

Walter,

Sorry to take you by surprise on the FY93 Budget discussion last week, but I'm afraid that your staff touched a raw nerve for a number of members of the National Science Board by eliminating any specific reference to the NSF Traineeship program in the proposed budget. For the past three years, the majority of the Board--and much of the rest of higher education and industry--have been trying to convince both the Foundation and the Administration that the most effective short-term response to the possible shortfalls in U.S. science and engineering doctorates projected for the mid- to late 1990s is an aggressive traineeship program, modeled after that in NIH.

Indeed, as we noted last Wednesday, the EHR Committee has voted unanimously on two different occasions to recommend such a program to the full Board, and the Board has supported this recommendation in public session on two occasions: first at the FY92 Budget meeting last August, and then reaffirmed this priority at the February meeting at the Beckman Center. The proposal, approved by the Board, involves an effort beginning at \$25 M in FY92 and building to a steady-state level of \$125 M over five years.

Such a traineeship effort has been supported by formal actions by major university associations, including AAU and NASULGC. It has also received the endorsement of corporate bodies such as the Manufacturing Forum and the Council on Competitiveness. Indeed, last year CORETECH took on the traineeship effort as one of its highest priorities.

Therefore, you can understand the sense of frustration on the part of members of the Board--not to mention leaders of higher education and industry--that the NSF (and the Administration) have been slow to respond to these recommendations. In part the problem has to do with the continuing need to educate those new to the issue, and in part it has to do with overcoming certain preconceptions and misunderstandings of just what is being proposed.

To summarize the basic arguments, I am sending along both by E-mail and FAX a summary document used to brief the NSB, Congress, and OMB on the arguments in favor of such a program. But let me make several additional points here:

1. First, let me stress once again that the principal distinction between "traineeships" and the current NSF "fellowship" program is that the traineeship grants would be made to programs and departments in contrast to "portable"

awards made to students who then choose their institution. In this way, the traineeship puts the incentive (and burden) directly on the department/program to recruit outstanding U.S. students into their programs. It also allows both the NSF and the program the opportunity to target traineeships to technical areas of particular importance.

2. We believe that a robust traineeship program will fill a needed gap in existing NSF graduate student support, augmenting the existing NSF fellowship program and graduate research assistantships. In a sense, traineeships are a hybrid of both support mechanisms, combining their best features. They provide maximum incentives for the aggressive recruiting of U.S. nationals in graduate programs while allowing NSF and departments/programs to target support to the areas of most critical need.

3. While it is clear to some disciplines, notably engineering, that traineeships are the most effective form of graduate student support, other disciplines (most notably physics and chemistry) have long felt that graduate research assistantships are preferred. While noting this difference in perspective, let me also observe as a one-time physicist that I believe that part of the problem is what I would call the "Yale/Chicago/Michigan" syndrome, in which the appetite of "big science" for cheap graduate student labor on gigantic projects has distorted the nature of graduate education. I personally believe that the physical sciences would benefit greatly from a more diverse fellowship/traineeship/research assistantship portfolio for graduate student support since it would facilitate both "big" and "little" science.

4. Finally, a comment about the FY93 Budget. We all agree that there is a real chance that there will be a traineeship program included in the FY92 appropriation. Hence, the real question is how to handle FY93. Many of us believe that the NSF--and the nation--would be well-served by retaining the flexibility to implement the second phase increase of the traineeship program in FY93--that is, taking it to \$50 M in base. Further, we believe that this is important to efforts led by CORETECH and others to build comparable commitments from mission agencies. In this regard, let me note that many folks from both higher education and industry are beginning to sense a shift in attitude at the highest levels of the Administration on this issue.

But we also understand the complexities of building a FY93 Budget request which is acceptable to OMB and yet also capable of accommodating the uncertainty in the FY92 appropriation. Hence, let me suggest the following:

i) Move ahead with a plan to implement the \$20 - \$25 M you are

likely to get for a traineeship program in the FY92 appropriation

- ii) Prepare to make the case that this \$25 M should be included in the "base" request for FY93, once FY92 becomes a reality.
- iii) Then identify targeted areas within the research directorates in which an additional \$25 M of graduate student support could be repackaged as traineeships in FY93. For example, one could simply require that some component of funding of the new ERCs or even major projects such as LIGO could be for graduate student support in the form of traineeships rather than graduate student assistantships. From a practical point of view, the only real differences are the requirement of the traineeship program for multiple-year support of U.S. nationals and the elimination of indirect cost and staff benefits charges that would characterize the research assistantships. The holders of the traineeships would still provide research assistance in the areas of highest priority to both the NSF and the programs.

Your folks can probably come up with lots of more creative ideas. But the key point is that there is a large and growing community that believes VERY STRONGLY that our nation could be facing a very serious shortage of U.S. doctorates in key areas of science and engineering, and that a NSF traineeship program (later augmented by similar programs from mission agencies) is the most effective near term response. Hence, we believe it important that this be reflected in the FY93 Budget strategy.