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Engineering Management: Extending Dimensions and Frontiers

The frontiers of engineering are constantly expanding.

When engineering was an art, engineering management was an art; and when engineering became a science, engineering management became a science.

In the pre-high-technology times when the territory of engineering was limited, engineering management advanced on and around its central issues, that is, planning, organizing, resource-allocating, directing, and controlling engineering activities. But, today, as the territory of engineering expanded, the frontiers of engineering management are already pushed far beyond the conventional borders and limits.

Engineering management of today is already a complex whole of human knowledge, belief and behaviour concerning engineering activities. It is both an art and a science. As an art, it differs much from general management, in that it is much more systematic, comprehensive, and complicated. As a science, it is the complex integration of engineering sciences, management sciences, and various other sciences within whose perspectives engineering activities might be placed, examined, and interpreted. As a matter of fact, engineering management makes a territory of three dimensions, with the horizontal, formed of management in such pluralistic fields as traffic engineering, hydraulic engineering, energy engineering, and mining engineering; the vertical formed of such multiple techniques, methodologies and theories working at different stratum, as management devices at the overt and engineering philosophies at the covert; and the spherical, formed of such different branches as technology management, project management, and environment management.

Engineering of various kinds has already changed not only the map of the economy and but also the map of social life. And, side by side with the economic gains, engineering in expansion has also brought various losses to the world man lives in and depends upon, of which, environmental pollution, ecological destruction and resource depletion, have become global problems. To solve these problems, environmental impacts of such large projects as the Three Gorges Project and the petrochemical engineering construction project become pressing issues; development strategy, economic growth model, and philosophical ontology become fundamental instruments; and what is more, preparation of engineering management professionals and development of the engineering management discipline become necessary approaches.

With persistent efforts, individual and communal, taken over the problems, it is not difficult to find solutions, which will not only contribute to the sustainable development and improvement of the global society as whole, but also extend the frontiers of engineering management further and further, till beyond the utmost bound of human thought.



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