

# Deep Impact: Robert Goddard and the Soviet 'Space Fad' of the 1920s

Asif Siddiqi

*Using newly available information from Russian archives, this paper explores American rocketry pioneer Robert Goddard's relationship to the Soviet space-flight advocacy community in the 1920s. In post-Revolutionary Russia, Goddard enjoyed a curious kind of fame. News of his alleged plan to launch a rocket to the Moon permeated widely through a Soviet audience interested in the possibility of space exploration. Goddard's practical work in developing rockets became a metaphor for the aspirations of the many in Soviet Russia who were unwilling to limit their horizons to theory and prognostication. The new research into Goddard's relationship to the Soviet space-flight enthusiast community underscores how international contacts shaped the space advocacy movements of the early twentieth century. The new evidence prompts us to consider an alternative approach to the 'foundation myth' of space history involving Tsiolkovskii, Goddard and Oberth, one that privileges an international context instead of the usual multiple national contexts.*

*Keywords:* Robert Goddard; Soviet Union; America; Spaceflight; Popularization; 1920s

## Introduction

In the history of astronautics, it has become a cliché to begin all narratives by invoking the Russian Konstantin Tsiolkovskii, the Romanian (and later German) Hermann Oberth and the American Robert Goddard. In the early decades of the twentieth century, the three men independently produced the first serious theoretical works on the possibility of rocketry and space travel. In recounting the story of their early works, historians have traditionally presented them as parallel but independent narratives firmly placed in their respective national contexts: Tsiolkovskii and Oberth as patrons to the early popularizers in rocketry in the Soviet Union and Germany respectively, and Goddard as a lone pioneer experimenting without much contact with the broader group of space enthusiasts in the USA in the 1930s.<sup>1</sup>

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Already in the 1920s and 1930s, the spaceflight communities in the three countries had at least a superficial awareness of each other's interests.<sup>2</sup> For example, Tsiolkovskii and the space advocacy constituency in the Soviet Union in the 1920s were very much cognizant of the general nature of both Oberth and Goddard's work. Similarly, German publications on spaceflight made frequent references to the work of Goddard and Tsiolkovskii.<sup>3</sup> Both countries also enjoyed brief but intense 'space fads' that crossed a variety of social and cultural constituencies before dying out in the mid-1930s.<sup>4</sup> Enthusiasts in both countries frequently contacted each other to exchange information. By contrast, before the early 1930s the USA did not have any organized communities or publications popularizing the cause of spaceflight. As such, in the 'international discourses' of the late 1920s, Americans were noticeably lacking, appearing only in the early 1930s after the formation of the American Interplanetary Society.

Despite the absence of direct American participation in the popularization of spaceflight in the 1920s, the name of Robert Goddard stands out. Especially in Soviet Russia, Robert Goddard enjoyed a curious kind of 'fame'; his activities, or more often a perception of his actions, permeated widely through a Soviet audience interested in the possibility of space exploration. Most of the news on Goddard in the 1920s focused on his proposal to launch a rocket to the Moon. Although Goddard frequently spoke of the Moon as a future target, during the 1920s, his experiments were less far-reaching. His first liquid fuel rocket launched in 1926, the first in the world, flew no further than a modest 60 meters. However, in the vibrant discourse on spaceflight in the Soviet Union in the 1920s, ambition and rumor were much more important than achievement and fact. As such, Goddard's alleged attempt to reach the Moon became a metaphor for the aspirations of the many in Soviet Russia who were unwilling to limit their horizons. Like Thomas Edison or Alexander Graham Bell before him, Goddard represented a vibrant, active, and industrious America to Soviet space activists; his ambition, optimism and urge to create were a pronounced contrast to Tsiolkovskii who limited his activities to prediction and not practice.

Using newly available information from Russian archives and the Goddard Papers, I explore Goddard's standing in, and relationship with the Soviet spaceflight advocacy community in the 1920s. I investigate three dimensions of this interaction: first, I describe how Goddard came to prominence in 1924; second, I explore the actual communications between Goddard and Soviet citizens; and, finally, I speculate on possible social and cultural reasons for Goddard's unusually prominent standing in Soviet Russia. By reconstructing these three facets of Goddard's engagement with the Soviet spaceflight enthusiast community, I hope to contribute to a reformulation of the early history of spaceflight in the twentieth century.

### **Goddard's Arrival**

Robert Goddard arrived in Russia, in spirit if not in reality, in 1924, and he got there via Germany. In October 1923, an anonymous writer for the Soviet newspaper *Izvestiia* wrote a short article with the subheading: 'Is Utopia Really Possible?', noting that a new book, 'Rocket to the Planets,' [sic] had just been published in Munich. Its author,

Professor Hermann Oberth, had found, using a ‘strict mathematical and physical path,’ that ‘with the aid of our modern technology it is possible to achieve space velocity and overcome the forces of Earth’s gravity.’ At the end of his short report, the journalist declared that Oberth’s book gave a theoretical foundation to the work of ‘the American professor Goddard, who has recently presented a sensational plan to send a rocket to the Moon.’<sup>5</sup> The journalist had discovered Goddard’s name in the appendix to Oberth’s book where the German had cited and described Goddard’s ideas.<sup>6</sup>

The article in *Izvestiia* about Oberth and Goddard not only introduced the names of these two pioneers to the Soviet populace, but also indirectly helped to disseminate the name of one of their own: Konstantin Tsiolkovskii. When news of the *Izvestiia* article reached the rural town of Kaluga where Tsiolkovskii lived, it had unexpected consequences. Bitter that his contributions to spaceflight theory and rocketry had gone unrecognized for decades in his own country—and now was being overshadowed by foreigners—Tsiolkovskii entered into a struggle to establish his priority in the field. Within weeks, with the financial help of some of his friends, he republished his early work on spaceflight theory, originally published more than 20 years earlier in 1903. In the introduction of the reprint, a prominent Russian intellectual lamented, ‘Do we always have to get from foreigners what originated in our boundless homeland and died in loneliness from neglect?’<sup>7</sup>

Tsiolkovskii’s pursuit for recognition, by way of a flood of publications on space, contributed to mass fascination with space travel that exploded in Soviet Russia in the 1920s. Students, workers, writers, journalists, artists and even filmmakers explored various dimensions of the possibility of cosmic travel. Enthusiasts formed societies and organized exhibitions while the media published hundreds of articles and dozens of books on cosmic voyages in the Russian language.<sup>8</sup> Via the various republications of his older works in the 1920s, Tsiolkovskii finally gained some of the recognition that had eluded him in his native land through most of his life. By the time of his death in 1935, he was officially recognized in the Soviet Union as an important scientist. Yet, in this struggle to establish priority and preeminence, Tsiolkovskii’s most serious competition came from an American who never set foot in Soviet Russia.

### **Goddard’s Background**

Who was this Goddard whose name would have a deep effect on the tenor of the Soviet space fad of the mid-1920s? Robert Hutchins Goddard, born 25 years after Tsiolkovskii, passionately believed, like his Russian and German counterparts, in the cause of space travel. Like Tsiolkovskii and Oberth, he also recognized that liquid propellant rockets promised the best option for reaching outer space. Goddard grew up in rural Massachusetts, influenced by Jules Verne’s fantasies. By 1909, while completing his doctorate in physics at Clark University, he had devised plans for liquid propellant rocket engines and concluded, like Tsiolkovskii, that liquid hydrogen and liquid oxygen promised the best combination of propellants to reach outer space. During World War I, Goddard began experimenting with small solid fuel rockets; lack of funds prompted him to apply to the Smithsonian Institution to continue his work. With its

sponsorship, in 1920, Goddard published *A Method of Reaching Extreme Altitudes*, considered the first serious work in the English language on using rockets for space travel.<sup>9</sup>

Goddard's name came to be associated with the Moon because of the final section of his monograph where he conjectured on sending a small rocket to impact on the surface of the Moon. With enough destructive power, such an explosion could then be seen by astronomers on the Earth. After the monograph's publication, the Smithsonian Institution issued a short press release highlighting Goddard's 'speculation' about sending a Moon rocket. From that one press release, the news on Goddard snowballed. In the following days and weeks, newspapers across the USA sensationalized a sober speculation on rocketry into an exciting plan to send a rocket to the Moon. *The Boston Herald* headlined a report 'New Rocket Devised by Prof. Goddard May Hit Face of Moon,' while *The New York Times* printed an infamous editorial that ridiculed Goddard's basic knowledge of physics, calling his work 'A Severe Strain on Credulity.'<sup>10</sup> Through the first part of 1920, Goddard's apocryphal rocket found a home in the pages of newspapers, magazines, editorials, cartoons and even popular songs. Many volunteered to fly on Goddard's rocket; others wanted to send a message to the Moon.<sup>11</sup>

Although posthumous biographers painted Goddard as publicity-shy to the point of isolationist, more recent research by David A. Clary underscores that Goddard himself was partly responsible for his notoriety. He was, in many ways, a 'publicity hound' who willingly engaged with the press, believing that higher visibility might translate into more financial patronage for his ideas.<sup>12</sup> After Goddard's presentation to the American Association for the Advancement of Science (AAAS) in late 1923 and a publication soon after where he announced once again that a rocket could reach the Moon, the American press disseminated further sensationalist news about an impending lunar flight in 1923–24.<sup>13</sup> Fed by both rumor, lack of information and Goddard's own efforts to keep his work in the public eye, news of his non-existent Moon rocket filtered beyond the borders of his native country to Europe. Soon, in 1924–25, there were 'wild rumors' in the German media about the fictional Moon rocket.<sup>14</sup> By this time, without having launched a single rocket, Goddard had received letters from as far as Czechoslovakia, Denmark and France from people with something to say about his Moon project.<sup>15</sup>

### **'One of the Greatest Stages in the Evolution of Technology...'**

From Europe, news about Goddard filtered into Moscow. Three months following the original *Izvestiia* article, in January 1924, a prominent Soviet spaceflight enthusiast, Fridrikh Tsander, provided more details on Goddard in a public talk.<sup>16</sup> Later, on 15 April, Mikhail Lapirov-Skoblo, an influential member of the new Bol'shevik technical intelligentsia, repeated in *Pravda*, that Goddard intended to fire a rocket to the Moon 'next year.' He added that this was a 'serious project of the chairman of the department of physics of Clark University' that had 'attracted the attention of a wide circle of scientists.'<sup>17</sup> Within days, the most prolific and well-known Soviet popularizer of

spaceflight, Iakov Perel'man also weighed in on Goddard.<sup>18</sup> As the news on Goddard mounted, Perel'man made one of the strongest statements in favor of Goddard's reputation. In a long piece on 21 April in the evening newspaper *Poslednie novosti* (Late News), he opened with dramatic flourish:

Future historians will remember 1924 as the date for one of the greatest stages in the evolution of technology ... 4 July of the present year has been named as the date for sending the first projectile to the Moon ... Professor Goddard ... has named that day when the first gigantic rocket will careen into the Moon ... It could reach the solid surface of our satellite at a prior designated point and explode there, [thus] issuing a bright flash which will be visible from powerful telescopes on the Earth.

Pausing to acknowledge that Tsiolkovskii was the 'founding father' of space travel, Perel'man concluded that '[v]ictory is ensured and there is no more doubt that the day is near when the Columbus and Magellan of stellar lands will pull away from Earthly captivity into the open Universe [and] into the outermost world of worlds.'<sup>19</sup> Words such as these, from a respected science journalist and not someone prone to hyperbole, fed the ever-growing fascination with the (non) exploits of Robert Goddard. As more and more reporters in Moscow repeated the same morsel of (incorrect) information, the American's name achieved a currency in the Soviet scientific media which Goddard could scarcely have guessed at—and indeed was unaware of during his life.

News of Goddard in Moscow served as a key spur for both organization and debate. Fridrikh Tsander, one of the key space activists of the period remembered that 'the increase in interest due to the experiments of Goddard made it possible for [him] to organize in Moscow the Society for the Study of Interplanetary Communications' in 1924, the world's first such society.<sup>20</sup> The Society was one of the conduits for press reports on Goddard that continued to circulate through the summer; many Russian enthusiasts anxiously waited for news of a Moon rocket launch on 4 July 1924.<sup>21</sup> In mid-June, the science reporter for *Izvestiia* finally noted that according to *The New York Herald*, Goddard had postponed his launch to August.<sup>22</sup> As summer turned into fall, and there was no news, Goddard fever among the youth reached such proportions that once the police had to be called out in Moscow. Responding to the notoriety over the Goddard shot, the aforementioned Society for the Study of Interplanetary Communications asked a prominent Leningrad-based astronomer, V. V. Sharonov, to speak to the public on the Goddard project at the Main Hall of the Physics Institute of the First University in Moscow. Sharonov gave two separate lectures, 'The Truth on the Dispatching of Professor Goddard's Projectile to the Moon on 4 August 1924' and 'Debates in the West in Connection with Sending a Projectile to the Moon,' both on Wednesday 1 October 1924. The Society printed up artful posters under the giant headline *Polet na drugie Miry* ('Flight to Other Worlds') which were put up at several major intersections in Moscow. On the night of the talk at 8 pm, so many people showed up that the Moscow horse militia had to be called out to control the crowds who were unable to enter the auditorium. All the tickets, for 30 kopecks each, had been sold out. Due to popular demand, the Society asked Sharonov to repeat the talks, which were followed by public debates, on 4 and 5 October.<sup>23</sup>

Debates and lectures such as these circulated Goddard's name among many Soviet journalists. Although Goddard never launched a rocket to the Moon, he was mentioned in dozens of Russian articles in the popular science media through the 1920s.<sup>24</sup> In fact, it was rare to find a Russian article on space exploration that did not mention the American, although most often it was in the form of an obligatory nod that introduced his name as part of the pantheon of Tsiolkovskii, Oberth and Goddard.

Invocation of Goddard's name was intertwined in the types of contradictions and mis-reporting that was characteristic of the broader discourse on spaceflight in the 1920s in the Soviet Union. Reporting on Goddard ran the gamut from sensationalist to sober evaluations of his work, often in the very same publication. In May 1926, the journal *Nauka i tekhnika* (Science and Technology) reported that Goddard was not only planning to send a rocket to the Moon that same year, but that the rocket was already built, and that that it would carry passengers to the Moon. Apparently 52 people had volunteered for his mission.<sup>25</sup> Yet, less than three months later, when 'Comrade Skeiner from Khar'kov and many others' inquired about the veracity of this story, the journal responded with a report that was remarkably faithful to Goddard's actual work; the writers noted that Goddard's real focus was on exploring the upper layers of the Earth's atmosphere; he had only speculated on the possibility of reaching the Moon.<sup>26</sup> Lack of specifics led many to believe the exaggerated news reports. For example, the documents from one amateur society in Moscow suggest that they sincerely believed that Goddard was coming to Moscow in 1926 to participate in a public debate over his Moon shot. They even prepared a list of questions for the American in preparation for his arrival.<sup>27</sup>

The reporting, mis-reporting, and reaction to Goddard's alleged exploits in the Soviet media were part of a larger international conversation about the possibilities of space travel during the 1920s. Even at this early stage, space enthusiasts, especially in Europe and the Soviet Union, were not operating in a vacuum, but engaging in a unique discourse via the media that focused mostly on the search for more information about their like-minded peers. One of the many ironies of this surrogate discourse is that the fascination with Goddard helped to introduce Tsiolkovskii's name to a wider audience within his own homeland. The hoopla over Goddard reached such a level that in 1926, the most popular Soviet weekly, *Ogonek* (Spark), invited Tsiolkovskii to weigh in with his opinion on the Goddard Moon rocket with an article intended for a broad audience. Although Tsiolkovskii's submission was never published, *Ogonek* issued an article later in the year by an in-house writer titled 'When We Fly to the Moon' that prominently mentioned Tsiolkovskii's work. Due to reader response, a couple of years later the magazine published Tsiolkovskii's 'autobiography,' ('Voyager into Cosmic Space') complete with a picture of him standing next to a model of an airship and artists' renditions of his various spaceship conceptions.<sup>28</sup> Tsiolkovskii's arrival in the pages of *Ogonek*, a major and popular Soviet journal signaled an important milestone in his career. These articles, prompted directly by the hysteria over Goddard's Moon rocket, were the very first in a non-technical journal that introduced Tsiolkovskii's works on spaceflight to a broad Soviet audience.<sup>29</sup>

## Letters Across The Divide

Before the opening of Russian archives in the 1990s, historians had only the barest hints of communication between Goddard and his Soviet contemporaries in the 1920s. The published version of Goddard's papers revealed that Goddard had communicated with Nikolai Rynin, an aeronautical engineer of high repute based in Leningrad who played an important role in propagating the idea of civil aviation and spaceflight in the Soviet Union.<sup>30</sup> Rynin, who had frequent contact with Tsiolkovskii and was fluent in several languages, wrote to Goddard in January 1926, asking for a copy of the American's original 1920 monograph, adding that 'extracts of your works are [sic] published in many Russian papers...'<sup>31</sup> Goddard promptly responded to the request; Rynin was quite possibly the first person in the Soviet Union with an actual copy of Goddard's historical work.<sup>32</sup> In their short correspondence through 1926, Rynin wrote to Goddard: 'I have read very attentively your remarkable book "A Method of Reaching Extreme Altitudes," ... [and] I have found in it ... all the ideas which the German Professor H. Oberth published in 1924 as [being] new...'<sup>33</sup> To Goddard, who was obsessed with establishing his priority and prominence in the field of rocketry, Rynin's communication must have been received with gratification. Rynin later translated into Russian and then published excerpts and summaries of Goddard's seminal monograph, thus introducing a generation of Soviet rocketry enthusiasts with first-hand information about Goddard's early ideas.<sup>34</sup>

The opening of Russian archives paint a portrait of Goddard actively promoting his case, meshing well with Clary's characterization of the scientist as publicity-obsessed rather than publicity-shy. Goddard communicated with a number of Russians beyond Rynin. For example, the American exchanged letters with the two most important Soviet organizations devoted to spaceflight in the 1920s. The Society for the Study of Interplanetary Communications (OIMS), the Soviet Union's and possibly the world's, first organization dedicated to space research, initiated contact with Goddard in early 1924. Society records reveal that Goddard wrote to the Society on 16 August 1924, where he expressed pleasure at the Society's formation and indicated that he would be interested in co-operating with them.<sup>35</sup> At one of the major talks in Moscow in early October, Tsander read out Goddard's letter to the Society to a rapt audience.<sup>36</sup> Goddard also sent the same Society a copy of one of his recent articles from the journal *Monthly Weather Review* where he conjectured on the velocity required to send a rocket to the Moon; the Society translated the article into Russian for its members.<sup>37</sup> This was probably the first contact between enthusiasts of spaceflight in the USA and the Soviet Union.

Goddard also wrote to the Association of Inventors (AIIZ), a ragtag group of students, workers and unemployed space-obsessed enthusiasts who put on the world's first exhibition devoted to the display of artifacts related to rocketry and space travel. The exhibition, held between April and June 1927 in Moscow, featured special sections ('corners') dedicated to all the prominent theorists and practitioners in the field, including Tsiolkovskii, Tsander, Goddard, Oberth, as well as the Germans Max Valier and Walter Hohmann, most of whom were in contact with the organizers.<sup>38</sup>

The exhibition, which was an important milestone in the Soviet popular interest in spaceflight, was relatively unknown outside of the Soviet Union. Yet, Goddard's singular importance to the space advocacy community in Russia is underlined by a curious report in no less than *The New York Times* during the time of the exhibition. A journalist wrote in May 1927:

Ivan Fedorof [sic], a [Soviet] mechanic from Kiel [sic], who belongs to the freak 'All-Inventors' Vegetarian Club of Interplanetary Cosmopolitans,' with several thousand members using a new language ... says that he will fly to the moon in September in an apparatus called a 'rocket,' thirty meters long, half airplane and half giant projectile ... At least, that is what Fedorof and his ecstatic companions told the New York Times correspondent ... although Fedorof asserts that the 'moon machine' is already half built, he refuses to show this much, preferring to exhibit a wooden model and a portfolio full of plans and documents, including a letter from Professor Goddard of Clark University.<sup>39</sup>

Freaks, vegetarians, and new languages notwithstanding, there was indeed an Aleksandr [not Ivan] Fedorov of Kiev [not Kiel], who organized the exhibition in 1927 as part of the Association of Inventors. Both the Goddard papers and Russian archives show that the Association invited Goddard in 1927 to contribute to the exhibition given that his work was 'of inarguable value to humanity.'<sup>40</sup> Goddard initially wrote back to wish them good luck, but declined to continue the correspondence.<sup>41</sup> His reasoning may have had to do with one of the Association's letters where the organizers asked for literature and drawings from the American, adding:

The interest of the public [in the exhibition] has been colossal ... especially toward your work, since you performed not only theoretical research but also practical laboratory tests with rocket models, [which have] confirmed the theoretical contributions of the Russian scientist K. E. Tsiolkovskii who provided data on the question of interplanetary flight 35 years ago.<sup>42</sup>

Goddard, acutely sensitive to claims that cast doubts on his claim to originality or preeminence, did not submit any technical materials.<sup>43</sup> Using materials from some of Goddard's published articles, however, Association members reconstructed and built a model of one of his rockets that was prominently displayed at the exhibition.<sup>44</sup>

Goddard received letters from many in the Soviet Union, most asking him to confirm or refute the wild rumors about him. In May 1924, for example, the President of the Russian Society for Astronomy Enthusiasts (ROLM) based in Leningrad, gripped by the publicity surrounding the American, wrote dramatically in a telegram delivered by Western Union: 'Is it true you send 4 July racket to Moon' [sic].<sup>45</sup> In 1929, a physics professor in Ekaterinburg and two of his students wrote to Goddard asking for his permission to serve as passengers on his rocket to the Moon, which they believed was to fly in July; they asked 'can one steer [the rocket]?'<sup>46</sup> Goddard also communicated several times with Iakov Perel'man, the famous Soviet popularizer of spaceflight. In response to a telegram from Perel'man sent in 1924 to clarify the status of his Moon project, Goddard responded that 'insufficient resources is the single obstacle on the road to quick development of the [Moon rocket].'<sup>47</sup> Using information from several letters from Goddard—often with long quotes from Goddard himself—Perel'man consistently tried to dispel some of the misconceptions about the Moon shot in the



Soviet media.<sup>48</sup> In several articles and books, he tried to summarize American work on rocketry based upon his careful analysis of the various Bulletins of the American Interplanetary Society (formed in 1930) and letters from Goddard. In most of these accounts, Perel'man recognized and promoted Goddard as the most important American pioneer of rocketry working at the time.<sup>49</sup>

The available evidence suggests that Goddard's exchanges with the Soviets were limited to several brief letters and a couple of published journal articles. Because Goddard never sent any of his Soviet contacts any *technical* materials on rocketry, his influence on the Soviet rocketry community remained symbolic rather than substantive. His stature was such, however, that by the 1930s, when the Soviet 'space fad' had ended and mutated into a state interest in the military uses of rocketry, the Soviet government sought out information on Goddard. Marshal Mikhail Tukhachevskii, the high ranking officer who sponsored a wide-range of highly innovative military projects in the early 1930s, singled out Goddard's work in a letter to Stalin's deputy Kliment Voroshilov in 1935. Admitting that the best information on Goddard they had at the time was a published article from 1932, Tukhachevskii recommended that Soviet intelligence services make a special effort to determine the contours of the American scientist's research.<sup>50</sup>

In April 1936, the Soviet security service, the NKVD, submitted more than 50 documents on foreign technology (not just rockets), including materials on Goddard, gathered from open and covert sources to Tukhachevskii.<sup>51</sup> If anything useful was gleaned from these documents, it did not have much effect on nascent Soviet rocketry efforts. My in-depth research in the archives of the Reactive Scientific-Research Institute (RNII), the most important Soviet rocketry R&D organization of the 1930s, suggests that on the ground, engineers had little or no knowledge of technical data on foreign rocketry at the time. Various internal documents indicate no knowledge beyond a suspicion that Goddard was doing work for the American military.<sup>52</sup> As late as 1940, the senior engineer at RNII in charge of liquid propellant ballistic missiles noted in his annual report that he had no information on long-range missiles in Germany or America.<sup>53</sup>

### Goddard's Appeal

Practical work such as that of Goddard and Oberth, as opposed to the more sedentary theoretical work of Tsiolkovskii, was more attuned to the wild social and cultural experimentation of the NEP years in the Soviet Union. Soviet urban culture was in an extraordinary degree of flux in the 1920s. Experimentation with politics, the economy, literature, the arts, cinema, social mores, family life and media was the norm rather than the exception.<sup>54</sup> In this social and cultural context, practice more than prognostication appealed to those interested in pushing the boundaries of possibility.

Although most popular science writers considered Tsiolkovskii the native 'patriarch of astronautics,' they could not avoid the fact that the Russian had done nothing in the way of practical work towards his stated goal.<sup>55</sup> On the other hand, an American inventor was not only doing something, but had ambitions that were more in line with the

kind of euphoric dreaming of the day prevalent in Soviet culture in the 1920s. Writing, such as the claim that ‘Goddard showed ... with experiments that a rocket does not need an external medium for its action,’ helped to highlight the difference with Tsiolkovskii who not only did not experiment, but was afraid to even leave his hometown of Kaluga.<sup>56</sup> Even Iakov Perel’man, who practically worshiped Tsiolkovskii, conceded in his seminal *Mezhplanetnye puteshestviia* (Interplanetary Voyages) that Goddard’s practical work had ‘opened a new chapter in the history of rocket flight.’<sup>57</sup>

Some of the attraction to Goddard may have had to do with his nationality. Historian Jeffrey Brooks’ has shown how, in the 1920s, ubiquitous negative media views of the ills of capitalism in America ran parallel with ‘the use of America as a metaphor of modernity.’ He notes, ‘When [journalists] wrote for worker-activists in agriculture and industry, the journalists were able to use phrases such as ‘the practical Americans have understood’ to promote any innovation, from tractors to horse manure.’<sup>58</sup> Thomas Edison, who was widely respected in the Soviet Union in the 1920s, came from this tradition of American ingenuity. Debates over the efficacy of technological projects, from electrification to agricultural mechanization, were frequently couched either in opposition or in support of the ‘American model,’ i.e. American industrial know-how was a benchmark for debate about technological modernization in the Soviet Union.<sup>59</sup> That Americans would also contribute to pushing the boundaries of rocketry was not surprising but in fact, fully expected. Underscoring that idea, in 1931, the Soviet popular science journal *Vestnik znaniia* (The Journal of Knowledge) translated and published an article by Edward Pendray, an active participant in the American spaceflight community. Pendray’s article, which began with Goddard, seemed to suggest that Americans were doing significant work on rocketry and spaceflight.<sup>60</sup> In some sense, American work on rocketry and spaceflight legitimized indigenous interest in space exploration which might have been considered frivolous otherwise.

Yet, at the same time, Goddard’s nationality alone does not explain his reputation in the Soviet Union in the 1920s. On the contrary, in many articles mentioning Goddard, his citizenship is often mentioned as a secondary piece of information; his ‘American-ness’ was less an asset or liability than simply an identifier. When journalists praised Goddard, it was because of his vision. When they criticized him, it was for his lack of one.<sup>61</sup> Additionally, in all the publicity, they never invoked the easily used anti-capitalist argument in the way that many Russians criticized, for example, the Ford Corporation. Judging by the media coverage, to Soviet space enthusiasts, Goddard was less an American than a scientist. If the former had ambiguous meaning in the 1920s, the latter had only positive allure. For example, in 1928–31, both the popular science media and the space enthusiast community in the Soviet Union were fascinated by Germans such as Oberth, Opel and Max Valier and their sensational experiments with rockets. In fact, the Germans’ frequent presence in the Soviet popular science media at the turn of the decade matched if not exceeded both Tsiolkovskii and Goddard, suggesting that Goddard’s appeal may have lain elsewhere beyond his nationality.<sup>62</sup>

The Oberth/Valier case in 1928–31 points to a more plausible explanation for Goddard’s appeal: he may have represented the ‘lone inventor’ archetype that had

wide resonance in the 1920s and 1930s in the Soviet Union. Many popular science journals of the day, gripped by technological utopianism and optimism, popularized the notion of the noble lone inventor whose sole goal was to contribute to social progress. Several Soviet official institutions such as the All-Russian Council of the National Economy (VSNKh or *Vesenkha*) opened Bureaus for Assisting Inventors and solicited ideas from working people. The military also had a special division, the Directorate of Military Inventions (UVI) whose sole goal was to evaluate invention proposals from any Soviet citizen.<sup>63</sup> Science journals devoted considerable space to American pioneers such as Edison and Bell as well as European scientists such as Marconi who were pushing the limits of modern technology. When Thomas Edison passed away in 1931, several publications, both mainstream and popular scientific ones, devoted attention to his life, to his humble origins and to the far-reaching implications of his inventions.<sup>64</sup>

Many of those Russians who believed in the cause of spaceflight shared the fascination with inventors and invention. In 1928, *Vestnik znaniia* published a long article ‘On Inventors and “Inventors”,’ which opened with the claim:

The wide wave of the inventors movement has overflowed through all the Soviet republics. Inventors annually give to our economy many tens of millions of rubles. All are gradually starting to understand that the inventors—these are the first pushers and initiators of rationalization—workers who are worth their weight in gold for industry and the state...<sup>65</sup>

Whether such a claim could ever be proven (or even tested) was less important than the idea that invention and innovation, and indeed, all new forward-thinking ideas, were paid lip service by the Bol’shevik Revolution. The piece was also notable because, although it was a cautionary note about dilettante inventors ‘obsessed with various unrealizable and fantastic ideas,’ it did not include spaceflight or rocketry among ideas that were ‘unrealizable and fantastic.’ In fact, the author of the piece, one Vladimir L’vov, wrote an article the following year where he announced the formation in Leningrad of a ‘society for interplanetary communications’ of which he was a member.<sup>66</sup> His piece implicitly underlined the notion that spaceflight was not a frivolity but an object of serious academic study. The many notices about Goddard seemed to underscore this very point. In combination, Goddard’s profession (lone inventor) and background (American) helped to disengage spaceflight from fantasy and frivolity and link it to invention and innovation in the Soviet Union.

## Conclusions

The new research into Goddard’s relationship to the Soviet spaceflight enthusiast community in the 1920s prompts us to rethink how international contacts shaped the space advocacy movements of the early twentieth century. In the Soviet Union, which perhaps enjoyed the most active and vigorous popular fascination with spaceflight in the pre-World War II years, international contacts were crucial. Thirty years before Sputnik, Soviet interest in spaceflight was already inseparable from news and rumor from other countries. The Goddard case underlines how international discourse on

space travel was a mix of direct contact between enthusiasts and a surrogate conversation via the media. Goddard's personal role in this discourse—one of active contact with the Russians—is noteworthy since it confirms David Clary's questioning of the conventional image of Goddard as a publicity averse inventor.

Most important, the case of Goddard and Russia suggests that we revise one of the unchallenged intellectual tropes that historians have used to describe the early history of spaceflight: one of immutable national boundaries. Goddard's contributions as a pioneer and his legacy are not simply limited to the United States, but also the Soviet Union. As such, the new evidence prompts us to consider an alternative mode of conceiving the foundation myth of space history, one that privileges an international context instead of multiple national contexts for each member of the foundation myth—Tsiolkovskii, Oberth and Goddard.

Within the Soviet Union, Goddard played a unique role in the dissemination of ideas about space travel. His was not a crucial role—there were many indigenous activists and popularizers who were more important. However, Goddard's function was unique because he contributed to a vigorous discourse on spaceflight without actually participating or knowing much about it. This was especially true in 1924 when the rumor of a rocket flight to the Moon drew the attentions of many who would normally not have been interested in cosmic travel.<sup>67</sup> For the growing Soviet spaceflight advocacy movement, Goddard represented the flipside to Tsiolkovskii. News of Goddard's intent to build rather than theorize, dragged the idea of spaceflight from dreams to reality, and it is this that may have been Goddard's most enduring contribution to the Soviet space fad of the 1920s.

A testament to his lasting legacy is the impression Goddard made on young Russians in the 1920s. Nearly 40 years after the Goddard 'craze' in Russia, in 1958, when Soviet space program Chief Designer Sergei Korolev proposed to the Soviet government to approve a project to send a probe to the Moon, he invoked Robert Goddard's fabled Moon rocket from the 1920s.<sup>68</sup> Korolev's request for the Moon project was approved, and a year later, in 1959, the Soviet Union successfully achieved one of the great firsts of the space age: sending a rocket to impact on the surface of the Moon. The Soviets had finally made Goddard's dream a reality.

## Notes

- [1] For an English-language biography of Tsiolkovskii, see Kosmodemiansky, *Konstantin Tsiolkovskiy, 1857–1935*. For Oberth, see Rauschenbach, *Hermann Oberth: The Father of Space Flight*. For an outdated biography of Goddard, see Lehman, *This High Man: The Life of Robert Goddard*.
- [2] Winter, *Prelude to the Space Age: The Rocket Societies: 1924–1940*.
- [3] Zhelnina, 'K. E. Tsiolkovskii i pionery kosmonavtiki germanii,' 3–55.
- [4] For the German 'space fad,' see Neufeld, 'Weimar Culture and Futuristic Technology: The Rocketry and Spaceflight Fad in Germany, 1923–1933,' 725–752. For the Soviet 'space fad,' see Siddiqi, 'The Rockets' Red Glare: Technology, Society, and Culture in Revolutionary Russia, 1857–1957,' ch. 2. There were similar fads in Austria, France, Italy and several other countries but they did not match the depth and breadth of the fascination in Germany and the Soviet Union. See Winter, *Prelude to the Space Age*, 87–112.

- [5] 'Novosti nauki i tekhniki: neuzheli ne utopiia?' *Izvestiia VTsIK*, 2 October 1923, 4. The correct title of Oberth's book was *Die Rakete zu den Planetenräumen* (The Rocket into Interplanetary Space). It was published in June 1923.
- [6] F. Davydov, 'Novosti nauki i tekhniki: raketa v kosmicheskoe prostranstvo.' *Izvestiia VTsIK*, 18 April 1924, 7. For Oberth's nod to Goddard, see Oberth, *Die Rakete zu den Planetenräumen*, 90–92. That Oberth's book was a conduit for information on Goddard is confirmed by Fridrikh Tsander in a talk given in 1924. See Tsander, 'Doklad inzhenera F. A. Tsandera o mezhplanetnykh puteshestviakh,' 39. Oberth was a Romanian citizen until he took German citizenship in the 1930s.
- [7] Tshijewsky, 'Anstatt eines Vorworts,' unnumbered preface page. The brochure was dated 1924, but the first copies came off the press in December 1923.
- [8] Siddiqi, 'The Rockets' Red Glare: Technology, Society, and Culture in Revolutionary Russia, 1857–1957,' Chapter 2.
- [9] Goddard, *A Method of Reaching Extreme Altitudes*. Note that the published manuscript is dated 1919 although the work was actually published in January 1920. See Ley, *Rockets, Missiles and Men in Space*, 99. For a review of Goddard and his legacy, see Hunley, 'The Enigma of Robert H. Goddard,' 327–50.
- [10] 'Topics of the Times,' *The New York Times*, 13 January 1920; 'New Rocket Devised by Prof. Goddard May Hit Face of the Moon,' *The Boston Herald*, 12 January 1920. The latter is reproduced in Goddard and Pendray, *The Papers of Robert H. Goddard, Volume I: 1898–1924*, 406–08. For other headlines of the day, see Lehman, *This High Man*, 104.
- [11] For the 1920–21 flap over Goddard's work, see Clary, *Rocket Man: Robert H. Goddard and the Birth of the Space Age*, 90–92; Lehman, *This High Man*, 107–20; Goddard and Pendray, *The Papers of Robert H. Goddard*, 408–09, 433.
- [12] Clary, *Rocket Man*, 92–97, 107–12. Clary also implies that another reason for Goddard's engagement with the press was to establish his preeminence in the field of rocketry, especially after 1923 when similar claims were advanced for Hermann Oberth in Germany.
- [13] Clary, *Rocket Man*, 109–10. For American press accounts in 1923–24 on Goddard, see, for example, Edwin E. Slosson, 'Rocket From Earth to Moon is Almost Accomplished Fact,' *The New York Times*, 29 December 1923, 1; 'Plans Giant Rocket to Explore Space,' *The New York Times*, 31 December 1923, 6; 'Wants Support for His Rocket,' *The New York Times*, 2 January 1924, 19; James C. Young, 'Hopes to Reach Moon With a Giant Rocket,' *The New York Times*, 25 May 1924, XX4; 'Force for Goddard Rocket,' *The New York Times*, 17 June 1924, 21; 'Earth-to-Moon Rocket Propellant Perfected,' *The Washington Post*, 17 June 1924, 1.
- [14] Neufeld, 'Weimar Culture and Futuristic Technology.'
- [15] Goddard and Pendray, *The Papers of Robert H. Goddard*, 543, 544, 547.
- [16] Tsander, *Iz nauchnogo naslediiia*, 29–30.
- [17] M. Ia. Lapirovo-Skoblo, 'Puteshestviia v mezhplanetnye prostranstva,' *Pravda*, 15 April 1924, 5–6. Lapirovo-Skoblo was the deputy chairman of the Scientific-Technical Department of the Supreme Council of the People's Economy (VSNKh or *Vesenkha*), a job that put him in charge of the technical intelligentsia who were engaged in introducing modern technology to the Russian economy. When Lenin formed the State Commission for Electrification of Russia (GOELRO) in 1920, he personally tapped Lapirovo-Skoblo to represent the *Vesenkha* on GOELRO. Among his many other *ad hoc* duties was as head of the department of science and technology at *Pravda*. For a biography, see Archive of the Russian Academy of Sciences (ARAN), r. 4, op. 14, d. 197, ll. 30–30ob. See also the list of GOELRO members in Jonathan Coopersmith, *The Electrification of Russia, 1880–1926*, 158.
- [18] Perel'man, 'Polety v mirovoe prostranstvo,' 1–8.
- [19] Perel'man, 'Zavoevanie mezhplanetnogo prostranstva,' *Poslednie novosti*, 21 April 1924, 5.
- [20] Tsander, *Iz nauchnogo naslediiia*, 43.
- [21] According to Perel'man, the 4 July 1924 date evidently came from a note on Goddard in the March issue of *Popular Science* and a newspaper article in the British newspaper, the *Observer*.

- See Ia. Perel'man, 'Lunnaia raketa Goddarda,' *Krasnaia gazeta*, 22 September 1924; ARAN, r. 4, op. 14, d. 202, ll. 1–4.
- [22] 'Slovoutaia "raketa",' *Izvestiia VTsIK*, 13 June 1924, 5.
- [23] Tsander, *Iz nauchnogo nasledii*, 47–51. For a reproduction of the poster for 4 October as well as Tsander's comment about the 'horse militia,' see Korneev, 'Zhizn', tvorchestvo i deiatel'nost' F. A. Tsandera,' 29–30. See also Kramarov, *Na zare kosmonavtiki: k 40-letiiu osnovaniia pervogo v mire Obshchestva mezoplanetnykh soobshchenii*, 54–55.
- [24] For a small sampling, see: Prianishnikov, 'V rakete na lunu,' 15; Gol'berg, 'Rakety Goddarda i Oberta,' 12–13; Ia. Perel'man, 'Lunnaia raketa Goddarda,' *Krasnaia gazeta*, 22 September 1924; Bazilevskii, 'Na lunu,' 1343–49; Ia. Perel'man, 'Sostitsia li polet na lunu?,' *Krasnaia gazeta*, 17 October 1925; Alchevskii, 'Kogda my poletim na lunu,' 8–9; Morozov, 'Vozmozhnen li polet na lunu,' 147; Rynin, 'Mezoplanetnye soobshchenie,' 75–78; Rynin, 'Reaktivnyi avtomobil,' 590; Kerner, 'Rezultaty mezhdunarodnogo konkursa po voprosam zavoevaniia mirovogo prostranstva,' 251–252; Ia. Perel'man, 'Sovremennoe sostoianie zvezdoplavaniia,' 367–368.
- [25] 'Novoe on rakete Goddarda,' *Nauka i tekhnika*, no. 21 (1926): 12.
- [26] 'Tov. Skeinry (Khar'kov) i mn. dr.' *Nauka i tekhnika*, no. 32 (1926): 23.
- [27] The society was the Moscow Society of Astronomy Enthusiasts (MOLA). See MOLA to Tsiolkovskii, 10 December 1925, f. 555, op. 3, d. 135, ll. 3–3ob.
- [28] For the first article, see Alchevskii, 'Kogda my poletim na lunu,' 8–9. For the second, see Tsiolkovskii, 'Puteshestvennik v mirovye prostranstva,' 12. The second article, although ostensibly an 'autobiography,' was not written by Tsiolkovskii, but by a staff writer at *Ogonek* who used the writings of Tsiolkovskii to compile an essay. For the exchange between *Ogonek* and Tsiolkovskii, see *Ogonek* to Tsiolkovskii, 4 November 1925, 1 June 1928 and 18 July 1928, ARAN, f. 555, op. 3, d. 175, ll. 1–9.
- [29] *Ogonek* had published a previous article on Tsiolkovskii in 1925 in relation to his writings on airships but did not mention his writings on spaceflight.
- [30] For a recent biography, see Tarasov, *Nikolai Alekseevich Rynin*.
- [31] Rynin to Goddard, 9 January 1926, in Goddard and Pendray, *The Papers of Robert H. Goddard*, 575.
- [32] Rynin acknowledged receiving the book in a letter to Goddard on 23 February 1926 in which he noted that Goddard had sent the monograph to Russia on 1 February 1926. See Rynin to Goddard, 23 February 1926, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Dr Robert H. Goddard, 14 January–22 December 1926.
- [33] Rynin to Goddard, 11 April 1926, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Dr Robert H. Goddard, 14 January–22 December 1926. The other two letters in the same box from Rynin to Goddard are dated 23 February 1926 and 2 December 1926.
- [34] See Rynin, *Interplanetary Flight and Communication*, Vol. III, No. 8, 98–134.
- [35] Goddard to Leiteigen [Leiteizen], 16 August 1924, ARAN, r. 4, op. 14, d. 195, l. 16.
- [36] For Tsander's note on the reading, see Tsander, *Iz nauchnogo nasledii*, 50.
- [37] For the location of the article, see ARAN, r. 4, op. 14, d. 194, l. 44. Goddard's article was Robert Goddard, 'The High-altitude Rocket,' 105–06. For a reprint of the article, see Goddard and Pendray, *The Papers of Robert H. Goddard*, 529–530. For the Russian translation, see ARAN, r. 4, d. 194, ll. 45–45ob.
- [38] ARAN, r. 4, op. 14, d. 198, ll. 41–46. For letters from Hohmann and Valier to the AIIZ, see ARAN, f. 555, op. 2, d. 38, ll. 1 (Hohmann), 2–2ob (Valier), and 3–3ob (Valier). See also, Rebrov and Tkachev, *Moskva-Kosmos: puteshestvie po 'kosmicheskim adresam' Moskvyy i Podmoskov'ia*, 61.
- [39] 'Plans Hop to Moon in a Rocket-Plane,' *The New York Times*, 8 May 1927, 19.
- [40] Association to Inventors to Goddard, undated, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Dr. Robert H. Goddard, 14 January–23 December 1927.

- [41] Goddard to the Association of Inventors (copy), 28 February 1927, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Dr. Robert H. Goddard, 14 January–23 December 1927.
- [42] Association of Inventors, 21 May 1927, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Robert H. Goddard, 14 January–23 December 1927.
- [43] Clary points out that Goddard's wife Esther 'wrote all over a souvenir scrapbook of the [Soviet] exhibit that it gave him insufficient recognition. Following his own inclinations and prodded by Esther's defensiveness, Goddard was not pleased at this turn of events.' See Clary, *Rocket Man*, 126.
- [44] For a description of the Goddard model at the exhibition, see the reminiscences of organizer Polevoi in ARAN, r. 4, op. 14, d. 198, l. 42.
- [45] ARAN, r. 4, op. 14, d. 197, ll. 22–23. Nicolai Morosov [N. A. Morozov] to Goddard, 28 May 1924, Robert H. Goddard Papers, Clark University, Box 6/Correspondence, Letters to Dr. Robert H. Goddard, 14 January–19 December 1924.
- [46] Leontovsky, Soloviev and Vinogradov to Goddard, 26 May 1929, Clark University, Goddard Papers, Box 6/Correspondence, Letters to Dr. Robert H. Goddard, 5 January–22 August 1929.
- [47] Ia. Perel'man, 'Lunnaia raketa Goddarda,' *Krasnaia gazeta*, 22 September 1924; ARAN, r. 4, op. 14, d. 202, ll. 1–4.
- [48] See for example the quote from Goddard in Ia. Perel'man, 'Sostitsia li polet na lunu?,' *Krasnaia gazeta*, 17 October 1925.
- [49] See for example, Ia. Perel'man, 'V mire nauki: zvezdoplavanie na zapade,' *Krasnaia gazeta*, 24 July 1929; Ia. Perel'man, 'Novye opyty s raketami,' *Krasnaia gazeta*, 30 July 1929; Ia. Perel'man, 'Uspekhi zvezdoplavanie v Amerike,' *Krasnaia gazeta*, 15 April 1930; Ia. Perel'man, 'Novyi opyt s raketoi,' *Krasnaia gazeta*, 31 January 1931; Ia. Perel'man, 'Uspekhi zvezdoplavanie na zapade,' *Krasnaia gazeta*, 20 November 1931.
- [50] Tukhachevskii to Voroshilov, 23 July 1935, ARAN, r. 4, op. 14, d. 245, ll. 5–6.
- [51] Barkovskii, 'Nauchno-tekhnicheskaia razvedka na sluzhbe sovetskogo gosudarstva (1917–1946 gg.),' 76–87.
- [52] Siddiqi, 'The Rockets' Red Glare: Technology, Conflict, and Terror in the Soviet Union,' 470–501.
- [53] The engineer was L. S. Dushkin. See 'Raketa dal'nego deistviia,' Russian State Archive of the Economy (RGAE), f. 8162, op. 1, d. 300, l. 104.
- [54] For NEP culture in general, see Fitzpatrick *et al.*, *Russia in the Era of NEP: Explorations in Soviet Society and Culture*.
- [55] The phrase 'patriarch of astronautics' is from Perel'man, 'Problemy zvezdoplavaniia,' 594–97.
- [56] The quote about Goddard is from Eigenson, 'Kosmicheskie korabli,' 886–87.
- [57] Perel'man, *Mezhplanetnye puteshestviia, izdanie desiatoe*, 139–40.
- [58] Brooks, 'The Press And Its Message: Images of America in the 1920s and 1930s,' in Fitzpatrick *et al.*, *Russia in the Era of NEP*, 239, 241. For works on the Soviet perception of American technological innovation in the 1920s, see: Bailes, 'The American Connection: Ideology and the Transfer of American Technology to the Soviet Union, 1917–1941,' 421–48; Rogger, 'Amerikanizm and the Economic Development of Russia,' 382–420.
- [59] For electrification, see, for example, Coopersmith, *The Electrification of Russia*, 185. On the question of agricultural mechanization, see Lewis, 'Technology and the Transformation of the Soviet Economy,' 185–88.
- [60] Pendrei, 'Rakety i raketnye korabli,' 1201–05.
- [61] For articles that are critical of Goddard, see 'Preslovutaia "raketa"; 'Zavoevanie vselennoi (rakety khefta),' *Nauka i tekhnika*, no. 32 (August 1928): 1–3.
- [62] The question of Oberth, Valier, and Opel's standing in the Soviet media, which is beyond the scope of this paper, is a separate story worthy of its own study. For only a very small sampling of articles that mention them, see: Al'tberg, 'Predpolagaemyi polet v stratosferu,' 550–51; Ia., 'Avtomobil'-raketa,' 7–8; 'Era rakety,' *Nauka i tekhnika* (June 1928): 22; Iampol'skii, 'Raketa

- na zemle i v vozdukh'e,' 5–6; 'Pervyi raketnyi aeroplan,' *Nauka i tekhnika* (November 1929): 1–2; 'German Obert,' *Nauka i tekhnika* (January 1930): 17.
- [63] For some of the debates over amateur inventors in the 1930s, see Bailes, *Technology and Society under Lenin and Stalin: Origins of the Soviet Technical Intelligentsia, 1917–1941*, 360–66.
- [64] See, for example, Khlynovskii, 'Tomas Al'va Edison,' 1211–13.
- [65] L'vov, 'Ob izobretateliakh i "izobretateliakh",' 516–19.
- [66] L'vov, 'Pervoe nauchnoe obshchestvo mezhplanetnykh soobshchenii v sssr,' 204.
- [67] See for example, the reminiscences of one Prianishnikova, a member of the OIMS, who underscores how the popular interest in spaceflight was fed by information in the media about a possible rocket flight to the Moon. See ARAN, r. 4, op. 14, d. 197, ll. 22–23.
- [68] Korolev, 'O programme issledovaniia luny,' 400–04.

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