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The study sections and advisory panels of the National Institutes of Health and the National Science Foundation provide scientists with a critical review by a broadly selected (and rotating) group of their peers who are not subject to the pressures of local politics and who have the opportunity and experience of comparing applications from all over the country. A grant application approved by an advisory panel in Washington is an important vote of confidence; disapproval should give the applicant serious cause for soul-searching. Certainly there are mistakes, but, in my judgment, far fewer than would be made by local review. Allocation of research funds within an institution is much more likely to perpetuate mediocrity and incompetence; recognition of new ideas or far-sighted proposals may be much more infrequent.

There is much merit in having panels of experts well informed on the advanced thinking of the scientific community as expressed in grant applications. In the long run, the good that is done by having these open lines of communication far outweighs any possible damage to the private enterprise of idea ownership. There is also, via this route, considerable dissemination of knowledge about investigators, young and old. There is great revenue in cross-fertilization. Moreover, the large numbers of working scientists coming to Washington to serve on study sections maintain a flow of information and personal contact with government officials that is necessary for mutual understanding and cooperation. . . .

The present project-award system may not lend itself too well to the development of new schools and departments. This problem could be handled by a separate system of institutional and departmental grants-in-aid. Similarly, funds for regular teaching could come from separate sources. For older and established institutions, the general research-support grant contributes to flexibility; it should not, however, be enlarged to replace project support to individuals.

Critical periodic evaluation of the individual on the basis of scientific merit by a distant, semi-anonymous panel of peers is a source of strength to institutions. The frequently expressed danger of loss of loyalty or control of grantees should hardly be a problem if the institution maintains control over the

initiation of research applications and over hiring, firing, and the allocation of space.

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**The Exclusive "Graduate" Course
in Advanced-Degree Programs**

One of the criteria used by accrediting committees when evaluating graduate programs at universities strikes me as being trivial but pernicious. It is the distinction between "graduate courses" and "senior-level courses carrying graduate credit." In my opinion, the only valid case for herding graduate students together and excluding the undergraduates is that graduate enrollments may be so large that it is inconvenient to enroll undergraduates in the same classes. Many accrediting committees gather data on the proportion of "graduate" courses in an advanced-degree program, implying that this proportion gives an indication of the quality of the program. Consequently, many institutions aspiring to higher levels of graduate work will, under pressure of this criterion, proliferate "graduate" courses for which prospective enrollment is prohibitively small. Recently I encountered a situation in which this criterion was carried to its extreme. A college was expanding its courses at the master's degree level and was hoping to offer doctoral programs in the not-too-distant future. In the interest of insuring "excellence" as it is judged by accrediting committees, the graduate council had adopted the following criteria: All the courses for the master's degree would be at the 500 and 600 level. The 500-level courses would be open to "qualified seniors" (not all seniors), and 20 percent of the credit for the master's degree could be earned at this level. The 600-level courses would be closed to all undergraduates, and 80 percent of the credit toward the master's degree would have to be earned in such courses. All the departments at this college are overburdened with the task of preparing 500- and 600-level courses in which enrollments during the foreseeable future will be of the order of 1 to 3 students per course.

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