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Outline of text for February 5, 1979
CUMC Griffis lecture series

Setting of this talk. Transition from professorial to curatorial role. Not yet fully developed philosophy of academic management, especially with all the singularities of institution, colleagues,place.

Can but share a discursive set of thoughts and concerns about the contemporary state of medical science and research. Perhaps a tedious subject but we are all inevitably influenced by the social policies about science that will influence the material and intellectual environment of our work for a long time hence.

Influenced by the tragedies of DISorganization that are besetting academic medical centers everywhere, and which are posing serious threats to the ethos and internal cohesion of these institutions.

But primarily responding to external challenges -- have gone so far as to lead Dr. Goldberg to say recently in this hall that we are at the end of an era. Not so discouraged, but believe that serious self-examination of our enterprise is obligatory.

Challenges to public investment in biomedical research (Muller ,Steven-- demobilization of professionals post Sputnik) Manifested in:
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accountability of practice -- fetal, human subjects,r-DNA
bureaucracy of administration
demands for relevance and utility, and rapid shifts: disease-of-month Pres. Commission on Biomed Res. --e.g. congress DHEW Research principles study

We should welcome challenge insofar as it leads to better understanding by others and ourselves, and some chance of reform. Public can properly demand efficiency, efficacy and effectiveness of our efforts, which it supports. The last of these is more a political matter, having to do with the translation of scientific insight into available practice, and I will say little more about that today. We do not often question the efficiency of the scientific enterprise: but there is little reason to correlate the history of its institutions with any such criterion, even by the standards of advance of knowledge for its own sake. Efficacy is connected with the pertinence of scientific advance to human problems, and there is of course much latitude for controversy and for pluralism in assessing the values of research at many different levels in reaching eventual resolution of the most grievous burdens.

Some publicity about the DHEW principles study, and apprehension in which in some measure I shared. It appeared as if the Sec. was probing for weaknesses in the fabric, particularly under the impulse of the enormous pressures of entitlement expenditures for health, exploding costs, desires for still further extensions of access under NHI, and vanishing opportunity in the discretionary budget. It seemed as if medical advance itself was doing much more to extend costs via technological innovation, and in the mind of some far beyond

the point of reasonable return. However, in the public hearings, there has been little encouragement indeed for retrenchment, and a great deal for still more vigorous reliance on research, in ever widening fields of application. Particular emphasis was, indeed, placed on the need for more insight into health-related behaviors (e.g. smoking, drinking, overeating) and for sharper skills in population based research, notably epidemiology. The most controversial question is how and how far to fund clinical trials and health services research: perhaps they should be related to health care expenditure as a way to protect more basic studies.

Efficiency. Many of the traditions of science stem from the time that was the practice of the genteel amateur. Only with the mobilization of scientific effort since 1950 could we properly even ask about the efficiency of the enterprise. Still more recently has funding for research changed the balance of effort of our major universities to the point that formal teaching is incidental to research, rather than vice versa. It is not surprising that we have been reluctant or unable to confront the measures that might speak to how well we actually do science. And perhaps it is too fragile to be questioned. With all the plausible demand that I will make for collegiality, for the convergence of specialized domains of information, I also know how precious are the moments of aloneness which may harbor the most creative thought.

My main observation is how badly we need to start to analyze the scientific process itself. Koestler must be credited for his vision of the sleepwalker; but in fact there are almost no authentic accounts of discovery, at least that ring true to me -- neither at the psychological or philosophical level of description there are few accounts that are either psychologically or philosophically persuasive. The methodological problem of authentic capture of scientific discovery in flagrante delicto is obvious: my own experience is that a few minutes are enough to contaminate the initial fantasies with the rationalized afterthoughts, once one has had a chance to confirm being on the right track.

In the main axis of philosophical controversy, I would have to count myself a Popperian-- at least that the MAIN value of our experimental ardors is in disconfiromation of old theories, and opening up new questions. But most of us hold there is a bit more than that to the approximation of truth. And as challenging as is Tom Kuhn's vision of revolution in science, it is hard to see where it has any strict application to biology at all: at least I am not able to identify the paradigm that has been overthrown during the past three centuries. If we are remiss in teaching scientific method, perhaps we have not yet learned what method we actually use!

(Sweet Thursday -- But Darwin had a lifetime of revision
and correction, as I don't doubt for the creative artist)

Jervis. Perception and misperception in international politics. 76
Belief systems more pervasive and elusive than we can ever
give credit. Use that insight -- especially on overall
strategies!
: Anticipate likely sources of predisposition
past experience; side stakes(pride, power,benefit self or

protege, disbenefit to adversaries, prove you're right,
political or ethical belief system.)
: Structure criticism -- devil's advocates
Systematic multiplication of hypotheses.
: Plan to plan -- behavioral self-control paradigms.
Ulysses lashed to the mast.
: Information still to be acquired; and how is this processed
Accomodating data to paradigm hazard of wellworn issues
: Whom else consulted

Reductionism{Loeb}: the tool of ultimate power. But -> Big science and its managerial and entrepreneurial demands.
We may be lucky if there are more field like genetics that will let us use the evolved organism as a ready-made assay machine for constructs otherwise incredibly costly to measure and recapitulate.

Basic issues of organization of scientific effort
warrant unremitting skepticism too:
selection
training
doctrine
career structure & incentives (and demographic problematics)
Peer review. Coles testimony

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Opportunities and challenges.
HDL regulation: pursue the lead of the gene
Cancer somatic genetics: we have tools to define the difference at the level of DNA sequences!
Chromosome markers for schizophrenia and other 'polygenic' diseases
We can leapfrog over the paradoxes of twin studies and other feeble methodologies.
Teratology -- must be in part a problem of autoimmunity. 15% demonstrable antisperm antibody.
Virology -- the pathologies of interferon.
Tissue regeneration (muscle,tendon,bone,liver...) -- closer liaison of research in surgical subspecialties, rehabilitation, exercise and molecular/cell biology.
Integration of physical and mental health -- the psychosomatic pathways.

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References

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Yarmolinsky,A. What future for the professional in American Society?
Daedalus, Win 78. 159-174. Starr Medicine and the waning
of professional sovereignty.
Steven Muller, A new American University? (demobilization syndrome)

Institutional paralysis. 61-67. Win 75.

GIM Madison June 78.