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Space History, Space Policy, and Executive Leadership

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One decade ago, almost to the day, I abandoned a satisfying 20 year career, toiling in the groves of academe, for the mysteries of Washington politics and bureaucratic life--and for the highs and lows of the U.S. civil space program. When asked about the differences between that earlier and this Washington world, I can readily acknowledge that the level of intelligence required is about the same, and the level of social awareness and political astuteness required, much greater.

Filling in the details, however, can be tedious in the telling, and tedious in the hearing. Suffice it to say that one learns over time to appreciate the wisdom behind some of the sage advice and old adages by which, as we cross the threshold into middle age, we convey the lessons of our experience. My comments this afternoon on the need for space history in the groves of space policy and executive leadership will be shaped around two of those adages. The first is what every English teacher and editor tells the aspiring author:

Adage #1: Write About What You Know About

What I have learned is that the typical historian's work of researching and writing monographs and journal articles does not naturally yield much of a return to the society that subsidizes, through tuition fees and indirect tax benefits, the solitary and occasionally communal pleasures of academic scholarship. In many historical areas, including the history of aviation and

space travel, there has been a stream of books and magazines for the general reader. In some areas--the Civil War comes to mind--that seemingly unending stream is supplemented by volumes of historical "fiction," and video productions.

Some contemporary policy areas have been well served by historians. Economic policy, social policy, public health policy--all can draw on an accumulation of historical work demonstrating what kinds of policies tend to succeed at achieving certain kinds of ends, and why. Only this week economic historians Douglass North and Robert Fogel were awarded the Nobel prize for their substantial and, when new, pathbreakaing work on the relationship of economic trends to social and regulatory institutions.

Or consider John Hope Franklin, a true historian's historian, who prepared the critical background papers for the NAACP's brief in the landmark 1954 civil rights case, *Brown vs. Board of Education of Topeka, Kansas.* One thinks also of military history which, since antiquity, has been rich in accounts of tactical and strategic triumphs and failures. Perhaps of all historical subjects, military history has demonstrated best the convergence of policy and executive leadership, or, for the soldier, strategy and good generalship.

Historians have made contributions to public policy or strategy in these areas notwithstanding academicians' and other skeptics' assertions that, since history cannot be purely `objective,' it offers nothing useful for policy at all. But absolutes are not useful; just as there can be no absolutely accurate history, there is no absolutely perfect policy. Reasonable people may argue about the details of the Holocaust, or about World War II; but few sane people argue whether they occurred at all. Aside from death and taxes, most

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of life is a matter of probabilities. (This is fortunate, for otherwise life would loose much of its interest, its comedy as well as its tragedies.)

Unfortunately for those who toil with the burdens of space policy and executive leadership, there is no comparable reservoir of historical research and understanding to draw upon to increase the probability that a policy or a decision is the best possible under the circumstances. And now, for my second adage, first told me by General Rosie Rosenberg:

Adage #2: Good managers do things right; Good executives do the right things.

Why do I couple space policy with executive leadership? I do so because elected policy makers tend to make policy primarily on the basis of their perception of political necessity. This is as it should be. That is why they were elected. But perceptions that appear perfectly astute for the near term may prove disastrously myopic or misguided in the long run. What does a particular policy entail? Is our administrative or institutional machinery capable of doing what's promised? If the policy is mistaken, what can go wrong? Suppose we fail? These are the kinds of things that good generals tell their chiefs, and that good executives tell policy-makers. Executives stand at the intersections of policy and possibility. And in the space arena, policy makers and executives are badly in need of the kind of reservoir of examined history that the Pentagon, for example, can draw upon.

The reason space policy and policy execution has this need is its relative youngness in the total scheme of things. Space travel has been an option for just over 30 years--just over a generation. There are no alluvial layers of well-tilled soil from which to extract pertinent precedents or examples. Our archives are uneven at best, and largely the product of an era

that has seen the general deterioration of the written document, both in its content and in its candor.

So there's a lot of work that has to be done. Here are only a few of the issues facing contemporary space policy makers and executives to which historians could bring some badly needed enlightenment:

(1) **Technology transfer:** The United States has an enormous capacity, in its Federally owned and operated laboratories, for military and aerospace technology development. Given the changing geopolitcal landscape, do we let this capacity atrophy? How do we demobilize this capacity, assuming we want to? Politics and common sense tell us, no; we don't let this capacity atrophy; we learn to turn our swords into ploughshares. But do we really know very much about transforming Federal laboratories into nurseries of commercially viable technologies for the producers' and consumer market? No, we don't. Historians need to identify approximate parallels and accumulate some comparative studies of what has been tried, what works, the institutional and regulatory practices that tend to lead to success, and the ones that tend to lead to costly failures.

(2) **Technology and Economic Competitiveness:** A national anxiety over "Economic competitiveness" has replaced the "Better Dead than Red" slogan as a driver of much of contemporary politics. And yet we know very little about the *relative weight and complex interactions* of the various elements that make up a vigorous economy. We know certain things are necessary, and we have our productivity formulas and statistics. But statistics only map results, and many of the formulas are based more on inadequately proven theory than on practice. For example, what will result from trying to stimulate the movement of young people into science and technical careers while, at the same time, firms like IBM and the aerospace industry are

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streamlining by adding thousands of highly trained people to the numbers of the unemployed or underemployed?

Or, to take another examapke, assuming that government-industry partnerships have played the role claimed for them in Japàn's dramatic economic recovery from the ashes of World War II, will such partnerships have the same consequences here? If we spend $1 million tax dollars on X, what will that produce for Y? And by what mechanism? Not only do we need to learn more about previous and comparable efforts to use "technology push" tactics to revive economies, we also need to consider which technologies produce the best return to the national economy, and how to measure that return.

I'm referring here to distinctions between tractors and hand-held calculators, or between increasing the number of CAT scanners vs. increasing the number of good but cheap eye-glasses and hearing aids. Are there trade-offs between stimulating advanced technologies or increasing the availability--through cheaper production and distribution methods--of ordinary technologies? As you can see, economic and technology policy issues can be inextricably intertwined with social and ideological issues. Historians have been pretty skilled at detecting and tracing these nuances.

(3) **Government Acquisition Policy and Space Technology:** Now here's a real sleeper--procurement policy. If only procurement policy were less of a sleeper, we might be far wiser about the real history of not only our own space technologies, but those of the other space-faring nations. Now we all know that no bureaucrat ever produced a piece of space hardware. In this country, at least, space hardware is manufactured, and by in large designed, in the private sector. Anecdotal evidence suggests that the government operations divisions in our large aerospace corporations are the most

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technologically conservative divisions in those firms. Does the government-as-buyer promote or dissuade cutting-edge technology? If so, why?

Federal acqusitions policy has been shaped more by ideology and politics than by anything else. And that will continue to be the case until policy-makers, well-armed with closely examined experience, can make a convincing case that the way Uncle Sam buys things does, or does not, foster technological innovation or cost reduction, whatever else it may do. Acquisitions or procurement policy raises another set of issues begging for some historical understanding, namely:

(4) **The role of institutions in affecting technological change, and how mutual adaptations between public and private sector institutional requirements impede or promote technological innovation**. The Federal government interacts with the private sector in a myriad of ways, direct and indirect, of which tax policy, banking regulations, and acquisitions policy are only a few of the most familiar. The history of the U.S. space program--indeed, the history of all our space programs--would be much enriched if we could begin to appreciate the affects of different institutional dynamics on the emerging technologies they bring to the public or private marketplace. Similarly, I think we could make space policy more confidently if we had a better feel for the ways the private sector tends to adapt to various government impediments as well as opportunities.

Consider, for example, the U.S. need for a policy to promote the production of ample, cheap, reliable, and variously sized launch vehicles. Last year, as part of a literature search for a launch vehicle study then underway, I counted over 800 published launch vehcle policy studies. Virtually all of them were studies of technological solutions to the essentially technological problem of lofting so much mass to such and such altitude at such and such

frequency, for such and such cost. Unfortunately, these studies will continue along with the search for an effective launch vehicle policy until we acquire a convincing and effective in its grasp of the issues I have just described. When policy is that well founded, which is to say, well founded at all, it will survive the quadrennial transitions in the White House.

Notwithstanding my affection for the many fine students I taught in a previous incarnation, this historical work is not work for graduate students. It is work for historians who have acquired, one way or another, a little sophistication when dealing with large organizations, and I don't mean the monthly faculty meeting. It is work for space historians who have overcome the narrow specialization to which almost all of us have been trained, and learned to talk with, and read the work of, political scientists, students of public administration, and historians of business. We should all be challenged to produce, within another generation, a history of technology originally framed by the policy issues raised by space travel, useful for executives, and worthy of a Nobel Prize.

Thank you.

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