

The background of the slide is a historical painting depicting a fortified settlement. In the foreground, a wooden palisade runs along a riverbank. Behind the wall, there are several buildings, some with thatched roofs. In the background, a large mountain or hill is visible, with smoke rising from it, suggesting a battle or a fire. The sky is filled with clouds.

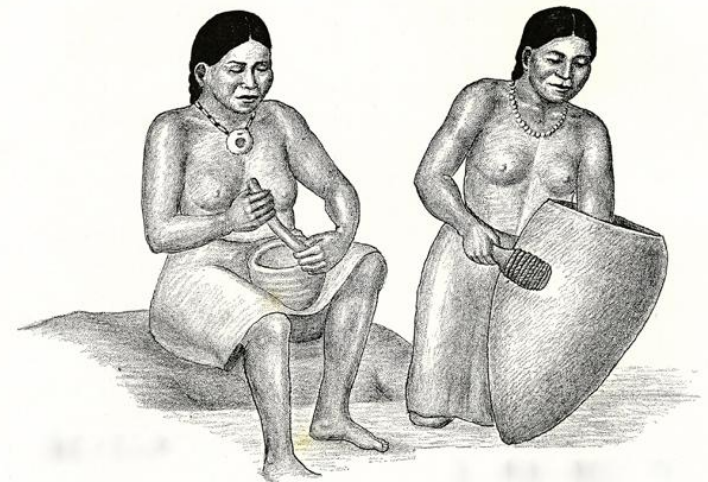
Marvels of the Mud

**An Experimental Investigation into the
Firing of American Bottom Ceramics**

Derrien Jackson

American Bottom Pottery

- Vessels -coil built in stages
- Temper – solid additives which help vessels maintain shape
- Temper types studied
 - Lack of studies for firing methods



Context and Background

- What are firing methods?
 - Reduction (covered) / Oxygenated (open)

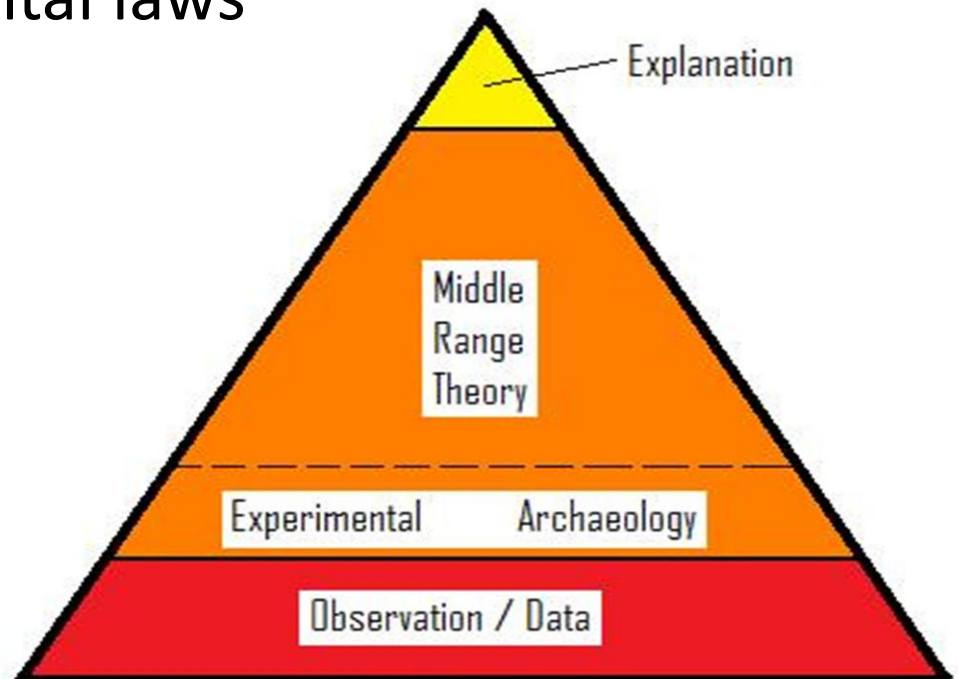
Time periods / Temper types

- Late Woodland (350-900 CE) / grit (sand, rocks) and grog
- Emergent Mississippian (900-1050 CE) / limestone
- Mississippian (1050-1400 CE) / shell



Experimental Archaeology

- Middle Range Theory
 - Manufacturing processes
 - Low level experimental laws
 - Theory
 - Explanations
 - Credibility



Goals of the Project

- Create performance comparison of firing methods across high & low temper types categories
- Adequately control variables to distinguish affects of the two firing methods
- Construct first stage within larger body of research

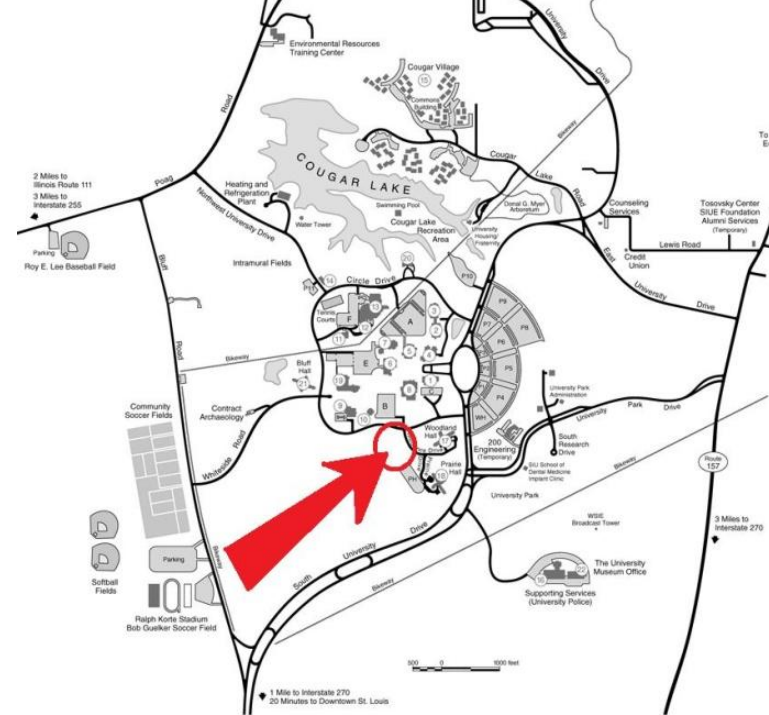
Hypotheses

- Firing methods have a measurable effect
 - Reduction atmosphere =
Greater thermal resistance
 - Oxygenated atmosphere =
Greater kinetic energy resistance



Materials

- Clay
 - Glacial clay deposits: SIUE campus
- Tempers
 - Grit (Sand)- Refined, Purchased
 - Grog – Coarse, Purchased
 - Limestone – Crushed, Locally Sourced, Pre-fired, Purchased
 - Shell – Medium sizes, Pre-fired, Purchased



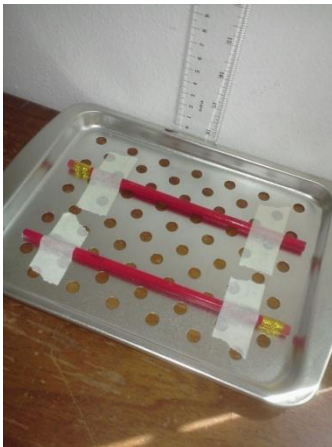
Methods

- Preparation of clay
 - *Tedious*
 - Multiple cycles: agitating, settling, screening and skimming then drying
- Temper Proportions: 10% and 50% of 400g test tiles
 - Dried, weighed, mixed, reconstituted, then formed
- Firing kiln - salvaged



Testing Methods

- Thermal Shock
 - 5 min boil / 5 min cold
 - Repeated 5x
- Kinetic energy resistance
 - Falling weight test (84g)

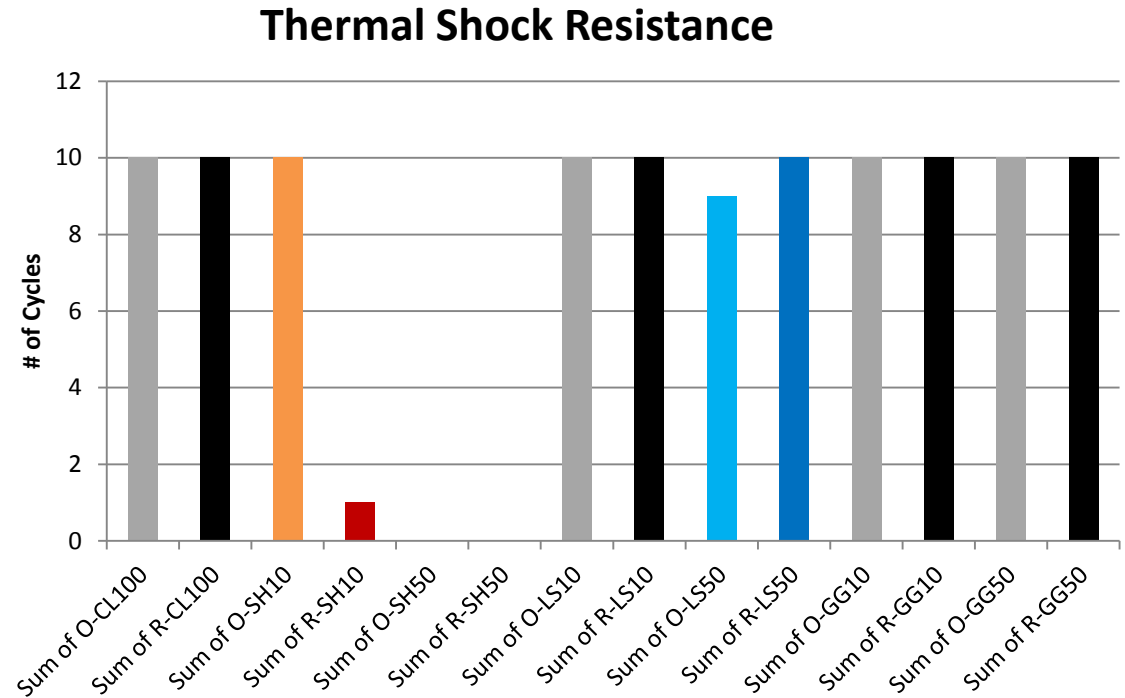


Results: Thermal Shock

- Quantitative
 - Largely inconclusive
 - Failure of R-SH10 (1/0)
 - Failure of O-LS50 (5/4)

Open Fire (Oxygenated)
= Gray

Closed Firing
(Reduction) = Black

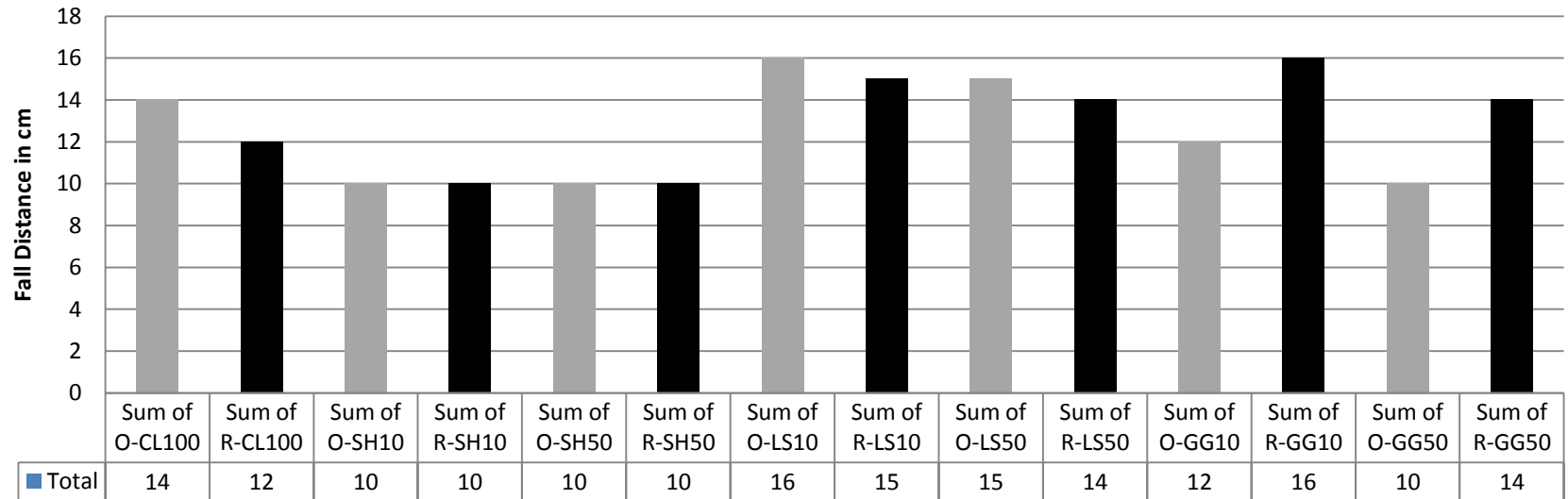


Results: Kinetic Energy Resistance

- Quantitative
 - Oxygenated: limestone, controls = increased resistance
 - Reduction: all temper types besides grit & grog = reduced resistance
 - Shell tempers: no measurable differences

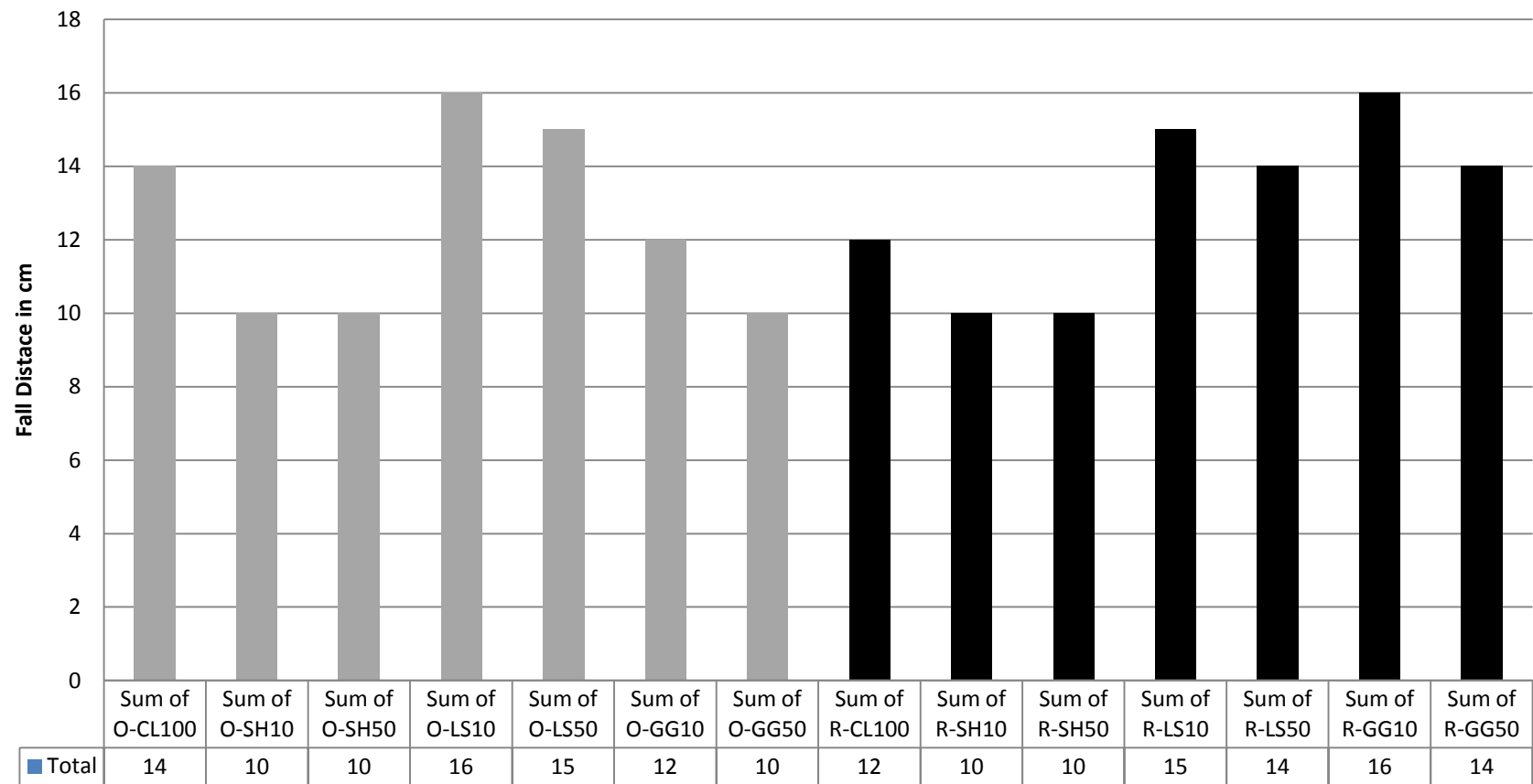


Energy Resistance Organized by Material



Oxygenated = Gray / Reduction = Black

Energy Resistance Organized by Firing Method



Interpretation

- Hypothesis **SUPPORTED**! (...mostly)
- Majority of test units exceeded thermal shock test parameters
- Oxygenated firing (mostly) increased kinetic resistance
- Thermal shock resistance = decrease 10% reduction shell & 50% limestone oxygenated

Acknowledgements

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- Nature ...for providing materials
- Jābir ibn Hayyān ...for popularization of the Hypothetico-Deductive method
- Descartes ...for the advancement of Rationalism in Western Culture

Photo Credits

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- To future seniors; run !Don't do the final project !it is a trap! They first ask for your data then steal your research and publish it themselves then they extort silence by threatening graduation until they come for you in the night... I am the last survivor now though I don't think that I will survive much longer they have turned my friend and family against me with their expert manipulation of cultural beliefs and ability to track me by determining the length and time frame of my occupation where ever I go... so I've decided the last place I can go to hide is somewhere they'll never look... the castle Aaarrgh*