Arch 652 - Project Management

New Jersey Institute of Technology
School of Architecture

David Hawk, Professor, NJIT

Spring, 2006

Phone: 973-596-3019 davidhawk@comcast.net

Arch 652-Architectural Project Management 3 credits

Prerequisites: completion of core sequence and Arch 579G. Management of architectural projects: project costs, timing, personnel, documentation, professional ethics and resource management. This course is required for the dual degree M.Arch./Master of Science in Management program. It may be used as an elective in the M.Arch. program.

INTRODUCTION

Building projects arise in many varied forms. The assembled results of these projects become unique patterns of assembly which in-turn become products in their own right. Each project and set of products can require a different approach to planning, configuration, production of the final assembly, as well as facility management.

The variety of results implied by the variety of processes involved implies that the challenges to understanding could exceed human capabilities to understand. This does not need to be so. There are ways to systematic organization a project so that the predicable is simply categorized as such, so scarce resources available to respond to the unpredictable. The ways for doing this continue to evolve alongside the changing complexities of the industry, its clients and their demands. It is possible to learn a great deal about being systematic prior to and during the building assembly process, although this does present some dilemmas for architecture as usual. First among the difficulties is to accept that architects are not at the center of the process. A second difficulty is that other participants in the process also have a knowledge base which they act upon. Third is a great deal can be learned from project management as it is done in other industries, even though these activities may seem to have little to do directly with the construction industry.

The course will deal with concepts of management and of projects, and then attempt to present their integration relative to the role of architects. The project management system, where it works well, tends to be more inclusive than exclusive. To be inclusive the course covers several approaches to management.

CONTENT

The concept of learning to carry out rational management has long been a dream of humans. Management schools are indeed founded on the belief that such is possible. In some ways this dream is achievable yet in some ways it appears hopeless in the face of rapid change, emerging technology and the complexity created by both plus more.

Sometimes the building/construction industry seems hopelessly designed and arranged. Other times it appears excitingly attractive to those who want to create value in the process by doing it in novel and innovative ways. Indeed, there are ways to greatly reduce the variety in a project and to create modules of elements as well as of thought. Some of the more successful organizations indeed illustrate how this is done. There are many rather simple things that can be done to make projects more "manageable," but prior to getting into those methods of conceptualizing projects, and ways to manage them, we should first examine the major characteristics of the building industry. With this we can begin to fruitfully compare and contrast construction characteristics with those of other industries; especially those that have faced serious design, procurement and delivery problems but have found ways to overcome them to the credit of their industry.

Let us begin with some characteristics of facilities. They are:

- Unique (even high-rise office buildings can and do vary).
- Immobile and occupying a highly unique location that can't be duplicated.
- Expensive in total, yet the relative ratios of material weight to cost, and technology (capital) to labor is low.
- Exposed to the unpredictability, precariousness and ambiguities of nature.
- Somewhere between economic production in factories and on farms.
- The assembled products are long-lived manifestations, that generally outlive the parts.
- In other industries the purpose of a project is a means to arrive at an end (a product as a means). In construction the project denotes an end as well as means to other ends.

This means that a team producing a building is a unique assembly of people with different skills and talents. As such, it has little organizational history and recognizes from the outset that it will probably not work together as a team again. The project management team is thus widely seen to be a "temporary organization." To add to the transitory nature of building project management, most of the industry's clients buy only one or two buildings in a life-time. They are not very sophisticated in their understanding of the process and often their expectations are out of line with the industry's performance. They are neither skilled in managing the building process, nor in hiring those who are skilled.

In addition, the industry itself faces internal problems of quality control, measurement of performance, raw materials that tend to have a high degree of imperfections, and employees that often have no alternative for work. The size and scale of its products, and their exposure to difficult environmental conditions over very long

life-spans, explains part of the previous problems as well as presents addition problems for the results of the industry and those that use its products.

The problems of the industry can exist for a long time. While it is possible for buildings to improve with age, most do not. These characteristics begin to define the serious challenges for those who work to manage projects in the building industry, and thereby end up defining its needs.

The course begins with discussion of general topics and how they interrelated to provide the challenges of project management. They are:

1. What is a project?
2. What is a portfolio?
3. What is a program?
4. What is management?
5. What is risk?
6. What is added value?
7. Who are the stakeholders in the process?
8. Is it better to manage a project via time or money as a constraint?
9. Which industry produces the most competent project managers?
10. What are the alternatives to project management?

This prepares the stage for discourse on how project-needs and management-methods relate, or fail to do so. This also serves as a base to examine project management via its ideas, tools and techniques as they may more closely relate to: architectural design and building production.

Grading:

Final grades will be based on:

- Assignments (40%),
- Mid-term (20%)
- Final project report and presentation (40%).

Objectives:

Project management has long been seen as a beneficial base for product development in other industries (autos, electronics, banking, etc.). Project management in its essence organizes a process that begins with idea generation, travels through production and sales, and ends with client after-production services, if a firm is qualified. Its application to the needs of construction is relatively recent. While it is critical to note how project management developed in other industries this is insufficient to the needs of construction. There are serious dilemmas for any barrow project management knowledge directly from other industries. The first is that the projects of project management as other industries apply it are shorter-lived and more portable.

Perhaps the most that we can say about project management with certainty is that it is “fragile.” As such, the most we can know about it is that it is ever changing. With

this in mind the following course for architecture and construction students has been designed.

People who do project management generally rely on spreadsheets and charts in the form of matrices. Now that computers systems are available these charts have turned into spreadsheets with the options of being modified with ease, and being susceptible to manipulation via various analytical tools. While pitfalls await those who handle this abstraction you will still need to become familiar with spreadsheet construction and manipulation during the course. Your final presentation should use this skill.

Beyond this you need to learn how the construction industry is changing. In this way you can both see how project management has surfaced in construction and is changing to meet new production and client needs. You may even be able to speculate on further changes that will undoubted occur. The only text for the course addresses this issue.

References:

Project Management: A Managerial Approach, Third Edition, Jack Meredith and Samuel Mantel, John Wiley and Sons: New York, 1995.
Forming a New Industry: International Building Production. by David Hawk, 1992.
Project Management for Design Professions (A copy is on reserve in the AIC in Colton.)
Various articles from ENR and other publications.

Schedule:

Session 1: Introduction and overview to architectural project management.

Session 2: History of management of projects and related phenomena.

Session 3: Management theories and the Evolution of Construction Needs. Three assignments.

Assignment One – Objective: To improve understanding of why PM emerged as a problem solving approach, and then how it operates.

Session 4: Examples: Introduction to the International Dimension

Session 5: Relations between Project Management, Program Management, and Construction Management.

Session 6: Examples: Project Management challenges.

Assignment 4: Identifying those you might work with/for/against?

4: **In this assignment you need to find a short list of organizations that you might spend many years of your life within. From this list you need to select one and then find the key person within the organization to interview. During part of the interview you will need to discuss project management; their approach to it and your knowledge of it. Objective: You want to find out if investing years of your life in this organization is a good choice for you, and them. You will report on your interview to the class.**
Due: 11th class meeting.

Session 7: Information, its Organization, Management and Dissemination.

Session 8: Traditional Factors of Construction.

Session 9: Emerging Factors of Construction

Session 10: Discipline vs. Problem focused methods of management.

Assignment 5: Final Project.
5: To be discussed and described in detail later, but should be conceived as a group project that combines your collective reports from Assignment 4.

Session 11: Professional models of management.

Session 12. Architectural Project Management.

Session 13: Summary and Conclusions

Session 14: Student Presentations

Session 15: Final

CLASS ASSIGNMENTS:

1: Your first assignment is to consider the four major factors of product management; factors that you will need to manage or somehow account for. They are: money, time, materials and labor. Labor normally includes the technology and equipment factor. In less than four pages describe a way to manage these four factors in a way that does not require emphasis on only one.
Due: 4rd class meeting.

2: Your second assignment is to identify the worse mistake you can find in a building-related project, and then describe how a different approach would

have helped avoid it, or even managed to control it. These can be from any source.
Due: 6th class meeting.

3: Your third assignment is to improve your understanding of your specific role in the building industry by speculating on what you would need to know to a avoid the problems if the industry. Describe what you need to know to be a successful project manager. This might involve another degree, a new set of courses, or different life experiences.
Due: 8th class meeting.

FINAL PROJECT: To be announced.