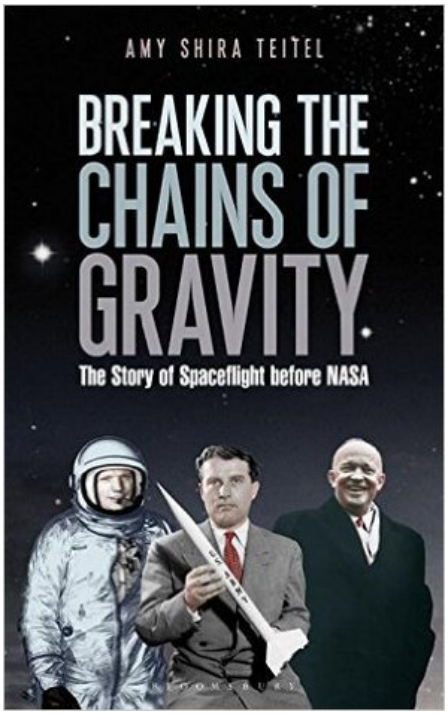


# Breaking the Chains of Gravity: The Story of Spaceflight before NASA

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**Breaking the Chains of Gravity: The Story of Spaceflight before NASA** Amy Shira Teitel
NASA's history is a familiar story, one that typically peaks with Neil Armstrong taking his small step on the Moon in 1969. But America's space agency wasn't created in a vacuum. It was assembled from pre-existing parts, drawing together some of the best minds the non-Soviet world had to offer.

In the 1930s, rockets were all the rage in Germany, the focus both of scientists hoping to fly into space and of the German armed forces, looking to circumvent the restrictions of the Treaty of Versailles. One of the key figures in this period was Wernher von Braun, an engineer who designed the rockets that became the devastating V-2. As the war came to its chaotic conclusion, von Braun escaped from the ruins of Nazi Germany, and was taken to America where he began developing missiles for the US Army. Meanwhile, the US Air Force was looking ahead to a time when men would fly in space, and test pilots like Neil Armstrong were flying cutting-edge, rocket-powered aircraft in the thin upper atmosphere.

*Breaking the Chains of Gravity* tells the story of America's nascent space program, its scientific advances, its personalities and the rivalries it caused between the various arms of the US military. At this point getting a man in space became a national imperative, leading to the creation of the National Aeronautics and Space Administration, otherwise known as NASA.

## Breaking the Chains of Gravity: The Story of Spaceflight before NASA Details

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# From Reader Review Breaking the Chains of Gravity: The Story of Spaceflight before NASA for online ebook

### Matt Heavner says

A fascinating look at the U.S. efforts to get to space, pre-NASA. At the outset, the disclaimer of "for Goddard, look elsewhere" (to keep the book a reasonable length) was ok, but the counter was it felt to me like too much of this book focused around Von Braun. I can forgive this, because Von Braun is such a critical part of the story, but I felt like there should have been some space to Goddard, a bit less to Von Braun, and more to others. However, it was a really good history. I especially enjoyed the intrigue of Eisenhower and the IGY (International Geophysical Year) and Killian (the MIT president and first Presidential Science Advisor), the AF (Air Force) SAB (Science Advisory Board), NACA, the AEC, and the military vs peaceful use of space (intriguingly similar debate in nuclear physics, but with (perhaps?) different conclusions). At any rate, this book was an interesting review of early space exploration efforts.

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### K De says

A very good read on what happened before NASA with the ability of Germans who were interested in rocketry and space flight both manned and unmanned is the main focus of the book. Given that focus I think Amy Teitel writes clearly and with authority. The use of German scientists and engineers in jump starting the US space program is uncontestable but she does gloss over the ethical concerns with regard to the use of slave labor in the Nazi V rocket programs. I would say that it is the biggest fault of the book. I did find the use of high altitude ballooning in the quest to see how human beings are affected by radiation and other factors to be something that I wasn't aware of. Well worth reading about the early beginnings of the space programs in Germany and the US.

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### Rebecca says

I received a free copy of this ebook from the publisher, via NetGalley, in exchange for an honest review.

2.5 Stars

I was very excited when I discovered this book. I am a huge fan of the history of spaceflight, and I’ve read dozens and dozens of books on the subject. I think the early years of spaceflight and rocket development are extremely cool and should have more written about them. These years usually get a chapter or two in other works before moving on to Project Mercury. A book dedicated to those early years would be a welcome addition to any space fan’s library. This book falls short.

This book covers a few of the major bullet points that have to be told to accurately cover this age. The first third of the book is dedicated to the German rocket scientists, including Wernher Von Braun, who developed the V-2 missile during WWII. The story follows them from the early days of rocket tests, to their arrival at Fort Bliss and the V-2 launches from White Sands. The book also covers the rivalry between the Vanguard and Redstone rockets to launch the first US satellite.

These parts of the book were nicely written and interesting, full of good details. I did take issue with some of the other topics the author covered. A good deal of the book was spent discussing the X-1 flights to break the sound barrier, the development of the X-15 rocket plane and Project Manhigh. This really frustrated me because I do not feel that so much of the book should have been dedicated to these projects. While you could loosely consider the X-15 and Project Manhigh to be “spaceflight,” I don’t believe the section on these should have been so long. I wouldn’t have minded these sections being in the book if the author hadn’t excluded so much actual spaceflight history and rocket research. I had hoped this book would at least touch on a few of the important people, places and events. She did not.

By the end, I was very disappointed. Some of the most interesting parts of spaceflight history before NASA occurred at the various research centers and contractors across the country. The author excludes a great deal that I consider to be more relevant to the history of spaceflight than the X-1 or Project Manhigh. While your average reader would probably learn a great deal from this book, they will be missing a lot of really cool history.

Also, please understand that there is no such missile as a Navajo. The Navajo are a Native American Tribe. The Navaho is a missile composed of a pilotless airplane attached to a rocket booster, built by North American Aviation. This is a huge pet peeve of mine. Mixing up the two is a very lazy, amateur mistake.

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### John says

This book is a summary of the history of American (and German) rocketry up to the formation of NASA. Fascinating and well researched, with an enormous bibliography, this book is a good starting point to reading up on the history of space exploration.

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### Doctor Moss says

Treitel is a good story teller. She is neither dry and simply factual, nor does she pump up the drama. In fact, I think her biggest virtue is letting the actual figures in the story display their own personalities. Some of the figures, e.g., Wernher von Braun, John Stapp, and Scott Crossfield, truly have larger than life personalities, and she lets them have their air time.

I think she also does a good job of depicting the marriage between the military and the science side of the development of rocketry. Some of the efforts, and some of the personalities, fell harder to one side or the other. Certainly the military imperatives of World War II were a dark blessing for the development of new technologies, as were those that followed during the cold war.

You could even read the story as a wrestling match, played both on a personal scale and on broader national scales, between military aspirations and space exploration. Von Braun dreams of trips to the Moon while building V-2s to be launched against Britain. Experimental planes like the X-15 derive from Eugen Sanger’s vision of an “antipodal bomber”. Astronauts ride in space capsules atop rockets designed as missile weapons. And at the end of the story, NASA emerges as a civilian agency under the Eisenhower administration, to the apparent frustration of the military branches, especially the Air Force.

Any story is going to be selective. One decision Treitel made was to leave out the contributions of Robert

Goddard. She states that decision in the book's Preface, citing the need to limit and focus the story. It's understandable that she focused her story on the trail that begins with the German rocket group prior to WWII, but that trail did intersect with Goddard's, or the technologies and approaches that he and his teams developed before his death in 1945. The omission still feels odd to me. The only mention of Goddard in the book is to say that he will not be part of the story.

One part of the book I especially appreciated was the story of competition and inefficiency in the multiple space and missile programs undertaken in the late fifties, by the US Navy, Army, and Air Force. Strategic decisions to separate missile and space programs, along with those inter-service rivalries could arguably be said to have been responsible for both the Soviet public victory with Sputnik and the perceived "missile gap" of the time.

A related debate over the next step for the American manned spaceflight strategy in the aftermath of Sputnik included a fascinating weighing of ballistic re-entry vehicles (space capsules) against gliders (space planes, descendants of the X-15 and precursors of the Space Shuttle). This was something I hadn't read before.

I would have liked more coverage of the X-15's story itself, and of its proposed successor, the X-20 DynaSoar. I'd recommend Milton Thompson's At the Edge of Space to anyone who would like to read that story.

Now that I've read Teitel's book, I'd like to read a similar story about the early days of the Soviet manned space program. If anyone has a recommendation, I'd love to hear it. One I'd recommend on the space race itself is Walter McDougall's The Heavens and the Earth.

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### Wes says

Lots of information in this book about the years prior to the formation of NASA. She focused mostly on NACA (National Advisory Committee for Aeronautics) and delves into the history of the German V2 rocket and Werher von Braun. There's also good information on the X-15. I rather liked the book but it was spoiled by the lack of a good editor who would have reigned in her tendency to lengthy aka "run on" sentences. She also repeatedly referred NACA as "the NACA" which, while it may be correct English, struck me as very awkward. A good book for a space geek like me. I gave it a 6 because the awkward language made it harder to read than it should have been.

Wes Brevig I should note that Amy hosts a really good video blog site called Vintage Space mostly about pre-shuttle stuff. Check it out here: https://www.youtube.com/channel/UCw95...

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### Rafael Ontivero says

Pese a contener mucha información, el libro está bastante mal organizado. Va de un tema a otro sin mucha coherencia, se deja cosas sin contar y narra otras con demasiado detalle.

De hecho la parte central del libro sobra, contando cómo se sobrepasó la barrera del sonido o los tejemanejes entre la Marina y la Armada americanas, que poco tienen que ver con la cohetería si no es de forma incidental.

Solo los tres capítulos finales centran el tema de la exploración espacial como tal, y los primeros en los que se cuentan los inicios de von Braun y la gestación de las V-1 y V-2 alemanas. Nada más.

Ciertamente un libro bastante pobre aunque, eso sí, se lee bastante rápido.

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### Gendou says

I really wanted to like this book. I'm a huge fan of space exploration and am curious about those first steps we took towards the technology that got us to The Moon. But this book was too short and didn't go into detail much beyond anecdotes that one can find on Wikipedia. It was mostly about WWII and military aircraft.

There were some interesting facts about early rocketry but the focus was on the kinds of things you learn in history class; which men did various things for the first time on such and such a date. So. Boring.

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### Rachael Thomson says

A few things really bothered me about this book, most notably the notion of culpability. Ms. Teitel spends a tremendous amount of time with one of the fathers of American rocketry, Wernher von Braun. She explains his membership in the Nazi party, and eventual joining of the SS. She explains that the V2 rockets built during WW2 by von Braun and his team were physically constructed by concentration camp detainees. She explains how von Braun was as scientist, focused on the problems of rocketry, and how he made every effort to escape Germany as the war began to turn against Germany, and it became more possible to leave, and how he turned over all the information he physically could to the Americans.

And that's it. She does in one sentence, mention German research into human tolerances for pressure and temperature changes, and she mentions the slave labor which built his missiles. That's it.

The fact of the matter is that von Braun knew what was going on in Germany. He wasn't some Kurt on the front lines whose only job was to shoot towards Russia, with no idea what was going on back home. He was a man who worked IN A LABOR CAMP, supervising SLAVES. Yes, resisting the Nazis openly was not something a person tended to do if one wished to stay alive. Yes, he was a scientist, in love with his work, and unwilling to give it up for a principle. But let us remember Oscar Schindler. He joined the Nazi party for convenience, and the used his power to save his workers' lives. Von Braun simply groused the whole war about the shoddy work his starving slave laborers were doing.

Oh, and that research Ms. Teitel mentions in one sentence? That was the sort of horrific torturous nonsense perpetrated in the death camps. Jews and other prisoners were given the bends until they died, to see how much pressure they could take before they died. When you get the bends, your blood literally boils. You develop embolisms in your sinuses, and then in your brain. It is an excruciating way to die, and the poor subjects who survived one round of these pressure tests were then subjected to them over and over again until they died. Other subjects were literally frozen to death, in labs, so that German scientists could study the effects of hypothermia on human beings.

Yes, that knowledge is useful. Yes, at its most fundamental level science is apart from morals, it is morally

neutral. Information is just that, information, which can be used for any purpose.

Von Braun knew all of this information because he was a high ranking SS agent. The United States chose to ignore this fact because we wanted to control the man who had designed the first major ballistic missiles. We brought Nazi sympathizers, outright Nazis, and high ranking members of a terrorist organization primarily responsible for the extermination of 3 million people into this country so we could get to the moon first.

I'm not saying the book has to spend chapter upon chapter castigating the principles figures in American rocketeering, but to not even acknowledge that this German research into pressure and temperature was conducted entirely through the medium of malicious and sadistic torture is cowardly.

This is a cowardly book. It presents an enthusiastic and technical picture of rocketry, which is very interesting to people who like learning about space travel, but it is a book written by a coward. A coward unwilling to explain the more complex elements of American history, which are VITAL. America was not the valiant underdog in the space race, baring its chest to the Soviet Union and drawing a line in the sand.

We were a nation spiriting perpetrators of horrific violence away from justice, so we could build better weapons of war.

Eisenhower was a decent man, who believed in the neutrality and scientific purpose of space flight, and this appears to be the only thing holding us back from developing space-faring rockets simply as a better delivery mechanism for our nuclear arsenal.

I don't know if I like this book. While it's interesting, I find it lacking in many fundamental ways. I don't think the fact that it's a straight history of rocketry excuses it from the imperative to face history unflinchingly and without sugar coating any aspect of it, or ignoring it.

I know I don't like Ms. Teitel.

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### Darlene says

I won an Advance Reading Copy of Breaking the Chains of Gravity: The Story of Spaceflight before NASA by Amy Shira Teitel in a Goodreads Giveaway. This is a History of Science work which chronicles the space race from the pre-space and rocket origins up to the formation of the National Aeronautics and Space Administration. While being informative, the book is readable and enjoyable. I received an uncorrected proof but there were very few errors, which for this format is unexpected. I recommend this book to any reader interested in science, space, aviation, history (esp. military or aviation history), and non-fiction.

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### Brian Manville says

Amy Shira Teitel has made a niche for herself in the science community through her Vintage Space YouTube page and twitter account (@atsvintagespace) discussing space-related topics. She took a very specialized area of study - science history - and created a means to share what she's found with her audience. One topic, even in the space nerd community that never gets a lot of discussion is the time period before the creation of NASA in 1958. It is this void that Ms. Teitel goes in search of the (under-)told story of those

early days of spaceflight.

This search obviously starts with Wernher von Braun and the Nazis. Even in the 1920s, von Braun and others in Germany were thinking ahead to a future with spaceflight. With most everything else in Germany during the change from the Weimar Republic to the Nazi, von Braun and his Verein fur Raumschiffahrt (VfR) associates were swept up in Hitler's grand designs to conquer Europe. While it can be stated that von Braun was in the SS, the author is sure to point out that von Braun was anything but a willing participant.

As the war ended, von Braun knew his best chance was to cast his lot with the Americans. His Nazi past was to be an issue here and there, but lingering anti-German bigotry was put aside in the name of overcoming the alleged "missile gap" and later to catch up in the space race. We are given names, dates, programs, and acronyms that you almost need a program to keep them all straight. Fortunately, Ms. Teitel crafts a wonderful story that doesn't bore yet give the information to tell a good story. For fellow space nerds, it is literally the holy grail.

The only real drawback to the story is the absence of early luminaries such as Robert Goddard. As she states in the preface, she wanted to make sure that this was a history that would be accessible to a wide audience, so certain elements were left out. Given that the main thrust of this history comes through German engineers, this is an understandable oversight and does not take away from the book.

From her Instagram feed, it appears Ms. Teitel is working on another book. If so, this reviewer will welcome it with open arms as her first effort was a masterstroke of story-telling.

BOTTOM LINE: Required reading for space nerds; good reading for the casual historian.

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### Andreas says

Ms. Teitel is a space historian and producer of the popular YouTube channel Vintage Space, in which she presents short segments focusing on particular bits of space history. The subject matter of this book is fascinating, and not only because it is not as popular as the early NASA period from the formation of the agency to the end of the Apollo Program, which is documented and described in hundreds of books and documentaries. The story of the German rocketeers before and during World War II reads almost like a thriller.

Ms. Teitel lays out the subject matter clearly, mostly avoiding confusion by periodically reminding the reader of myriad programs and initiatives with repeated mentions of names. Given the very intricate events and relationships of the post-war US rocket launch initiatives, this is no small feat. While clarity is achieved, a history should focus on bringing people and events to life. This one fails to really grip the reader and would probably not be very an interesting read to the non-enthusiast. A more in-depth focus on a changing society, or a deep dive into technology, or character analysis of particular figures and their motivations, would have made the whole thing more engaging and less bland. Put bluntly, the story told lacks the ability to provoke passion in the reader because there is little depth presented. Many parts read like an encyclopedia entry.

The prose could use some polish, perhaps with stricter editing. There is an overuse of "as well" and "also". Too many sentences start with conjunctions, making for a sometimes jarring rhythm in the text. The decision to use purely US/Imperial units without conversions even in footnotes makes the text less accessible to

readers from most of the world.

The subtitle is somewhat misleading. While the Soviet space program is frequently featured, there is no in-depth analysis of that side, and information on the adversary serves mostly as background to the US program.

http://www.books.rosboch.net/2018/06/...

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### David says

Das Buch gibt einen tollen detaillierten Einblick in die Geschichte der Raumfahrt vor NASA's Gründung.

Los geht es in Deutschland kurz vor dem Beginn des zweiten Weltkrieges. Das Buch stellt viele Forscher vor die damals noch mit anderen Hobby-Raumfahrt Fans versuchten ihre Raketen immer höher und höher fliegen zu lassen. Als die Entwicklungen auch interessant für das Militär wurden, konnten die Forscher ihr Hobby zum Beruf machen und damit nahm die ganze Entwicklung spätestens während des zweiten Weltkrieges richtig Fahrt an.

Sehr ausführlich wurde das Leben von Wernher von Braun beschrieben der damals gemeinsam mit Walter Dornberger die Aggregate Rakten-Serie entwickelte. Die bekannteste Rakete der Reihe ist wohl die A-4 auch bekannt als V-2.

Das Buch ist jedem Raumfahrt-Fan zu empfehlen der noch weiter zurück in die Geschichte als das Mercury und Gemini-Programm (mit der Gründung von NASA hört das Buch nämlich auf) blicken möchte.

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### Tom says

Not a bad read certainly, yet still a bit of a disappointment. While there are lots of very interesting historical points presented, the whole thing felt very disjointed. The events chronicled are all pretty scattered until the last 25% or so of the book. Unfortunately, by that point the birth of NASA is only couple of years off and there is no logical connectivity to those disparate events occurring before that time. Undoubtedly the many research projects and tests described influenced the formation and charter of NASA, but it is never made clear how. There were also a number of what felt like rather pointless inclusions in the narrative. Didn’t really need a dissertation on “Americans’ familiarity with rockets” because of the “rocket’s red glare” lyric in The Star-Spangled Banner [?!?]. Didn’t need an explanation of who Daedalus and Icarus were. Didn’t particularly need to be instructed on how Dwight Eisenhower became the Republican presidential candidate in 1952. And it felt even a bit condescending to be told what “supersonic” means. Really? Point is: none of these things helped tell the story of spaceflight before NASA. If anything, they were just filler. Better to toss that stuff and offer some explanation on how supersonic flight research (for example) influenced the Redstone Arsenal rocket development programs going on at the same time. That would have been meaningful, but it didn’t happen. As I say: a bit of a disappointment.

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### David Clifton says

What a fascinating read! It was great fun to read while having access to Google or Wikipedia to look up references to people, scientific programs, or faster-than-sound aircraft.
I enjoyed learning about some of the "shakers and movers" in spaceflight development - Wernher von Braun and Dwight D. Eisnehower being the most obvious. I'm anxious to read biographies about both of them. John F. Kennedy may get credit for inspiring us to put a man on the moon, but without the foresight and leadership of Dwight D. Eisenhower, it would not have happened as quickly as it did.
I'm hoping that Ms. Teitel plans to write a sequel - recounting the history of the manned space program.

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