

Directed Research

Reading Journal

Typed Notes

Book: Performance Materials in Architecture and Design

Chapter: Experimental Performances: Materials as Actors

- Performance Materials: A materials that does not simply exist within a dynamic environment, but more accurately acts as an integral contributor to a living ecological system
- Can also be defined as: physical, sensory, and perceptual interaction of organized composition of matter with their immediate and expanded environments
- **Dynamic interface between materials and their environs, each an actor... responding to the cues of the actor**
- Performance of digital and physical materials begin to blur the boundaries the two
- Contemporary performatism is very much about the **capacity of architecture to become an event to participate in a world which is more and more defined in terms of occurrences rather than a collection of objects and relations**
- This allows for an altered dimension of space: intervals of time
- This means materials do not need to be dimensionally stable
- **Smart materials behave in response to energy fields**
- **The introduction of smart materials calls for the careful consideration of even the most rudimentary materials in recognition that all material systems exist within variable environmental conditions and therefore embody some potential to respond to these active energy fields**
- This expanded definition of "performative" elevates the status of materials in architecture, moving past material as artifact towards a paradigm of **materials as mediators... celebrated for their vigorous participation** with surrounding atmospheres
- All materials exist in a state of perpetual change
- Sensitive reprogramming of architectural space...
- Mutual relationships, breathing environments, fragility
- Lightweight thin systems, resonate
- Tensile bending--- early Buckminster Spines
- Ability to cope with changes
- Gentle Reactions--- tactility
- Energy fields surrounding a space: wind, light, etc.
- Not necessarily shelter us or shield us, **but extend and interact with external forces**
- Clusters of spaces and forces

Article: Physical Drivers: Synthesis of...

- Force driven material systems
- Forces defining form, multiple states of equilibrium
- The systems of generation and the systems of operation are intimately aligned, not representatively layered
- Interdependencies
- **Form is not a static entity; rather it serves as a system itself that embodies the interacting systems by which it was formed and how it operates**
- Transitions of forces in **localized instances effect the systems' homeostatic performance**

Article: Radiant Soil - Beesley

- Living System
- Geometric Hierarchies
- **Interlinked components across multiple systems**
- Small life like movements

Article: Hylozoic Sibyl - Beesley

- Artificially alive
- Thin repeated aggregations
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Article: Setient Chamber - Beesley

- The new structural system is organized by a hybrid triangular flexible space grid stiffened by expanding mesh hexapods that support telescoping posts and spires contacting the floor and ceiling for stability
- Tensegrity coupling??
- Fractal branching in structure

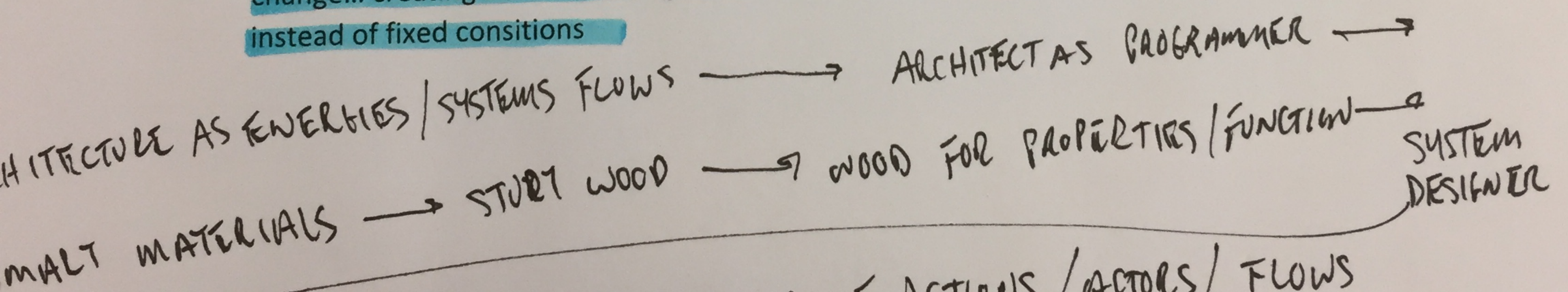
Article: Dissipative Architectures - Beesley

- Capable of sensing and actuating, buildings make it possible to **rethink architecture not as something static**, but rather as entities and **environments able to respond and adapt to changing conditions**, and to engage in **active conversations** and **mutual exchanges** with their occupants

Article: Exploring Responsiveness in Architecture

- We can expect buildings not only house and facilitate various modes of human activity but also adapt, behave, respond, and accommodate the flows of energy and information
- Architecture should be a "living, evolving thing"
- Architecture as a responsive and productive participant in a larger ecology
- Technologies have progressively shifted the view of architecture as a responsive and productive participant in a larger ecology
- Banham's arguments orient architecture towards adaptive environments
- Weinstock – Dynamics of fluidity through the concept of nature as a source of interrelated dynamic processes
- Dynamic environments should not only address kinetic movements, but also includes flows of energies, material, and information
- The responsive architecture system could act as ecologies themselves, allowing architecture as a discipline to recalibrate its role in the larger socio-economic context by becoming a more intelligent and operative participant... a participant imbued with foresight
- Mechanisms that control and activate the intelligence of the physical environment
- Architects are first and foremost system designers – Gordon Pask
- A truly responsive environment should not only sense and respond but also perceive and act
- Mediating the local environment
- A distributed system that can facilitate the circulation and gathering of people
- The availability of [smart] materials offers an opportunity to design material behaviors as opposed to choosing materials on their properties
- This would alter the way we design: it would require us to relinquish control of the design process (understood in a traditional way) and find ways to change the material transformations to produce equally rigorous and reliable architecture, but only more aligned with its own materiality and larger ecologies
- The process of designing responsive environments relies on flows and dynamic behavioral patterns
- Ed van Hinte – Architects should see themselves as programmers of a process of spatial change... creating a field of change and modification that would generate possibilities instead of fixed conditions

IS IS GOOD NOT APPLICABLE?



→ SYSTEM COMPLEX INTERRELATIONS OF ACTIONS / ACTORS / FLOWS

ENERGIES SYSTEM ECO SYSTEM •

NOW COOKING AT HOW WOOD CAN BE USED IN THIS SYSTEM

Article: Sensory Material Architectures

- Form, as a **macrocosm of minute multi-hierarchical material behaviors, is a temporal condition in fluctuation via the charge of internal and external energies**, as part of a socio-spatial sensory architecture
- High strength fiber reinforced materials (GFRP Rod)

Article: No Mesh Kinetic Responsive Architecture

- Hygroscopic – Absorbing moisture
- Anisotropic p non-uniform 3 axis deformation