A Conceptual Model of Integral Sustainable Design Framework

Leigh & Orange

DELIVERING EXCELLENCE FOR 140 YEARS
1. **Introduction** - Challenges of Our Architectural Practice

2. **Limitation On Traditional Design Process**
   1. Disparity between “Good” and “Green” Design
   2. Complex Rules and Self-perpetuating Process of Externalization
   3. Top-down Command Control

3. **Integral Design Conceptual Framework**
   1. Theory of Integral, Ecological and Regenerative Design
   2. Fundamental Shift of Values from Bottom-up
   3. Integral Design Palette for Qualitative Reflection Process
Introduction

Challenges of Our Architectural Practice
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Challenges of Our Architectural Practice

40% of the world’s energy use is due to buildings

90% of the total energy of buildings is consumed during building lifetime

10% of consumption is linked to the materials and construction of buildings
Introduction
Challenges of Our Architectural Practice

Architectural Studio

Principal Directors
Architects
Designers
Assistants

Ecological ideas Get lost in the system
Limitation On Traditional Design Process
Disparity between “Good” and “Green” Design
Limitation On Traditional Design Process
Disparity between “Good” and “Green” Design

Good = Green?

Green = Good?
Limitation On Traditional Design Process
Complex Rules and Self-perpetuating Process of Externalization
Limitation On Traditional Design Process
Complex Rules and Self-perpetuating Process of Externalization
Limitation On Traditional Design Process
Top-down Command Control
Limitation On Traditional Design Process
Top-down Command Control
Limitation On Traditional Design Process
Top-down Command Control

Horizontal Organization
Limitation On Traditional Design Process
Top-down Command Control

Food Source

Signal A

Signal B

Signal C

Self-organization

ARMY ANTS
Eciton Burchelli

Behavioral cycle and organization of bivouac

Food Source

Signal A

Signal B

Signal C

Self-organization
Integral Design Conceptual Framework
Theory of Integral, Ecological and Regenerative Design
Design thinking conceptual framework (Dorst 2011)
Integral Design Conceptual Framework
Theory of Integral, Ecological and Regenerative Design

WHAT + HOW lead to RESULT

WHAT + HOW lead to RESULT

THING [Design Solution] + SCENARIO [Usage/Operation] lead to ASPIRED VALUE [New Experience]

Integral Design Palette
Integral Design Conceptual Framework
Fundamental Shift of Values from Bottom-up
Integral Design Conceptual Framework
Fundamental Shift of Values from Bottom-up

Traditional design process

Linear design

Ecological & Regenerative design process

Integrated design
Dynamic creation of a regenerative concept at the operational level for **regenerative action** (Mang and Reed 2012)
Integral Design Conceptual Framework
Fundamental Shift of Values from Bottom-up

Time Factor

Back-casting  Forecasting  Climate resilience

ecosphere & economic discounting
Integral Design Conceptual Framework
Integral Design Palette for Qualitative Reflection Process
Integral Design Conceptual Framework
Integral Design Palette for Qualitative Reflection Process

ECOSYSTEM SERVICES - Link social and ecological systems

PEOLPE (human well-being)

Modified from Bennett, Peterson, Gordon 2009 Ecological Letters
Integral Design Conceptual Framework
Integral Design Palette for Qualitative Reflection Process

Regenerative Action

1. Regenerative Action
2. Sustainability Issue
3. Governance Structure
4. Classification
5. Design Strategy
6. Case Study

Integral Design Palette for qualitative reflection process from a socio-ecological system (SES) perspective (Leigh & Orange 2016)
Integral Design Conceptual Framework
Integral Design Palette for Qualitative Reflection Process

1. Social
2. Environment
3. Economic
4. Socio-economic
5. Socio-environmental
6. Eco-economic

Sustainability Issue

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1. Governance
2. Top-down / Bottom-up
3. Vertical / Horizontal

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Social
1. Communication & Movement
2. Enquiry & Learning
3. Health & Wellbeing
4. Engagement & Identity

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A. Internet of Things

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B. Health Productivity

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C. Safety & Resilience

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Integral Design Conceptual Framework
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E. Low-Impact High Efficiency

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Integral Design Conceptual Framework

Integral Design Palette for Qualitative Reflection Process

Case Study

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Integral Design Palette for qualitative reflection process from a socio-ecological system (SES) perspective (Leigh & Orange 2016)
Limitation On Traditional Design Process
Complex Rules and Self-perpetuating Process of Externalization

Environmental Expert

Architectural Design Team
Limitation On Traditional Design Process
Complex Rules and Self-perpetuating Process of Externalization

(Booher & Innes 2002)
Integral Design Conceptual Framework
Integral Design Palette for Qualitative Reflection Process

Traditional design process

Ecological & Regenerative design process

Vertical Organization

Linear design
Ecological Value get Lost

Integrated design
Alignment of Ecological Value

Horizontal Organization
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Thank you