

# Breaking the Chains of Gravity

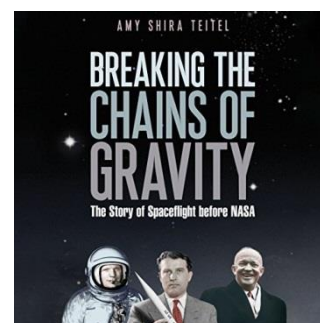
*The Story of Spaceflight Before NASA*

By: Amy Shira Teitel

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Why should I read this book – I was asking myself when I saw its announcement in connection with the 60<sup>th</sup> anniversary of the Sputnik launch on October 4<sup>th</sup>, 1957, everything was written, documented analyzed and published before?

Nevertheless I did read it and was not disappointed, in fact the book fits very well with the anniversary recalling the boost the Sputnik shock provided to the US space program. The book focuses on the pre-NASA history and goes back to the very beginnings of rocket developments in the USA and Germany.

The book opens with the death of Max Valier in his make-shift test laboratory in Berlin, 1930 when experimenting with an alcohol-fueled rocket. Max Valier was a friend of Hermann Oberth who in 1923 electrified his avid readers with his visionary book “Die Rakete zu den Planetenräumen” (A Rocket into Planetary Space).

Amy Teitel unrolls the history of spaceflight from those events onwards under the umbrella of today’s knowledge. The author skillfully interlinks the various lifelines of the most important rocket– and spaceflight pioneers with just the right level of detail. So the benefit of this book is, that, although the biographies of each of those space pioneers and events have been published many times before in separate voluminous books – in this book you get the “big picture” leading you through the “premiere-events” with all involved players with the right depth of information and the relevance to each other – and each development is told from a German and, when mandated from the American point of view. In fact, with the provided synopsis we learn a lot about the “entanglements” and details of both nations – at least I was not aware before. One example would be the detail descriptions of Wernher v. Braun’s involvement with the national socialistic party, becoming a member of the SS, his clashes with Himmler and Kammler, his meeting with Hitler and his clandestine search for American troops at the end of the war in order to get “captured”, without knowing that von Karman and Dryden were already looking for him and his rocket experts at the beginning of 1944. I think the author gives a very fair treatment of v. Braun and convinces the reader that v. Braun’s true intention was always to build rockets for space exploration rather for Hitler’s war machinery.

After the war von Braun’s biography is tracked from his and his team of experts transfer to the USA (projects “overcast” and “paperclip”) to White Sands and later to the Redstone Arsenal at Huntsville, but also a detailed account of the US military efforts for developing long range ballistic missiles and the involved governing committees and advisory groups is given. The ensuing military programs were mostly based on the 33 volumes of the Science Advisory Group (SAG) report (Dec 15, 1945) and the 14 tons of documentation and V-2 hardware shipped to the USA. Von Braun and his team basically stood at the sidelines, other than reassembling V-2 rockets from the recovered parts from the “Mittelwerk” (Germany) for testing at White Sands as part of the US missile project Hermes. They were not involved in the other military projects like MX-774 followed by Viking.

An interesting side note explains the aversion of US military against rockets which is reaching back to the bombardment of Fort McHenry by the British in 1814 as documented in the national anthem : “...And the rockets’ red glare, the bombs bursting in air, Gave proof through the night that our flag was still there;...” As mentioned, von Braun was restricted to “tinkering with the V-2”, but excluded from the Hermes program. During a stay in the hospital at Fort Bliss he wrote a memo, called “[Survey of Development of Liquid Rockets in Germany and their Further Prospects](#)” (1945), postulating nothing less than “shooting for the Moon”: “When the art of rockets is developed further, it will be possible to go to other planets, first of all to

*the moon...*”

According to the author von Braun and his experts were brought back “into the game” with the start of the Korea-conflict in 1948 and their move from White Sands to the Redstone Arsenal in Huntsville.

According to its subtitle “the story of spaceflight before NASA” the book describes in detail many less known research activities and achievements of the National Advisory Committee for Aeronautics (NACA, founded in 1915), starting with a chapter called “rockets meet airplanes”, with the focus on the Muroc test base (later called Edwards AFB) and the beginnings of super- and hypersonic research.

It is always fascinating to read again about the breathtaking achievements, the dedication and “bodily” engagement of the pioneers like Chuck Yeager, Scott Crossfield (becoming known as “X-15 Chief S.O.B”) and “Mel” Apt with the Bell –X research planes. We meet young Neil Armstrong at Edwards after his completed 78 flight missions in Korea training with the first “iron cross simulator” to learn about and overcome the phenomena of “inertial coupling” during supersonic flights.

On a separate track we follow Walter Dornberger after his 2 years as POW from South Wales to America in 1947 to find a job with Bell Aircraft pitching his space plane idea to the Air Force – which in turn was inspired by Saengers’s analytical and practical research activities on a sub-orbital bomber for the German Luftwaffe called the “Silbervogel” (silver bird), during the war.

Donberger’s version was a hypersonic liquid fuel glider, finally being called the Ultra Plane, a combination of a carrier plane with a smaller plane riding “piggy-back”. He described tourist flights and the required launch infrastructure for passengers with could resemble a “spaceport America” already.

In the early 1950s NACA became interested in testing the boundaries for “man in space”. The detailed chapters in the book put the names on the faces on the photos which made it into the newspapers at the time, but also tell their stories of enthusiasm and dedication, like John Stapp, the deceleration pioneer who buckled himself in the seat of the “g-whizz” rocket sled. You still might remember the picture of Stapp’s distorted face during his record test submitting himself to a grueling 45.4 g and setting a land speed record of 1,017 km/hr on a three- rocket powered sled. Another less told story is the exploration of the higher atmosphere with balloons: we have seen the slack, glittering balloons but never the names attached to them, like the “Manhigh” project, involving Winzen Research, Minesota (founder Otto Winzen) inventing the polyethylene “seamless” balloon used by Simmons and Kittinger for a 24 hr human flight at 115,000 feet (Kittinger, and later Simons - “no sweat”, despite voice communications loss during the flights). Again, dedication and professional pride “pushed the envelope”.

From 1954 onwards, ideas for the international geophysical year (IGY) developed to explore the higher atmosphere with a combination of rockets and balloons (“Rackoons”) or alternatively with earth orbiting satellites. Wernher v. Braun with his Redstone team became excited and proposed to develop a variant of their 70 ft long and 6 ft wide surface to surface missile for peaceful purposes, a WAC Corporal or another variant, a four staged rocket, but lost against proposals from other military services.

Werher v. Braun’s growing popularity in the USA began with articles published in the Collier’s magazine in 1951 and his convincing presentations in the Walt Disney produced ABC broadcasting shows (“Tinkerbelle wand”). It is still worthwhile to watch the originals on YouTube like the “Tomorrowland” episode “[Man in space](#)” introduced by Walt Disney himself in 1955.

By 1955 the idea to launch a scientific satellite for the International Geophysical Year (IGY) was solidified. The Soviet Union showed interest to participate in the IGY and borrowed the Walt Disney film, which was presented during the 1955 IAF Congress in Copenhagen for their own purposes. Wernher von Braun still was restricted to work on Redstone based medium ballistic missiles for the Army because science and military projects should strictly be kept separated.

America’s politicians and public at-large were deeply surprised by the “beep-beeps” of the Sputnik launched by the Soviets on Oct 4<sup>th</sup> 1957 (“one little ball”). Amy Shira Teitel describes in detail the events and competence struggles between science and military authorities and the conflicts within the Army, Navy and

Air Force units with Wernher von Braun still forced to inactivity – despite he has demonstrated that his Redstone staged vehicle (Jupiter-C, warhead reentry test vehicle) in August 1957 was able to reach orbit, even before Russia launched its Sputnik. Wernher von Braun claimed the dummy warhead reached a high of 460 km and was “the first object recovered from space”.

The NACA Round-3 Conference took place right after the Sputnik launch at AMES and came up with the project “Highwards” (?) a supersonic glider following up the X-15 developments.

Before 1958 the Air Force and NACA discussed an orbital X-15B spaceplane to be launched on a two staged Navaho configuration (first stage two Navahos, second stage one Navaho), to be launched from the Cape, to complete three orbits and to return for an unpowered landing.

On 6 December 1957 the Vanguard test flight-3, was set to be the launch of the first US satellite to draw even with the Soviet Union. It carried the 1.3 kg US IGY satellite Vanguard-1 to tip the scales a little bit for the US again – the launch however, watched by an expectant public crowd, was a “spectacular failure”.

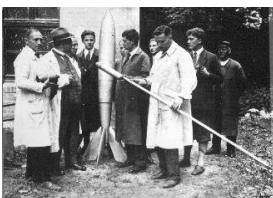
The ensuing hectic activities by President Eisenhower, NACA and the military services competing to regain their technical research reputation after the two Sputnik launches (Sputnik-2 on 3rd Nov 1957 with the dog Laika on board) is described in very detail offering an impression of how deep the shock went. Wernher von Braun managed to put forth his Jupiter-C rocket, developed under Air Force control to be a candidate to launch Explorer-1, the second attempt to launch an US satellite into Earth orbit. Wernher von Braun was in Washington on launch day to be at hand for the press – during the countdown on January 31<sup>st</sup> 1958 the attendees surviving the nerve-wrecking hours only on lots of coffee, doughnuts and cigarettes finally could break out in jubilation at 22:48 Eastern Time.

In 1958 after many reports, committee meetings, studies and discussions President Eisenhower decided to centralize space activities and to separate the military activities from a civil science space program by signing the National Aeronautics and Space Act July 29, 1958, disestablishing NASA's predecessor, the National Advisory Committee for Aeronautics (NACA). The new agency became operational on October 1, 1958, writing its own spectacular history since then.

As mentioned, the timing for the publication of the book is well taken, 60 years after the “Sputnik-1 shock”. It is an excellent book telling all of us who had the privilege to partly experience the events, what really went on behind the official statements in a straightforward way tying together all the major strands of development, locations and players.

In summary I am impressed by the book, I highly recommend it to everybody who is enthusiastic about space science and space exploration to find out where our roots lay and how many developments were shaped by unforeseeable coincidences.

Taking the past 60 years as an example it seems almost impossible to predict the future of space exploration (and exploitation) for the upcoming 60 years ahead of us – but as the book also shows, everything is possible with dedicated engineers, political will and an insatiable thirst for knowledge and progress.



Historic view of the "Verein Für Raumschiffahrt" 1930  
Wernher Von Braun is standing behind Klaus Riedel who is holding an early version of the minimum rocket or "MiRa".  
Photo courtesy of NASA-Marshall Space Flight Center

Student Werner von Braun at the Chemisch-Technische Reichsanstalt test area, 1930, standing behind Klaus Riedel (right). Klaus Riedel (white lab-coat, right) holding the MiRa (Minimum Rakete, 1 liter) and Hermann Oberth with a model of his 16 liter rocket for the Fritz Lang movie “Die Frau im Mond”.



Dr. Wernher von Braun, Marshall Space Flight Center's first director, points out details on a Saturn rocket to President Dwight D. Eisenhower. President Eisenhower was at Marshall to participate in the center's dedication ceremony, Sept. 8, 1960.

Ref: NASA history