

German Spaceflight Advocacy from Weimar to Disney

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One of the most striking features of the rise of the space program in the United States in the 1950s is, of course, the prominence of German technology and personnel, primarily as a result of the acquisition of the core of the Peenemünde rocket group under Project Paperclip. But almost equally striking is the extent to which American spaceflight advocacy in the pre-Sputnik era was influenced by the German rocketry and space travel movement of the Weimar Republic. This was due primarily to two individuals: Willy Ley and Wernher von Braun—one a refugee from Nazi Germany, the other a prominent servant of it. Ley and von Braun, in collaboration with a number of native-born space enthusiasts and artists, and one or two other former Germans, set out to sell the idea of space travel between 1949 and 1957. As Howard McCurdy notes in his invaluable *Space and the American Imagination*, through their articles in *Collier's* magazine and their TV specials with Walt Disney, they largely succeeded. Even before the launching of the Soviet satellite in October 1957, the American public was much more inclined to believe in the feasibility of spaceflight than it had been only eight years before.¹

McCurdy attributes this success in significant part to the melding of two quite different styles of spaceflight advocacy after World War II: German scientific explication with American science fiction imagery. And I wouldn't fundamentally disagree with him. Still, there are more similarities than he may have realized—for example, science fiction did play a role in the Weimar German space advocacy movement, if a significantly smaller one than in the interwar U.S. Moreover, the German and American space movements, both before and after the war, shared common Western cultural assumptions about why *manned* spaceflight (in both the traditional and in the gendered sense) was inevitable. Indeed, technological progress was taken so much for granted, as was the fact that "man must explore," that little effort was put into providing the German public of the 1920s, or the U.S. public of the 1950s, with elaborate rationales for exploring space. The only really new element in the *Collier's*/Disney era was a Cold War argument for the space station as orbital battle station—a plan particularly stressed by von Braun and by *Collier's* magazine editor Cornelius Ryan in the early 1950s, at the height of Korean War mobilization and anti-Communist paranoia. But the reigning assumption apparently was that if we could go, we would go—an attitude that manifested itself earlier in the Weimar Republic, and no doubt in Soviet Russia. The more elaborate arguments for space travel that Howard McCurdy examines are, I think, mostly a product of the post-Sputnik need to justify expending billions of taxpayer dollars on space exploration.

However, before I get too far ahead, let us turn back to the history of the rocket and spaceflight movement of the Weimar Republic. In my 1990 article, "Weimar Culture and Futuristic Technology," I argued that there were three reasons why the exotic idea of space travel found a particularly strong echo in the Germany of the 1920s: nationalism, a widespread faith in technological change, and the rise of a modern consumer, entertainment culture. Moreover, as against traditional assertions that the Weimar rocketry and spaceflight fad (as I dubbed it) reflected attempts to escape from economic depression and chaos, I noted that the media's interest in rocketry and space travel arose and reached its apogee during the so-called "stabilization" era of 1924–29, the Weimar Republic's interlude of relative stability.² I might add, however, that at the time I wrote my article, I had not examined the rocket experimenter groups that arose after 1929. In their propaganda and in the attention the press paid to them, one does see an element of escapism driven by the Great Depression. In addition, I perhaps did not underline enough the importance of the triumphs of aviation technology for raising expectations of future travel beyond the atmosphere.³

In emphasizing cultural factors as an explanation for why Germany was so prominent in the early days of space advocacy, I did not thereby wish to downplay the importance of individual personalities. (Personalities are apparently a random factor in history, although it might be argued that the emergence of certain individuals is associated with deeper social and cultural forces.) It is clear that the whole spaceflight fad might not have "gotten off the ground" (if you will excuse the pun) but for the boldness and mathematical acumen of Hermann Oberth, who launched the Weimar movement with his small theoretical book *Die Rakete zu den Planetenräumen* (The Rocket into Interplanetary Space) in 1923. Nor might it have spread so widely in Germany but for the indefatigable efforts of the popularizer Max Valier. Yet in the end, cultural factors do seem to help explain why German and Austrian spaceflight advocates found such a relatively enthusiastic reception in the German-speaking world—one that was equalled nowhere else except in the infant Soviet Union.⁴

What the cultural factors do not explain very well is why the space movement was relatively so weak in the interwar United States, as against Weimar Germany and Soviet Russia. Nationalism was also strong in America, although perhaps it was not of the desperate type evident in defeated Germany, faith in technological change was even more deeply rooted in American culture (and in Bolshevism) than in Germany, and Weimar's new consumer culture was in part an imitation of the much more developed one in the U.S. As opposed to cultural factors, one must again concede the importance of personalities—or, in this case, a personality. If the secretive and shy Robert Goddard had not abstained from publishing his detailed theoretical examinations of the feasibility of spaceflight, perhaps the American interwar movement might have had more respectability and American spaceflight advocacy might have had more intellectual rigor. Instead, the American Interplanetary Society was founded in 1930 by science-fiction writers. As I pointed out in my Weimar article, the very vibrancy of science fiction in American culture may, however, provide an additional explanation, in that the "pulp," Buck Rogers, Flash Gordon, etc., tainted the whole topic of rocketry and spaceflight. As the result, respectable scientists shied away in fear of damaging their reputation.⁵

In Germany, Weimar space advocates believed that science fiction could be used to bring people to the cause of spaceflight. Hermann Oberth and Max Valier even tried their hands at writing short stories and novels. But, in general, science fiction was less well developed in Germany, and was largely confined to a few novels and one major movie, *Frau im Mond*, that actually helped the cause of space advocates.⁶

If science fiction was not detrimental in Germany, there was certainly no lack of shallow, media-driven silliness at the height of the Weimar fad in 1928–29, most notably in an explosion of rocket stunts unequalled in any other country—not in the U.S. and definitely not in the state-dominated USSR. Yet looking back one cannot help but be impressed by the relative depth and sophistication of the space advocacy literature of the second half of the 1920s: among the important works of substance were books by Walter Hohmann, Willy Ley and Hermann Noordung (a pseudonym for Herman Potocnik) plus Oberth's massive expansion and revision of his book, now entitled *Wege zur Raumschiffahrt*.⁷ On top of that, the journal *Die Rakete*, the organ of the Society for Space Travel or VfR, published a number of theoretical papers by German and Austrian authors. A number of popular works were published as well by Max Valier, Willy Ley, and others. The only other country where this theoretical creativity was evident was in Russia, with the works of Tsiolkovsky, Rynin, etc. In the United States, after Goddard's famous 1919 Smithsonian paper, *A Method of Reaching Extreme Altitudes*, the next publication of any significance was the 1931 popular treatise *The Conquest of Space*, by David Lasser, a science-fiction writer and president of the American Interplanetary Society. It was illustrated with pictures from Germany!⁸

The tone of the German-language literature was almost certainly set by Oberth's original book: emphasis was placed on theoretical or popular demonstrations of the scientific feasibility of space travel. At a time when many were skeptical, this strategy made sense, but it did not stop various academic scientists from contesting the possibility that vehicles could actually be built that could reach the enormous velocities necessary to go into orbit or escape the Earth's gravitational field. The ridicule that some American advocates encountered was, however, noticeably lacking. But deeper and more elaborate arguments for why humans would want to explore space were largely missing from the German literature. If we look at the categories Howard McCurdy outlines for space advocacy in the United States after World War II—Cold War military and political competition, demonstrations of government competence, the search for extraterrestrial life, pioneering the space frontier, creating routine access to space, and improving life on earth—only a couple of these appear in some form or other in the works of Oberth, Ley, Noordung, and Valier, and then only usually indirectly. Nationalist and military arguments for investing in the technology do appear in passing, mostly because of Germany's deeply wounded pride over the loss of World War I. A few Weimar space books do mention life on Mars and perhaps Venus as a possibility, and late-19th and early-20th century polar expeditions, along with pioneering aviation achievements, served as the implicit or explicit models for space pioneering, as Howard McCurdy has rightly emphasized.⁹ There are a few attempts, starting with Oberth, to demonstrate that building a space vehicle would not be prohibitively expensive, with the result that these authors come up with what are in hindsight ridiculously low estimates.¹⁰ The technical difficulties were grossly underestimated. Yet the assumption seems to be that some corporation would find a justification for doing it, and it would be done; the pioneers of that era manifestly did not foresee that spaceflight would turn out to be an enormously expensive enterprise that could only be mounted by large states with military-industrial complexes.

Clearly the historical context in which the interwar space advocacy literature is written was fundamentally different than the one McCurdy has described. The arguments he outlines were primarily driven by a post-Sputnik need to justify the NASA budget to the American people. Perhaps to belabor the obvious, explaining the expenditure of tax dollars on a practical space program was not the issue for interwar true believers in Germany or elsewhere, thus

they did not have to try very hard. Yet I still find it interesting to tease out the underlying cultural assumptions in this lack of extensive justification, because it demonstrates to what extent the technological progress and manned exploration is absolutely taken for granted.

Regarding the adjective *manned*, I do not think it is very necessary to elaborate how gender-specific the space travel movement and literature of Weimar tended to be—just as was the case elsewhere. More interesting is the extent to which the Weimar space advocates and prophets did not even imagine unmanned or automated space-flight as having importance. Oberth's first treatise described what we would now call a sounding rocket as his initial practical objective, but that is where his consideration of unmanned flight stopped.¹¹ I would need to re-examine the Weimar literature again more deeply, but as far as I know there are no discussions of robot lunar or planetary probes whatsoever. Just as my colleague Paul Ceruzzi some years ago outlined the "unforeseen revolution" of modern computing, virtually no one between the wars—or for that matter, not much before Sputnik—could imagine that humans could now choose to explore and exploit space exclusively with robotic spacecraft.¹² (Not that this is likely to happen.) Personal exploration of space by humans—primarily men—was simply taken for granted as being the point of the whole exercise, of course, but there is also a profound inability to imagine the automation and computer capability needed to make robotic spacecraft possible. This is interesting, as the robot as such—the mechanical man—had entered the European imagination in this period, notably in Czech author Karel Capek's 1921 play "R.U.R.", from which our word "robot" comes, and in film director's Fritz Lang's *Metropolis*, which appeared three years before his 1929 space movie *Frau im Mond*. Of course, these mechanical men were first and foremost the modern technological versions of Frankenstein's monster, not harbingers of the computer and electronics revolution.¹³

When we turn to the post-World War II literature many of the same patterns repeat themselves. Once again, manned flight is the only purpose of spaceflight as far as its advocates are concerned, and no effort is expended justifying that choice. In the *Collier's* series and the books it produced, or Willy Ley and Chesley Bonestell's *Conquest of Space* from 1949, or Wernher von Braun's *The Mars Project* from 1952/53, unmanned space probes are a preliminary stage to the first manned flight and are mentioned as an afterthought.¹⁴ During the middle phase of the *Collier's* articles, in 1953, von Braun did introduce the "Baby Space Station" containing rhesus monkeys for biological experiments—obviously as a pathfinder for humans. It is true he operated in a military environment that prevented him from discussing early, as yet unfunded plans for small satellites, but clearly he did not look at those satellites as anything but preliminaries to manned flight. As to the gender-specificity of the literature, the *Collier's* articles and books seem even more blatantly sexist than the interwar publications, due to Cold War conservatism in gender roles and the powerful influence of the images of the test pilot and military officer on the discussion of who would be space travellers.¹⁵

Of course a key question for this paper is: what specifically German elements did Willy Ley and Wernher von Braun bring into this postwar literature, beyond a tradition of careful scientific popularization of the physical principles of rocketry and space travel? Given the common cultural roots of the German and American (and perhaps also the Soviet) space advocacy movements, this does not turn out to be a very easy question to answer. Willy Ley, in his 1944 book *Rockets*, which turned into a standard book with many editions and longer titles, did naturally bring the history of the VfR and the German movement into center stage in the history of rocketry, but his book is most notable for being the first new book written in the German scientific mode.¹⁶ Wernher von Braun, on the other hand, attempted to carry out the Weimar nostrum that space travel could be sold to the public better as science fiction. In 1948 he wrote a large, bad novel at nights and on weekends in the barracks at Ft. Bliss, but ultimately only the technical appendix was published as *The Mars Project*, and only after it appeared first in German.¹⁷ In the *Collier's* series, von Braun, Ley, and the American contributors found another voice, which probably has as much to do with editor Cornelius Ryan, as with them: they wrote a kind of fictionalized science fact: long, elaborate descriptions of space voyages, equipment, training, written in the mode of "you are there." Once again, I am struck by how quickly these articles and books move beyond rationales for sending men into space (von Braun's militarized space station perhaps aside). Going was its own rationale—based of course on an implied and widely accepted discourse of "progress"—both in terms of science and technology and in terms of exploration. The only alternative to progress was stagnation or decline. This discourse certainly repeats the pattern of the Weimar literature, but I am not convinced there is anything specifically German about it. Ley and von Braun brought to the U.S. assumptions about science, technology, and progress that needed little adaptation to the new environment.

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Another noticeable Weimar-influenced element in the post-war literature was Wernher von Braun's space station, which for decades was the model for a station. His inflatable wheel-like structure bears a considerable resemblance to Noordung's 1929 proposal. There is no specific evidence that he was influenced by Noordung, but the space station as orbital refueling and research base was a common motif of Weimar spaceflight discussions and fiction, and von Braun himself wrote a plotless short story about a visit to a space station called Lunetta when he was a high-school student in 1930. No doubt orbital bases also appeared in American science fiction and space advocacy before von Braun as well, but the Weimar origins of his influential proposal is clear. Of course, for images and descriptions of rocketry, there was another powerful German influence post-dating Weimar: the Third Reich's V-2 program. Images of the V-2 or the A-9, the winged V-2, in particular dominate the earlier paintings of Chesley Bonestell.¹⁸

If one were to look more closely, one could probably find even more German influences on the American space travel literature of the 1950s; given the personal roles of Willy Ley and Wernher von Braun, there was a strong continuity in space advocacy from Germany to the United States and from Weimar to Disney. But this is not news; what is particularly interesting is the commonality in cultural assumptions and imagery that undergird space advocacy in the two countries both before and after World War II. Even the nationalist and military arguments for spaceflight were fairly transferable from country to country, although they had to be adapted to the new environment of the Cold War and nuclear arms race. If Ley and von Braun had never come to the U.S., I'm not sure the literature after 1945 would have looked fundamentally different, although the specific content would have been different. What the cause would have lacked was their considerable energy and ability. Without them it certainly might not have been so easy to sell the American public on an elaborate manned space program after Sputnik.

Notes

¹ Howard E. McCurdy, *Space and the American Imagination* (Washington, DC, 1998), 9–48.

² Michael J. Neufeld, "Weimar Culture and Futuristic Technology: The Rocketry and Spaceflight Fad in Germany, 1923–1933," *Technology and Culture* 31 (Oct. 1990), 725–752.

³ See Peter Fritzsche, *A Nation of Fliers: German Aviation and the Popular Imagination* (Cambridge, MA, 1992).

⁴ Hermann Oberth, *Die Rakete zu den Planetenräumen* (Munich, 1923; reprint Nuremberg, 1960). For a useful overview of the German and Russian rocket societies, see Frank H. Winter, *Prelude to the Space Age: The Rocket Societies: 1924–1940* (Washington, DC, 1983).

⁵ Neufeld, "Weimar Culture," 750–752, and the sources cited therein.

⁶ Max Valier, "Die Fahrt ins All: Eine kosmische Phantasie," *Die Rakete* 1 (1927), 87–92, 102–105, 121–124, 133–136, 152–155, 166–169; Hermann Oberth in *Wege zur Raumschiffahrt* (Munich, 1929; reprint, Bucharest, 1974), included an excerpt from a novella he wrote on pp. 287–297. Particularly influential space fiction novels of the twenties were those written by Otto Willi Gail, although still exercising a powerful hold over German imaginations was Kurd Lasswitz's *Auf zwei Planeten* (1897; reprint with a Foreword by Wernher von Braun, Frankfurt, 1969). On *Frau im Mond* see Willy Ley, *Rockets, Missiles and Space Travel* (New York, 1951), 124–125.

⁷ Walter Hohmann, *Die Erreichbarkeit der Himmelskörper* (Munich, 1925); Willy Ley, ed., *Die Möglichkeit der Weltraumfahrt* (Leipzig, 1928); Hermann Noordung, *Das Problem der Befahrung des Weltraums: Das Raketen-Motor* (Berlin, 1929), translated as *The Problem of Space Travel: The Rocket Motor* (Washington, DC, 1995), NASA SP-4026.

⁸ Robert H. Goddard, *A Method of Reaching Extreme Altitudes* (Washington, DC, 1919); David Lasser, *The Conquest of Space* (New York, 1931). Britain and France also made a few contributions; in Britain the British Interplanetary Society became active enough in the late 1930s to make a detailed study of a moon mission; in France, Robert Esnault-Pelterie and Alexandre Ananoff published mostly a number of mostly short works. See the bibliography in Willy Ley, *Rockets: The Future of Travel Beyond the Stratosphere* (New York, 1944), 273–280.

⁹ McCurdy, *Space*, 165–167.

¹⁰ Oberth, *Die Rakete*, 84–88; Johannes Winkler (?), "Was kostet das Weltraumschiff," *Die Rakete* 1 (15 Dec. 1927), 170–171.

¹¹ Oberth, *Die Rakete*, 48–69, expanded in *Wege*, 221–253.

¹² Paul Ceruzzi, "An Unforeseen Revolution: Computers and Expectations, 1935–1985," in Joseph J. Corn, ed., *Imaging Tomorrow: History, Technology, and the American Future* (Cambridge, MA, 1986), 188–201. There was, however, some debate over manned vs. unmanned stratospheric ballooning in the 1930s, which presaged the debate over manned spaceflight during the Apollo program of the 1960s. See David H. DeVorkin, *Race to the Stratosphere: Manned Scientific Ballooning in America* (New York/Berlin/Heidelberg, 1989).

¹³ During the discussion of this paper, Scott Palmer and Gerald Silk noted the positive (pro-technological) discussion of what we would now call "cyborgs"—i.e., human/mechanical combinations—in interwar Italy and the USSR. I am not aware of similar discussions in Germany, which is not to say that they did not happen. For a penetrating discussion of *Metropolis*, see L. J. Jordanova, "Fritz Lang's *Metropolis*: Science, Machines and Gender," *Radical Science* 17 (1985), 5–21.

¹⁴ Willy Ley and Chesley Bonestell, *The Conquest of Space* (New York, 1949); Wernher von Braun, *The Mars Project* (Urbana and Chicago, 1953; reprint 1991); Cornelius Ryan, ed., *Across the Space Frontier* (New York, 1952), and *Conquest of the Moon* (New York, 1953); Willy Ley and Wernher von Braun, *The Exploration of Mars* (New York, 1956). Copies of the original *Collier's* articles are difficult to come by; some are in National Archives College Park, RG 156, E. 1039A, Box 72, folder "Project Von Braun." See also Randy Liebermann, "The *Collier's* and Disney Series," in Frederick I. Ordway III and Randy Liebermann, eds., *Blueprint for Space: Science Fiction to Science Fact* (Washington and London, 1992); David Houston, "The Master at 90: Chesley Bonestell, Space Painter," *Future* (April 1978), 66–75; David R. Smith, "They're Following Our Script: Walt Disney's Trip to Tomorrowland," *Future* (May 1978), 54–62; Ron Miller, "The Great 1951 Space Program," *Future* (Oct. 1978), 63–67, as well as McCurdy, *Space*, as cited in note 1.

¹⁵ Cornelius Ryan, ed., "Testing the Men," *Collier's* (7 Mar. 1953), 56–63, and "Man's Survival in Space," *Collier's* (14 Mar. 1953), 38–44; Cornelius Ryan and Wernher von Braun, "Baby Space Station," *Collier's* (27 June 1953), 33–35, 38, 40.

¹⁶ Ley, *Rockets* (1944), cited in n. 8 above; later editions carried titles such as *Rockets, Missiles, and Space Travel* and *Rockets, Missiles, and Men in Space*.

¹⁷ The original manuscript is in the Wernher von Braun Papers at the U.S. Space and Rocket Center, Huntsville, Alabama.

¹⁸ See in particular Bonestell and Ley, *Conquest of Space* (1949) for V-2 imagery; a translation of Wernher von Braun's short story "Lunetta," *Leben und Arbeit* (1930/31), 89–92, can be found in the Wernher von Braun biographical files, National Air and Space Museum Archives. Noordung is cited in no. 7.

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