
Fall from Orbit: The Collapse of the Soviet Union, Witnessed from the MIR Space Station

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His life resembles “a story out of Soviet science fiction, in which cosmonauts who have spent a short time in space return to Earth, where ages have gone by and everything – *everything* – has changed.”¹ Having launched to the MIR space station from the Union of Soviet Socialist Republics (USSR) in May 1991, cosmonaut Sergei Krikalev returned in March 1992 to a nation drastically transformed by revolution. The USSR, as it hurtled towards political reform, had collapsed during Krikalev’s ten-month stay in orbit. As a result, large-scale economic inflation permeated the new Russian Federation, oligarchs snapped up power and property, and the cosmonaut’s hometown of Leningrad had been renamed to St. Petersburg.² Upon his landing, Krikalev was extricated from the Soyuz landing capsule by Russian military officials, the letters *U.S.S.R.* sewn onto his sleeve and the Communist Party membership card was clutched

¹Associated Press. “After 10 Months in Space, Cosmonaut Is in a New Land,” *Los Angeles Times*, March 26, 1992, <https://www.latimes.com/archives/la-xpm-1992-03-26-mn-6366-story.html>.

²Stephen Kotkin, *Armageddon Averted: The Soviet Collapse, 1970-2000*, 2nd ed. (London, UK: Oxford University Press, 2008), 115.

uselessly in his hand.³ Dubbed “the last Soviet citizen” by some Western newspapers, Sergei Krikalev endured the fall of the Communist system that sent him up to space, only to face a lonely and belated transition to capitalism after coming home.⁴ “Not only were his legs wobbly from his ten-month space mission,” an American journalist wrote, “but he also had to cope with ten months’ worth of dizzying political upheaval that took place in his homeland while he was away.”⁵ Weak and in need of smelling salts, the cosmonaut, as photographed shortly after his landing in Figure 1, typified the fallen might of the Soviet space program.⁶ The decals on his pressurized Sokol spacesuit, brazenly anachronistic against the background of Russia’s break with its past, hearkened back to an era forever left behind.

Having witnessed the decline and collapse of the USSR from a vantage point of 250 miles above their homeland, the cosmonauts who occupied the MIR space station in the years 1991 and 1992 share a unique perspective of the Soviet Union’s latter months.⁷ Andrei Ujiča, a filmmaker who captured Sergei Krikalev’s story in documentary form, described these spacefarers as “out of the present”: so fundamentally uninvolved were they in the political developments that redrew the world,

³Brian Harvey, *Russia in Space: The Failed Frontier?* (Chichester, UK: Praxis Publishing, 2001), 31.

⁴Eric Betz, “The Last Soviet Citizen,” *Discover Magazine*, December 19, 2016, <https://www.discovermagazine.com/the-sciences/the-last-soviet-citizen>.

⁵“After 10 Months in Space, Cosmonaut Is in a New Land,” *Los Angeles Times*.

⁶The source for Figure 1 is TASS, “The Last Soviet Citizen,” *Discover Magazine*, December 19, 2016, <https://www.discovermagazine.com/the-sciences/the-last-soviet-citizen>.

⁷The cosmonauts referenced here include the crews of Soyuz TM-12 and Soyuz TM-13, respectively. Sergei Krikalev, Anatoly Artsebarsky, and Helen Sharman flew to MIR on Soyuz TM-12, while Aleksandr Volkov, Klaus-Dietrich Flade, and Franz Viehböck flew on Soyuz TM-13.

that they almost seemed to slip out of the Earthly timeline.⁸ The experience of cultural loss from outer space offers an intriguing insight into questions of national identity, as well as a valuable addition to the overarching narrative of Soviet history. In this essay, I will analyze the personal stories of the cosmonauts aboard MIR in the form of oral interviews. These primary sources will guide me as I discuss the perception of the USSR's collapse as it differs between cosmonauts with varying stakes in the mission, the nation, and in human space exploration as a whole.

While I unfortunately could not reach Sergei Krikalev for an interview, I spoke with three cosmonauts who worked alongside Krikalev during his second mission to MIR.⁹ Anatoly Artsebarsky, a Ukrainian pilot-cosmonaut and colonel in the Soviet Air Force, lived aboard the MIR space station from May 1991 to October 1991. As the commander of the Soyuz TM-12 mission, he worked closely with Sergei Krikalev, performing spacewalks (hereafter referred to as EVAs, or extravehicular activities) and maintenance around the station. After listening to Artsebarsky's descriptions of his time on MIR, I can better understand how the fall of the USSR affected this Soviet patriot and ardent Communist. Franz Viehböck, an Austrian researcher whose week on the space station in October 1991 coincided with the official beginning of Sergei Krikalev's extended mission, offered an outsider's view on the chaos taking place in Russia. Hailing from a Western nation unentangled in the drama of the Cold War, Viehböck speaks from the point of view of an unaffiliated entity about his perceptions of the Soviet Union's collapse.

⁸*Out of the Present*, directed by Andrei Ujiča, featuring Sergei Krikalev, Anatoly Artsebarsky, Helen Sharman, and Aleksandr Volkov (K Films, 1996).

⁹Having been granted media access to attend the Association of Space Explorers XXXII Planetary Congress in Houston, TX, I had the opportunity to meet and formally interview three cosmonauts: former Soviet cosmonaut Anatoly Artsebarsky, German cosmonaut Klaus-Dietrich Flade, and Austrian cosmonaut Franz Viehböck. I conducted the interview with Anatoly Artsebarsky in Russian, while the interviews with Klaus-Dietrich Flade and Franz Viehböck were conducted in English.

I also interviewed Klaus-Dietrich Flade, a test pilot from the newly unified Germany who flew to MIR for a week in March 1992. As part of the first crew to launch to space under the auspices of modern Russia, Flade experienced the political and economic instability inherent in both the decaying USSR and the emergent Russian Federation during his training for the mission.

As of now, no academic insight exists that focuses exclusively on the cultural and emotional impacts of the Soviet Union's collapse on the crews aboard MIR at that time. Scholars have approached the latter years of the Soviet space program through a technical lens, researching, as Brian Harvey does, the technological history of Soviet and post-Soviet space projects.¹⁰ Anatoly Zak has analyzed the decentralization of the Soviet space industry, citing its influence on the events of the MIR station's lifetime.¹¹ Discussing the fall of the USSR and its aftermath, Stephen Kotkin comprehensively examines the cultural and political atmosphere of the era in his book, *Armageddon Averted*.¹² The NASA Headquarters History Office has published a thorough history of the Shuttle-MIR program, compiling oral histories and technical documents from the American participants in this partnership.¹³ Focusing on the history of MIR during the period of the Soviet Union's decline, my research will contribute to the fields of Soviet and space history. By analyzing oral histories from direct participants in the Soviet space program, I hope to gain new insights on the more personal aspects of space travel during this time period.

¹⁰Brian Harvey, *Russia in Space: The Failed Frontier?* (Chichester, UK: Praxis Publishing, 2001).

¹¹Anatoly Zak, *Russia in Space: The Past Explained, The Future Explored* (Griffin Media, 2014).

¹²Stephen Kotkin, *Armageddon Averted: The Soviet Collapse, 1970-2000*, 2nd ed. (London, UK: Oxford University Press, 2008).

¹³"Welcome to Shuttle-Mir," *NASA Headquarters History Office*, September 2001, <https://history.nasa.gov/SP-4225/toc/welcome.htm>.

Launching in February 1986, the space station MIR constituted the logical next step of the Soviet Union's "relentless presence in outer space."¹⁴ With a core module structured similarly to that of the station's predecessor, Salyut-7, MIR "embodied everything that [engineers] had learned previously," while symbolizing a "new beginning for Soviet space stations."¹⁵ As spaceflight historian Philip Baker describes, "[MIR] was designed with long-duration space flight in mind, and offered a level of comfort not seen on a space station since Skylab."¹⁶ Indeed, in preparation for the long months cosmonauts would endure in orbit, "cabins were built to give the cosmonauts a bit of privacy. Each cabin had a berth on one wall, a folding table and a porthole to view the Earth, the stars and the darkness."¹⁷ In 1991, when the crews of Soyuz TM-12 and Soyuz TM-13 lived in orbit, MIR boasted four modules including the core structure, as seen in Figure 2.¹⁸ By 1997, the space station had expanded to a grand total of seven individual modules.¹⁹

A scientific laboratory, multinational classroom, and an orbital outpost all in one, MIR is a name that reflects its multiple functions. Filled with "meaning, feeling, and history," the Russian word *mir* can signify *world*, *village*, or *peace* in Russian.²⁰ "Certainly the entire world is literally at the feet of the Russian cosmonauts, not just for short episodes as we

¹⁴Philip Baker, *The Story of Manned Space Stations* (Chichester, UK: Praxis Publishing, 2007), 79.

¹⁵Ibid.

¹⁶Ibid., 80.

¹⁷Giovanni Caprara, *Living in Space: From Science Fiction to the International Space Station*, trans. David Climie (Buffalo, NY: Firefly Books, 2000), 112.

¹⁸This is what the MIR station looked like during the second half of Sergei Krikalev's ten-month stay. The Soviet flag shown here will be referenced further in future paragraphs.

¹⁹Baker, *The Story of Manned Space Stations*, 86.

²⁰Frank Culbertson, "What's in a Name?" *NASA Headquarters History Office*, October 3, 1996, <https://history.nasa.gov/SP-4225/documentation/mirmeanings/meanings.htm>.

experience on [the] shuttle, but continuously, daily, seamlessly,” writes Shuttle-MIR project coordinator Frank Culbertson in his 1996 essay, “What’s in a Name?”.²¹ Comparing the long-duration missions of cosmonauts aboard MIR with the shorter, meticulously-planned Shuttle missions, Culbertson first ascribes the name *MIR* to the station’s continual position above the Earth. Later on, Culbertson cites the historical meaning of a *mir*: a peasant “commune where all the local people lived in close or communal proximity to better share...limited resources.”²² Viewing the space station through this historical and linguistic lens, Frank Culbertson reflects on the similarities between the *mir* commune and the MIR station: “[Both represent]...a gathering of people with common goals and values in a place where they [have] a better chance of surviving, living a productive life, and succeeding as a group.”²³ The very role of MIR in the Shuttle-MIR project emphasizes the third meaning of the station’s name: *peace*. In a post-Cold War world where the United States stood victorious and the Russian Federation tottered on shaky legs, this collaboration between the formerly rival space programs helped to ease U.S.-Russian relations, if only in the cosmic sphere. All these meanings aside, MIR can best be understood through its significance to its occupants: *home*.²⁴

Intriguingly, Sergei Krikalev was never supposed to stay longer than five months on MIR. His mission itself marked a casualty of the Soviet Union’s collapse.²⁵ As nationalist movements swept through the USSR in 1991, the Soviet space program’s main launch site, the Baikonur Cosmodrome, “ended up inside the newly independent state of Kazakhstan.”²⁶ Consequently, “thousands of military officers, many of

²¹Ibid.

²²Ibid.

²³Ibid.

²⁴Anatoly Artsebarsky, interview by author, Houston, October 14, 2019.

²⁵Harvey, *Russia in Space: The Failed Frontier?*, 30.

²⁶Zak, *Russia in Space: The Past Explained, The Future Explored*, 10.

them ethnic Russians, became instant refugees without ever leaving their homes.”²⁷ Embracing the novel economic opportunities that accompanied the collapse of the Communist system, Kazakhstan demanded that the space program pay rent in order to continue to use the cosmodrome. The moribund Soviet Union, strapped for cash, negotiated a deal: in exchange for a reduction in rent, the next Soyuz rocket would fly to MIR with a Kazakh cosmonaut on board.²⁸ Launching in October along with commander Aleksandr Volkov and Austrian researcher Franz Viehböck, Kazakh cosmonaut Toktar Aubakirov took the seat that had previously been assigned to a Russian flight engineer, Aleksandr Kaleri, who had been due to relieve Sergei Krikalev as the resident flight engineer on MIR. Now, with two visiting cosmonauts on board who planned to only spend one week in space, Krikalev felt obligated to remain in orbit for an extra mission to ensure the upkeep of the station.²⁹

On October 10, 1991, Toktar Aubakirov and Franz Viehböck returned to Earth along with Anatoly Artsebarsky while Krikalev spent an additional five months on MIR with Aleksandr Volkov.³⁰ Although “the American media, unwilling to let the truth stand in the way of a good story, declared the crew of the Mir space station to have been abandoned by the empire which launched them into space,” Krikalev and Volkov voluntarily continued their routine work despite the growing political unrest in the Soviet Union.³¹ On December 25, 1991, Mikhail Gorbachev signed the official documents dissolving the USSR. Spinning around the rapidly-changing planet sixteen times a day, “[Krikalev]...was suspended in space

²⁷Ibid.

²⁸Caprara, *Living in Space: From Science Fiction to the International Space Station*, 117.

²⁹Ibid.

³⁰Harvey, *Russia in Space: The Failed Frontier?*, 30.

³¹Zak, *Russia in Space: The Past Explained, The Future Explored*, 11.

as his world fell apart.”³² The only humans not on the planet at that time, Krikalev and Volkov watched from the windows of their orbiting laboratory as their nation collapsed below.

Propelling its populace into a new era of cultural confusion and economic chaos, the fall of the Soviet Union in 1991 represented an end to the nation’s “sphere of influence in Europe,” as well as any “stable political institutions” that might have eased the domestic transition to a capitalist economy.³³ Stephen Kotkin states that in the post-war USSR, “a strong allegiance to socialism - understood as state responsibility for the general welfare and social justice - remained very much a part of ordinary people’s worldview, confirmed by such facts as the near impossibility of being evicted from their state-provided apartments, whatever the circumstances.”³⁴ As Russians saw the disappearance of the state that had supported them for nearly seven decades, many experienced a unique sense of cultural loss and nostalgia. Every great Soviet accomplishment, from the Allied victory in World War II to the launch of Yuri Gagarin, had been achieved by a Socialist system that now ceased to exist. After 1991, the populace of the new Russian Federation languished hopelessly in a “ten-time-zone Russian rust belt, whose combination of economic deadweight and scavenging opportunities defined the decade of the 1990s.”³⁵

Like many of his compatriots, Anatoly Artsebarsky viewed the collapse of the USSR as a tragedy of political instability and cultural loss. When asked what he considers to be his greatest achievement, Artsebarsky did not cite his voyage to the cosmos; instead, he “feels proudest of the

³²Fabio Squillante, “The man who was suspended in space as his world fell apart,” *Vancouver Sun*, April 11, 1992, Proquest (243366346).

³³William I. Hitchcock, *The Struggle for Europe: The Turbulent History of a Divided Continent, 1945 to the Present* (New York, NY: Anchor Books, 2004), 378.

³⁴Kotkin, *Armageddon Averted: The Soviet Collapse, 1970-2000*, 44.

³⁵*Ibid.*, 117.

day [he] became a colonel in the Air Force.”³⁶ His devotion to his nation greatly influenced his perspective on the Soviet Union’s fall, as the patriotic cosmonaut even attempted a political statement from outer space in the summer of 1991. Mission commanders had tasked Artsebarsky and Krikalev with the construction of a fifteen-meter structure on top of the *Kvant 1* module, called the *Sofora*.³⁷ Intended as a means to “effectively control the growing [orbital] complex,” this metallic girder, constructed piece by piece over the course of four EVAs, effectively symbolized the strength of the contemporary Soviet space program.³⁸ During his final EVA on July 27, Artsebarsky hoisted a meter-long Soviet flag to the top of the *Sofora*, setting a record for the highest-flying [Soviet] banner. In hindsight, Artsebarsky’s raising of the Soviet flag from the MIR space station, one of the most lauded Soviet technological achievements at that time, darkly foreshadows Yeltsin’s raising of the Russian flag from a T-80 tank less than a month later.³⁹ This coup against Mikhail Gorbachev would play an important role in hastening the Soviet leader’s fall from power, as well as the disintegration of the USSR itself. When asked about

³⁶Artsebarsky, interview.

³⁷Ibid.

³⁸Harvey, *Russia in Space: The Failed Frontier?*, 28.

³⁹S.K. Au-Yeong, “Meet Russia’s T-80 Tank (One of the Worst Tanks on Planet Earth?),” *The National Interest*, December 6, 2018, <https://nationalinterest.org/blog/buzz/meet-russias-t-80-tank-one-worst-tanks-planet-earth-37982>.

The T-80 tank, first produced in 1976, was at first lauded as a great innovation in military technology. However, like the MIR space station, the T-80 tank later developed a negative reputation among both experts and the public. The catastrophic events that occurred aboard MIR in 1997, from a life-threatening oxygen fire to a collision with a *Progress* resupply ship, contributed to the space station’s reputation as a complete disaster. Equally failing in the post-Soviet era, the once-praised T-80 was found to have multiple technological design flaws, including a propensity to violently explode when hit, during the First Chechen War of 1994. I am unsure what this says about the strength of the Soviet engineering programs of the 1970s and ‘80s, but it certainly illustrates the fall from grace of the USSR’s many technological achievements.

his personal motivations behind his raising of the flag, Artsebarsky denied any pressure from desperate bureaucrats anxious to garner faith in a decaying nation. Instead, the cosmonaut described his deep admiration for the Soviet state. “Just as the Americans planted their flag on the Moon,” said Artsebarsky, “I wanted to mark [the Soviet Union’s] achievement in constructing the tallest structure on a space station.”⁴⁰

At the climax of political and economic frustrations in the USSR, Artsebarsky, a devoted Communist raised in the Ukrainian Socialist Republic, carried the Soviet banner to MIR not only on his own accord, but also without the knowledge of his superiors. As he prepared for launch in Baikonur, the cosmonaut asked his friends to buy him a Soviet flag from a local shop. Even though the silk banner “was not made specifically for weightlessness,” Artsebarsky “hid the flag inside [his] spacesuit during the launch, and by the time [he] unfurled it in orbit, nobody scolded [him].”⁴¹ This independent manifestation of Soviet national identity can be used to examine how patriotism affected the cosmonaut’s perceptions of the fall of the Soviet Union from outer space. Once aboard MIR, Artsebarsky, shown with the flag in Figure 3, finally revealed his patriotic plan to Mission Control.⁴² In response, one of the flight directors switched from the Russian language to Ukrainian as he asked the cosmonaut if he would be flying the “blue and gold flag” of Ukraine. “No,” replied Artsebarsky; “It will be our Soviet flag.”⁴³ The flight director “nodded, and granted permission to attach the flag to the *Sofora*.”⁴⁴ This exchange shows that even as regional nationalist movements spread across the USSR in 1991, national minorities in the space program felt more loyal to the Soviet state than to the idea of ethnonational independence. As the

⁴⁰Artsebarsky, interview.

⁴¹Artsebarsky, interview.

⁴²*Out of the Present*, directed by Andrei Ujiča, 00:19:36.

⁴³Artsebarsky, interview.

⁴⁴Ibid. A photograph of the Soviet flag flying on MIR can be referenced in Figure 2.

“pride and glory of the Soviet Union,” the “pioneering [Soviet] space program,” served not only as a source of national patriotism, but also as an indicator that ordinary citizens could one day achieve the utopian goals of Communism.⁴⁵ Cosmonauts, engineers and flight directors thus enjoyed heroic status within the Soviet Union, with Gorbachev even praising the space program in 1987 as proof that “Lenin’s dream of making our State a great industrial power has come true.”⁴⁶ “I just hope for stability in our nation,” Artsebarsky murmured as he raised the Soviet banner to the top of the *Sofora*.⁴⁷ As Artsebarsky turned to climb down from the fifteen-meter girder, a cooling mechanism inside his spacesuit malfunctioned, and his visor fogged over.⁴⁸ Sergei Krikalev had to carefully guide the blind cosmonaut back down to the hatch, and both men hoped in vain that the USSR would not lose sight of its future.⁴⁹

Hailing from Austria, Franz Viehböck launched to MIR in October 1991 with a week’s worth of biomedical experiments. Funded in full by an Austrian scientific research organization, Viehböck’s flight gave the Soviet space program a monetary boost as the USSR’s budget tightened from economic restructuring.⁵⁰ When asked about his experience in the Soviet space program in such a politically chaotic era, Viehböck described “how interesting it was to see how the system really broke down, and how it affected both local people [in Baikonur] and people on the [MIR] project.”⁵¹ The Austrian’s unemotional recollection of the Soviet collapse from space demonstrates the importance of how the Western world viewed

⁴⁵Zak, *Russia in Space: The Past Explained, The Future Explored*, iv.

⁴⁶Harvey, *Russia in Space: The Failed Frontier?*, 24.

⁴⁷Artsebarsky, interview.

⁴⁸*Out of the Present*, directed by Andrei Ujiča, 00:33:26.

⁴⁹Ibid.

⁵⁰David M. Harland, *The Story of Space Station MIR* (Chichester, UK: Praxis Publishing, 2005), 290.

⁵¹Franz Viehböck, interview by author, Houston, October 16, 2019.

this event. Without a personal stake in the fate of the Soviet Union, Viehböck experienced nothing more than an intriguing cultural exchange, heightened by the novelty of flying in space. Intriguingly, Franz Viehböck's mission was marked by the news of his daughter's birth during his absence. In his interview, he mentioned the difficulty of being away from home during such an important personal event, and cited the importance of keeping close connections to loved ones while on long-duration flights.⁵² Viehböck and Sergei Krikalev were also both absent from significant events on Earth during their stay on MIR. A further comparison of the two cosmonauts' experiences could contribute to the study of the psychological and emotional effects of long-term spaceflight.

In March 1992, a crew launched to relieve Krikalev and Aleksandr Volkov of their duties aboard MIR. Along with flight engineer Aleksandr Kaleri, whose mission had been postponed due to diplomatic conflicts with Kazakhstan, Klaus-Dietrich Flade became one of the first cosmonauts to fly into space after the collapse of the Soviet Union. As a test pilot from West Germany, Flade had experienced a more personal connection than Viehböck with Communism, his nation having neighbored the Soviet satellite of East Germany until the fall of the Berlin Wall in 1989. Thus, his perceptions of the fall of the USSR held more emotion, and even some nostalgia.⁵³ "We had a very Soviet-style mission," he explained during an interview. "After training under Gorbachev, I wish that I could have been awarded my medal [for service in the cosmonaut corps] by Gorbachev, and not Yeltsin."⁵⁴ Albeit a foreigner with few ties to the Soviet Union, Flade admired the fact that the post-Soviet training of cosmonauts did not differ greatly from the way

⁵²Ibid.

⁵³Klaus-Dietrich Flade, interview by author, Houston, October 16, 2019.

⁵⁴Ibid.

cosmonauts trained before the USSR's collapse. "They didn't reinvent the wheel," he said with a smile.⁵⁵

All in all, the cosmonauts aboard MIR during the period of the Soviet Union's decline held diverse perspectives on the fall of the USSR. Anatoly Artsebarsky, an Air Force officer for whom the Soviet Union symbolized opportunity, pride, and achievement, described a deep sense of loss as he returned to Earth just in time for Gorbachev to sign away his nation.⁵⁶ Artsebarsky's raising of the Soviet flag on MIR holds important potential for the further study of national and regional Soviet identities during this chaotic period, as he identified more with the Soviet state than with his Ukrainian roots. Unsurprisingly, the two foreign cosmonauts cited in this paper, Klaus-Dietrich Flade and Franz Viehböck, experienced a decreased intensity of emotion when faced with the dissolution of the USSR. However, both Flade and Viehböck expressed that the Soviet Union's collapse did not mark the end of an era for Russia's space program, nor was it an end to MIR itself. International partnerships such as the Shuttle-MIR program and the International Space Station (ISS) ensured the vitality of the Russian space program, allowing cosmonauts to continue to reach new heights. In fact, Sergei Krikalev would fly to orbit four more times after his extended ordeal on MIR, making history as the first Russian cosmonaut to fly on a Space Shuttle, a member of the first crew aboard the ISS, and, until June 2015, a record holder for the most time spent in outer space.⁵⁷

⁵⁵Ibid.

⁵⁶Artsebarsky, interview.

⁵⁷Sergei Krikalev spent a total of 803 days in space, launching into orbit six times over the course of his career. In June 2015, Russian cosmonaut Gennady Padalka surpassed Krikalev's record, spending a total of 878 days in orbit.

Appendix I

Figure 1. *Cosmonaut Sergei Krikalev is lifted out of his Soyuz landing capsule, March 25, 1992.* Discover Magazine, <https://www.discovermagazine.com/the-sciences/the-last-soviet-citizen>.

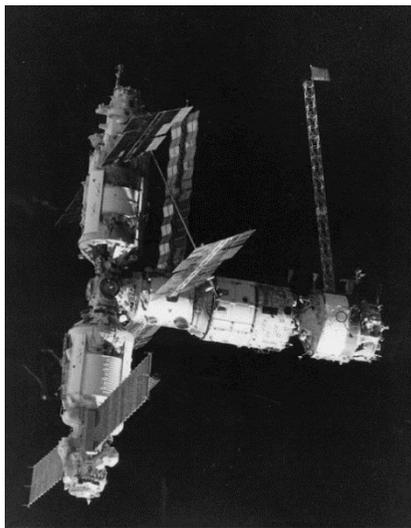


Figure 2. *A view of the MIR space station, October 1991.* Popular Mechanics, <https://www.popularmechanics.com/space/a19517/mir-space-station-30th-anniversary/>.



Figure 3. *Anatoly Artsebarsky unfurls the Soviet flag upon his arrival on MIR, May 1991. Still from “Out of the Present,” directed by Andrei Ujiča.*

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