

16.895 – Engineering Apollo

Book Review Assignment on:

Two Sides of the Moon by Alexei Leonov and David Scott

Jaime Pereira de Mateus

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Two Sides of the Moon relates the first hand stories of an American astronaut, David Scott, and a Russian cosmonaut, Alexei Leonov. The writer, Christine Toomey, does a great job of interweaving the two men's chronicles into an interesting recount of the space race from both sides of the iron curtain. The narrative is organized in chronological order and begins by contrasting the childhoods of both men. It follows their lives as they progress through the air force, their recruitment into the space programs, and their eventual retirement from the space industry.

Leonov lived through some incredible hardships, at one point 11 people in his family lived in a 16 square meter apartment, where Alexei would sleep on the floor under a bed. Scott's family, while by no means wealthy, always had enough money to live comfortably. Despite this stark contrast they also shared many things in common, both wanted to be pilots from an early age and WWII had a significant impact on their lives. Throughout their careers both men survived several near death experiences, the most publicized being Scott's Gemini 8 incident with Neil Armstrong where the spacecraft was spinning rapidly out of control. Leonov also had several close calls throughout his aviation career. His resourcefulness in handling these situations became well known and is likely one of the reasons why he was chosen for cosmonaut training. During the Voshkod 2 mission Leonov had another dramatic experience when returning to the airlock after performing the first ever EVA. He found out his suit had deformed and was almost unable to return to the interior of the spacecraft in time.

The space race was an arena where the two world superpowers competed and whoever won the race would be seen as having the superior sociopolitical structure. It seems clear from the book that both Leonov and Scott understood why their nations were pursuing this race so adamantly. This was not a scientific endeavor. The space race was motivated (and funded) by politics and the unique geopolitical setting of the time. It is interesting to note that in the few occasions where Scott and Leonov met throughout the 1960s, their conversations were mostly focused on the technicalities of the challenge itself, its engineering and scientific merits, and not on the politics behind the program. At a time when the relationships between the two countries were so tense, the astronauts were able to communicate and appreciate their cosmonaut counterparts much better than the politicians.

The most interesting thing about this book is that it tells both sides of the story. It is similar to many other astronaut biographies in the sense that the space race story is being retold through an astronaut's perspective, yet it is also more than just this, as the constant switching between Leonov and Scott gives a new insight into the Russian interpretation of the events. It is also interesting to note that on a few occasions Leonov and Scott have different recollections of particular events. In one such incident, Leonov remembers being shocked at seeing a copy of *Mein Kampf* in Scott's bookshelf. Scott, however, points out that he never owned a copy of that book, and that Leonov must have been thinking of another book, *The Rise and Fall of the Third Reich*, which he does possess and has a swastika on the cover and spine of the book. Although only a minor point, it serves to emphasize the fact that this book, published in 2004, is based on the two men's recollections of events from over 50 years ago.

From the way the book is written and the lack of footnotes, it appears that the only sources for the book have come from Scott and Leonov directly. Obviously, these are important sources of information, as both men lived on the front line of the space race, but there are also certain limitations which must be taken into account. First of all, human memory is not a perfect recollection of the events and this tends to get worse as time passes. It is also very difficult, if not impossible, to be objective and unbiased when retelling the story of one's life. Certain memories might be given a slight spin to make a good guy sound heroic or make an antagonist sound worse than deserved. It is also unclear exactly what role the writer, Christine Toomey, played in assembling the book. It is not known if she wrote the entire book, or if she served more as an editor in merging the two stories into one. The book does not attempt to present any major argument, it is simply telling the space race story from their perspective. This, to some extent, explains the lack of other sources of information and the reliance on their personal memories. However, a more thorough job would have researched other sources to corroborate the stories being told and give them greater credibility.

In the essay, *Interpreting the Moon Landings: Project Apollo and the Historians*, Launius categorizes the historiography of the Apollo program into five main areas. This book fits clearly into his third category, books that are largely centered on the memories of astronauts and usually presented in a narrative and biographical style. Any space enthusiast who is well read in the history of Apollo and the space race will probably not find much new information in this book,

except for Leonov's side of the story which provides a new insight into the Russian perspective which has historically been less publicized.

One of the decisions that Scott recalls in his story is trying to convince Deke Slayton and others that they should allow him to take some extra geological equipment onboard, a light aluminum rake and a telephoto lens. From an engineering point of view the main issue was the weight. The LM for this mission was already the heaviest one so far, as so much more extra equipment was being carried that there wasn't room for much more weight. Scott says he had to argue strongly with Deke and others "at higher levels" to get this equipment approved. Although this was essentially an engineering trade-off decision, politics also played a role. Science had always taken a back seat in the Apollo program, and many people didn't give it much importance. It is likely that this general disregard of the science program made it even harder for Scott to convince people that these two items could significantly increase the science value of the mission, and that this was important. This is a clear example of the complexity and interdisciplinary understanding that is necessary to manage a project like Apollo. With weight being such a strict limitation, any approval to increase the equipment (and weight) being carried requires an understanding of the engineering penalties, the scientific benefits, as well as a politically justified cost.

Overall, this book gives a good general overview of the moon race from the point of view of the space travelers. Its most interesting feature is the interweaved story of an American and a Russian space pioneer, which literally presents us with a perspective on the *Two Sides of the Moon*.