

MORTARS OF TURKU CASTLE

Master of Architecture Thesis

Misa Nurminen



THESIS RESEARCH

TITLE

Mortars of Turku Castle –
The history and historical-cultural values of a building material

OBJECTIVES:

To chart the literary history of mortars used at Turku Castle

To understand the cultural significance of mortar

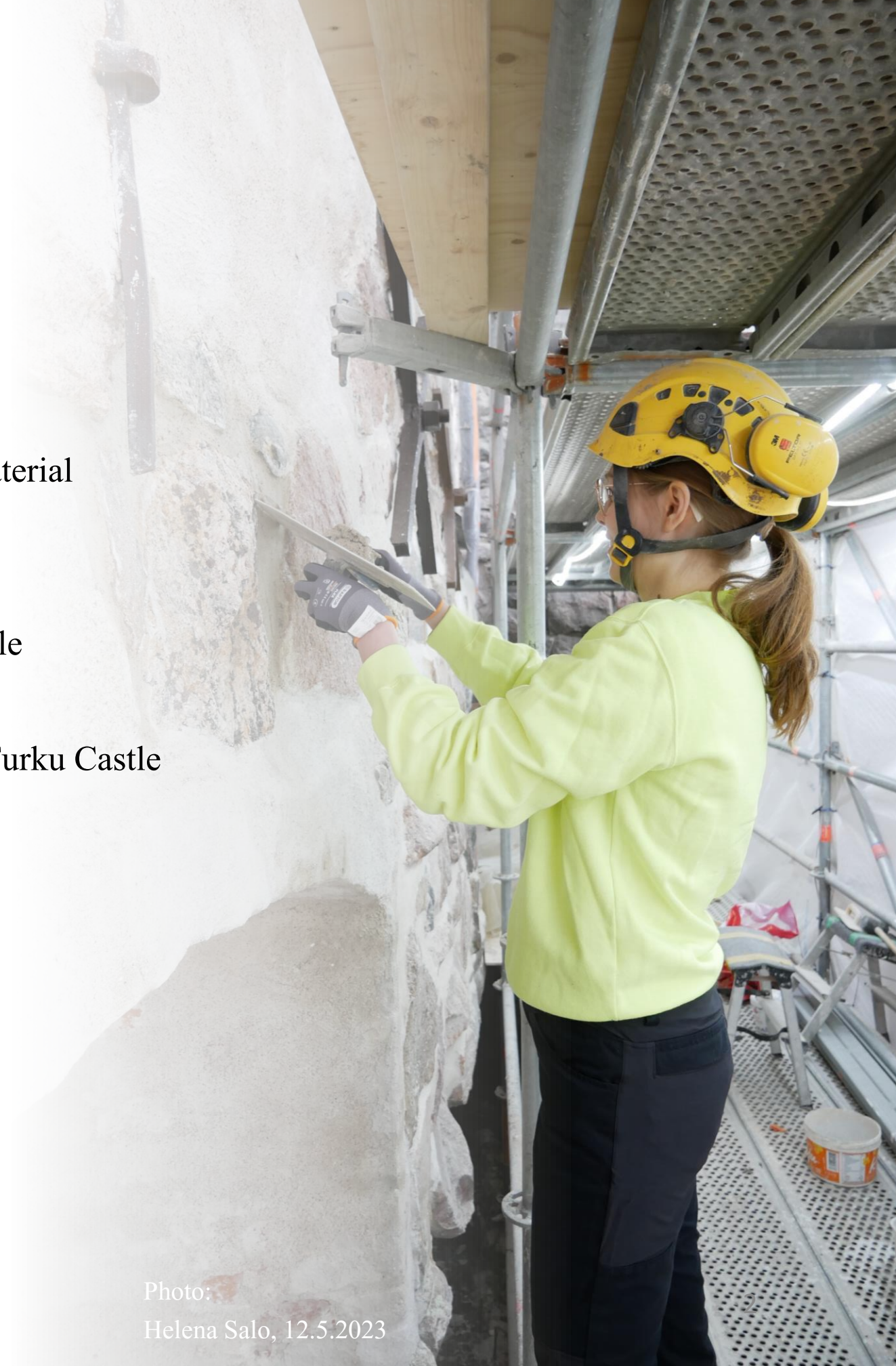
To assess the recognition of heritage values of mortar at Turku Castle

METHODS:

Archival research

Literature review

Interviews



OVERVIEW ON MORTARS AT TURKU CASTLE

MORTARS CURRENTLY

Diverse: age, use, raw materials, consistency, craftsmanship

Overlapping and merged

Visible layers mostly from 1950s or younger

Common factor in old mortars:
lime



LIMESTONE



INDUSTRIAL MINERAL POTENTIAL

Geological Survey of Finland: Ahtola et al 2007

LIMESTONE MINES 1873–2001

Geological Survey of Finland: Ahtola et al 2007



Calcitic limestone



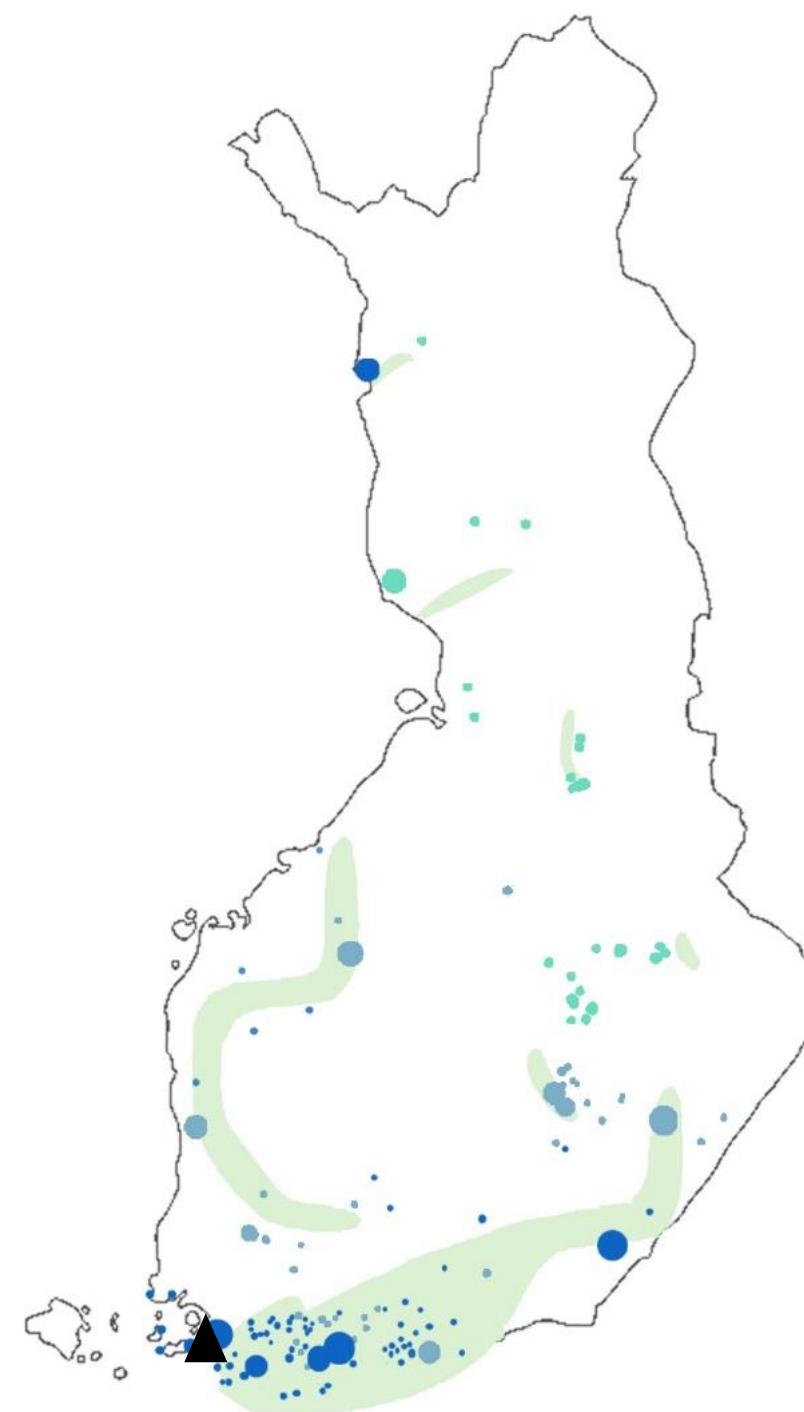
Calcitic-dolomite limestone



Dolomite limestone






Turku Castle





LIMESTONE

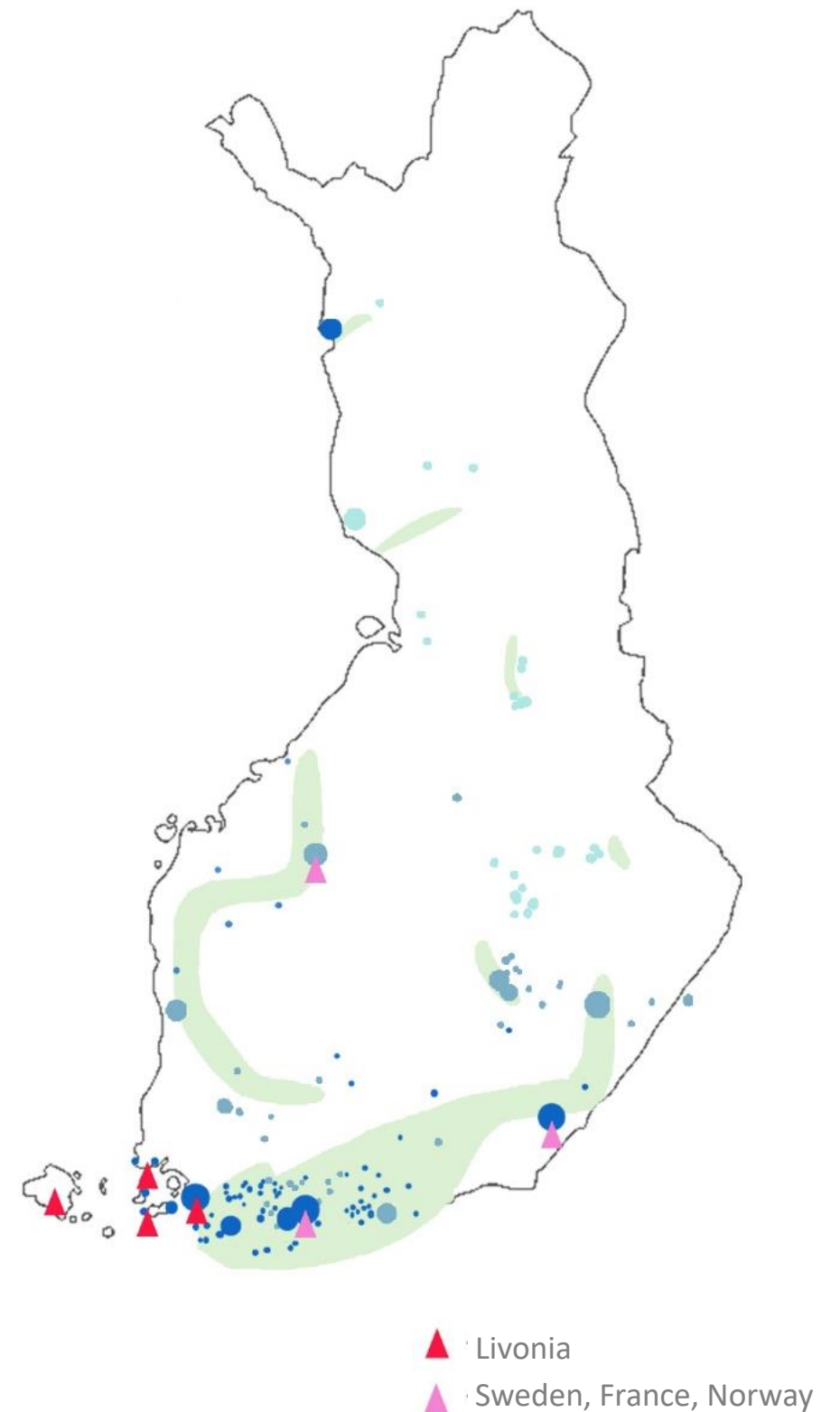
 INDUSTRIAL MINERAL POTENTIAL
Geological Survey of Finland: Ahtola et al 2007

LIMESTONE MINES 1873–2001
Geological Survey of Finland: Ahtola et al 2007

 Calcitic limestone
 Calcitic-dolomite limestone
 Dolomite limestone

THE ORIGIN OF LIME USED FOR TURKU CASTLE
FHA Hd:39, Gardberg 1959

 1500–1600
 1900→



LIME BURNING

- Traditional lime kilns
- Peasants' livelihood

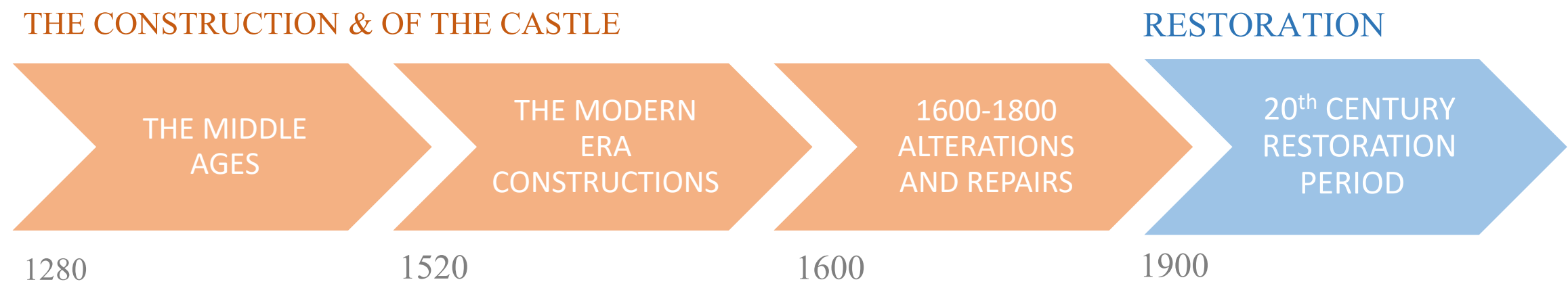


Photo: Benjamin Frosterus, 1904

MORTARS OVER TIME



MORTARS OVER TIME

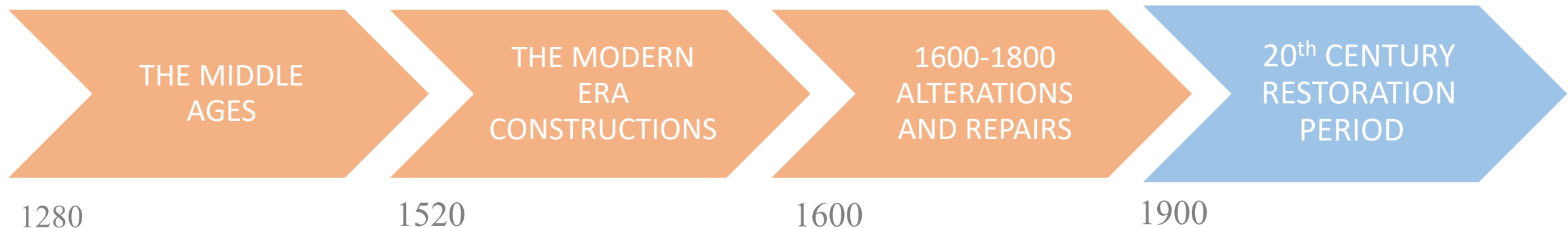


SOURCES

Very few original sources
Archaeological and historical research
Lime production and craftsmanship

MORTARS OVER TIME

THE CONSTRUCTION & OF THE CASTLE



RESTORATION

SOURCES

Very few original sources
Archaeological and historical research
Lime production and craftsmanship

SOURCES

Written documents
Pictures and interviews
Mortar recipes and methods

THE MIDDLE AGES 1280–1520

MORTARS:

- Medieval mortars generally great quality (Perander et al 1985)
- VTT study: (Perander et al 1985)
 - 1200s KKh 70/30/131 and KKh 73/27/171
 - 1300s KKh 67/33/318
 - 1400s KKh 78/22/86

LIME:

- Possible sources: medieval lime kilns in Aland, Parainen, Turku, Kemiö and Lohja.



THE BEGINNING OF MODERN ERA 1520–1600

MORTARS:

- VTT study: (Perander et al 1985)
 - KKh 98/2/115
- Skilled foreign masons and local workers

LIME: (Account books of Turku castle NAF, Gardberg 1959)

- Acquired as tax, by buying & own production
- Suppliers
 - Mostly from Parainen
 - Early 1500s: Aland and Livonia
 - Other suppliers: Kemiö, Paimio, Piikkiö, Korppoo, Kakskerta and Taivassalo
- Delivery by water, castle's own lime vessel (Kuokkanen 1981, Gardberg 1959)



FROM 17th TO 19th CENTURY

MORTARS:

- Colors were used in the plasters (Pietarila 1993, Mattinen and Raatikainen 1990)
- The quality of mortars decreased (Perander et al 1985)

LIME:

- Account books at NAF contain information about lime suppliers
- Uncertain, how long castle's own kiln produced lime (Kuokkanen 1981)



20th CENTURY RESTORATION PERIOD

MAIN RESTORATION PHASES

- Great restoration of the main castle 1946–1961
- Renovation of the bailey 1977–1987
- Renovation of the main castle 1987–1993
- 21st century wall repairs



Photo: Kotkas, 1985



MATERIALS

LIME

- Finland: Lappeenranta, Lohja, Vimpeli
- Sweden: Gotland, Landskrona
- Norway
- France: Saint-Astier

(Raatikainen 1981, Vilkanen 2007, Lauren 2023, Neffling 2023, Reinikainen 2023, Leppäniemi 2017)

MORTARS

- Lime- cement
- Lime- hydraulic lime

(For example: Raatikainen 1981, Leppäniemi 2017)

CEMENT

- 1931 first written mention (Rinne 1931)
- Became commonly used



TO BE CONTINUED...

MASTER'S THESIS

Due to be published by Senaatti and Tampere University by the end of the year

LIST OF MORTARS

As an appendix to my thesis

FURTHER RESEARCH?

Potential for further, deeper research

KIITOS



SOURCES

ARCHIVES

Finnish Heritage Agency (FHA)

The National Archives of Finland (NAF)

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EMAILS TO AUTHOR

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Other photos: Misa Nurminen, 4.5.2023 and 12.5.2023. Turku castle, Turku.