The Universe In A Mirror: The Saga Of The Hubble Space Telescope And The Visionaries Who Built It

Synopsis

The Hubble Space Telescope has produced the most stunning images of the cosmos humanity has ever seen. It has transformed our understanding of the universe around us, revealing new information about its age and evolution, the life cycle of stars, and the very existence of black holes, among other startling discoveries. The Universe in a Mirror tells the story of this telescope and the visionaries responsible for its extraordinary accomplishments. Robert Zimmerman takes readers behind the scenes of one of the most ambitious scientific instruments ever sent into space. After World War II, astronomer Lyman Spitzer and a handful of scientists waged a fifty-year struggle to build the first space telescope capable of seeing beyond Earth's atmospheric veil. Zimmerman shows how many of the telescope's advocates sacrificed careers and family to get it launched, and how others devoted their lives to Hubble only to have their hopes and reputations shattered when its mirror was found to be flawed. This is the story of an idea that would not die--and of the dauntless human spirit. Illustrated with striking color images, The Universe in a Mirror describes the heated battles between scientists and bureaucrats, the perseverance of astronauts to repair and maintain the telescope, and much more. Hubble, and the men and women behind it, opened a rare window onto the universe, dazzling humanity with sights never before seen. This book tells their remarkable story.

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Customer Reviews

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ItThis book describes the Hubble Telescope Program and its predecessors in a most thorough and beautifully written exposition of NASA’s efforts and problems in constructing the telescope. Unfortunately, in accordance with NASA’s policies, it only contains the activities and decisions made by NASA management.As I was Chief Engineer at Itek Optical Systems for the competing Large Space Telescope Program, the Hubble’s predecessor, many technical problems were created by NASA’s program management and convoluted approach to budget management, as explained by Mr. Zimmermann. The Large Space Telescope was a 3 meter aperture telescope very similar to the Hubble excepting for its much larger size. There were no 3 meter test facilities available in the country for full aperture high vacuum testing of the primary mirror. The projected cost of the 3 meter aperture LST far exceeded the amount that NASA thought was available. The NASA management opted for a null lens testing arrangement for the primary mirror construction which, as explained in Zimmermann’s book, led to grinding and polishing the primary mirror to an incorrect prescription.Furthermore, the aperture of the Hubble Telescope was reduced to 2 meters to take advantage of a classified test facility. A colleage of mine who had formerly worked for Perkin Elmer, the maker of the Hubble, told me of the testing failures that had occurred there, and his subsequent role explaining the problem to Congress in an investigation of the program.

Quick: name a satellite. If you can think of one name, it is probably the Hubble, officially the Hubble Space Telescope, and the reason you might know of it by name when all those other communications and positioning satellites are up there (and also the International Space Station) is that images from Hubble are part of popular culture as well as scientific culture. Hubble has been an amazing success, but often just barely. It took a long time in coming, and might at any point in the planning stage have been shifted aside for other space goals. The complicated story of how Hubble got planned and launched and repaired is told with enthusiasm and detail in _The Universe in a Mirror: The Saga of the Hubble Space Telescope and the Visionaries Who Built It_ (Princeton University Press). Hubble is not just beloved by the public, it has been an extraordinary research tool, and deserves this fine biography, which tells a great deal not only about the gadget but about the boffins who made it all happen.There are good reasons to have a telescope in space, mainly the avoidance of the distortion and filtering of the Earth’s atmosphere. An orbiting telescope got a realistic proposal in 1946 with a paper for RAND by Lyman Spitzer, an astronomer who was ending up some sonar research after the war. Spitzer remembered thirty years later, "Most astronomers didn’t take it seriously. They thought I was sort of ... wild-eyed or wide-eyed, one or the other." Zimmerman details the scientific and engineering planning and also the lobbying and horse-trading

that had to go on to get the Hubble built and launched. It is a confusing tale, reflecting the peculiar mindset of the bureaucracy.