WHY THE BEST ENGINEERS SHOULD STUDY HUMANITIES

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16:00 – 16:30 Refreshments
16:30 – 17:30 Lecture
17:30 – 18:30 Discussion

Abstract

We will develop the following ideas in this talk:

I. The proper study of humanities can **make the engineer more effective.**

II. The scientifically trained engineer is **poorly equipped for a leadership role** in the social and historical context. The world uses technology, but does not think or develop in patterns familiar to the scientifically trained mind. We see this in examining attitudes towards:

1. *Evolutionary processes.* What we will call the **scientific mind** is inclined towards a nomological, deterministic and predictive attitude towards developmental processes. In contrast, the **humanistic mind** tries to explain evolution adaptively and non-predictively.

2. *The status of facts.* For the scientist a fact is a mundane repeatable manifestation of a universal law. This is the basis of empirical induction. For the humanist a fact is a singular event by which one characterizes and explains. For the historian, history repeats itself analogically, not nomologically.

This distinction between the scientific and the humanistic minds arises from the scientific emphasis on epistemological concepts of **truth,** while the humanist concentrates on concepts of **meaning.**

III. The **engineer faces challenges** which demand abilities which are not developed in current engineering curricula. We develop three directions.

1. Technology influences the material course of history, but no less importantly, technology impacts **how people think.** This indicates the engineer's dual responsibility:

   (a) Innovation: improve the material quality of life.

   (b) Interpretation: contribute to an understanding of where our civilization is headed.

2. The cultural milieu limits the **horizon of conceivability,** and thus constrains the creative potential of the designer. To be most effective the engineer must understand the civilization and its developmental processes.

3. The engineering community has lost a **sense of scholarship.** We are caught in a progressive textbook tradition. Engineering designers do not study past masters, whose formulations of questions and problems are ignored due to an excessively forward-looking positivism. Ironically, engineers are conservative rather than progressive in their attitude towards scientific theory. We inadequately train our engineers to participate in the process of scientific innovation and theory-building

IV. We address the question of **humanities curricula for engineers.** The emphasis is on developing an ability for humanistic thinking and its application to technology. Study of a specific topic through a sequence of courses will culminate in a report demonstrating independent thought of a synthetic, adaptive, or interactive nature characteristic of humanistic thinking.

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