

# Building Ground in Contemporary Rammed-Earth System Design

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Rammed-earth appears today mainly within the context of sustainable development. Paradoxically, sustainability as such followed centuries after the archaeological roots of rammed-earth architecture took ground [4], and probably centuries before “architecture” was conceived as such.

*“The cultures I choose to call “unselfconscious” have, in the past, been called by many other names — each name chosen to illuminate whatever aspect of the contrast between kinds of culture the writer was most anxious to bring out. Thus they have been called “primitive,” to distinguish them from those where kinship plays a less important part in social structure; “folk,” to set them apart from urban cultures; “closed,” to draw attention to the responsibility of the individual in today’s more open situation; “anonymous,” to distinguish them from cultures in which a profession called “architecture” exists. [1, p33]*

There appears to be an irreversible epistemic gap between rammed-earth’s original tectonic and contemporary systems of design applying to the rammed-earth material. It is argued that the intrinsic coupling between material and method heard in “rammed-earth” / “pisé de terre” / “hāngtǔ” has sustained the rammed-earth methodology across worlds of context. Pliny writes, about a century after Vitruvius published his treatise on architecture:

*“Have we not in Africa and in Spain walls of earth, known as ‘formacean’ walls? From the fact that they are moulded, rather than built, by enclosing earth within a frame of boards, constructed on either side. These walls will last for centuries, are proof against rain, wind, and fire, and are superior in solidity to any cement.” [3, p385]*

Into modernity, Thomas Jefferson writes to William Short regarding French architect Francois Cointereaux’s advocacies for rammed-earth building with American soil:

*“I had seen buildings in this way near Lyons, and moreover had known the author at Paris, where he raised some walls to shew his manner: and afterwards, while I was secretary of state, the President recieved from him lengthy details & propositions on the same subject. How far it may offer benefit here superior to the methods of the country, founded in the actual circumstances of the country as to the combined costs of labour & materials, and the circumstances of durability comfort & appearance, must be the result of calculation.”<sup>1</sup>*

Consider the context for resurgences of rammed-earth building in the nineteenth and twentieth centuries:

*“Historically, rammed earth has expressed itself as an economical do-it-yourself project for farmers, enthusiasts, and environmentalists. It has also been understood as a way to correct social ills, minimize financial difficulties, and remedy overabundances of labor. During the Great Depression, these factors came together and pushed the federal government to experiment with the technique, erecting seven rammed earth homes as part of the Resettlement Administrations Gardendale Homestead north of Birmingham, Alabama. They remained an experiment, as a true federal rammed earth initiative never fully developed.”[2]*

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<sup>1</sup>“I. To William Short, 13 April 1800, Founders Online, National Archives, last modified February 1, 2018, <http://founders.archives.gov/documents/Jefferson/01-31-02-0432-0002>. [Original source: The Papers of Thomas Jefferson, vol. 31, 1 February 179931 May 1800, ed. Barbara B. Oberg. Princeton: Princeton University Press, 2004, pp. 501511.]

RATIONALIZING A FRAMEWORK FOR FORMWORK 1. Sustainability a. Ecological Economics 2. Thermodynamics 3. Computation

SYNTHESIZING A FORMWORK FOR RAMMED-EARTH DESIGN

Part II: THEORETICAL GROUNDS: a physical theory of architecture and an architectural theory of physics

Part III: APPLICATION in THREE HEURISTICS: mapping sources of matter and energy, designing, and composing.

## References

- [1] Christopher Alexander. *Notes on the synthesis of form*. Harvard Univ. Press, 2002.
- [2] Jennifer Lynn Carpenter. *DIRT CHEAP: THE GARDENDALE EXPERIMENT AND RAMMED EARTH HOME CONSTRUCTION IN THE UNITED STATES*. 2010.
- [3] Pliny the Elder. *Natural History, IX*. Loeb Classical History (Cambridge, MA), 1942.
- [4] Anthony F. Merrill. *The Rammed Earth House*. Harper and Brothers, 1947.