Some Thoughts on Military Funding of Research at M.I.T.

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M.I.T. is obviously heavily supported by the Department of Defense. It is undeniably true that funds from the Department of Defense are often of the best kind in the sense that less work is required in writing proposals and there is more stability of funding. Ironically, the Department of Defense has supported "basic research" in Engineering in a more progressive way than the National Science Foundation, although some deterioration has recently occurred in this regard. This, in my view, is not the main issue. What needs fundamental intellectual clarification has to do with the very concept and definition of "basic research," especially with regard to research in engineering.

The model for science (excluding some aspects of biology) is physics, which has as its principal goal the discovery of the fundamental laws of nature. If we accept this, then basic research in science has a unique unambiguous definition. What is the corresponding definition for social science, economics and engineering? A definition which we have adopted in certain fields of engineering (notably in parts of electrical engineering and computer science) is to understand the fundamental physical limitations of systems. This is admirably exemplified in the seminal work of Shannon in information theory. What we should discuss is an equally valid definition of the fundamental limitations of systems which is not just based on physical laws. It is a definition which incorporates constraints of physics but also those of economics, production and social and cultural values.

The causal relationships between military funding and the research we do are complex. I believe, however, that an overdependence on military funding creates a condition and culture which implicitly defines basic research in parts of engineering as that of understanding fundamental physical limitations of systems and this is the issue which should be debated. If we are serious about trying to do something at M.I.T. to improve international competitiveness of U.S.A. (clearly our sphere of influence is not large) then we could try to make an intellectual contribution to two issues:

i) What is the definition of basic research in engineering, economics and social science?

ii) What does national security mean and how should the U.S. government ensure that national security at the highest level is preserved?

These statements need considerable clarification which I shall attempt to do in a more detailed paper.