

satisfaction among scientists who feel that they have basically satisfactory salaries--is freedom to select the research projects they work on, or in other words, opportunity to work on those things they want to work on.¹⁸

Now, you see, we have come full circle in our analysis of adaptation mechanisms for scientists. We have said that the professional orientation of scientists--that is, the values that are ingrained into them in their long period of professional preparation and education--emphasizes the importance of autonomy and freedom in the conduct of their work. They carry this orientation with them when they become employed in industry, government, universities, or elsewhere. The professional values and disciplines that they have acquired are almost as strongly ingrained as the codes and disciplines of the professional soldier.¹⁹ If organizations are to utilize these professional scientists in an effective way, they must provide for the fullest expression of professional attitudes and activities, rather than resisting them. Bureaucracy must learn to accommodate to professionalism.

This is all well and good, you may say to yourself; but you may feel that what I am really saying is that organizations that employ scientists ought to just "give in"--"give the scientists what they want and keep them happy." My answer here would be that I do not say that organizations ought simply to reorient themselves to the needs and interests of scientists. Instead, I have been speaking about accommodation. In this regard, I would emphasize that accommodation is not capitulation. Let me try to explain further what I mean by brief reference to three common problem areas in the management of research organizations--the evaluation of research productivity, the organization of research in contrast to development, and the coupling of research with nonresearch activities.²⁰

Management Applications

We know that research organizations, unlike many other kinds of organizations, do not produce tangible things; they produce ideas. We also know that ideas are not as easy to count and measure as are items of hardware. At the same time, top level management must have some way to evaluate the comparative effectiveness of different research laboratories under its direction with regard to the production of ideas, just like top management must have ways to evaluate the comparative productivity of hardware divisions.
