

ARCH 521: MEDIA TECH VI: WORKFLOWS: FALL 2019
Federico Garcia Lammers

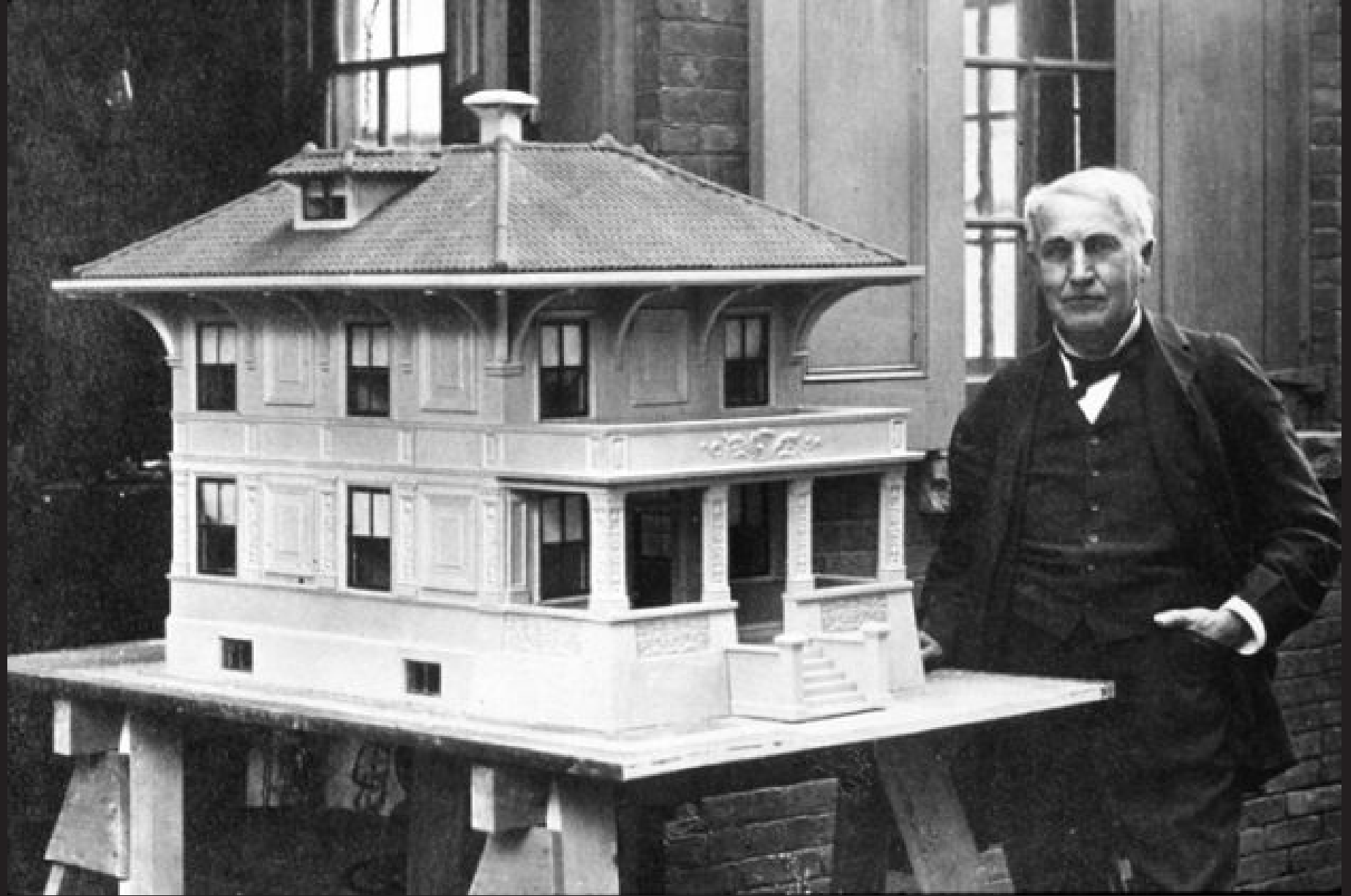


Post-industrial Materials

Robotic labor practices and other forms of efficiency.

Why are we primarily addressing concerns about material depletion with new consumption strategies?

What are the socio-cultural and material implications of automated and autonomous forms of labor?



Witnesses:
James B. Lewis
Byer Smith

Inventor:
Thomas A. Edison
By George F. Johnson
Att.

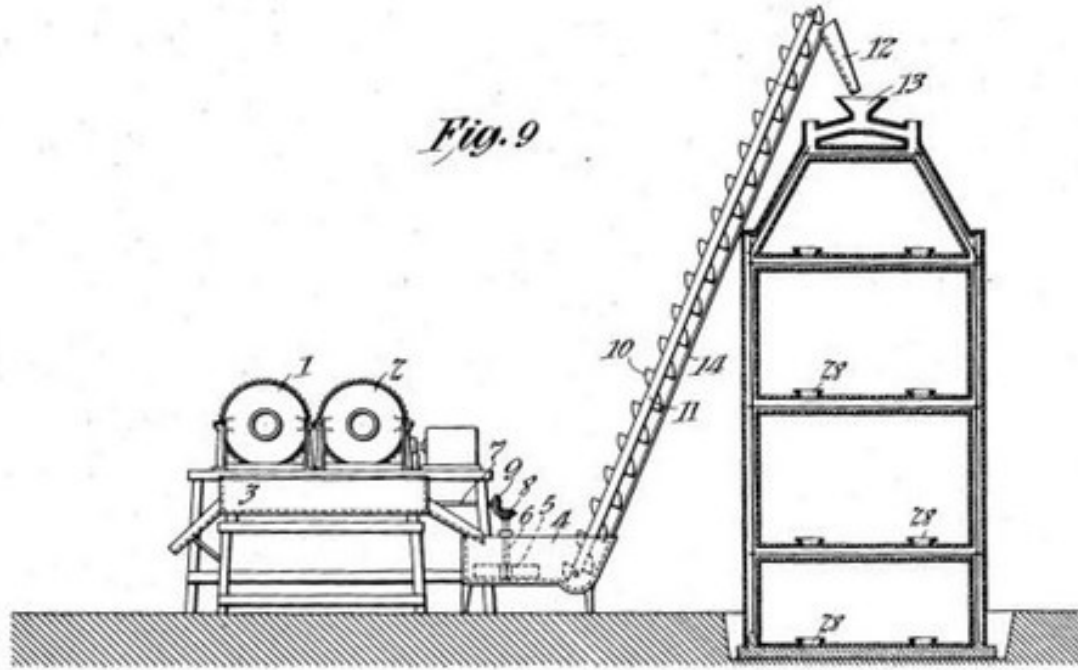


Fig. 9

1,219,272.

T. A. EDISON,
PROCESS OF CONSTRUCTING CONCRETE BUILDINGS.
APPLICATION FILED AUG. 13, 1908.

Patented Mar. 13, 1917.
4 SHEETS—SHEET 4.

Toward site-specific and self-sufficient robotic fabrication on architectural scales

Steven J. Keating, Julian C. Leland, Levi Cai, Neri Oxman

This essay combines several workflow-driven concerns that have been addressed throughout the semester:

- a. Representation, Media, and Simulation
- b. The Pursuit of Efficiency
- c. Material Practices and Labor

“Contemporary construction techniques are slow, labor-intensive, dangerous, expensive, and constrained to primarily rectilinear forms, often resulting in homogenous structures built using materials sourced from centralized factories.

To begin to address these issues, we present the Digital Construction Platform (DCP), an automated construction system capable of customized on-site fabrication of architectural-scale structures using real-time environmental data for process control.”

MIT Mediated Matter Lab
DCP Dome Construction.
Image: Steven Keating. 2016



Introduction

1. Where to build—In a factory, on site, or a combination
2. How to build—Materials and processes
3. Static or mobile platform
4. Evaluating the ideal system form factor

Results

5. The Digital Construction Platform
6. Control of the compound arm system
7. Real-time environmental data
8. Platform mobility
9. 3D-printed insulated formwork
10. Case study: Architectural-scale dome

Two metrics used to evaluate performance.

The first metric is the total work volume that the system can reasonably reach during a fabrication operation. This estimates the **scale of the structures** that a given system can produce.

The second metric is the typical maximum volumetric fabrication rate a system can achieve with its default fabrication process. This provides a **measure of how rapidly** a given system can produce structures.

Together, these two metrics give a rough sense of a system's overall performance in executing automated construction tasks.

In a 1982 interview with Paul Rabinow, the French philosopher, Michel Foucault, suggested that there are three architectural domains that architects are letting slip away from their work: Territory, Communication, and Speed.

Interview with Paul Rabinow. "Space, Knowledge and Power". 1982.

How do post-industrial robotic labor practices affect the work that architects do within these three domains?

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www.materialecology.com



Reflections about Arch 521

Historically architects have found a lot of pleasure in the self-reflection of drawing, modeling, and making images. For centuries, the representational project in architecture has promoted a wonderful breadth of imagination. Architects enjoy this part of their work very much.

Evolving notions of craft, making techniques, and material/structural innovations are also central to the architectural imagination. Many architects live in the space between the representational and material aspects of their work.

Additionally, architects continue to rediscover the pleasure of collective reflection through advocacy of socio-political issues and important environment concerns. This range of types of reflection and pleasure is solid.

Architects have yet to find pleasure in dull, ubiquitous processes that fill the professional landscape. There is very little historical or theoretical discourse that examines the impact of means of production, construction processes, labor practices, effects of tools, etc.

This space of non-reflection is the space that professors and practitioners obsess over when it comes to preparing students for practice.

Despite this obsession we still find no joy, pleasure or valuable reflection in dwelling on these “non-design” issues.

It's time we find pleasure in boring things.