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THE STRANGE CAREER OF THE SPACEPLANE: NASA AND THE QUEST FOR ROUTINE HUMAN SPACE OPERATIONS

Abstract

For nearly forty years before the beginning of human spaceflight leading experimenters and advocates for the human exploration and development of space in the United States envisioned a future in which human flew into orbit aboard reusable, efficient, winged vehicles and then came back to Earth and landed on runways. Their model for that effort was the emerging airline industry. This belief dominated thinking before the space age, but in the rush to place humans into space during the Cold War of the latter 1950s the United States abandoned these dominant ideas about reusable spaceplanes in favor of the expedient of ballistic capsules, a technology already well underway to ensure reentry of nuclear missile warheads. During the 1960s Projects Mercury, Gemini, and Apollo employed these ballistic concepts, but the dream of a spaceplane did not abate. No sooner had victory in the space race been achieved through the Moon landing in 1969 then leaders in the National Aeronautics and Space Administration (NASA) returned to the spaceplane concept. NASA built the Space Shuttle to replace the capsules, an important step toward a spaceplane but not truly the vehicle envisioned earlier. Numerous efforts to build a successor spaceplane have foundered since the 1980s because of technology, budget, and other obstacles; still the goal remains. Only in the twenty-first century has NASA shifted its focus away from the spaceplane concept to return to a ballistic flight approach. The quest for an orbital spaceplane represents a unique story of the social construction of technology; one in which spaceflight professional pursued a technological path dictated not so much by hard-headed engineering considerations but because of other priorities.