Toward a Unified Theory of Project Governance

Economic, Sociological, Psychological and Technical Elements

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What is Governance?

- “...the process of governing a country or organization”
  - (includes transparency, accountability, access...)

- What do we mean when we talk about “project governance”?
Unified Theory of Project Governance:

OUTLINE

- Governance of Projects
  - Economic View of Project Governance
  - Organizational View of Project Governance
  - Technological Enablers of Project Governance
- Toward more fully aligned project governance
  - Integrated Project Delivery
  - PPP Procurement
Unified Theory of Project Governance:

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- Governance of Projects
  - Economic View of Project Governance
    - Innovation challenges
      - Very high transaction costs
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Innovating in a Fragmented Supply Chain

Supply Chain Fragmentation: Y2E2 Bldg.
“Modular” vs. “Integral” Innovations

- **Modular Innovations**: Innovate individual module within a single swim lane
  - More energy-efficient window assembly
  - New, more water-efficient bathroom/toilet fixture

- **Integral Innovations**: Affect the way that modules in multiple swim lane are integrated
  - Intelligent BMS that monitors indoor and outdoor temperatures and humidity, uses sophisticated software and firmware to activate the chiller, boilers, fans, window actuators, etc.
The Nature of the Construction Industry

- Construction is a mature fragmented, modularized industry
- Its project supply chain is fragmented vertically
“Broken Agency” Over the Project Lifecycle

- **Because of vertical fragmentation** (across the value chain), different parties incur the investment costs vs. receive the benefits over the lifecycle of a typical constructed facility.

- **This deters all investments in life-cycle sustainability.**
The Nature of the Construction Industry

- The supply chain is also fragmented **Horizontally** and **Longitudinally**
Instability of the Project Team

- Horizontal + Longitudinal fragmentation deter integral innovation
  - Severe horizontal fragmentation of the construction supply chain is found in all market economies
  - In “coordinated market economies*” like Japan or Finland, firms tend to stay together from project to project
  - In “liberal market economies*” like the US, where teams are most often assembled by competitive bidding, supply chain partners keep changing from project to project

- So longitudinal fragmentation is more pronounced in liberal market economies, slowing the diffusion of integral innovations

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“Synchronized Swimming” is difficult in the US!

Implementations of Modular vs. Integral Innovations in LEED-Certified buildings

- 40% Modular
- 17% Integral

... but integration of the supply chain helps

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Economic View of Governance: Governing Transactions in Markets vs. Hierarchies

- Production Costs
  - ΔPC = PC_H - PC_M

- Transaction Costs
  - ΔTC = TC_H - TC_M

- Total Costs (H-M)
  - Δ(ΔPC + ΔTC)

- Customization
  - Prefer Market
  - Prefer Hierarchy
Govern Projects in Markets

- Construction is highly customized, so transaction costs favor governance by hierarchy...

- ...but severe demand fluctuations even more strongly favor production by specialized, local firms—i.e., governance by market.

- So we govern many kinds of construction projects primarily via markets, even thought this causes very high transaction costs!
Unified Theory of Project Governance:

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- Political Governance of Construction Sector
- Governance of Projects
  - Economic View of Project Governance
  - Organizational View of Project Governance
    - Projects as “Virtual Hierarchies”
  - Technological Enablers of Project Governance
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Recreate Hierarchy through Contracts

- Where high transaction costs suggest that projects should be governed as hierarchies...

- ...but projects are governed in markets for production cost reasons, ...

- ...contracts evolve over time to include clauses that re-create “virtual hierarchies”

- So a construction project is governed as a virtual hierarchy comprised of firms in a market!

Organizational view of Project Governance

- Humans are not just “homi economici”
- Incentives and legal mechanisms clearly do affect behavior

- But so do ‘Institutions’
  - “What is appropriate behavior for someone with my role and identity in this situation?”
Organizational view of Project Governance: *Sociological and Psychological Elements*

- An exciting vision and mission clarifies purpose, engages employees’ shared identity and infuses meaning into work.
- A strong organizational culture, reinforced by authentic leadership, sanctions deviant behaviors socially.
- Long term “co-location” facilitates social exchange among employees to develop mutual trust.
- Symbols (e.g., logos, taglines) and investments in branding enhance employees’ sense of shared identity and purpose.
So the governance of a construction project lies somewhere between:

- Administer a long-lived set of multi-party transactions in a fragmented supply-chain

and

- Manage a relatively short-lived “virtual hierarchy”
Institutional Theory: Unifies Market and Hierarchical Governance

- Three Pillars of Institutions:
  - Legal/Regulatory (laws, regulations, contracts, courts, justice systems)
  - Normative (group norms, social conventions)
  - Cognitive (systems of meaning, beliefs, values, identity)

Unified Theory of Project Governance: OUTLINE

- Political Governance of Construction Sector

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    - BIM Enables “Serious Play”

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Use of Shared BIM Models Enables “Serious Play”*

- Credible simulation models whose inputs and outputs can be visualized facilitate difficult conversations among interdependent parties.
- This lifts groups out of the “ground effect” of conflict and competition, to enable “serious play”.

Recap of Unified Project Governance

- A Construction Project is a Combination of:
  - A long-lived, complex, uncertain, multi-party transaction
  - A short-lived, unstable “virtual hierarchy”

GOVERNANCE PRINCIPLES

- Long-lived, complex, uncertain, multi-party transaction
  - Align incentives through IPD-like contracts
  - Reconfigure supply chain to invest sustainably and innovate

- Short-lived, unstable “virtual hierarchy”
  - Align sociological (“normative”) elements
  - Align psychological (“cognitive”) elements
  - Leverage appropriate technologies
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Examples of Aligned Project Governance

- Heathrow Terminal Five
- Children’s Bellevue Hospital, Seattle
- Confederation Bridge, PEI, Canada
Firms with Strategically Integrated Supply-Chains: *Incent sustainable investments & encourage innovation*

- Integrate Vertically
  - Arbitrage broken agency
- Integrate Horizontally
  - Enable supply-chain learning

- SolarCity
- Ygrene Energy Fund
- GCP Green Campus Partners
- ZETA: Zero Energy Communities
- Make Your Buildings Work: More efficiently, sustainably and profitably
"Full IPD" multi-party contracts with:

- Legal/Regulatory governance aligned
- Normative governance aligned
- Cognitive governance aligned
- Supply chain virtually integrated
- Technological enablement of collaboration
Toward Fully Aligned Governance —PPP/ESCO

- PPP Infrastructure delivery concession or ESCO energy solution for which:
  - Effective “strategic communication” with public
  - Concessionaire’s contract aligns with long-term societal needs
  - Design-Build-Operate delivery process used
  - Ownership structure provides appropriate performance incentives, while guarding against “self-dealing”
Partially Aligned Governance

- Promises of repeat-business (the TCE solution) that are not sustainable with high demand fluctuation

- Cost-plus fee reimbursable contracts, without realigning normative and cognitive institutions of team members

- “Partnering” workshops and “handshake agreements” to align normative and cognitive institutions, overlaid on a conventional design-bid-build delivery with lump-sum or fixed-unit-price contract

- Broken agency from vertical fragmentation that undercuts investments in sustainability at all stages of the lifecycle, e.g., “triple-net” commercial real estate leases that pass energy costs onto tenants
Comments and Questions

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