



Dar Al Riyadh Insight #15

Flows in Large Complex Projects – Theory of Projects

Dar Al Riyadh Insights reflect the knowledge and experience of our Board, executives and staff in leading and providing PMC, design and construction management services. Dar Al Riyadh believes in the importance of broadly sharing knowledge with our clients and staff to improve project outcomes for the benefit of the Kingdom of Saudi Arabia.

Theory of Projects

The existing theory of projects goes back to the emergence of management theory associated with industrialization. Projects in that early era were largely executed within the four walls of a new industrial facility employing serial manufacturing, progressively moving a series of inputs towards an ultimate output. At each step of the manufacturing process an output from a prior step was further transformed.

Frederic Taylor in *The Principles of Scientific Management* laid out a series of management principles that in many ways mirrored many aspects of the manufacturing process itself. Among these principles was a division of work, a decomposition of efforts if you will, undertaken by trained workers in a prescribed and specified way. Henry Gantt, who worked for Taylor, extended this thinking into the execution of projects.

The prevailing theory of projects that resulted was built on several precepts regarding the transformation of inputs to outputs. Those precepts include:

- A comprehensive set of requirements at the outset of the project that can be decomposed with the work to be executed.
- Independence of discrete and *bounded* tasks (except for sequential relationships).
- A high certainty of the requirements to be met.
- Clarity on how the tasks are to be performed.
- The totality of work to be performed can be described by a top-down decomposition of the transformation effort.

Extensions to the classical theory of projects have emerged (lean, agile, extreme project management).

Let's focus on two aspects of classical project management theory that may be lacking in large complex projects: (1) the recognition of only one type of "flow," the *Transformative Flow*, and (2) the notion of tasks and projects as being well-bounded.

Regarding Gantt's perspective as the classical theory projects was evolving, projects at that time certainly were occurring within the four walls of a new industrial plant. In addition, the owner, plant manager, and client project manager often were the same individual. The four walls did provide a well-bounded setting with external influences limited and likely nonexistent.



Today's large complex projects take place in a very different setting.