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Universities and the Technology Gap

In a provocative and sure-to-be controversial analysis* of the origins of what has come to be called the technology gap, Professor Joseph Ben-David of Israel last month told the ministers of science of the OECD countries that the gap began around the turn of this century, and began in the universities. American university departments could keep pace with science and its applications because their flexibility of organization allowed them to follow up on the implications and ramifications of new developments. European universities, being bound by tradition and centralized authority, remained frozen in the 19th-century mode. German universities continued the system that had earlier served them so remarkably well: a professorial chair, an associated institute, and a few assistants and *Privatdozenten*. British universities were somewhat freer, for they were more influenced by the American pattern, but in France the only changes were those aimed "at incorporating the by then obsolete German experience."

The key to the American success is what Ben-David calls the entrepreneurial system. The way to maximize the practical uses of science "is not by trying to guess in advance (and in vain) what will be useful, but by developing science according to its immanent potentialities (as perceived by the scientific community) and by subsequently exploiting the scientific findings through imaginative enterprise for whatever purposes they may be useful."

And the way to encourage practical, imaginative enterprise is "by increasing the density of both . . . [fundamental and practical work] and the velocity of the circulation of ideas and problems from both areas of activity in spaces which ensure interaction."

The best "spaces" for ensuring interaction between fundamental science and practical problems are large, complex universities and large, multipurpose research institutions, in either of which there is a mixture of basic and applied interests. The United States has many such places; Europe has few. Ben-David thinks the number could be increased through more effective use of whatever funds a central government can put into higher education and research. Most of his recommendations were directed at Europe, but his recommendations for getting maximum value from the money a national government can provide for higher education and university research are worth considering here. This is what he proposes:

1) Money for higher education should be allotted among universities in proportion to the number of students.

2) Part of the money for research should be granted to universities competitively, on the basis of their overall research attainment during, say, the preceding 5 years.

3) The remaining research money should be granted competitively for individual projects.

4) To foster competition and cooperation among institutions and mobility and interchange of individuals—all of which increase the velocity of interchange of ideas and problems—the universities should be free to use funds in categories 1 and 2 as their own judgment determines.

The prescription is partly based on the success of American practices and experience, but, except for item 3, it goes beyond our standard practice in decentralization of responsibility. In suggesting to European governments a means to narrow the gap, Ben-David has also offered the U.S. Government a challenging prescription for getting greater returns from the monies it invests in higher education and university research.

—DAEL WOLFLE

* J. Ben-David, *Fundamental Research and the Universities* (Organisation for Economic Co-operation and Development, Paris, 1968).