Book Review of:

NASA and the Space Industry

by: Dr. Joan Bromberg

NASA and the Space Industry[1], by Dr. Joan Bromberg is the culmination of a series of contracts commissioned by the National Aeronautics and Space Administration's (NASA) history office. A historian by trade, Bromberg's mandate was to cover the fifty years of NASA history following the Second World War. Although she has written extensively on the history of modern science, this book represents her first venture into space history. With a target audience of historians of business and technology, Bromberg artfully exploits her chronological plotline of key milestones in NASA history, as a framework, for her exploration of NASA's ever evolving "partnership" with the space industry as a whole.

Although this book recounts the tale of NASA's history, from the events leading to its conception in 1958 through to the early plans for an International Space Station in the early '90s, as well as the parallel evolution of the space industry that is so inextricably linked to the NASA story, the actual events are of secondary importance compared with its subject matter. Within the broader topic of NASA-industrial relations, Bromberg seeks to explore how the ever-evolving structure of NASA's interactions with its contractors served to foster the innovations required for the momentous technical achievements that characterize the sector. Conversely, she explains how, on occasion, the combination of political pressures and agency self-interests thwarted the privatization of space projects to the detriment of the industry as a whole. Throughout the book, Bromberg grounds her Meta themes in the extended case studies of the emerging commercial launch vehicle and communications satellites market.

As a result of the extensive breadth of Bromberg's scope and her, self-confessed, relative inexperience with the inner-workings of the space industry, her research effort is focused primarily at the level of published sources. Specifically, the book is based on secondary books and articles, trade and business journals and U.S. government

[1] Full citation: Bromberg, Joan Lisa., NASA and the space industry, Baltimore: Johns Hopkins University Press, c1999.

publications, including congressional hearings and reports by the congressional Office of Science and Technology Assessment. Bromberg explicitly qualifies the depth of her study, expressing her hope that this work will stimulate scholars to do further research in this area, since "a systematic study of manuscripts is badly needed." Nonetheless, her use of the aforementioned sources, in particular the contemporary news paper clippings and magazine articles, allow her to bring a richness to her contextual descriptions and a credibility to her assertions about the prevailing sentiments that influenced key decisions at the time.

Given that Bromberg spends the bulk of her book unraveling the web of technical and non-technical factors that gave rise to the series of decisions that shaped the U.S. space industry as we know it, it would not do justice to the text to discuss just one decision taken at a particular time. Instead, this review will discuss the timeless overarching question that dominates both NASA-industry relations and Bromberg's study; the question that resurfaces each time a major new project is proposed or the political winds shift. This question is: What is the appropriate role for NASA, a government entity, to play, in the arguably commercializable space industry?

As a scholar and an historian, Bromberg does not attempt to answer this question categorically. Instead, she explains that the correct answer changes, depending on the particular time and circumstances. Among the more interesting parts of the book are Bromberg's descriptions of how and why different answers were arrived at, at different points in history. However, she is careful to qualify the difference between this and the widely held tenet about the space industry: that the passage from government to private dominance of space[2] is natural or even inevitable. While her account does reveal a marked trend towards the marginalization of NASA influence and an increased commercialization of space, Bromberg argues that this simplistic view ignores the complexity of the issues in play.

For example, on the surface, it appears that NASA's first administrator, Keith T. Glennan, through his policy of diversification of contracts to spawn a wide base of industrial knowledge, laid the groundwork for the "natural" evolution of the space sector

[2] by analogy to, for example, Christopher Columbus' publicly funded exploration of the new world that led to its eventual commercialization

from public to private. However, Bromberg explains that this is actually an example of how political ideology and global stability have shaped NASA-industry relations. During the cold war, President Kennedy used NASA, and the moon program, as a central instrument of administrative policy. He thereby endowed it, both with great power, and an important responsibility to shape the nascent space industry. This allowed NASA to demand a level of visibility into the internal affairs of it's contractors that has not since been match. Under Nixon, NASA became a peripheral agency, serving a different political end. It became an example of the Republican "small-government" ideology. Then, as the overall U.S. budget was slashed during the high-deficit years of Regan and Bush, NASA was forced to rely more heavily on private capital, not because of any natural progression or new found trust in the abilities of its contractors, but simply because it did not have the finances to sustain even its core programs.

It is also worth noting that at no point during this history was the flow of technical knowledge or expertise uni-directional. During the early years of spaceflight, NASA was as new to the challenges of space as its industry contractors. They taught each other and grew together. Although the trend has been towards privatization, the space industry is so influenced by policy that is global in nature, that there is nothing to say that the trend will not be reversed in the future. Bromberg does not, in the end, pass judgment over NASA's role. Instead she challenges the public to enter this debate, to stop "treat[ing] space projects as so many TV spectaculars, to be enjoyed rather than discussed," and decide what is necessary and what is accidental in NASA's molding of the space industry.

In the above discussion, and in the book itself, there is little explicit mention of technical considerations as either enablers or constraints on the structure of NASA industry relations and the appropriateness of NASA's role therein. The level of abstraction in the analysis is such that the particular feat of going to the moon (and the evaluation of technical feasibility that it clearly embodied) was secondary to the fact that Kennedy needed to make a political statement; it was the political need and not the particular project that shaped NASA's role for that period. Framed this way, government-funded complex engineering projects, like Apollo, are dual purpose in their very nature; they are technical accomplishments funded, more often then not, to serve political ends.

Although the Apollo project is peripheral to the book's central topic of NASA-industry relations, the book's topic is certainly relevant to the larger themes of the Engineering Apollo course. It reminds us that complex engineering projects, like Apollo, are more broadly influenced than by the technical challenges alone. Expressed loosely in terms of Launius's categories of historiography, Bromberg's book places the foreign and public policy antecedents and ramifications of Apollo in a timeline with other key programs (and their policy implications) in NASA's history. In this way, the book elucidates the lasting impact that decisions made during the Apollo days have had on the evolution of the American space industry. Further, it puts into perspective the fortuitousness of the politics that initiated and sustained the Apollo program. The history of the space industry is storied with numerous political pushes and engineering dreams, yet four decades later, we are still waiting for another "perfect storm."

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