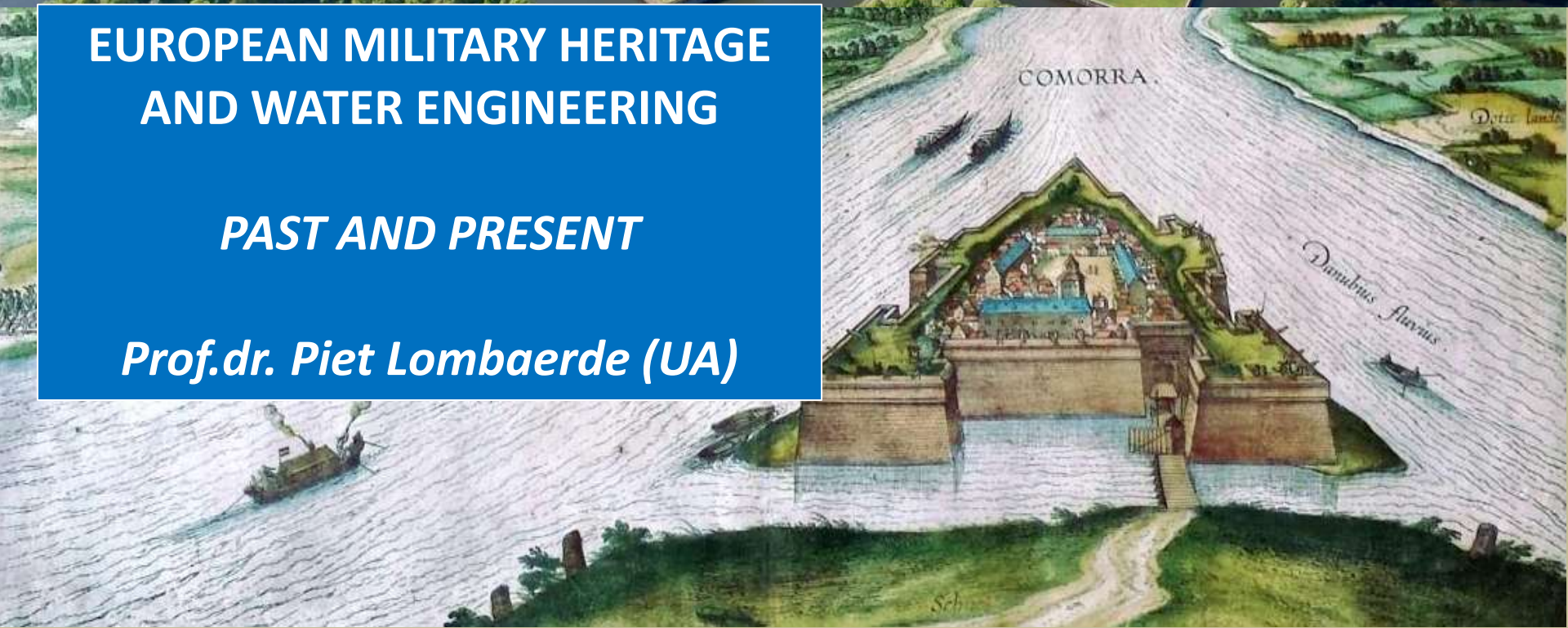




EUROPEAN MILITARY HERITAGE AND WATER ENGINEERING

PAST AND PRESENT

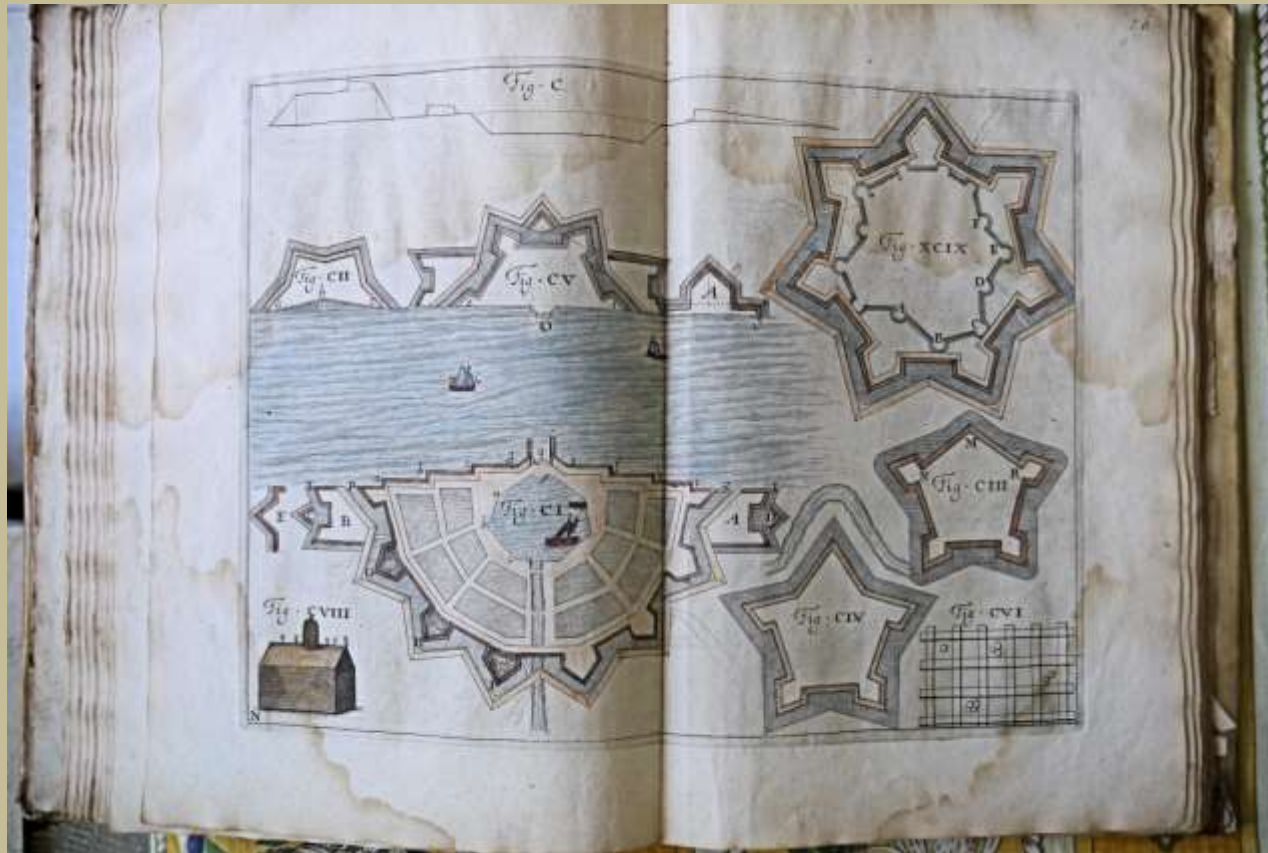
Prof.dr. Piet Lombaerde (UA)

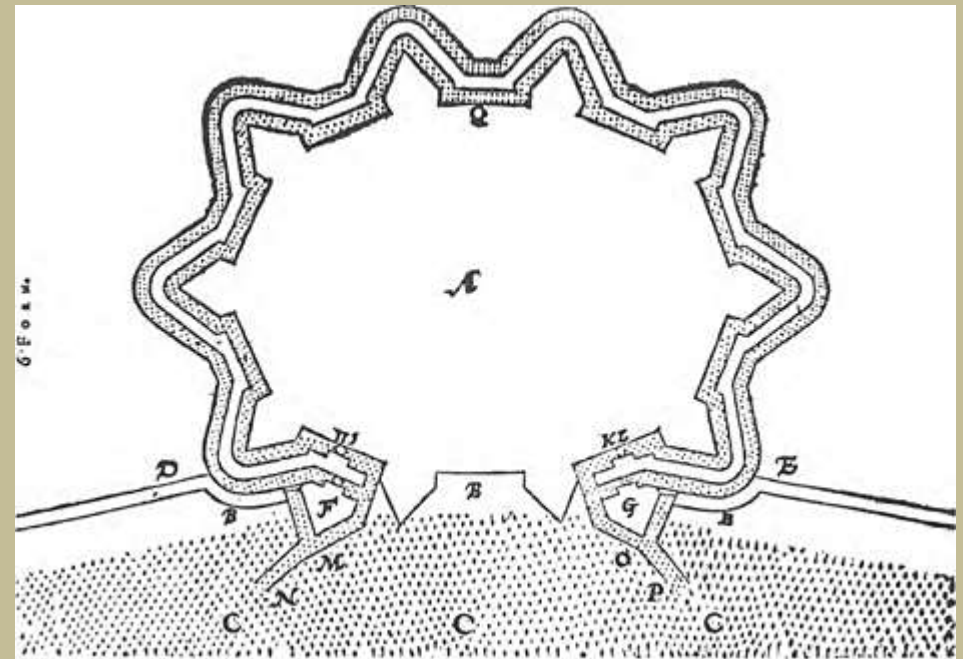
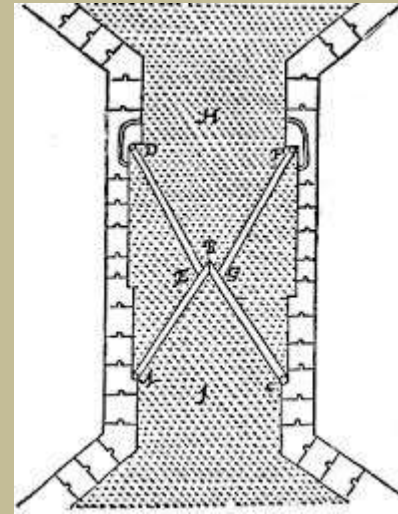


INTRODUCTION



What tell us the engineers in their tracts about fortification and water?



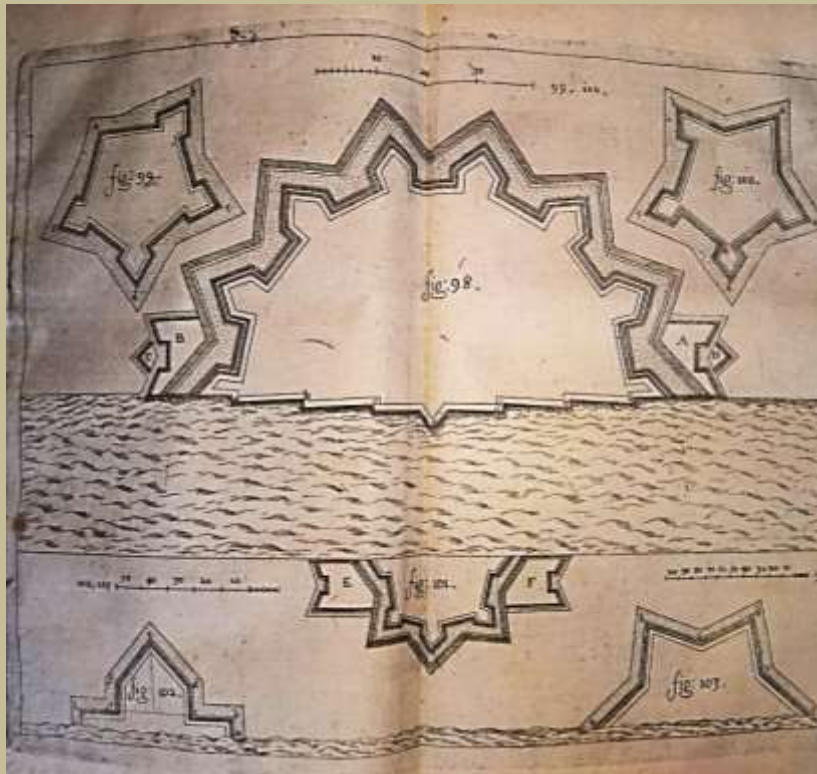


SIMON STEVIN (1548-1620)

Nieuwe maniere van stercktebou door Spilsluysen, Leiden, 1617

ADAM FREITAG (1602-1664)

*Architectura Militaris Nova et aucta, Oder
Neue vermehrte Fortification*, Leiden, 1631.



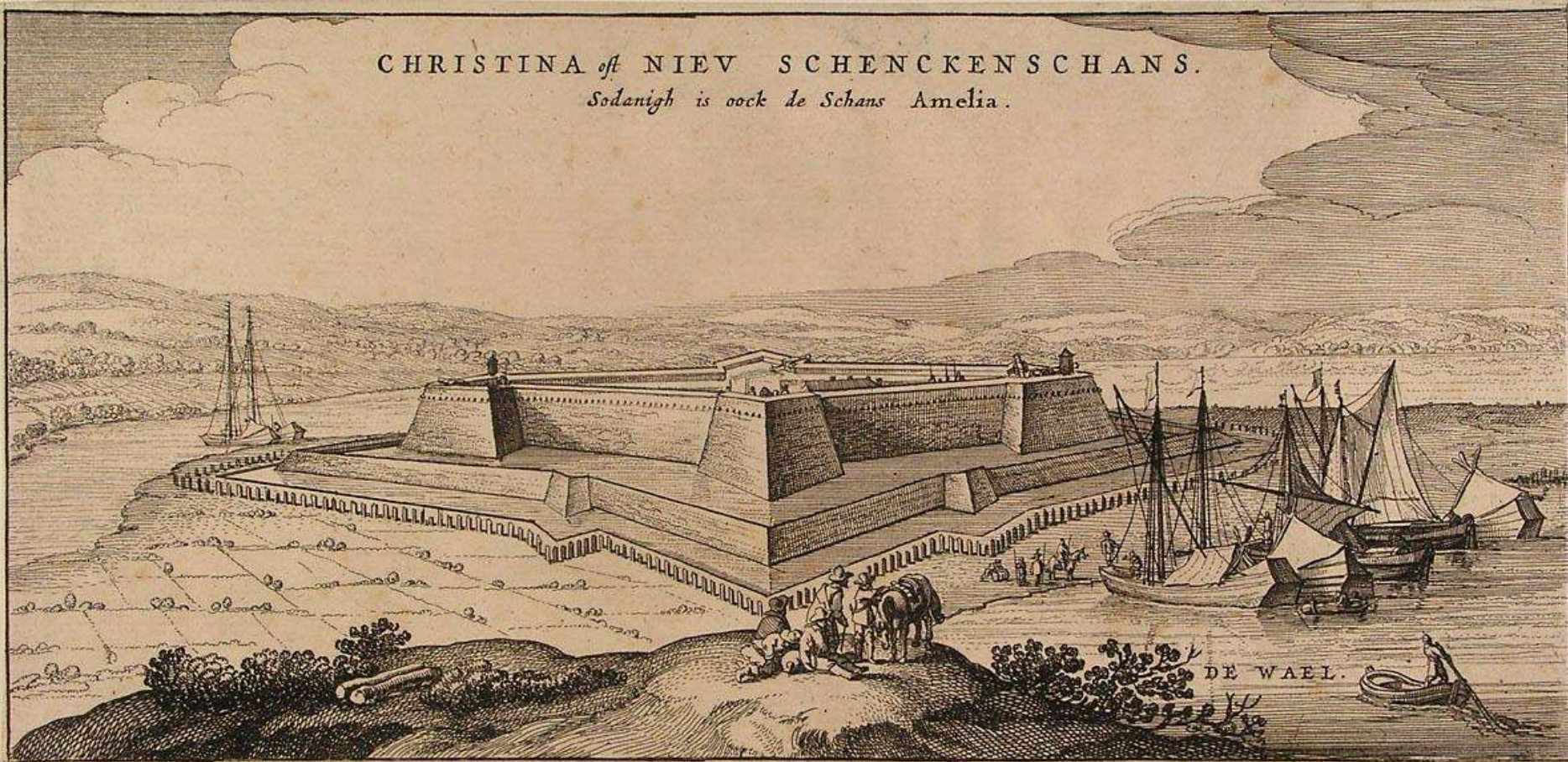
Model of a fortified city near a river



The city of Sluis with its fortifications, 1604

CHRISTINA oft NIEV SCHENCKENSCHANS.

Sodanigh is oock de Schans Amelia.



The 'Schencenschans' fortress on the Rhine River (Kleef, Germany)

MENNO VAN COEHOORN (1641-1704)

Nieuwe Vestingbouw op een natte of lage Horisont, Leeuwarden, 1702





**SÉBASTIEN LE PRESTRE DE VAUBAN
(1633-1707)**



Damme, 1702

Fort Lupin
(Charante
Maritime)

JAN BLANKEN (1755-1838)

*Verhandeling over het aanleggen en maaken
Van zogenaamde drooge dokken in de
Hollandsche Zeehavens..., 1796.*

The dry docks of Hellevoetsluis (The Netherlands)



TPOLOGY

- The Moats as Defence System:
 - Motte & Bailey Castles
 - Water Castles
 - Medieval Walled Cities
 - Bastioned Cities
- Rings of Moats as Defence Systems
- The Sea as Defence System
- The Inundations as Ultimate Defence System
- Naval bases

THE MOATS AS DEFENCE SYSTEM

Motte & Bailey Castles:

Motte 'De Hoge Wal' at Ertvelde (Flanders)





The **Water Castle of Wijnendale** (Flanders, near Torhout):
a medieval castle surrounded by a moat



Cittadella: a medieval walled city in the province of Padua (Northern Italy), 13th century.

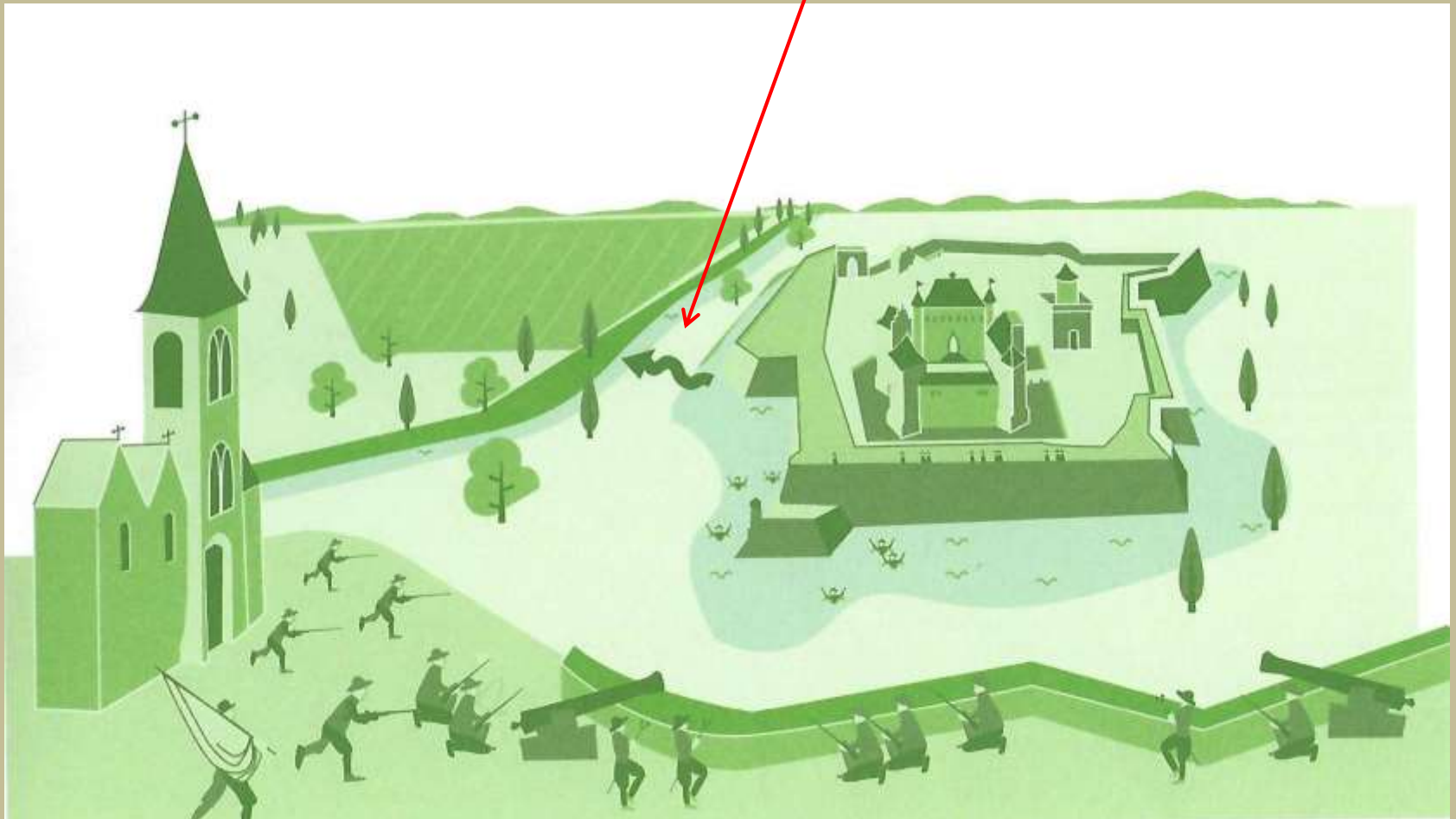


Gravelines:
a bastioned city
by Vauban

Westerlo (Brabant)

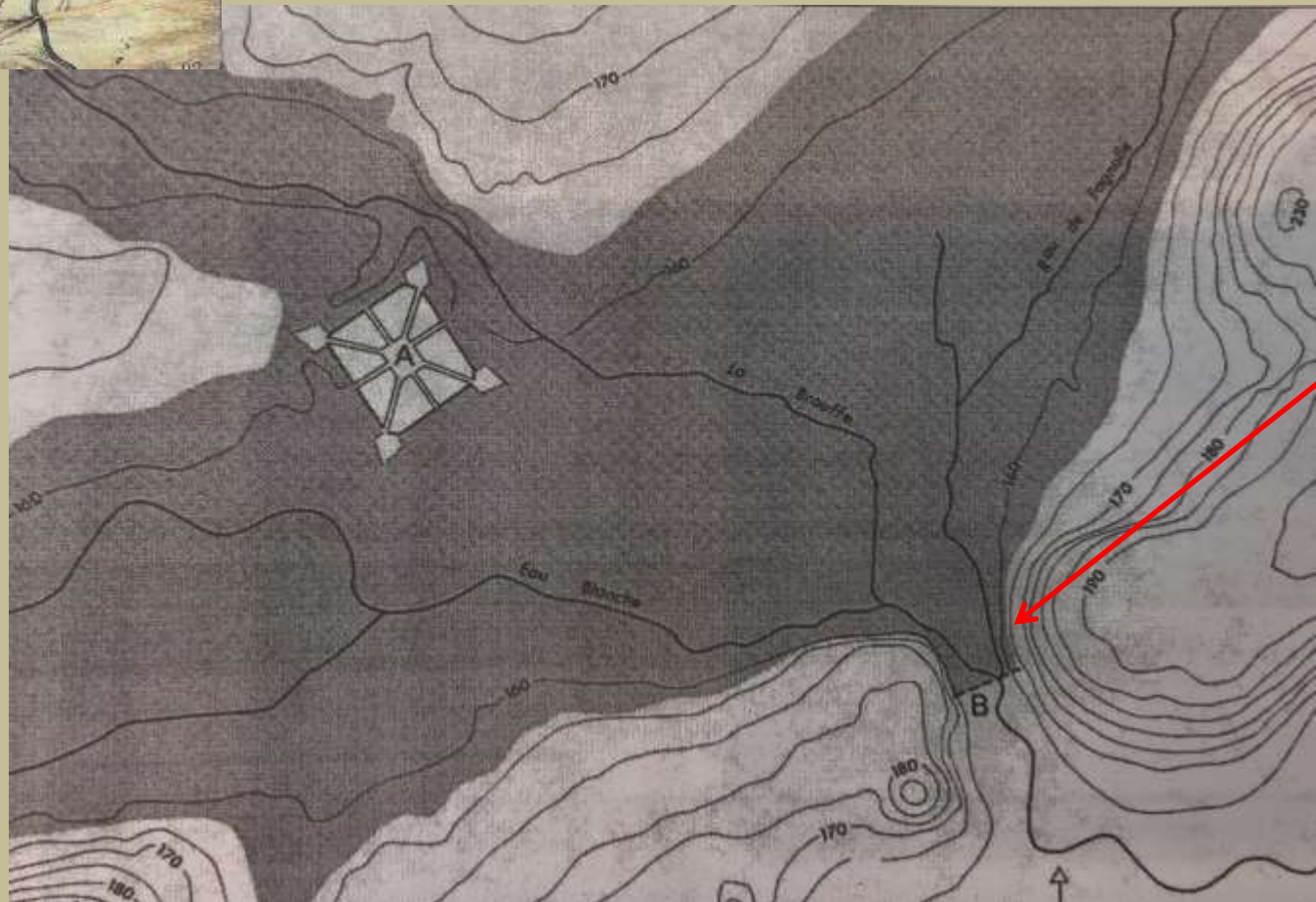
Siege of the 'castellum in fortezza' of Count de Merode by Count Charles de Mansfeld, 1583.

Drainage of the water from the moat of the fortification to the river

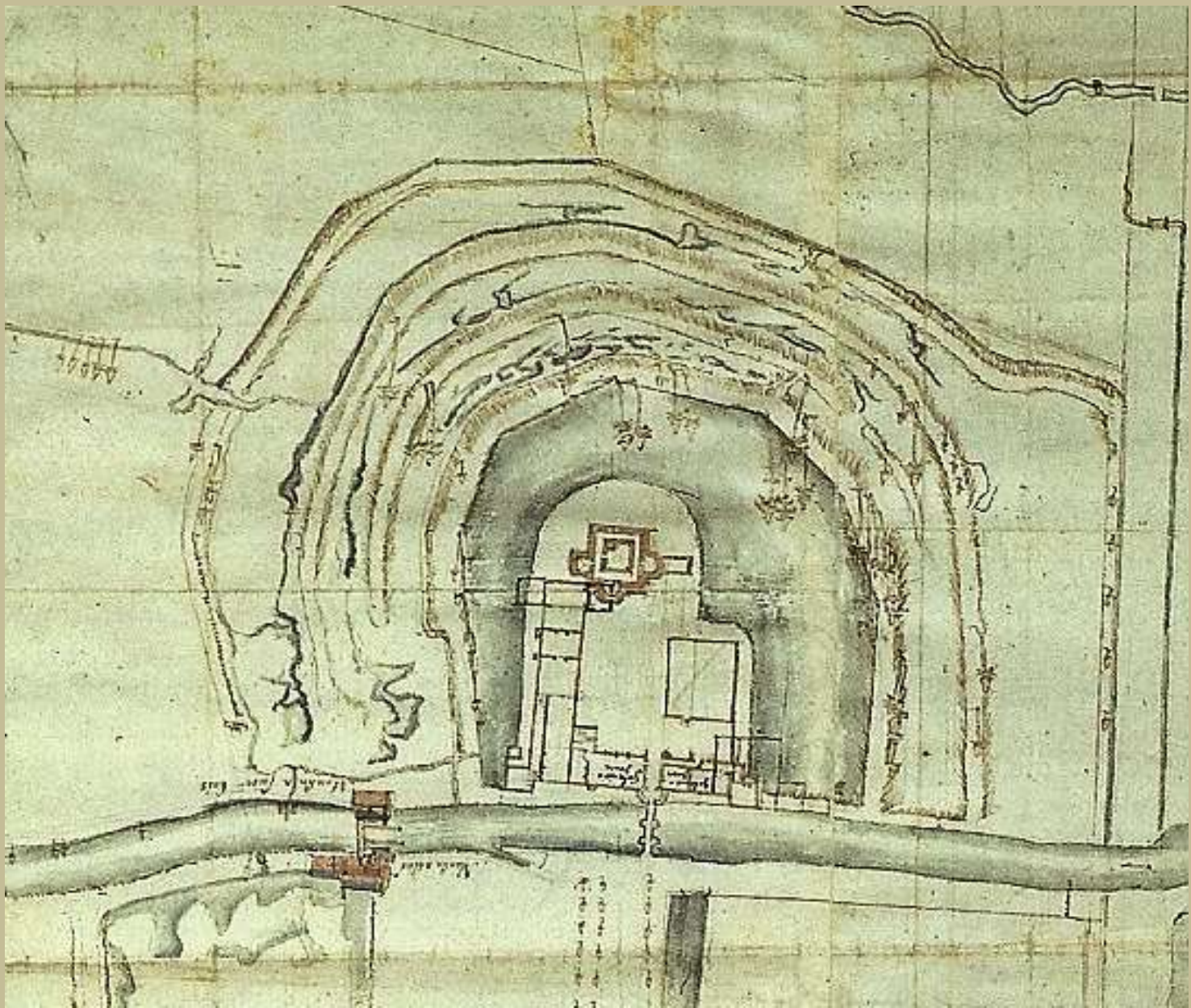




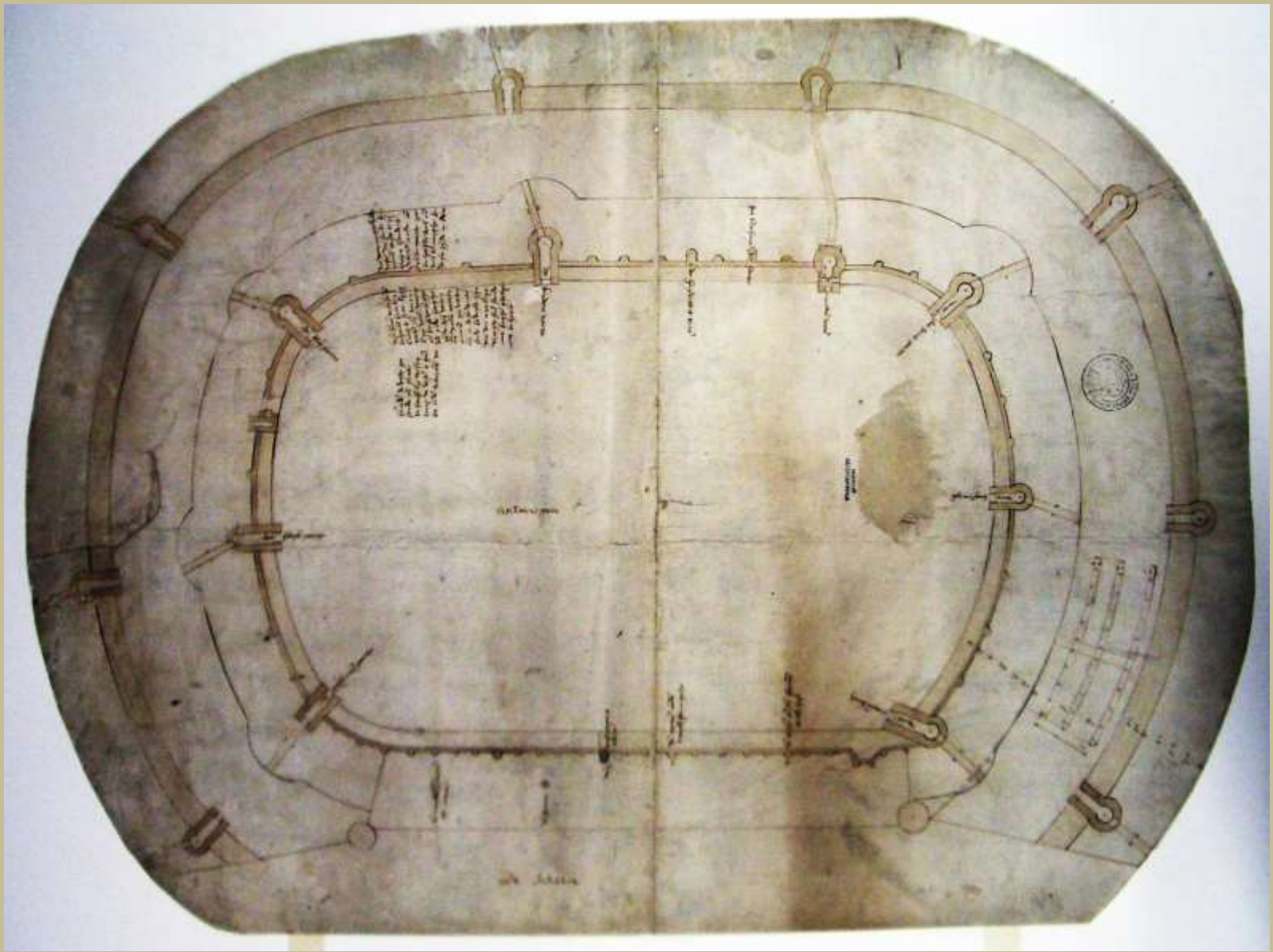
Siege of Mariembourg August 9th 1554
Italian engineer Mario Brunelli
Plan to 'draw' the besieged city by
the construction of a dam over the river



(drawing by B. Roosens)



The castle of Arenberg (Heverlee, Brabant) with four rings of moats, c. 1596



Anonymous: design for double ramparts around the city of Antwerp, c. 1520



Menno van Coehoorn: a double ring of bastioned fortifications around the city of Naarden



Malta: a complex system of sea arms and bastionated fortifications to protect the harbor and the city of La Valette



Vauban: the city of Saint-Malo and the fort Royal (Fort National), 1689



Fort Boyard (Charente maritime), 1801-1804



LIER Innundations

The Spui House: a medieval
lockkeeper house

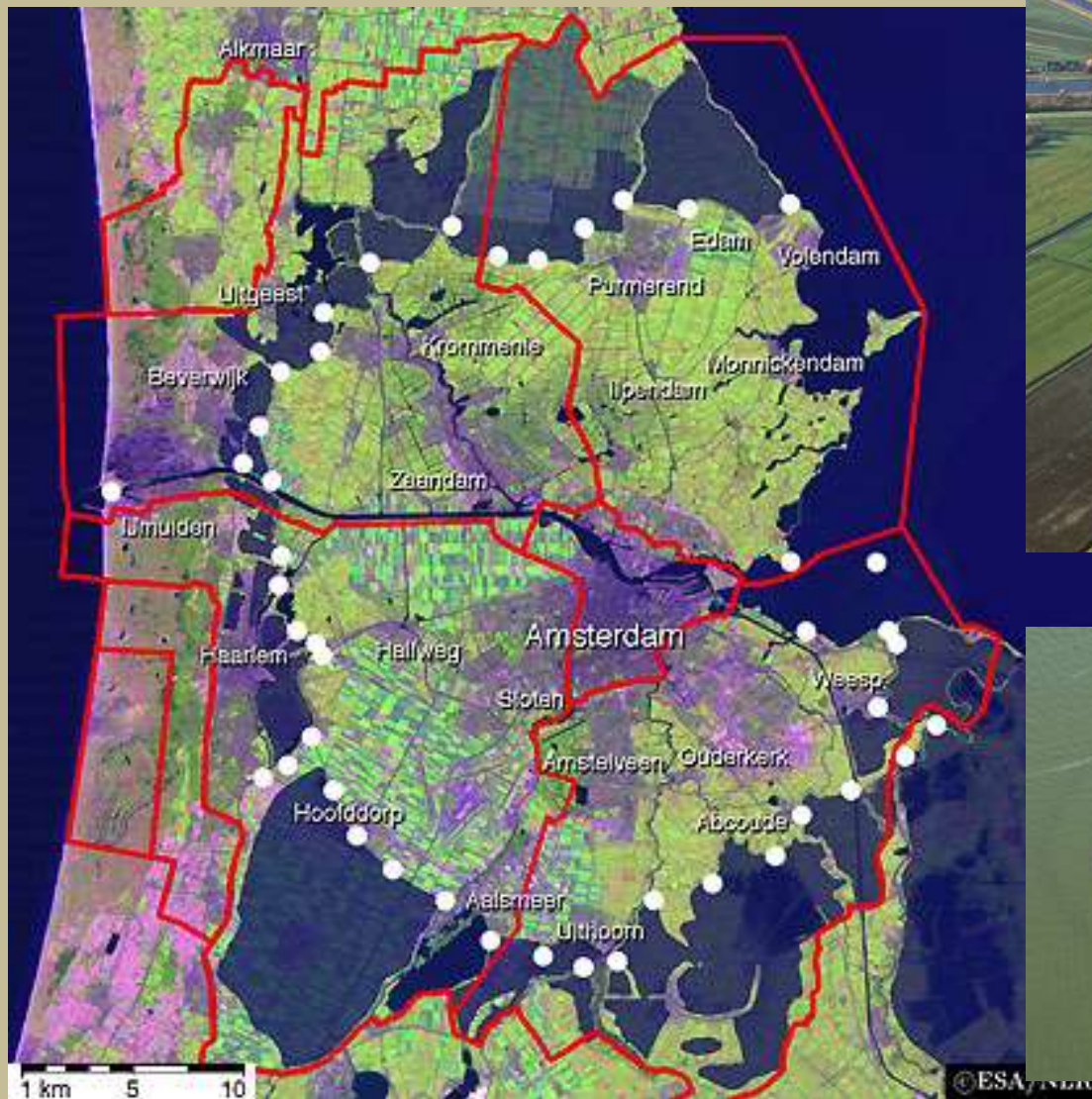




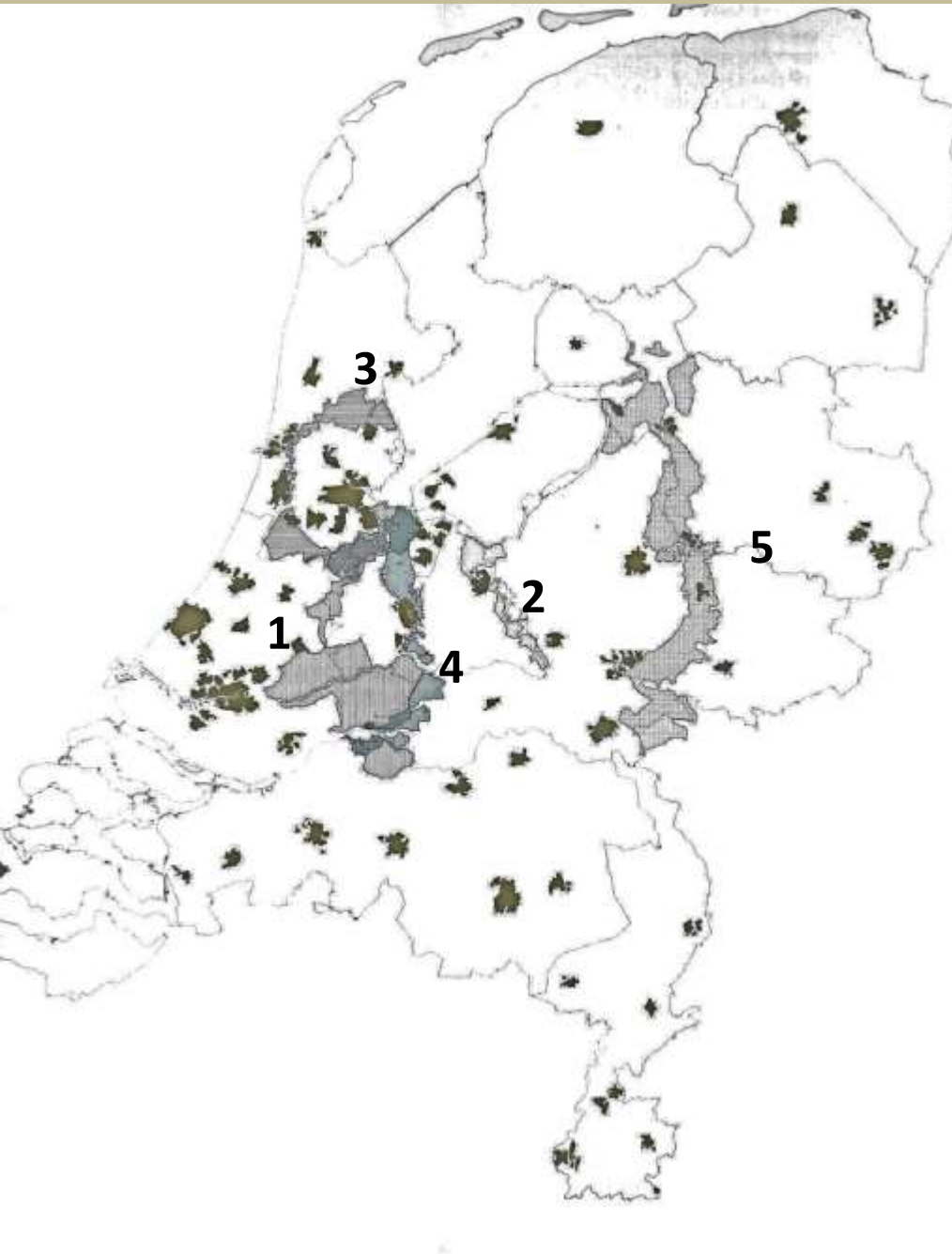
J. Blaeu: inundations around the city of Breda



Vauban: proposal for inundations around the city of Damme (Flanders), 1702



The 'Stelling Amsterdam'



Different Water Lines in The Netherlands

1. Old Dutch Water Line
2. Grebbe Line
3. Stelling Amsterdam
4. New Dutch Water Line
5. IJssel Line

Naval Bases

Suomenlinna
(Finland)



Karlskrona
(Sverige)



Daniel Thunberg





Kronstadt (Russia)



Cherbourg: the Naval Base created by Napoleon Bonaparte

CONCLUSIONS

