

CONDITIONED BY DESIGN
Presented by Alexandre Rossignol

INTENT OF RESEARCH

Material Ethnography

In view of the social and ecological predicaments of the 21st century, architects must frame their pedagogy and practice in such a way that does not preclude the economic and energetic transformations that occur within cities.

A predominant issue for the 21st century is not only how to design sustainably, but also how to strengthen economies and communities through design. Humans are culturally bound to the materials of their environments, and the tools with which they shape the latter. How these materials are employed, and what socio-political conditions influence the production of certain types of materials are all questions deeply entrenched in the work of the architect.

This research attempts to retrace the relationships between people and their tools - more specifically Indians and brick - and how new methods of production have altered them. The study tells the story of two bricks - one from Delhi and the other from Pondicherry - highlighting along the way their contributions and hindrances to ecosystems, human activity, and the architectures they inform.



Pondicherry masons constructing a single-wythe 69-meter long by 10-meter wide vault. The earth for these bricks was extracted from a pit on the same site as the building, and the workers were hired by the architect from the nearby village. Internship Jateen Lad Architects/June 2016

METHODOLOGY I

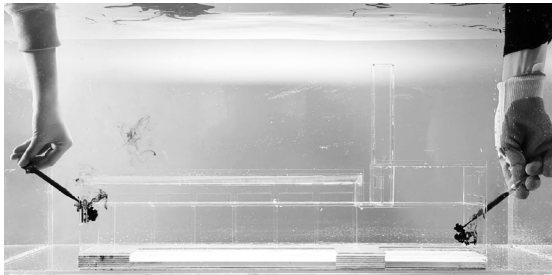
Construction Ecologies

From geological engenderment to extraction site, production plant, construction installation, associated thermal and air flows, demolition, and disposal, the materials that constitute the urban environment are intricately tied to a complex web of social, economic, and ecological processes.

Through this study, I am curious to study how a brick produced in Delhi might instigate social imbalance and economic disparity, whereas a brick produced in Pondicherry could contribute to a re-generative process of social freedom, knowledge accumulation, and thermally-diverse environments for living in, despite the harsh climate. In this way, mapping the flow of the brick engenders one scale of novel design practice.



Above: Delhi; woman labourer in a field of mass-produced bricks. *Below:* Untrained local workers are commissioned for a construction and trained on the job. They leave as experienced masons, and a promise for a better quality of life.



Thermal and Airflow “Water Bath” Simulation.
Design Study/June 2018

METHODOLOGY II

Bricks and Buoyancy

In addition to tracing material flows, this research also accounts for the properties of bricks and envisions how they might be more adequately used as thermal buffers from the humid exteriors of some of the most challenging climatic regions in India. Studies are conducted to estimate the optimal thermal mass and ventilation parameters of masonry buildings in both Delhi and Pondicherry, with the aim to design self-regulating units, which maximize thermodynamic exchange with their surroundings.

A distinct feature of the study is the method used to track the flow of heat and air around architectural configurations of bricks. The water bath, a form of live modelling, simulates airflows with dynamic similarity to actual air plumes, and yields powerful visuals to explain immanent thermal and social behaviours in buildings. This describes a second scale of flow.

METHODOLOGY III

Field Study

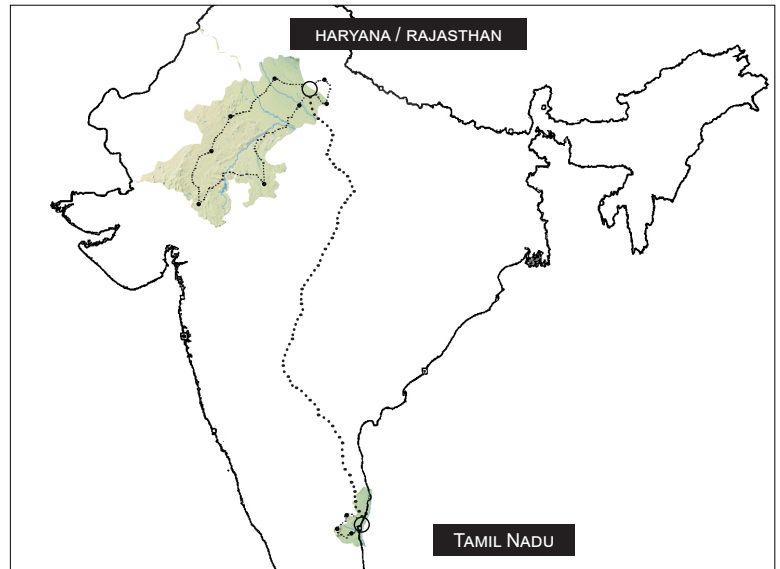
The field study is an opportunity to grasp a clearer understanding of the social, economic, and material dimensions of the two brick types and the context within which they are produced.

The first brick, originating from Pondicherry, is composed of red earth, 4% cement, is locally-sourced and implemented, and has a direct feedback into its local economy. The second brick originates from Delhi's brick firing kilns on the outskirts of the city, where standardized bricks are mass produced, and the re-distribution of economic wealth is disparate.

The efforts of the trip will culminate in an ethnography of brick production: a book of photographs, drawings, maps, diagrams and text that attempts to retrace the impact of the different bricks on a larger ecosystem (from material extraction to community involvement and establishment). Samples of brick and earth will also be collected from their sites of production for further study and to be presented as artifacts.

BUDGET ESTIMATION

Airfare	
+ Montreal / Delhi	\$1700
+ Delhi / Chennai	\$250
Lodging	
+ Delhi (\$50 / day)	\$700
+ Puducherry (\$40 / day)	\$560
Food (\$20 / day)	\$560
Daily Transportation (\$15 / day)	\$420
Fieldwork (Negatives, Microphone, Notebooks, Pens)	\$650
Administrative Costs	\$150
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Total	\$4,990



ITINERARY

01. Delhi

- + Consult Geological Survey of India office in Delhi
- + Meet with Tobias Hartmann, contractor for Leighton International Construction to discuss brick use in the building industry
- + Visit Raj Kumar Yadav Brick Kiln in Jhajjar district of Haryana
 - Trace brick production and transportation
- + Meet with Marco Ferrario and Rakhi Mehra from microHomeSolutions
 - Consult archival material
 - Visit current construction in informal settlement

02. Puducherry

- + Visit Sharanam Rural Development Center accompanied by foreman Chandranath and masons
 - Trace brick production and transportation
 - Study waste management
- + Visit Auroville Earth Institute to meet with Satprem Maini (Director) and builders
 - Study construction assemblies, soil compositions, demolition procedures, thermal data
- + Visit worker village
 - Document community establishment