

Space-Policy Education

Contexts and Constraints, Content and Methodology

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The legacy of success in space and its transformation also presents new challenges. When the space age began, the opportunities to use space were limited to only a few nations, and there were limited consequences for irresponsible or unintentional behavior. Now, we find ourselves in a world where the benefits of space permeate almost every facet of our lives. The growth and evolution of the global economy has [sic] ushered in an ever-increasing number of nations and organizations using space.

—National Space Policy of the United States of America, 2010

During a visit to Washington, DC, several months ago, a colleague and I met with Dr. Dana Johnson at the Department of State.¹ The course of our discussion included policy-related issues as they pertain to US space activities. Near the conclusion of our meeting, Dr. Johnson, an adjunct professor at George Washington and Georgetown universities, asked, “How do you teach space policy?” Her question made me think about the various teaching methodologies we use at the National Security Space Institute (NSSI), particularly during the policy-strategy block of instruction within the Space 300 curriculum.² It also gave rise to the question, Do we teach the right things effectively?

I’ve attended a number of forums regarding education and space-related topics but have never participated in a forum dedicated to the discussion of space-policy education. I contacted Dr. Peter Hays and asked whom we might invite to such a discussion.³ Among the academics recommended by Hays (and Johnson) was Dr. Scott Pace, director of George Washington University’s Space Policy Institute, who offered up his venue for a roundtable discussion.⁴

Our roundtable agenda considered the following questions:

1. What is the educational mission and purpose (of a particular institution’s curriculum)?
2. What are larger institutional contexts and constraints?

3. What is the nature of the students enrolled in the course/program?
4. What do students think they need, and what do they actually need?
5. What are they likely *to use*?

The agenda also included a survey of different types of instructional methods and their relative pros and cons. Unsurprisingly, we concluded that the answers to all five questions varied and could best be answered with, “It depends.” For example, at the NSSI, the students are all military members or civil servants; however, the contexts within which they may need to consider space policies are very diverse. Although their respective jobs differ, most of the students work in space-related positions. Consequently, some of them work—or will work—in space-policy positions while others may deal only tangentially with national policy.⁵ Similarly, the needs of students in George Washington’s Space Policy Institute and of those in other universities may be just as disparate. For example, some have yet to enter a professional workforce, and some are in—or destined for—civil servant or private industry positions, and they may or may not work directly on space-policy-related issues. Still others may just be interested in learning about various facets of space and may not have a direct need, other than the value of education itself.

Thus, in light of diverse requirements and various fiscal constraints, what types of curricula and methodologies are effective in addressing students’ core needs and furthering their professions’ organizational goals? NSSI’s three-week Space 300 course was designed within contextual constraints, partly due to budgetary considerations and time. The latter holds considerable weight; military services, combatant commands, and other military and intelligence agencies cannot easily deal with personnel absences for extended periods.⁶ Conversely, public and private universities traditionally base their programs on a longer-term basis.⁷

Because Space 300 is limited to three weeks, the contact time between faculty and students typically encompasses a full duty day, five days a week. Approximately one-third of this period focuses on national space policy and strategy. With the time constraints, one question we had to address concerned what specifically should be taught about space policy and at what learning level should the material be presented.⁸ Simple knowledge or comprehension of a given policy, in itself, is often inadequate. Students may and often have been put in roles in which they have to refer to national-level policy and apply its relevance to a specific situation. Here, they need to be aware of the relevant presidential guidance and other related regulatory and review processes consistent with that guidance and US law. It is not unusual for a person to be put into this process with no prior knowledge or experience and must attain proficiency solely through “OJT.”

Some years ago, I found myself in this position as a space policy planner on the Joint Staff.⁹ I was the Joint Staff’s representative for reviewing requests for commercial remote sensing operating licenses—despite having had no directly relevant experience, training, or education. Many of my duties entailed researching documents with which I had little to no experience. For example, shortly after reporting to the Joint Staff, my task involved preparing Gen Richard Myers for a National Security Council (NSC) Deputies Committee meeting, which would address private remote sensing

resolution restrictions.¹⁰ I had little experience with the president's 1996 national space policy and none with the remote sensing policy and other regulatory guidance; obviously, I needed to immerse myself rapidly in all relevant authorities and established policy guidance before preparing and providing a recommended position for the general.¹¹ I thought there must be a better way to prepare an officer for space-related positions—the purpose of the Space 300 course.¹²

The course addresses various aspects regarding national space-related policy. First, it considers the worldwide geopolitical environment, examining the context within which policy guidance is developed, given, or otherwise handled. Thus, the course begins with a “Geopolitical Foundations” lesson via a discussion format. The rationale is that any examination of space-related policy and issues is related to national security within a specific geopolitical context: that policy development and consideration are contextual in nature.

Consequently, context significantly affects why a policy provides the guidance it does. Space 300's “Evolution of Space Policy” lesson helps to answer the *why*? This lesson scrutinizes the principles—the United States' philosophy—regarding space activities reflected in the 2010 national space policy and compares national space and other policies dating back to the 1950s.¹³ During this inquiry, discussion includes what occurred at a particular point in time, why a certain principle was established, and how the principles evolved. This approach contributes to the students' ability to learn not only what is in a given space policy but also *why* it is included.

In addition to dealing with the current, national space-related policies, the Space 300 course familiarizes students with national-level policy formulation within the US interagency. By becoming acquainted with the NSC's organization, its relationship to the interagency, and the way policy is formulated, recommended, approved, and promulgated, students better understand the interplay within the executive government during policy development or execution.¹⁴ They grasp the importance of personalities and the power of influence. They also comprehend that the president's policies are most often the combined effort of many people working within the interagency. At this point, students have a better appreciation for the forces in play during policy development.¹⁵

This also better prepares them for examining the 2010 national space policy. Student groups are assigned different portions of the policy and tasked with drawing the lineage between sector responsibilities and the policy's principles and goals.¹⁶ The students discuss why certain entries are significant. Instructors emphasize substantive parts of the policy, and students are encouraged to share their perspectives. When we address positioning, navigation, and timing (PNT), as well as space-transportation-specific entries within the national space policy, we discuss how these items affect the extant PNT and space transportation policies, using this opportunity to segue into contemplating substantive points within those policies.¹⁷ Not only do we establish the relationship among these policies but also we examine how they relate to the current national security strategy and national interests.¹⁸

After a final recap of key themes reflected in the policies, students determine applicable parts of the policy while considering how to react to a real-world situation. The policy exercise is based on a current real-world situation or event—often one where the US government may have made an interim ruling but has not yet de-

cided its final position.¹⁹ After analyzing and applying relevant laws, policies, regulations, and agreements, the students offer potential solutions to the issues in light of where the US government stands and what further actions are anticipated.

By applying national-level guidance to real-world situations as well as determining and analyzing implications among potential alternative courses of action, the students are better prepared to analyze other scenarios. Through our policy exam, we use notional crises as the basis for the students to apply relevant laws, strategies, policies, agreements, and regulatory guidance. They role-play officers on a government staff tasked to prepare and make recommendations to a senior individual who will be attending an NSC committee meeting to discuss the crisis. At the beginning of the exam period, we present a scenario followed by time for each student to reference relevant national guidance. The students then form groups, as if they were staffing the issue. Final preparation follows, when the students prepare their thoughts, organize their references, perform final analysis, and select recommended courses of action. They meet individually with an NSSI instructor who acts as the senior individual destined for the NSC committee meeting. The student presents his or her recommended course of action among those considered, noting rationale and all relevant references.

The NSSI continually assesses whether this approach is effective in teaching space policy. Given the various institutional and environmental constraints and the challenging goal of preparing students to analyze and apply national policy, we do believe it is *one* approach that is effective. ★

Notes

1. Dr. Dana J. Johnson is the senior adviser for space policy, Office of Emerging Security Challenges, Department of State. As mentioned above, she also teaches space policy at two universities in Washington, DC.

2. The National Security Space Institute is an Air Education and Training Command (US Air Force) institution of learning. It is located at Peterson AFB, CO. Space 300 is one of the courses offered there.

3. Dr. Peter L. Hays is associate director at the Eisenhower Center for Space and Defense Studies and an adjunct professor at George Washington University's Space Policy Institute. He is editor and author of multiple books and articles on outer space activities.

4. The Space Policy Institute is part of George Washington University's Elliott School of International Affairs. The institute focuses on policy-related issues and the interplay between the United States and other nations. Dr. Pace assumed directorship following the retirement of Dr. John Logsdon, a longtime institute director and now director emeritus for the center. Other roundtable participants included the aforementioned Dr. Hays and Dr. Johnson; Dr. Logsdon, director emeritus of the Space Policy Institute; Dr. Howard McCurdy of American University; Dr. Clay Moltz of the Naval Postgraduate School; Dr. Forrest Morgan of the Pardee RAND Graduate School; Dr. William Barry, NASA historian; Deron Jackson of the Eisenhower Institute for Space and Defense Studies; and Jonty Kasku-Jackson and the author, both of the National Security Space Institute.

5. Examples include those military and Department of Defense civil-service positions within the space-policy offices in the Office of the Undersecretary of Defense (Policy) and the Joint Staff. The Department of State and other governmental agencies also have offices that work on space-policy-related issues but, at present, do not send their employees to the NSSI for their space-education needs.

6. Granted, some military and civil servant education programs, such as those found in the services and joint universities, have yearlong or longer programs, and extended postgraduate education fellowships programs are offered to a limited number of civil servants and military members. But many other educational programs are constrained to shorter time periods.

7. Here, I'm referring to degree programs. Many universities and colleges also offer shorter-term, accelerated-certificate (or other) programs.

8. Levels of learning are often characterized as "cognitive levels." One popular such characterization occurs via Benjamin Bloom's *Taxonomy of Educational Objectives*, whereby a hierarchy of learning ranges from simple knowledge level (recalling information without necessarily knowing its relevance) to evaluation (judging the value of some particular information). The other learning levels are comprehension, application, analysis, and synthesis.

9. The National War College, part of National Defense University, offers a curriculum described as a "senior-level course in national security strategy to prepare future military and civilian leaders for high-level policy, command, and staff responsibilities." See National War College, accessed 18 September 2015, <http://nwc.ndu.edu>. In other words, the education helps students think strategically on national-level issues within a broader international geopolitical context. Title 51, subtitle 6, chap. 601 is part of US law that gives the secretary of commerce regulatory authority for private, space-based remote sensing systems, part of which entails licensing for the systems' operations. The Memorandum of Understanding among the Departments of State, Defense, Commerce, Interior and the Intelligence Community Concerning the Licensing of Private Remote Sensing Satellite Systems offers procedures by which the relevant government organizations, including the Joint Staff (for the chairman of the Joint Chiefs of Staff), review and coordinate the licensing request.

10. Gen Richard B. Myers, USAF, was vice-chairman of the Joint Chiefs of Staff from 29 February 2000 until 1 October 2001, at which time he became the chairman of the Joint Chiefs of Staff.

11. Some of the major, relevant guidance for that time period included, but was not limited to, Presidential Decision Directive (PDD) / National Security Council (NSC) 49, *National Space Policy*, 19 September 1996; PDD/NSC 23, *Policy on Foreign Access to Remote Sensing Space Capabilities*, 10 March 1994; 15 Code of Federal Regulations (CFR) 960, *Licensing of Private Land Remote-Sensing Space Systems*, 25 April 2006; and the Land Remote Sensing Policy Act (now part of title 51, subtitle 6, chap. 601, *Licensing of Private Remote Sensing Space Systems*).

12. Space 300 was developed in 2005, the first prototype taught in the fall of that year. Impetus for its development was largely due to the recommendation of the *Report of the Commission to Assess United States National Security Space Management and Organization* (11 January 2001) regarding the nation's need for expertise in addressing space-related issues.

13. The 2010 national space policy is the current version of that document. See President of the United States, *National Space Policy of the United States of America* (Washington, DC: White House, 28 June 2010), https://www.whitehouse.gov/sites/default/files/national_space_policy_6-28-10.pdf. Each US presidential administration from presidents Carter through Obama has promulgated at least one national space policy (by that name). Before that time, a substantial number of presidential space policies were developed. Two of the early significant policies from the Eisenhower presidential administration were NSC 5520, *Statement of Policy on U.S. Scientific Satellite Program*, 20 May 1955, and NSC 5918/1, *U.S. Policy on Outer Space*, 26 January 1960. These documents were instrumental in articulating some of the principles reflected in today's national space policy.

14. The NSC, established via the National Security Act of 1947, is embodied in 50 *US Code*, sec. 3021. Consistent with law, each president tailors the NSC system to best serve him, typically articulated in a presidential directive such as President Obama's Presidential Policy Directive 1, *Organization of the National Security Council System*, 13 February 2009.

15. During his administration, President Obama promulgated a new national space policy and space transportation policy. However, the commercial remote and positioning, navigation, and timing policies of President George W. Bush are still largely/wholly in force. The students also learn how to make this determination.

16. Following the treatment on the goals and policies of the administration, the policy is broken down into sector guidelines, which delineate the responsibilities of the various sectors and intersectors as well as commercial, civil, and national security entities (Department of Defense and intelligence community).

17. At the time of the 2010 national space policy's (NSP) promulgation, the then-current positioning, navigation, and timing (PNT) policy and space transportation policy (STP) were from the George W. Bush administration and were technically still in force. In 2013 the administration promulgated a new STP, superseding the Bush-era policy; however, the Obama White House has not promulgated a new PNT policy. As a result, only those specific PNT-related points within the NSP supersede those specific points within the Bush-era PNT, with the rest of the Bush policy technically remaining in effect. Although the current NSP rescinds the G. W. Bush administration's space exploration policy in its entirety, Bush's US commercial remote sensing policy remains in force. We discuss these points with the students and demonstrate how to determine what policies remain in force (in part or whole).

18. In his op-ed "Align U.S. Space Policy with National Interests," Dr. Scott Pace effectively states, "It is my argument that international space cooperation, space commerce and international space security discussions could be used to reinforce each other in ways that would advance U.S. interests in the sustainability and security of all space activities. At present, however, these activities are largely conducted on their individual merits and not as part of an integrated national strategy." Scott Pace, "Align U.S. Space Policy with National Interests," *SpaceNews*, 26 March 2015, <http://spacenews.com/op-ed-align-u-s-space-policy-with-national-interests>. These remarks do not suggest that the NSP does not otherwise support the US national interests articulated in the national security strategy.

19. The Land Remote Sensing Policy Act of 1992 (now under 51 *US Code*, chap. 601) gives regulatory authority to the secretary of commerce (exercised through the National Oceanic and Atmospheric Administration's Office of Commercial Remote Sensing Regulatory Affairs) for the regulation of private, space-based remote sensing systems. Over time, restrictions to the operation of these high-resolution imaging satellites have gradually changed, enabling the industry to operate more capable satellites and sell increasingly detailed imagery products. As the basis for student exercises, the NSSI will often use instances of the government being in the midst of ruling on a requested change of operating restrictions. It is interesting to note that some (but not all) student groups often come up with recommendations similar to, or the same as, the interim US governmental position.



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