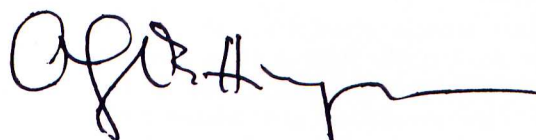


President's Letter to the ACM Membership



In my pre-election statement "On ACM's Responsibility" [*Comm. ACM*, April 1966], I spoke of self-education as a major gap in our efforts.

What are the important areas of self-education? There is an obvious range of technical subjects from online techniques through language and compiler problems to systems design, to name but a few at random.

Less obviously, there is the whole scope of human, managerial and political problems which our youthful and technically oriented profession has hitherto mainly left to others.

It is a mark of our neglect that the arrogance and inanity of "Do not fold, spindle or mutilate" has become the public's symbol of computing. It is we, not our machines, who still permit such barking to take place, without even the grace of a prefatory "please", on cards issued by the Internal Revenue Service.

This petty but very visible symbol is only a symptom. The following quotation from John W. Gardner, taken from an editorial in *Science* of January 21, 1966, goes nearer to the heart of the matter:

Very few of our most prominent people take a really large view of the leadership assignment. Indeed, it is my belief that we are immunizing a high proportion of our most gifted young people against any tendencies to leadership. Most of our intellectually gifted young people go from college directly into graduate school or into one of the older and more prestigious professional schools. There they are powerfully indoctrinated in a set of attitudes appropriate to scholars, scientists, and professional men. This is all to the good. The students learn to identify themselves strongly with

their calling and its ideals. They acquire a conception of what a good scholar, scientist, or professional man is like.

As things stand now, however, that conception leaves little room for leadership in the normal sense; the only kind of leadership encouraged is that which follows the performing of purely professional tasks in a superior manner. Entry into what most of us would regard as the leadership roles in the society at large is discouraged. As a result the academic world appears to be approaching a point at which everyone will want to educate the technical expert who advises the leader, or the intellectual who stands off and criticizes the leader, but no one will want to educate the leader himself.

Lest there remain some doubt that Gardner means us, I quote further from a recent survey of some sixteen associations in the automatic data processing and related fields which appeared in the Diebold Group's *Automatic Data Processing Newsletter*. In this survey, the ACM is characterized as a group whose "interests (are) primarily academic (and which is) helpful to those with scholastic backgrounds, theoreticians of methodology, scientific programmers and software people."

This is, I think, a rather curious and narrow mold for the adult ACM—at least as I see it—to fit into. We may have started there, but there we cannot remain. Lofty motives aside, there is the plain matter of self-preservation. A survey in the *IEEE Spectrum* of September 1965 points out that while in 1900 only 12.5 percent of top business executives had "technical backgrounds—degrees in engineering, natural science or equivalent on-the-job experience," the percentage was 19.3 in 1950 and 34.8 in 1964. Given the growth of management of computing and information processing and by computing and information processing, the ACM membership, individually and collectively, must ask itself whether it wishes to participate in it or see the role go to others by default. Sneering at the educational efforts of other organizations is not merely uncouth, but also ineffectual. Leaving the Business Equipment Manufacturers' Association as the sole Washington spokesman for our field is irresponsible.

A concern with the *science* of computing and information processing, while undeniably of the utmost importance and an historic root of our organization is, alone, too exclusive. While much of what we do is or has its

roots in not only computer and information science but also many other older and better defined sciences, even more is not at all scientific but of a professional and engineering nature. We must recognize ourselves—not necessarily all of us, and not necessarily any one of us all the time—as members of an *engineering* profession, be it hardware engineering or software engineering, a profession without artificial and irrelevant boundaries like that between "scientific" and "business" applications.

Another quote, this one from Don Price's excellent *The Scientific Estate* (there's a fine section on command and control beginning on page 144), will clarify this point:

The professions (for example, engineering and medicine) make tremendous use of the findings of the sciences, but they add something more: a purpose. Science has advanced by getting rid of the idea of purpose, except the abstract purpose of advancing truth and knowledge. But the profession puts it back again; basic science could not cure a patient or build a bridge or an airplane, but the medical and engineering professions are organized to do so. Each is organized around a combination of social purpose and a body of knowledge, much of it drawn from science. Each is organized as an almost corporate entity, with some control over its standards of admission. Its responsibility to an individual client, or to a corporate or governmental employer, is to serve within a defined and limited field; within that field, the professional has an obligation to standards of ethics and competence that his profession, and not his employer, dictates. The engineer has a sense of responsibility to build structures or systems that will work, and his responsibility is not merely to his employer. The doctor feels an obligation to the patient that goes beyond any contractual relation with an individual client, or any administrative instructions from the clinic or hospital that may pay him.

We must take to heart these ideas of purpose, of responsibility to build systems that will work and of responsibility beyond that to an employer. We must speak with a clear loud voice, individually and collectively, on issues of professional concern.

The ACM, as I see it, must be at home for any scientists, engineers, programmers or managers who are professionally competent and will lead in advancing both the computing and information sciences and their application to human purposes, through creative and responsible software or hardware architecture and engineering.