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Dear Josh,

Here is the second fellowship reference report I mentioned; this one is due before December 15.

You won't be surprised to learn that I was particularly impressed by the column called "Agony of the Scientists" (#169). Have you had any interesting response to it?

It occurred to me while I was thinking about that column that "Science and Man" as an ongoing project must itself sometimes embody for you the frustrations of the times. Week after week you point out more or less unattended areas in which research would have an almost immediate impact on human welfare, you argue the need for research in what must be one of the most politically prominent places available, and Congress responds with budget cuts, dissolution of science advisory subcommittees, and like gestures. You may have to take to the streets yet!

I hope it was clear that in my last letter I was getting at something different from the conscious "moral crisis" we evidently largely share, specifically at an elusive, emotional dissatisfaction that can remain even if the rational aspects of the crisis can be dealt with, and that must be sensitive in not very mysterious ways to the social and political ambience - so that a scientist, or anyone else, may find himself well in the head but still a little sick at heart. It's my feeling that this emotional component of self assessment and commitment is especially important to undergraduates and may serve as the primary force in their decisions at critical branch points. The tone of articles like Bryce Nelson's (Science 166:582), let alone the facts they report, doesn't help in this sense. I'd be interested to know what the behavioral scientists have to say about the topic and about the larger issue of how public appreciation for personal effort can be communicated in a complex society.

My own mood these days is still one of confusion, doubt, and, more often than not, depression. The political atmosphere seems to be closing in and thickening inexorably. I can't believe that Nixon and all his advisors are oblivious to the dangers of scapegoating and demagoguery at a time near the unsatisfactory end of an unpopular war, but those appear nonetheless to be their conscious choices of political tactics for the present. "Difficult times," says Fulbright.

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I've decided to go to Washington this weekend. You may not agree, but I think Nixon has essentially "called a hand," and that large numbers will have to show up now just to keep him from declaring dissent to have evaporated. The lesson Alice learned from the queen seems distressingly applicable - it takes all the dissenting one can do these days just to stay in the same place.

Thoughts about my own future haven't moved forward much. I have become more convinced that cell culture in vitro will prove to be a profitable, probably indispensable approach to neurobiology, especially if, as I think you once suggested, the choice of cell source is an organism offering some degree of genetic definition and flexibility. The mouse seems the best choice to me now, though I predict that the electrophysiology of interesting nematode mutants will also be performed in vitro. One long range possibility I've been considering is the use of allotypic surface antigens as cell-type markers in a study of synaptic specificity in vitro - a sort of Herzenberg system for neurobiology. I'm also very impressed with Richard Sidman's constellation of mouse cerebellar mutants (I hope Luca Cavalli is aware of them.).

In short, when I ignore some broader personal questions and focus on what kind of science I might want to do, it seems likely that cultured neurons will remain the subject of my immediate interests for awhile. If I can get the electrode array into a working system and take the technology with me, it should provide a good start (although I still feel self-conscious about representing myself as a neurobiologist). I haven't made any effort on my own yet to see what kinds of positions might be available, but some suggestions have been offered and I intend to write to Don Kennedy for some more.

I hope things are going well at Stanford. Have you succeeded in obtaining funds for the metatechnology study?

Sincerely yours,



Lawrence Okun