# THE PROBLEM OF THE AGED

## SCIENTIFIC ORGANIZATION



By: E. R. Harrison
November 30, 1965

As a visitor to America, I find it is a pleasant experience to have the opportunity of working in a relatively young and vigorous scientific organization. One healthy sign I have noticed is that there is an awareness of the problem of the "aging scientific organization" and a concern for how this problem can be solved. I should like to make some comments and comparisons and then suggest how this problem might be tackled.

Most of us know what a youthful scientific laboratory, institution, or establishment is like: it throbs with life and teems with ideas. The average age of the staff is young, the majority is engaged in scientific work, and from the top scientific leadership reaches down and stimulates all levels. The few administrators and executives are overworked and at one's beck and call. Measured in terms of output per person and impact on the scientific world such an organization has no equal.

As time passes, the organization ages rapidly and after as little as ten years, it is unrecognizable. The following comments are for the benefit of those unfamiliar with its creeping paralysis, decay, and senility.

In the opinion of an American colleaque a scientific organization is moribund when, in quest of administrational perfection, it assigns names to its streets. In any event it has grown in size and the average

age of the staff has increased. Nobody is in his dotage and yet the place is bereft of scientific ideas and, apart from out-of-date work of a trivial nature, tends to be imitative of what is initiated elsewhere. The majority of the staff is employed in administrative, executive, and an array of para-scientific duties. More and more organizes less and less. There is a multiplicity of committees; procedures are laid down, routines established, and forms designed and prescribed for every conceivable situation. Printing and duplicating apparatus everywhere abounds, and the minority of active scientists is bombarded with more scrap paper than it can use. Organizational senility can be gauged by the number of filing cabinets in the possession of the administrators and the number and size of the waste-paper containers in the possession of the scientific workers.

Formal and cold relations tend to replace the early informal relations. The widening abyss between the scientific worker and the management intimidates and enervates the former and robs the latter of the excitement and stimulus of contact with scientific work.

Those in the most senior positions were often the brightest and most active scientists in the youthful years of the organization. Each, in his desire to create and serve the organization, has sacrificed a career of active scientific work. Disillusion only follows after they are devoured by the monster of their own creation. Having no

time to keep abreast with science in their own field they lack knowledge, energy, and nerve to make original contributions or initiate ideas.

Most of our sympathy, however, must go to the young and active scientist in an aged organization, for he occupies a truly anomalous position. Possibly he has never spoken with or even seen his director. He is in the minority and at the beck and call of every facet of the administration. Multitudinous secretaries and typists are too busy to type scientific papers. The library thrives with executive and clerical activity but is otherwise empty. In the course of his career the young scientist is expected to shoulder an increasing amount of the organizational burden, and the chances of elevation to higher income and status depend on his willingness to give these duties priority over his scientific work. Failure to conform stamps him as eccentric; he will be regarded as self-indulgent, concerned only with enjoying himself doing science, and refusing to sacrifice himself as his seniors have done. Clearly, he cannot have the best of both worlds; either administrative or scientific work, and only the former entailing 'responsibility' and 'self-sacrifice' is deserving of increased income and status.

The aged organization is a potential well that traps low energy particles with the lure of security and the need for paying only lip-service to science; the high energy dedicated particles come and then go without

evoking comment or concern. The problem of the aged scientific organization, with its misinterpretation of the scientific spirit, its misdirection of scientific effort, and the attendant misuse of fantastic sums of money, is a modern dilemma that only the active scientist sees etched in its starkest form.

What is the solution? It is not beyond the wit of man to devise ways which can slow and even halt the aging process. Periodic dismissal of the senior staff is the crudest of all possible methods. Neither can we adopt the method of personal combat whereby a primitive tribe periodically renews its leadership with the ablest of its manhood. To me it seems that we must discover the conditions under which various kinds of scientific work can best flourish. This knowledge alone should be used to remould existing scientific organizations whilst every other consideration is discarded as utterly irrelevant.

Science has four faces: learning; the advancement of knowledge; teaching; and the application of ideas. The adoration of any one face to the exclusion of the others undermines the scientific will and temper. Each scientist should seek to enfold into his career in varying degree the four aspects of science. Learning by itself is mere scholasticism unless it leads to new ideas; to this must be added the play and impact of ideas and the conveying of vision and excitement particularly to younger people; and in addition there is the need for maintaining science

as a social activity concerned with the application and effect of ideas. It seems almost self-evident that a scientific organization can only endure and exist in a healthy state when its staff at all levels are engaged in making manifest the four faces of science.

It is a fact that the reward of high income goes to those who, often by the excellence of their earlier scientific work, have become people in senior administrative positions. On the other hand it is common knowledge, but by no means common practice, that scientists in a scientific organization should not be limited to a status and income that is inferior to the management's. This leads us to the two following suggestions, which are so obvious that presumeably they have been made on many previous occasions. Nevertheless they are of such vital importance to the scientific well-being of a nation that they deserve being repeated.

(1) Excellence in individual scientific work is more rare and more valuable than administrative excellence in a scientific organization. The highest incomes in a scientific organization should therefore be reserved for active scientists.

(2) Those in managerial and administrative positions should hold office only for a limited number of years. Their successors, mainly from the junior scientists of the

organization, are expected and have the power to dissolve and reorganize the para-scientific incumbus, and to refashion the existing scientific aims and policies.

Suggestion (1) needs hardly any comment on justification. Suggestion (2) is not quite so volcanically eruptive as it may seem. The overthrow of those with obsolete knowledge and diminishing powers of scientific leadership opens up avenues for young scientists, keen to express themselves, possessing contemporary knowledge and an urge to explore fresh exciting fields. A senior member of the administration, according to this scheme, is allowed to hold his position, or any number of such positions, for a total number of years having a maximum value of, say, ten. At the end he must again take up active scientific work, retaining his previous income. If he wishes to leave he receives a suitable income in recognition of his services. The annual cost involved should not be much more than the annual depreciation cost of the buildings. The gain is that the organization is in a continual state of renewing itself.

Whatever shortcomings these proposals may have they can presumeably be reduced or eliminated by adopting various modifications; in any case they are negligible when compared with the dismal shortcomings of the aged scientific organization. To avert this frightening state of affairs almost anything is worthwhile.