

Rammed earth building in Europe

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Presentation outline

- About me
- Historic rammed earth in Europe
- France
- Germany
- Austria
- Spain
- UK
- Rest of Europe
- Conclusions

About me

- UK Structural Engineer
- Recently working in Sweden
- PhD 'Analysis of historic rammed earth' Durham University, 2008. Treated rammed earth as an unsaturated soil
- Board member ICOMOS ISCEAH
- Director Earth Building UK
- Run www.historicrammedearth.com website



Historic rammed earth (1)

- 200BC Rammed earth from North Africa. Mentioned by Roman author Pliny
- 711AD Muslim armies moved from north Africa
- Introduced mainly into Spain and Portugal



Rammed earth spread 200BC – 1492AD

Historic rammed earth (2)



Jaen city wall. Spain 1264AD



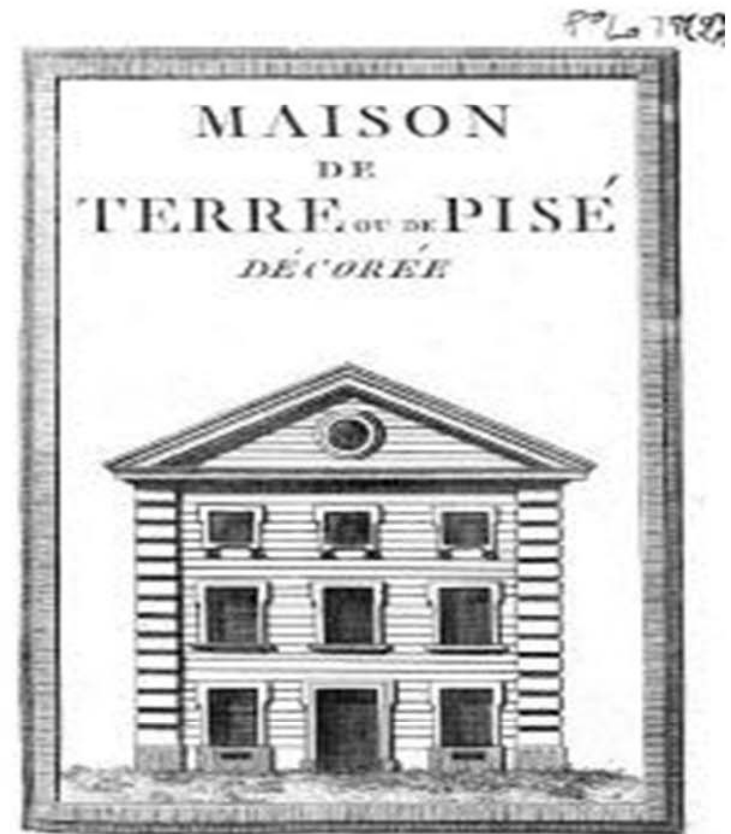
Marakesh city walls.
Morocco 1062

Historic rammed earth (3)

- Rammed earth used throughout Spain, Portugal and into France until the 17th century
- Reintroduced by architect Francois Cointeraux in a 1791 Book
- Translated and adapted into German, Italian and English



French rammed earth barn



Cointeraux's 1791 book

Historic rammed earth (4)

- Cointeraux style of rammed earth spread through France, to Spain, Germany and Italy
- Also taken to the United States, Australia and New Zealand



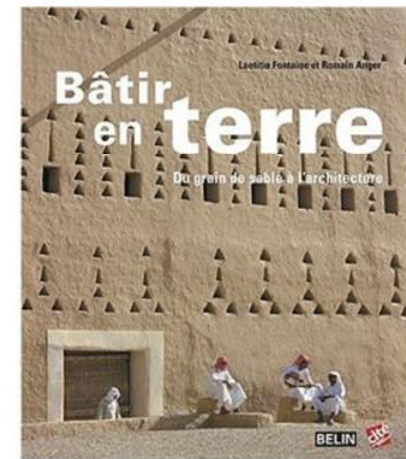
France



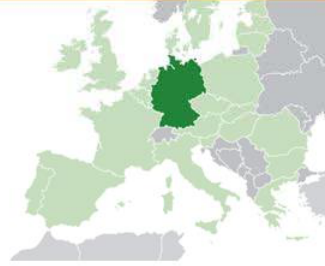
- Historic buildings based on books by Cointeraux
- CRAterre set in in 1970 to promote the use of earth building at School of Architecture in Grenoble
- Constructed Domaine de la Terre in 1980s
- Involved mainly in development work
- Now looking at science and education



Domaine de la Terre, near Grenoble



Germany



- Some historic buildings from around 1840
- Current research at Weimar university
- Have produced German earth building standards
- Moder earth building association, the Dachverband Lehm
- Many practitioners of earth plaster, and some rammed earth building



Haus Rath, near Koblenz, Germany

Austria



- Martin Rauch
- Earth sculpture and clay plaster
- Based in Austria, works across Europe
- Produces fireplaces, floors and structures



Martin Rauch new house. Austria



Bespoke rammed earth stove

Spain



- Many buildings from Muslim period 711-1492
- 'Morisco' Christian and Muslim architecture, 1300 – 1600
- Vernacular construction until after 1900
- Research focused on repair of historic buildings
- Currently few examples of new build in Spain



Repaired castle, Novelda, Spain



UK (1)



- Historic cob building in western England
- Majority constructed in the 1700s
- Small number of rammed earth trial buildings in the 1920s
- Modern cob returning as a sustainable construction material



Cob barn adjacent to cob house. Devon, UK



Modern Cob building. Kepplegate, Devon, UK

UK (2)

- Centre for research into rammed earth building, at Universities of Bath, Durham and Nottingham
- Small number of new build projects
- Some large scale flagship projects
- National association – Earth Buildings UK
- Current recession means fewer larger projects. These are now beginning to return



Rest of Europe

- Many small scale rammed earth projects after the world wars
- Swedish Earth building association
- Some 1970s 'hippie' commune type projects, rammed earth in Denmark, and the earthship movement
- Movement toward conservation of cultural heritage, Terra Incognita – European funded research project.



Experimental rammed earth house, Poland, 1940. From Terra Incognita



<http://culture-terra-incognita.org>

Conclusions

- Two different drivers for earth building in Europe
- In the north – UK, Germany, France and Austria – this is sustainable construction and architectural considerations
- In the south – Spain, Portugal, Italy – this is conservation of historic buildings
- European recession means that many new build projects have been put on hold
- Sustainable construction will continue to be a driver for both
- National and European design codes are coming!
- For more information on the history of earth building in Europe - buy my book!

