

Management Training for Scientists?

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Recently Dael Wolfe discussed the need for most managers of science to be trained for the managerial role.¹ His editorial proved an ideal peg for the following essay which I wrote several months ago. Though I agree with his main theme, it does not go far enough. "Management" training is something every scientist should undergo long before he becomes a *scientist*. There are many things it is easier and wiser to learn when one is young. Habits and attitudes can be established then that later minimize many difficulties. Somehow most successful scientists have learned to 'work smart'; to merely 'work hard' is not enough.

I know that it is dangerous to draw general conclusions from personal experience. But I think the following autobiographical discursion is justified in view of the point I wish to stress here.

By my early teens, the word and concept *SCIENCE* had been deeply embedded in my psyche. At thirteen, when I was admitted to Peter Stuyvesant High School in New York City, I was delirious with joy. Stuyvesant was then *the* science high school *non plus ultra*. (The Bronx School of Science opened its doors a little later.) Admission at Stuyvesant was very selective. About two percent of the candidates were accepted. The only "preparation" I had for a formal science curriculum was strictly informal. At the height of the Great Depression, I had been introduced by my family to chess, Beethoven, Bishop Brown's teachings on

evolution, social theory, and even *Dialectics of Nature*. It is arguable whether this intellectual atmosphere prepared me better for life than a normal childhood of fun and games (and dates) might have done.

My ambivalence on this question is heightened nowadays since my sense of values is continually assaulted by the contemporary scene. In contrast to my own background, my youngest son, about to enter the first grade of high school, has never, as far as I know, read a complete work of non-fiction. He is, however, an accomplished scuba diver. Breadlines? Soup kitchens? Relief? The expressions are virtually meaningless to him. The realities are incomprehensible—as incomprehensible, I'm afraid, as he finds my concern that his pleasures and gratifications require of him neither work nor contemplation. Such as it is, my success may be responsible for his outlook. The worrisome problem is whether it will have also "deprived" him of motivations that were indispensable to mine, and may be indispensable to his.

But there is hope, as there has always been. Each new generation produces its share of successful scientists. Lately, I've been encouraged by my son's growing interest in science and medicine, and even a noticeable sensitivity to other people's needs.

These varied thoughts came to mind recently when I read about employment problems of physical scientists (getting better) and biologists (getting

worse). I sympathize with any scientist who cannot slake his thirst for knowledge without desperate sacrifice. But I am not greatly upset by the 'dilemma' of having to choose between one scientific discipline and another. Once into Stuyvesant High School, I discovered that any area of science can be made stupefyingly boring if properly mishandled. Some areas are potentially more susceptible to such treatment than others--descriptive biology for example. But I discovered also that the study of language offered adequate compensation at the hands of a skilled teacher. So I left hard science temporarily--having earlier learned the 'scientific method' from Hegel and Marx and the socialist side of my family. (I might add that numerous others have succeeded in science in spite of bad teachers.)

The study of language, mathematics, and bookkeeping under competent teachers at DeWitt Clinton High School left me enough time to study 'management' at thirty cents an hour in an uncle's clothing factory. By the time I was fifteen, I must have written more invoices than ISI®'s computer has yet to produce from our subscribers list. The word *computer* was not then used in connection with machines. It was a decidedly dubious privilege to be allowed to use the hand-cranked adding machine if one were dull enough to require it. By the time I finished high school, the realities of the dog-eat-dog business world had convinced me that science was my utopia. But ironically science has benefited from that earlier business training, and ISI's modicum of success must in part be due to my 'management' training during the Depression.

I've known many good scientists who are dreadful managers. I don't know how such a 'management' course as my own (or its equivalent) might

have affected or sharpened their creativity or drive. Except in those hopeless cases where professional inefficiency is a psychological cover-up for incompetence or insecurity, management training can't hurt.

The academic world tends to scorn the assertion that 'a good manager can manage anything', and emphasizes professional expertise. One wonders, however, how much professional expertise is dissipated by poor management--even on an individual basis. Management is, after all, merely the optimum use of resources. But to manage anything, one must have optimum control of one's own resources. The scarcest of all is time. A sign of aging may be the tendency to recall just how much time one has wasted on vain or fruitless or mismanaged endeavors.

It is sadly true that most of us--including scientists--learn only with age that our stay on this planet is pitifully brief. Otherwise we would recognize early how vital 'management' is to work in any field, and to every aspect of that work. Nothing is too trivial to manage well. Whether it is merely a matter of filing reprints efficiently or budgeting properly, science is more than knowledge and ideas. There is not a little irony in so many scientists' use of the expression 'scientific method'.

But modern scientific method must include the management of information. I can't repeat often enough that a scientist who does not manage his own information is no scientist at all. Indeed, it is significant that scientists and engineers are found to be indistinguishable if one looks primarily at the ways in which they manage information.² Leaders in basic and applied science are not only "gate keepers."³ They "manage" the literature for all those reasons I've been citing *ad infinitum*.

1. Wolfe, D. Managers of science. *Science* 183(4125):183, 15 February 1974.
2. Amick, D.J. Scientific elitism and the information system of science. *J. Amer. Soc. Inform. Sci.* 24(5):317-27, 1973.

3. Crane, D. The gatekeepers of science: some factors affecting the selection of articles for scientific journals. *American Sociologist* 32:195-201, 1967.