Theories for Use: On the Bearing of Basic Science on Practical Problems

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Abstract

Funding policies for science are usually directed at supporting technological innovations. The im-pact and success of such policies depend crucially on how science and technology are connected to each other. I propose an “interactive view” of the relationship between basic science and technol-ogy development which comprises the following four claims: First, technological change derives from science but only in part. The local models used in accounting for technologically relevant phenomena contain theoretical and non-theoretical elements alike. Second, existing technologies and rules of experience constitute another major repository of technological inventions. Third, technology dynamics is only weakly coupled to progress in basic science but it is closely related to science. There is a dependence of technological change on a more fundamental understanding, to be sure, but it is of an indirect and long-term character. Fourth, progress in basic research is some-times the effect (rather than the cause) of technological change. Technological change sometimes brings about increased theoretical understanding (application innovation).

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