Download as 1/19/180

Remarks by Dr. Joshua Lederberg The Rockfeller University at the 1988 AIHC Annual Meeting.

12/7/88

DRAFT

9-180

Privileged to be invited to address you, here in Washington, at a major turning point in the nation's history. And a relief to be away from the Gorbylock on traffic in NYC.

Over the weekend, I had started to put my thoughts together;before I had spent a lot of time on my word processor, I recalled that I had received a copy of Ed Behrens' AIHC Transition Report to the American Agenda. Luckily, I was able to find that paper in the mail pile, and I was pleased to find an almost perfect congruence with what my own draft ideas. And this is good for you: I can make my remarks fairly brief and to the point. Having been working for some time on The Carnegie Commission on Science & Technology and Government I had already been going over many of the same issues.

What we have to say is not all that controversial: it is consistent with Pres.-Elect Bush's speech of October 25 to the Ohio broadcasters. Our task is not to persuade but to remind Mr. Bush of the priority he voiced for strong, credible, broadly based S&T advice in his new administration.

This may be redundant, but I will summarize the the main recommendations of the Transition Report:

1. That the scientific basis for regulation be of peer-review quality.

2. That each of the agencies retain or engage external advisers, so as to call on the broadest and best available talent.

3. A doctrine to separate technical judgments of risk assessment from the political ones of risk management.

4. A mechanism for interagency coordination.

5. A strong S&T adviser to the President to oversee the implementation of the above; to include a life scientist at a high level in the OSTP.

I imagine this audience would give only the most enthusiastic support to these modest proposals. Some may criticize them for not going far enough to relieve the industry of some of its most vexing harassments. In the back of our minds for many of us may be the feeling that the last prescription, the appointment of a well-qualified assistant to the president for S & T is the key to all the others. Many professional groups have urged the same; and I would add my own vote to the petition. We share the hope that it will happen, and have good effect. But I will turn now to some of the difficulties that the Science Adviser may face, and what else may be needed to bring this country to a better balance as we face very difficult cost-risk-benefit analyses. The first categorical is the understanding that we have no choice about risk-cost-benefit tradeoffs. They happen as a consequence of our choices, whether they arise out of conscious decision, revelation or any other process. The only question is whether we seek to optimize any of our values, or prefer to leave them to chance or whimsy.

We should begin with some elementary economic theory. Free enterprise -- # many advantages # inspiring innovation and investment in R & # even more costly D. Unfortunately, this profit oriented system, the hidden hand

that turns the aggregate of private greed into the public benefit, also propels safety validation into an adversarial mode. The party who is motivated to undertake safety research is the one who will profit from the commercialization of the product. Without that incentive, there is no advocate for it. So we have two problems: There may be some orphans, --- when there is insufficient self-interest owing to limited markets or profit opportunities, say for a commodity, or perhaps owing to expiration of patent monopolies. In other cases, the cat's watching the pigeons! that is excessive self-interest may cloud the professional ascertainment of the relevant scientific data. The public's confidence that industry has an unremitting concern for the public's welfare is hardly enhanced by the news headlines on leveraged buyouts and hostile raids; and I have real anxiety that top management's preoccupation with defenses and poison pills may leave real gaps in the unremitting oversight over middle management's "can do" spirit that is needed to forfend unprecedented environmental disasters, when a misstep as simple as leaving salt out of a recipe can generate a national tragedy over which everyone grieves for a long time.

No one today can possibly argue for abjuring all safety regulation; and as onerous as this may sometimes appear, it may yet help to forfend still more grievous torts actions. Unfortunately compliance with regulation is of limited defense -- very bad public policy, in my own view. We tend to ignore the orphans, though there would be a good argument to couple the extremities of regulatory demands with the expected numbers of people at risk.

Economic theory would say that we have efficient use of resources when the

overall health benefit of the regulatory process, through the aversion of disease, exceeds its costs, both direct, and through the discouragement of innovation. In practise, the market is unlikely to be so finely tuned, and the resources available to, and the expectations of, special interests are more likely to dominate. Those special interests include not only industrial proprietors, but also those who make their livelihood as self-appointed representatives of the public interest, even such bystanders as the press and the machinery of politics. Even the research establishment can be accused of a special stake in its appeal to "objective research"; but that will not deter me from the claim that this is also very much in the public interest. The net result is the kind of political embroil we have seen repeatedly, which has resulted in the challenge to, and often overthrow of an almostly randomly selected set of targets, which bear no relationship to any rational assessment of their risks and benefits.

The science adviser then faces several daunting tasks. First, of course, is the mobilization and coordination of scientific skills and policies across government agencies. He must do this in the face of personnel and compensation policies that have made government ever less attractive to people of high technical skills, and we want precisely those who are NOT motivated by any form of Potomac Fever as alternative reward. Why should our best and brightest work for government, especially in the crucial middle ranges; and if they do, why should they take any bureaucratic risks of any kind? Do we have the science base to give robust answers to most of the risk-assessment challenges facing us today? Industry today is, I believe, spending much more in assessments for Super-Fund and waste site cleanup than in toxicological research; and only a tiny portion of that trickles down

to the universities and to CIIT where the most fundamental work is done. Scarcer still are the settings where one can see practised and learn the arts of compiling diverse toxicological data and crafting a comprehensive risk assessment from them. # Obstacles of extrapolation, need for comparative toxicology ... Still a part of assessment are the economic costs and benefits .. we can see how vanishingly rare are the settings for comprehensive analysis. Where will people be trained for careers in government?

Then, the above accomplished, the Adviser must somehow give direction to the risk-management side of government responsbility. Will agency directors welcome having their judgment of the politically feasible encumbered by the pronouncements of the risk-assessors? Where will the votes come from to sustain rulings that seem to be on behalf of wealthy corporations? The root problem is in public understanding. We have to be appalled at the failure of scientific education at the most rudimentary level among our people. Not just there! (C.P. Snow talked about this in the 2 cultures). How many legislators, or CEO's for that matter, could tell you about Avogadro's number? Yet they must judge whether Delaney is scientifically sustainable! The adviser must reach very far to the very roots of our culture: probably the most important single repair needed in literacy is a fair understanding of risk and quantitative probability theory. How many will answer correctly: having tossed a fair coin and gotten 10 heads, what are the odds for the next toss? What do you think are the odds for a run of 10 or more heads in 100 throws? What do you think the public reaction is to a run of three birth defects in a 1000 births, when the average occurrence is nearly 1%? You can be sure a chemical will be blamed.

We can of course look to the president himself for leadership in policies about science and education, perhaps even directly for leadership in the very substance of these issues -- as we expect of him in equally grave and complex matters of economics, human welfare and national security. That expectation is part of our zeal for a high place of a Science Adviser in the White House: we would like to see scientific competence close to the center of political power. We have to be careful about the converse, how hard it is to insulate such power from politics; and there may be many matters best down-scaled, in a sense to protect the president from having to spend his own political capital on adjudications that can be dealt with at lower, more technical and more autonomous levels of government, -- precisely to insulate those decisions from the unremitting tug of war of political forces. For that reason, the AIHC transition team report is wise to stress elements of integrative process and coordination in the functioning of the presidency, the virtues of our high leadership notwithstanding.

May I add that comparable arguments may also apply to corporate governance; that the CEO (especially of a high-tech firm where he may not himself be technically qualified) may have a comparable need for a Science Adviser, reporting directly to him. Unlike most government agencies, the line organization of the corporation is more likely to have continued, operational scientific experience to keep it in close touch with contemporary scientific developments. Many companies also properly offer critical autonomy to their safety, quality-control, and environmental divisions. But in the U.S., the technical ladder often does not reach the topmost layers of management. At any event, many corporations should consider whether they do not need a "PSAC" to reach more broadly into the scientific

community for detached critical advice, both to enhance innovation and to be sure no stone is left unturned in risk assessment -- before this becomes a matter of broader public vulnerability.

I have high hopes for significant improvement, but not for radical amelioration until we have dealt with some of the more basic issues of human competence: the education of more professionals with cross-specialty skills, and a radical improvement in scientific education of our public. For the latter we must begin with the early grades, and it may be a dozen years at best before we can see much impact on the quality of our politics, and from there on that of our regulatory system.