, which doesn't exist any more. That's why there is always a lot of missing information and the model is more or less interpretation. In fact, I think that the generally used term virtual reality in the context of archaeology is in reality a little bit misleading; 3Dmodels made from ruined structures do not directly describe how they were in reality but is an explanation of it. Also it tells about the techniques used in the modelling process and gives watchers the possibility to make different kinds of visual tours through the models.

But I don't see the role of interpretation as a problem in our work; I think it's natural and one part of the whole research process. The question which needs more attention is how to make modelling a real part of the analysis. There is no need to make only a look alike building of some structure if it does not help in studying and understanding its past. But of course, when the work is well done, the doer has gone through all the information about his or hers research object. By doing this, the researcher surely has some new opinions about its phases. And I think that also we, by combining together the old and new studies, historical sources, archaeological material, natural scientific research and new possibilities of virtual archaeology, can discover new information about Häme Castle and its environment.

Picture 1. Häme Castle from the east. Photograph Martti Lampila. (NBA, Häme Castle).

## Häme Castle as a Modelling Target

Häme Castle is located in Inner Finland in the northern part of the modern town of Hämeenlinna (Sw. Tavastehus) on the western shore of Lake Vanajavesi (Fig 1, 2 and 3). Based on evidence it is thought that the castle was founded in the late thirteenth or early fourteenth century. In the Middle Ages, it either belonged to the Swedish Crown or to a liege lord chosen by the king, depending on the situation in the kingdom. Till the middle of the seventeenth century the main castle was used as a dwelling. In the eighteenth century it was renovated into a garrison and a grain store. From the 1830s the castle was used as a prison until 1953 when the Finnish Council of State made a decision to restore Häme Castle as a historical building. The research and restoration was completed in 1988.

Picture 2. Häme Castle in the Baltic Sea region. Drawing: Terhi Mikkola.

So, the Häme Castle that we see today is the result of building activity over 700 years. The oldest structures are the main castle and the wall (Fig 4). Based on research which was done during the restoration work, the castle and wall were built in several stages in the medieval period. The purpose of the restoration work was to uncover all medieval structures of the castle.

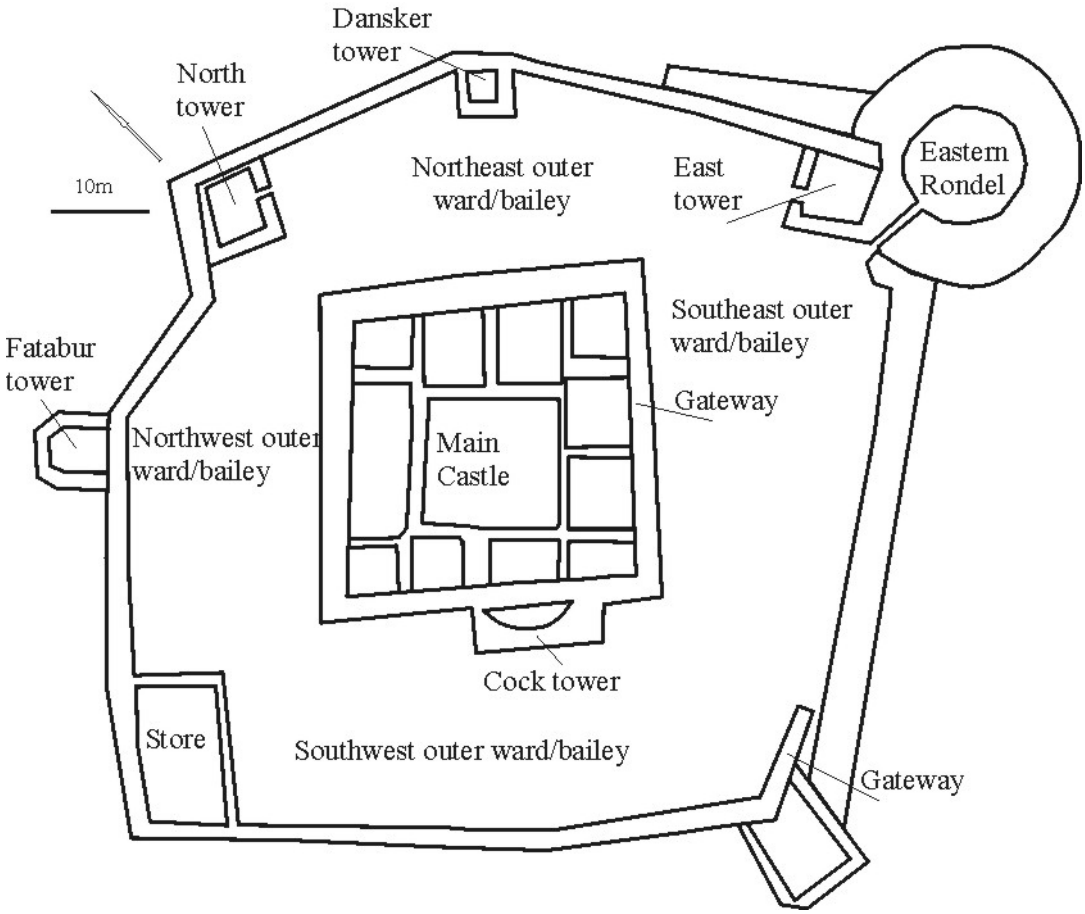
Although it was not always possible to identify medieval or original structures – structures were tore down and built again during the Middle Ages as well as later. Some fine examples from later period were saved too, like the eighteenth-century garrison buildings which were built along the medieval wall and the main castle's saddle roof. The ramparts surrounding the castle are also from same century. When the restoration work started, the rampart area had massive buildings from the prison period. Most of them were destroyed during the restoration work, especially on the northern side of the castle. [4]

Picture 3. Häme Castle from the north. The ramparts in the foreground were built in the eighteenth century, as was the brick building in front of the castle. Photograph: Martti Lampila (NBA, Häme Castle).

Now Häme Castle is the sum of all the building activity and restoration work in different times. Some of the building phases and buildings are quite

[4] Ailio, Julius, Hämeen linnan esi- ja rakennushistoria. In: *Hämeenlinnan kaupungin historia 1*: Hämeenlinna 1917, pp. 148–155; Drake 1968, pp. 24–25; Gardberg, Carl Jacob & Welin, Per-Olof, *Suomen keskiaikaiset linnat*: Keuruu 1993 pp. 62–63; Luppi, Päivi, Hämeen linnan keskiaikainen esilinna. Julkaisematon Pro gradu -tutkielma: Helsingin yliopiston arkeologian laitos 1992, p. 1; Stenius, Birgitta, *Tavastehus slott: Byggnadsverksamheten under 1700- och 1800- talen*. Delegationen för Tavastehus slott – Hämeen linnan neuvottelukunta: Helsinki 1973, pp. 4, 10–15, 18–22, 26, 32; Vilkuna 1998, pp. 12–16.

well known, some unclear and some totally unknown, for example between the main castle and the wall there might have been wooden buildings which have left no traces that can be seen today.




Picture 4. Medieval Häme Castle according to Knut Drake (1968), Päivi Luppi (1992) and Kari Uotila (1998). Redrawn by Terhi Mikkola.

All this complexity makes the castle a challenging target to model but also this is a research project where this method can really help to resolve the past. In the modelling work we can take apart all the structures of the castle and transform those to a scale model which we can edit as needed. For example, we can show different medieval building phases without later structures. Or how the castle and its environment changed with time. And we can demonstrate how buildings and structures functioned in relationship to each other. Also it is possible to test how conclusions and theories made about the castle's building sequences works in practice. And if the existing theories don't work, we can offer new solutions. Thus, once we have modelled the castle we can easily examine it from many angles by adding

and removing elements from different periods. The same flexibility works when we study the castle in the larger environment to see how it related to the other sites, villages, manors and churches by the shore of Lake Vanajavesi, where the population has been dense since the Iron Age. With these kinds of studies we can make conclusions about the castle's position in the contemporary society and its relationship with the surrounding area.

## Modelling the Inner Space

In the late medieval period, which is my interest, the main castle of Häme Castle had three stories and five towers which together made about 70 rooms and other spaces, like staircases and corridors (Figs 5, 6 and 7).[5] The order of the rooms, use of them and placing of doorways wasn't just coincidental. In different times builders and dwellers had various principles and needs in organising the inner space. Building solutions were also affected by the topography of the location where the castle was constructed and building traditions of different areas.

Placing the rooms influenced the daily life of the people who lived in the castle and those who came to visit. Everyone was not allowed to go everywhere. And some rooms were more difficult to reach than others. Rooms also formed groups. By room group I mean a set of rooms which you can't enter without going through some transit space, like a gallery or a hallway. According to my interpretations those groups of rooms were meant for groups of people doing different tasks in the castle. For example the northwest wing of the castle was for the higher staff and it was not possible to go there from the other parts of the castle without going through the gallery which surrounded the castle's inner yard on the first floor. Altogether, this complicated inner organisation indicates aspects of community: for instance social hierarchy, relations between masters, soldiers and servants in the castle and attitudes towards property.

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[5] Summary presented in this article about the medieval structures in Häme Castle based on my Master thesis about ordering the space in the late medieval Häme Castle (Tilanjärjestäminen myöhäiskeskiaikaisessa Hämeen linnassa, Julkaisematon Pro gradu - tutkielma: Helsingin yliopiston arkeologian laitos 2001) in which my main sources were: Research reports concerning Häme Castle (Archives of the Department of Monuments and Sites, National Board of Antiquities. Häme Castle) and Knut Drakes doctoral dissertation on the castle's building history (Drake 1968). See also: Mikkola 2003; Mikkola, Terhi, Spatial organisation in the late medieval castle of Häme, Finland. *Castella Maris Baltici* VI, ed. Kuncevičius A. Archaeologia Medii Aevi Finlandiae VII: Vilnius 2004.

Picture 5. A chamber in the western tower of Häme Castle. Photograph: Terhi Mikkola. (NBA, Häme Castle).

In fact, space in different connections has been of interest to archaeologists in the last decades. What it is considered to tell about the contemporary society depends a lot on the theoretical framework used.[6] Well, I don't want to be called a slightly old fashioned functionalist, but when I am looking back at my studies about Häme Castle, it seems little bit like that. I mean, I have determined the function of rooms in Häme Castle based on their building elements, like doors, windows, closets and fireplaces. And decided, what room was used for what purpose, such as dwelling, defence or storage, due to what it was best suited for according to structural features. But of course, it is not so simple. The room can have uses which are not dependent on its practical use. In some cases, the archaeologist has discussed the subject from

[6] See e.g. Mytum, Harold, Functionalist and non-functionalist approaches in monastic archaeology. In: *The archaeology of rural monasteries*, eds. Roberta Gilchrist & Harold Mytum. BAR, British series 203, Oxford 1989.

a structuralist viewpoint, defining space with opposites, such as sacred–profane or private–public. It is one solution, but sometimes it is difficult to define those opposites. Such as in the case of the castle, it could be easily said that the daily housekeeping and warfare were two different things, but it must be remembered that to a certain degree the whole castle was meant for defence. There are castles, whose ballroom windows were suitable for the cannons. And this brings us to contextualism, which admits that things, also rooms, can carry several meanings and purposes.

Picture 6. The eastern gable of the northeast wing. Photograph: Terhi Mikkola. (NBA, Häme Castle).

One reason, why archaeologists seldom go for very far reaching interpretations about buildings, such as castles, is that the research material is usually only partly preserved. It can be that the reconstructions of the buildings or landscapes are so uncertain that they are difficult to use as a basis for theories about society. We must be careful that we don't start to examine the reality what we have created by ourselves. But, on the whole, I think that correctly treated, use of space is such a complicated and

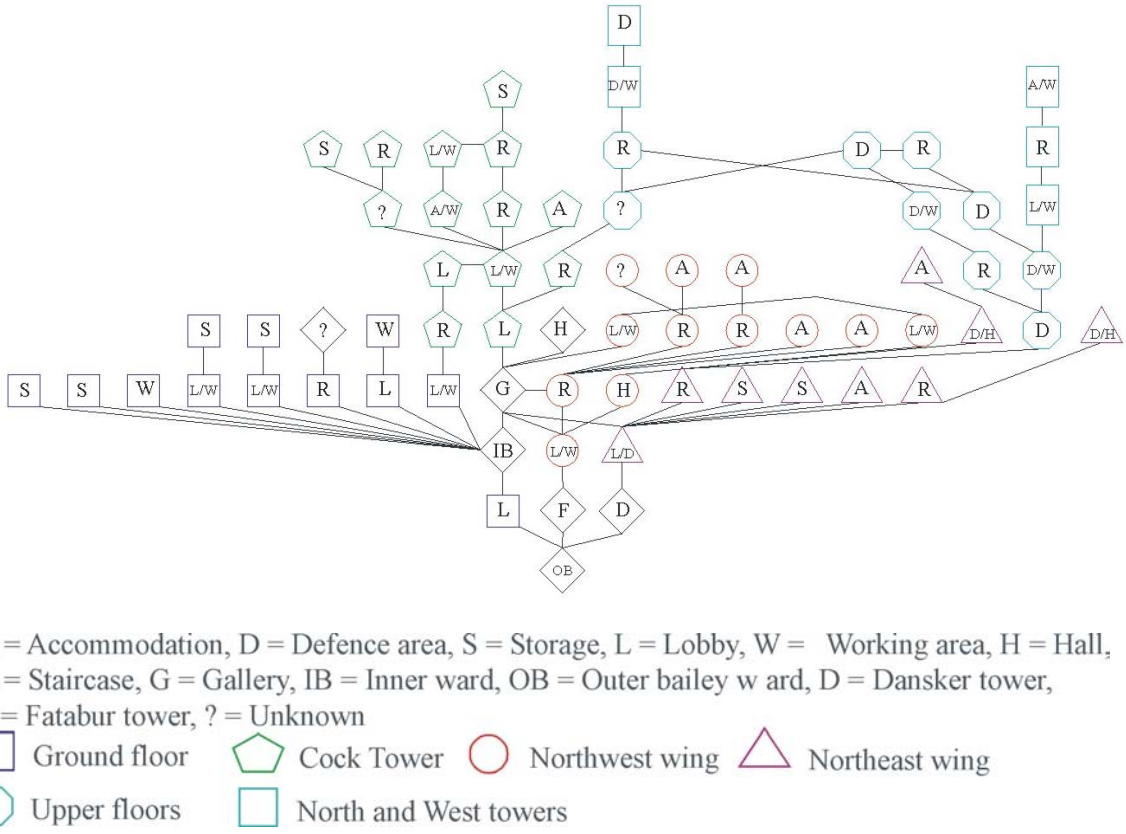
rewarding subject that it deserves to be examined through many various theoretical traditions.

Picture 7. The southern corner of the inner ward. Photograph: Terhi Mikkola. (NBA, Häme Castle).

Anyway, I think, that in order to analyse practical, social, cultural and mental factors I have to understand the whole inner organisation at same time. For that purpose I have made a so called access diagram about the late medieval Häme Castle (fig 8). In the diagram rooms and other spaces are marked on the different levels according to the smallest possible number of accesses from the chosen point, in my case, from the front doors of the main castle. This kind of diagram shows how people could move within the castle and it is also possible to do statistical analysis for instance about the status of the separate rooms. This method was developed by two architecture theorist, Julienne Hanson and Bill Hillier, in the 1980s.[7] But as is obvious, understanding and presenting the room organisation in the castle by using this kind of diagram is not easy. Of course, when I am in full swing in my

[7] Hillier, Bill & Hanson, Julienne. *The social logic of space*: Cambridge 1984, pp. 147–149.

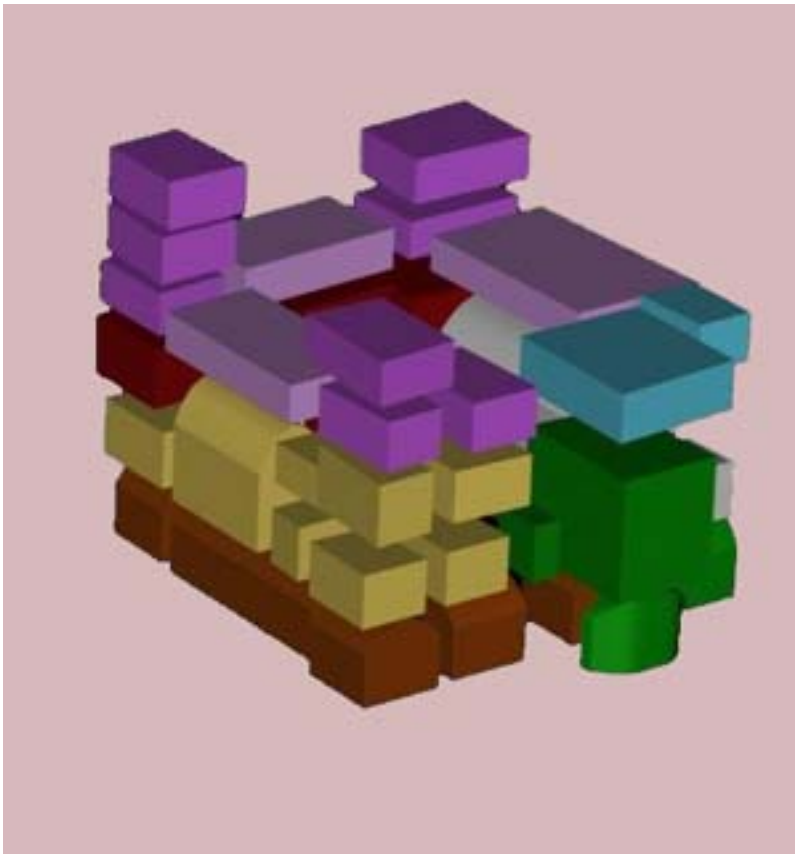
research, I know the exact meaning of every single dot in the diagram. But the problems start when I return to my study after few months or have many diagrams about different buildings – and of course when I am trying to present my ideas to a larger audience. For these reasons I wanted to try 3D-modelling in describing the inner space. At first I had to decide how I am going to do that and how much time and effort I want to spend on the work. In fact, I saw two ways; the first was to do a more or less photorealistic model. Another way was to do a simple model and present only those features which are important to my study.




Picture 8. An access diagram, i.e. a schematic overview of the different areas in Häme Castle. Drawing: Terhi Mikkola.

The photorealistic way seems very addictive because this way it is possible to make detailed and impressive pictures. But it demands effective computers, very thorough studies about every building element which is going to be presented and, in reality, it takes time and demands many-sided skills that it is perhaps impossible to do that all alone – there is maybe a need for a few well paid experts.

And one question, which needs much attention in the photorealistic models made of ancient, partly ruined buildings, is that sometimes it is difficult to see in those models which parts are modelled from remaining structures and which parts are interpretations. So, in choosing this way, there is really a need to think how to make people understand what in the model is based on measures of existing or existed structures and what is interpretation. And of course, it can easily happen that the possibilities of 3D-modelling can make the researcher put all the information in the same picture and the result is so full of details that the original idea of research is covered with them.




Picture 9. A 3D-model of Häme Castle. Drawing: Terhi Mikkola.

After considering my purpose of modelling and my capability at the moment, I decided to model my inner organisation in a much simpler way. It demands less time and cost and makes the message of the model easier to understand. It is true that these kinds of pictures are not as impressive as photorealistic one's, but it can be questioned if the 3D-model should look like a photo. I think that a good model can be very simple or very complicated, due to what it is meant to present and how it's going to be used. And of course, it is possible to make a simple model more complex if

needed, or make many simple models to describe different features. The models I have done present how room groups in Häme Castle were related to each other in the Late Middle Ages (fig 9). I have marked every room group with a certain colour. With colour, or some other easily understandable attributes, it is possible to mark other functions and meanings too, like all the dwelling rooms, storages, halls or defence passages. Or rooms where women or soldiers lived. I have found these kinds of simple and quickly done models useful in my work. Of course, one may ask: why not use drawings, which are more elegant and have a long tradition in describing buildings in art history and archaeology. But the benefit of using the 3D models is the possibility to look at same picture from every angle on your desktop. And your picture is flexible; you can use the same picture for different purposes and make corrections easily. In fact, I think that easy editing makes the modelling an excellent method in these kinds of studies.

## Conclusion

Generally speaking, archaeologists use pictures and maps more than many other humanistic disciplines. Archaeologists use them for example to show artefact distribution, how different uncovered features, findings, room structures and earth layers relate to each other or to show how dwelling sites are situated in the landscape. 3D-modelling makes this more visual and allows more ways of use than 2D-drawings. According to my opinion and experience, the meaning of a model in analysing and as a heuristic method uncovering new questions and sometimes showing ideas that I could not have been able to imagine without seeing, is significant.

Our project of modelling Häme Castle is still at the starting line, and surely we are going to make much more complicated models about the castle than I presented in the previous chapter. Till now the most important thing that was done was taking natural scientific samples: dendrochronological samples from the castle's wooden structures, for first time. We hope that they will help us in dating the castle's building phases, now all the existing interpretations are based on building archaeological observations and comparative studies. Macrofossil samples were taken from earth layers, which had remained below the garrison building in south-east

side of the castle, to tell us about the vegetation of the environment, cultivated plants and imported fruits and plants.[8]

On the whole the, *Through the Gate Tower – Modelling the Past of Häme Castle* -project will produce new research information about Häme Castle and its environment and we will use that new information in the modelling so that our model is based on scientific facts and justified interpretation. And when the result is ready, it is not just a trendy way to present our achievements but a tool which we can use in further research.

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The captions have been translated by Riina Kivijärvi with the exception of pictures 8 and 9.

[8] Dendrochronological samples were taken by Pentti Zetterberg, Laboratory of Dendrochronology, University of Joensuu and macrofossil samples by Terttu Lempiäinen, Senior Lecturer, Department of Biology, University of Turku.