

editorial

How to encourage innovation

The recent preoccupation with the state of the nation's innovative capacity—emanating largely from Washington—has a familiar ring. Two years ago there was a burst of concern reflected in a series of articles in the financial press bemoaning what *Business Week* called “the breakdown of US innovation.” A decade earlier a Commerce Department panel addressed in some depth the stimuli and barriers to innovation, the conclusions of which constituted the widely read “Charpie Report” on invention and innovation. The concern and methodology has changed little through the cycle; a preoccupation with attempted correlations of all sorts—geographical, fiscal, monetary and tax policies, government R&D spending, artificial incentives, market pull and technological push, commitment to basic research, and a host of other buzz words that rear their presence with increasing frequency.

What has often been overlooked in these deliberations and their stated conclusions is the relationship between academic research and the body of industrial innovative capacity. It is, after all, the industrial environment that is most conducive to promoting a discovery or invention to the status of innovation. If we are to invigorate our national capacity to innovate we must enhance the coupling of the academic technical culture to the fertile innovative fields of business entrepreneurship.

One of the most promising approaches to this goal is exemplified by the development of the high intensity of innovativeness now concentrated in the Route 128 and Silicon Valley (Palo Alto) corridors. Here numerous small high-technology companies have sprung up in the backyards of two prominent academic institutions (namely, MIT and Stanford University). Many a region has undertaken extensive studies seeking ways to emulate these two highly productive and unique centers. A major factor in their development has been the benign view of these institutions toward affiliation of their faculty members with business enterprises (permitting, for instance, flexibility in faculty schedules to make day-time hours available to these enterprises). Clearly a significant fraction of the thriving innovative companies in these two areas owe their origins to and are even today populated by a preponderance of personnel whose roots are firmly planted in the academic community.

But the street is two way. If there is to be intellectual flux between academia and industry, industry, large or small, is not free of the responsibility to keep the flow unimpeded in both directions by creating an environment that makes this possible, that opens the door to interaction, collaboration and mutual assistance. For example, a company should have on its staff the kind of researchers who can communicate and interact with

colleagues in academia and provide these staff members with opportunities to visit campuses (sabbaticals, teaching assignments, lectures and so on). In addition, similar visits by academic researchers to the industrial lab should be encouraged.

There is, in truth, a parallel argument to be invoked in the relationship between large and small industry. Just as an innovative geographical region is populated by thriving enterprises spun off in some loose and mysterious way by the presence of an academic giant, so do we find surrounding the truly innovative industrial giants nests of small enterprises spun off as it were—encouraged and nurtured by the presence and perhaps even active involvement of the large company. The best example is the active role played by the General Electric Company in encouraging these kind of enterprises. The Technical Ventures Operation at GE has as its primary function that of helping to start up small enterprises to exploit byproducts of GE's research efforts that the corporation itself has decided not to pursue. GE has been known to motivate some of its entrepreneurially minded employees to manage these independent new ventures, help find capital investment and arrange for patent licenses and transfer of knowhow in exchange for equity.

Large industry could and should take pride in its non-product progeny to no less an extent than an elected official would boast of the economic health of his constituency. There is no better measure of the innovative health of the constituency—be it region, state or nation—than the proliferation of satellite small enterprises under the intellectual umbrella of a major university or large corporation. To the extent that both these institutional genres accept and support this thesis we can look to a rise in the national “IQ” (Innovation Quotient—a measuring yardstick proposed by transportation economist A. J. Gellman) and a greater sensitivity and perception of how the national investment in academic research can relate more fully to its infrastructure for development.

J. E. GOLDMAN

Senior Vice President and Chief Scientist
Xerox Corporation