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The Architecture and Engineering Project: Organization, Management and Performance

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ABSTRACT

The architecture and engineering project, by necessity, is a collaborative endeavor and its implementation requires the commitment of multiple actors from a variety of disciplines that must be brought together to collaborate in a nurturing environment of shared vision, trust and unwavering commitment. Such a project can be likened to a symphonic performance that requires masterful collaboration of multiple talented musicians supported by a formidable yet invisible organization. One key difference, is that unlike a symphony, the architecture project is a unique endeavor whereas in the music performance the final result (product) is achieved after lengthy multiple rehearsal and practice sessions on the part of it participants. This paper is a set of personal reflections on professional practice and it explores the challenges that architects, engineers and other professionals engaged in the architecture and engineering project face in the course of their professional practice. It addresses the conflicting demands amongst project needs, practice needs and client and institutional constraints by examining the evolution of organizations and management practices vis-à-vis the increasing complexity, expanding knowledge and galloping technology.

Introduction

Throughout my professional practice in consultancy and project management and subsequent academic research, I have come to realize that the most difficult issues are not of a technical nature, but rather the organizational and management ones which arose in the course of the execution of architecture and engineering projects.

The Project

A project, by definition, is an endeavor undertaken to produce a unique product, and in the case of Architecture and Engineering, most often a building or other structure. Such a project is the result of individuals working together as members of often distinct firms who come together as a temporary multi-organization project entity. This entity is referred to as a network organization in the broader management literature. A network works towards common goal – the project - is disbanded on completion of the project.

The Archetypal Network Organization

A 2004 paper entitled, "Archetypal Network Organizations: The Case of the AEC Industry" (Katsanis, 2004), outlined the significance of recognizing the project multi-organization as a network for academic research in organizational structure, leadership, and management and provided the impetus for focused research in the area of organization management. Equally important for practitioners is to be aware of the existence of this particular organizational form, its attributes, the organizational skills it demands and its implications for their practice.

The concept of organizational structure is critical for understanding the dynamics of leadership. Mintzberg (1979) has defined structure as: "the structure of an organization can be defined simply as the sum total of the ways in which *labor* is divided into distinct tasks and then its [coordination] is achieved among these tasks". This definition works well in the context of industrial general management but when the task is intellectual work carried out by specialized professional service organizations where the boundaries are not clearly demarcated and a great degree of collaboration and of decision making are required a more appropriate definition may serve us better. A more useful definition of organization can be found in the work of Winograd and Flores (1987) in the field of computers and cognition, whereby an organization is defined as: "a network of communications and commitments"

Leadership

Espousing the notion that the Architecture and Engineering project is the collective effort of a network of service professionals, the professional practice firms operate in a network organization mode facilitates the adaption of the mental model required for higher performance. By necessity in the network model, the concept of leadership becomes paramount.

But firstly, we need to define what we mean by leadership. It is worth noting that Daft identified over 300 definitions. According to Daft: *"Leadership is defined as an influence relationship between leaders and followers intended to create real change that reflect their shared purpose"* (Daft, 1999). I favor this definition because it is consistent with current leading thought in management studies in the area of leadership. The key words are *"intended change"*, *"shared purpose"* and *"relationship"*.

Once a project is undertaken by the network it becomes the *network's mission*. However, as the network consists of multiple organizations, and organizations have their own mission, the project must become their shared mission. One of the management challenges is to align the project missions with that of the participating firms. This task requires what Mitzeberg calls a "*covert leadership: not leadership actions in and of themselves – motivating coaching, and all that – but rather unobtrusive actions that infuse all the other things that a manager does."*

Mission and Vision

In professional organizations and particularly in the network organization, this leadership extends beyond the individual organization to the inter-organizational relations and commitments. However, over and above the mission of the firm, the other component, which must be considered, is the vision. Vision, in contrast to mission, is about where the firm is going. Where will it be tomorrow? This is critically important, because the project has a definite end, but the firm must continue. And that's where challenge of a leader lies. It's about creating a vision and marshaling the resources to implement it.

Practitioners in leadership positions are well advised to bear in mind that over and above the need to focus resources and efforts on the organization's mission, which is carrying out the project; they must devote their energies and effort towards making organization viable in the long run. To the extent possible, they must also forge shared visions with other professional firms. They should look to having appropriate fit in terms of staffing with an appropriate structure that can support tactical activities essential to the mission and strategic planning and implementation. Care must be taken that they not only have a strategy, but they articulate it and communicate it to clients and fellow network members. Describe what you want your role to be without necessarily divulging the proprietary elements of how you're going about it. Communicate what you aspire to be and why you want to do a project. And

always benchmark and audit your performance. Don't just look at your last year's figures, benchmark against peers in your area of work.

Independent of the success of a project, it can be argued that whilst project performance is often measured in terms of cost, time and quality, the success of an organization is measured on far more numerous and complex dimensions.

One recently recognized attribute of a successful organization is the notion of the learning organization. Organizational dynamics facilitates the study and development of learning organizations that promote efficiencies that yield higher long-term performance, foster innovation and team cohesion and personal development.

Field research involving interviewing principals and upper management in key firms has examined architects, engineers and general contracting firms, and found there were some subtle differences in how they defined performance.

Financial performance was most important to general contractors. It was interesting to explore how each group views their performance. In the practice-related category, referred to by architects and engineers, reputation was paramount. Quality and prestige were key. Architects were also very product quality focused. In the words of one partner: "Unfortunately, doing projects takes precedence over business development activities. We get involved in the rhythm of the project and when that finishes, we scramble to get more work."

Performance

Procurement will be profoundly influenced by partnering and alliances in the foreseeable future. Ultimately, the advent of partnering represents a conscious attempt to establish stable network organizations. Such an attempt is reported in Katsanis and Davidson (2001). They looked at firms that aimed to establish a consortium, which was, in fact, a stable network. The network organization (a set of professional firms) decided it was advantageous to get together, so they could go after projects together as a large organization, The group included lawyers, planners, architects, engineers, contractors and sub-contractors. But who was going to take the leading role? Not everyone was involved at the same time. The developer, for example, is perhaps first to make the move. Who is going to compensate that person for the efforts required? He or she could be out of pocket. The group was not a long-term success because the front end did all the work, whilst others sat nicely, not expending effort and money, waiting for job. There was an asymmetry of effort. But how does one get others to participate when benefits are not immediately available?

The answers to that question are complex and still being explored. The emerging understanding and knowledge for diverse fields is likely to involve a new way of looking at and leading organizations.

We have to remember that an innovation may be a new way of organizing a department, managing a team or awarding a contract. Often, when we speak of innovation, we think of technology innovation such as higher-strength concrete, or other physical properties and design features of products. These

are important technical innovations, but as the industry matures, these types of innovation get harder to develop. These innovations also require capital investment, but organizational innovations do not necessarily require the same level of funding. The industry does not have the tradition of pursuing this type of capital intensive innovation. Its fragmented nature is not conducive to the allocation of funds for R&D. Perhaps the realization that projects are the product of joint effort by multiple firms and the increasing trend towards the recognition of network organizations as a dominant organizational form in architecture and engineering projects may change this in the future. There is always hope!

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