U.S.-Soviet Handshakes in Space and the Cold War Imaginary

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The Cold War, unlike the enormously destructive war that preceded it, first emerged as an imaginary conflict. There were no tank battles, aerial bombings, formal declarations of war, or direct military clashes between the United States and the Soviet Union. Reversing the more conventional understanding of causality—from the concrete event to its representation—assumptions about the existence of a state of war between the two countries intensified their ideological and military confrontation in the late 1940s, transforming the Cold War from an imagined event (an Iron Curtain that never existed except as a metaphor from 1946 onward) into a seemingly objective reality ("Eastern Europe," the North Atlantic Treaty Organization, and the Warsaw Pact) and turning former allies into nuclear-armed enemies poised for war.[1] The terrifying next step to direct military confrontation was nearly complete when both superpowers fought proxy wars in Korea and Vietnam and faced off over Berlin and the Cuban missile crisis. But what could be imagined could also be unimagined, thereby reducing the potential for military confrontation.

This article examines the use of joint space technology programs to imagine an alternative to war. These efforts built on broader scientific exchanges and cooperation—under way between the two superpowers since the late 1950s—that had been conceived as a way to reduce tensions and create bridges across ideology.[2] In the arena of space technology, strategic military considerations had partly inspired the early development of rockets, but both sides also claimed that their space programs served the interests of scientific progress and world peace. Those claims were more than political smokescreens. Sergei

1. Masuda Hajimi, *Cold War Crucible: The Korean Conflict and the Postwar World* (Cambridge, MA: Harvard University Press, 2015).

2. For an overview of scientific exchange programs and agreements during the Cold War, see Gerson S. Sher, *From Pugwash to Putin: A Critical History of U.S.-Scientific Cooperation* (Bloomington, IN: Indiana University Press, 2019).

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Korolev, the father of Soviet rocketry, was as interested in the romance of human space exploration as in explicitly military and national goals.[3] As a Soviet brochure at the 1958 Brussels Universal and International Exhibition put it: "If humanity would once and for all abandon war and direct all its energy to the solution of peaceful scientific problems, the day when Man would set foot on the surface of the Moon and Mars would be considerably closer."[4] Meanwhile, the enabling act in 1958 that created the U.S. National Aeronautics and Space Administration (NASA) envisioned space exploration as "an arm of American diplomacy" and a vehicle for promoting international collaboration.[5] True, military imperatives and ideological competition often eclipsed visions of peaceful cooperation in the early years of space conquest, but that did not stop President John F. Kennedy from making overtures to the Soviet Union about cooperation. With Kennedy's assassination and the increasing focus on the military challenge of fighting Communism in Vietnam, collaborative efforts were largely limited to the exchange of satellite meteorological data, and even then the Soviet obsession with secrecy made additional cooperation seem unlikely, at least to many U.S. observers.[6]

Then, in the late 1960s, following a period in which cooperative efforts with the Soviet Union took a backseat to the competition to be the first to land humans on the moon, both sides again viewed cooperation as a serious possibility. Among the factors that changed attitudes was the triumphant moon landing by the U.S. Apollo spacecraft, which was accompanied by an increasing sense of waning economic resources and the need to refocus NASA on its original collaborative mission, even while finding a stopgap program

3. On the mix of motives that inspired the Soviet space program, see Asif Siddiqi, *The Rocket's Red Glare: Spaceflight and the Soviet Imagination, 1857–1957* (Cambridge, UK: Cambridge University Press, 2010).

4. *Facing the Cosmos*, brochure handed out at the USSR Section, Brussels Universal and International Exhibition, in my personal collection.

5. On the complicated and difficult attempts by NASA to realize the international, collaborative part of its mandate, see John Krige, Angelina Long Callahan, and Ashok Maharaj, eds., *NASA in the World: Fifty Years of International Collaboration in Space* (New York: Palgrave Macmillan, 2013); Matthew J. Von Bencke, *The Politics of Space: A History of U.S.-Soviet/Russian Competition and Cooperation in Space* (Boulder, CO: Westview, 1997); and Dodd L. Harvey and Linda C. Ciccoritti, *U.S.-Soviet Cooperation in Space* (Miami, FL: University of Miami, 1974).

6. John Logsdon, *John F. Kennedy and the Race to the Moon* (New York: Palgrave Macmillan, 2010). The U.S.- Soviet agreement on 8 June 1962 to exchange satellite weather data was maintained in the wake of the Cuban missile crisis. See John Krige, "Sustaining Soviet-American Collaboration, 1957–1989," in Krige, Callahan, and Maharaj, eds., *NASA in the World*, pp. 135–137.

to keep crewed spaceflight busy between the anticipated end of the Apollo missions and the new Shuttle launch system.[7] On the Soviet side was a growing commitment to low-earth-orbit docking systems and a new focus on forging scientific and technological partnerships with foreign countries—and of reaping the political benefits that those links would supposedly create. By 1970 both sides were thus considering joint missions with the adversary as a way to achieve two objectives simultaneously, pooling resources for space exploration and creating a new dynamic of peaceful cooperation between the Cold War rivals.[8] Returning to the original vision of space exploration as an international enterprise, the two sides thus set the stage for détente—the policy pursued by President Richard Nixon and General Secretary Leonid Brezhnev in the early 1970s to transcend ideological tensions and to build a relationship based on shared interests—and embarked on one of the first serious peaceful initiatives of the Cold War.[9]

The Apollo-Soyuz Test Project (ASTP), started in 1970 and completed on 17 July 1975, embodied the shift from competition and confrontation to cooperation in space and in politics. As such, it was a critical event in challenging the Cold War imaginary—a way of thinking that represented the ideological enemy as an existential threat that could be countered only with a commitment to total military preparedness and mobilization. As the 1950 National Security Council (NSC) 68 policy document stated in its conception of the USSR, Soviet leaders viewed the United States as "the principal center of power in the non-Soviet world and the bulwark of opposition to Soviet expansion . . . [and thus] the principal enemy whose integrity and vitality must be subverted or destroyed by one means or another if the Kremlin is to

7. On the post-Apollo malaise, see Alexander Geppert, ed., *Post-Apollo: Outer Space and the Limits of Utopia* (New York: Palgrave-Macmillan, 2018).

8. "Cooperation between the U.S. and USSR in Space Activities, Prospects and Opportunities," 8 April 1970, in Richard M. Nixon Presidential Library and Archives (RMNPL), National Security Study Memorandums, NSSM 70–76, Box H-162. The key Soviet docking engineer on ASTP, Vladimir Syromyatnikov, discussed in his memoirs the broader implications of the technical act of docking on the changing political and diplomatic relationships between the United States and Soviet Union. Vladimir Syromyatnikov, *100 Stories about Docking and Other Adventures in Space*, Vol. 1 (Moscow: Universitetskaya kniga, 2005), pp. 11–13. This is Syromyatnikov's own translation of his Russian-language memoir *100 Rasskazov o stykovke i o drugikh priklyucheniakh v kosmose i na zemle*, Vol. 1 (Moscow: Izd. "Logos," 2003).

9. In a three-volume set of essays on the history of the Cold War, the third volume deals with détente. Although the volume discusses science and technology as spheres of competition, it does not touch on scientific and technological cooperation. See Melvyn P. Leffler and Odd Arne Westad, eds., *The Cambridge History of the Cold War*, 3 vols. (Cambridge, UK: Cambridge University Press, 2010).

achieve its fundamental design." With such an enemy, "a despotic oligarchy" hellbent on "world domination," there could be no peace but only a permanent state of preparation for war.[10] The Soviet authorities, meanwhile, increasingly viewed the United States as an implacable foe that had essentially replaced the Nazis as a destructive force preparing for an invasion.[11] On both sides of the ideological divide, then, Cold War outlooks were stoked in the late 1940s and early 1950s by what recent scholarship has called the process of "securitization," which suggests that conceptions of security are as much social and political constructions, dependent on ideological and cultural biases, as they are the result of ongoing events or objective factors.[12] The social process of securitization—encouraged by hostile speech acts by political leaders, media representations, and objective events such as nuclear bomb tests—exploited a feeling of vulnerability that was accentuated and amplified in the Soviet case by the bloodshed of World War II, producing a state of permanent military preparedness on both sides.

ASTP countered the Cold War's stark division with images of enemies shaking hands, smiling in each other's presence, and designing a technology to enhance the security and safety of space exploration. The central goal of ASTP was to test a safety system that would allow Soviet and U.S. astronauts to survive a catastrophic failure in orbit by docking with each other and using the other's capsule as a safe haven (according to one Soviet engineer, the U.S. side was inspired in part by the 1969 Hollywood movie *Marooned*, in which a Soviet spacecraft comes to the rescue of a U.S. spacecraft in orbit).[13] Cooperation in space was, as the cosmonaut Vitalii Sevastyanov said, an escape hatch in a literal sense but also in the sense of escaping the madness of the nuclear doctrine of Mutual Assured Destruction, and the first step toward sanity and

10. "NSC-68," *Naval War College Review*, Vol. 27 (May–June 1975), pp. 51–108. On the mobilization of U.S. politics and public opinion in accordance with the image of the Soviet enemy created by NSC 68, see Steven Casey, "Selling NSC-68: The Truman Administration, Public Opinion, and the Politics of Mobilization, 1950–51," *Diplomatic History*, Vol. 29, No. 4 (September 2005), pp. 655–690.

11. For examples of anti-American poster propaganda that shaped Soviet depictions of the Cold War, with the United States increasingly represented as a new incarnation of the Nazis, see 15 "Soviet Anti-American Posters from the Cold War," *Russia Beyond*, 10 September 2018, https://www.rbth.com/history/329103-15-soviet-anti-american-posters; and "The Deployment of Soviet Satirists in the Cold War," Old Magazine Articles, http://www.oldmagazinearticles.com/article-summary/cold-war-cartoons#.XTnOyC2ZPGI.

12. Michael C. Williams, "Words, Images, Enemies: Securitization and International Politics," *International Studies Quarterly*, Vol. 47, No. 4 (December 2003), p. 514.

13. Syromyatnikov, *100 Stories*, p. 615.

security was to see each other as friends and partners rather than enemies and adversaries.[14]

ASTP was therefore a physical event—the docking of two orbiting spaceships—but it was also intended by both Nixon and Brezhnev as a way to ease the Cold War and lay out a vision of politics that included peaceful scientific and technical cooperation and the development of a technology that enhanced global security rather than threatened it. This vision, in the Soviet context, drew on the traditions of Russian cosmism, as well as the Soviet slogan of friendship of peoples, which saw the collaborative exploration of space as a common task (*obshchee delo*) that would unite people across ideology, nationality, and religion. The Russian traditions of cosmism had begun in the late nineteenth century and involved a vision of space exploration as a Russian-led effort that would unite humanity in a common struggle against disease and war. By the 1970s, the ideas of cosmism provided a planetary perspective with which many cosmonauts and Soviet space industry officials came to understand the meaning of their professional endeavors.[15] ASTP—whose most dramatic moment was the handshake in space between Aleksei Leonov and Thomas Stafford—thus helped the Soviet Union and the United States to construct an alternative to the Cold War, creating a new dynamic in superpower relations that spread outward from the scientific and technological realm and into the political, diplomatic, and social worlds.

The use of ASTP as an instrument of diplomacy and as a catalyst for détente has received little attention in either the general literature on the Cold War—which has only recently begun to address the political significance of science and technology—or in the literature on space history, which has focused mostly on the earlier space race and said little about the cooperation in space that has dominated crewed space missions since the 1970s (up to and including the International Space Station).[16] This article thus connects two

14. V. I. Sevastyanov and V. F. Priakhin, *Rescue: Avariinyi vykhod: Kosmonavtika i novoe politicheskoe myshlenie v yaderno-kosmicheskuyu eru* (Moscow: Mezhdunarodnye otnosheniya, 1989).

15. For an attempt to integrate Soviet space exploration into the cosmist traditions, see V. I. Sevastyanov and A. D. Ursul, *Era Kosmosa: Obshchestvo i priroda* (Moscow: Znanie, 1972). On cosmism, see George M. Young, *The Russian Cosmists: The Esoteric Futurism of Nikolai Fedorov and His Followers* (New York: Oxford University Press, 2012).

16. The technical details of how both sides engineered this project—on time and with few technical problems in July 1975—are ably recounted by NASA itself in the official history of ASTP, Edward Clinton Ezell and Linda Neuman Ezell, *The Partnership: A History of the Apollo-Soyuz Test Project* (Washington, DC: National Aeronautics and Space Administration, 1978). For the Soviet story of ASTP, which relies on interviews with all the key Soviet personnel, from cosmonauts and engineers to managers and scientists, see K. D. Bushuev, ed., *Soyuz i Apollon: Rasskazyvayut sovetskie uchenie, inzhenery, i kosmonavty—Uchastniki sovmestnykh rabot s amerikanskimi spetsialistami* (Moscow: Izd. Politicheskoi literatury, 1976).

previously separate spheres of study—space history and diplomatic history—to shed light on the importance of space exploration in the bigger story of Cold War diplomacy.[17]

Seen in this combined perspective, ASTP exemplifies the concept of technopolitics, which historians of technology use to explain the mutual and simultaneous construction of technological systems and new political regimes.[18] As a technopolitical system operating in the domain of international relations, ASTP involved both the design of a docking interface between the Soviet and U.S. space programs and, simultaneously, the building of an alternative, less adversarial, less militaristic, and safer relationship between the Soviet Union and the United States. Advancing an alternative to the Cold War standoff, ASTP thus involved what the historians of technology Sheila Jasanoff and Sang-Hyun Kim refer to as a "sociotechnical imaginary"—the projection of ideas about social and political progress through scientific and technological projects—that in the case of ASTP conveyed a radical new understanding of U.S.-Sovieet relations based on peaceful technical and economic collaboration.[19]

Where Pragmatism Meets Idealism

A mutually reinforcing combination of pragmatic and idealistic considerations culminated in the ASTP project. Faced with the prospects of budget cuts in the post-Apollo era, NASA Administrator Thomas Paine in March 1970 noted that NASA simply could not fund its many crewed and uncrewed missions. Cooperation would help to defray the costs of space exploration, extend the life of the Apollo technologies beyond the planned moon missions, and challenge claims that the U.S. space program was "largely a selfish effort run for purposes of national prestige and to compete with the Russians." The Apollo 8 astronaut Frank Borman, in a note to the White House in December

17. For recent works that integrate the history of science and technology into Cold War history, see Egle Rindzevicute, *The Power of Systems: How Policy Sciences Opened Up the Cold War* (Ithaca, NY: Cornell University Press, 2016); and Audra J. Wolfe, *Freedom's Laboratory: The Cold War Struggle for the Soul of Science* (Baltimore, MD: Johns Hopkins University Press, 2018).

18. On the concept of technopolitics and the simultaneous construction of engineering systems and political regimes, see Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity* (Cambridge, MA: The MIT Press, 1998).

19. On sociotechnical imaginaries, see Sheila Jasanoff and Sang-Hyun Kim, eds., *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (Chicago: University of Chicago Press, 2015).

1969, wrote that foreign cooperation would lead "hopefully to more direct financial participation from the other countries of the world," including the Soviet Union. Taking advantage of the popularity of the Apollo 8 mission, which produced the "earthrise" photograph, Nixon had made Borman his point man for floating ideas about cooperation when the Apollo hero became the first U.S. astronaut to visit the Soviet Union and its formerly secret space facilities in July 1969.[20]

Nixon also believed that closer relations with the Soviet Union in space might produce the breakthrough necessary to move beyond the Vietnam War. The United States was mired in a costly military and ideological struggle with Soviet proxies in Southeast Asia, whereas U.S. allies in Europe were imagining a new kind of relationship with their East European neighbors. West German Chancellor Willy Brandt in 1969 redirected West German foreign policy toward closer relations with East Germany and the Soviet Union with his policy of *Ostpolitik*. French President Charles de Gaulle had visited the USSR on 30 June 1966, followed by Soviet Premier Aleksei Kosygin's return visit to France on 9 December 1966. Soviet leaders were especially impressed by the French president's willingness to propose collaborative science and technology projects across a range of applications—from meteorology to space physics—and they saw the political utility of closer ties with France as a way to extend Soviet influence in Western Europe. De Gaulle's eventual successor as president, Georges Pompidou, visited the USSR when he was prime minister in July 1967, and he returned there as president in October 1970. Brezhnev, for his part, traveled to France in October 1971 to solidify the ever-expanding relationship. These visits initiated a Franco-Soviet collaboration across a broad range of science and technology fields, creating a vibrant and enduring exchange of knowledge and personnel that challenged Cold War divisions.[21] Tellingly, the former Soviet Academy of Sciences archive devoted to Soviet international collaboration in space contains far more files describing French contacts through the late 1960s and 1970s than about the "fraternal" Communist countries in Eastern Europe.[22]

20. Memorandum from Thomas Paine to the White House, 26 March 1970, in RMNPL, OS Outer Space Box 1, 1969–1970; and Memorandum from Frank Borman to Peter Flanigan, 2 December 1969, in RMNPL, OS Outer Space Box 1, 1969–1970.

21 A bilateral agreement of cooperation signed in Moscow on 30 June 1966, after preparatory discussions during Soviet-French meetings in Paris in October 1965, is stored in Archive of the Russian Academy of Sciences (ARAN), Fond (F.) 1678, Opis' (Op.). 1, Delo (D.) 108m, List (L). 14. Moscow's satisfaction with French willingness to cooperate is evident in other documents in ARAN, F. 1678, Op. 1, D. 108m.

22. On the deepening scientific and technological collaboration between the Soviet Union and France, see the documents in ARAN, F. 1678, Op. 1, D. 182, Ll. 1–46. A document from 1974 specifically

The French-Soviet emphasis on scientific and technological cooperation deeply impressed Nixon, who, like Brezhnev and the French leaders, conceived of it as a fillip for a broader relaxation of tensions. An NSC briefing paper for Nixon underscored the point:

> In this connection the [Soviet and French] sides referred to the important achievements in cooperation in the fields of space exploration, peaceful uses of atomic energy, as well as high energy physics, in particular the installation of a French laser reflector on the moon surface, the commissioning of the French bubble chamber Mirabelle at the Soviet proton accelerator in Serpukhov, [and] the Soviet-French contact on enriching French natural uranium in the Soviet Union.[23]

Nixon's policies of détente, which began with a focus on scientific and technological cooperation, were thus influenced by France's approach. The French, along with their Soviet partners, viewed science and technology as supposedly objective activities that could transcend the zero-sum mentality of the Cold War and help to ease tension.[24] Their shared technocratic mindset provided a convenient cover that allowed otherwise hostile powers to meet in an atmosphere of reduced ideological and political tensions, providing an alternative to more traditional diplomacy—an alternative based on the assumption "that actual or potential conflict can be resolved or eased by appealing to common human capabilities to respond to good will and reasonableness."[25]

For Soviet leaders, meanwhile, cooperation with France was just one piece of a broader program of cooperation that gained momentum in the late 1960s and coincided with the growing U.S. interest under Nixon in enacting the rhetoric of space collaboration. In the mid-1960s the Soviet Union created a formal institutional mechanism to connect the formerly secretive Soviet space industry to open, cooperative ventures with Communist and non-Communist partners. Known as Interkosmos, the program dovetailed with cosmist notions about the common, unifying task of space exploration as well as long-standing traditions of Soviet internationalism, based on the idea of using science and technology to advance both Marxism-Leninism and the human condition. It

referring to cooperation in nuclear energy, space exploration, and the development of satellite color television can be found in ARAN, F. 1678, Op. 1, D. 307, L. 10.

23. The NSC memorandum, dated 27 October 1971, is stored in Helmut Sonnefeldt Papers in RMNPL, NSC HAK Files-Europe-USSR Box 67, 1 of 2.

24. Isabelle Gourne, "Dépasser les tensions Est-Ouest pour la conquête de l'espace: La coopération franco-soviétique au temps de la Guerre froide," *Cahiers SIRICE*, Vol. 2, No. 16 (2016), pp. 49–67.

25. William D. Davidson and Joseph V. Montville, "Foreign Policy According to Freud," *Foreign Policy*, No. 45 (Winter 1981–1982), p. 155.

also was an expression of soft power and second-track diplomacy that relied on co-opting rather than coercing enemies and friends (as the Soviet Union had done so disastrously with the invasion of Czechoslovakia in 1968).[26] The idea for Interkosmos was laid out in a letter Kosygin sent in April 1965 to fellow Communist countries about scientific collaboration.[27] The organization was set up under the Soviet Academy of Sciences on 12 April 1967, International Cosmonaut Day. Interkosmos had broad responsibility for coordinating negotiations with foreign partners as well as Soviet design bureaus in the Soviet aerospace industry to conduct joint crewed missions and scientific experiments. By the mid-1970s it handled partnerships with Communist and non-Communist countries (e.g., France), and in November 1975 Interkosmos invited the United States to participate in the Soviet Cosmos satellites devoted to biology and medicine.[28]

Soviet officials were also eager to build on another precedent; namely, the 1967 UN Outer Space Treaty's formal declaration of space as a demilitarized zone.[29] Immediately afterward, Mstislav Keldysh, the Soviet Academy of Sciences president who played a key role in civilian Soviet space ventures, began floating the idea of collaboration in the Western press, inspired by the example of the Antarctic Treaty of 1961, which grew out of the International Geophysical Year of 1957 and had set aside the Antarctic as a demilitarized region devoted exclusively to international science.[30] Trained as a mathematician, Keldysh in the late 1960s had increasingly served as an international spokesperson for the civilian and peaceful uses of science and space collaboration, replacing Anatolii Blagonravov in this role. Following Korolev's untimely death in 1966, Soviet space managers remembered Keldysh's role in the history of Soviet space exploration.[31] With the Soviet space industry deprived of one of its most effective advocates for funding and political support, Keldysh was enlisted to reorient Soviet space exploration away from the super-secret

26. Joseph S. Nye, "Public Diplomacy and Soft Power," *ANNALS of the American Academy of Political and Social Science*, Vol. 616, No. 1 (March 2008), pp. 94–109.

27. Kosygin's memorandum, 13 April 1965, in ARAN, F. 1678, Op. 1, D. 108m, L. 13.

28. V. I. Kozyrev and S. A. Nikitin, *Polety po programme 'Interkosmos'* (Moscow: Znanie, 1980), pp. 9–10, 64; and Krige, "Sustaining Soviet-American Collaboration, 1957–1989," p. 143.

29. Bushuev, ed., *Soyuz i Apollon*, p. 15. Both the United States and the Soviet Union had signed the treaty.

30. "Soviet Space Aide Interested in Joining with U.S.," *The New York Times*, 13 October 1967, p. 1. For a general history of Antarctica, see Gordon Elliott, *A History of Antarctic Science* (Cambridge, UK: Cambridge University Press, 1992).

31. On the importance of Keldysh following Korolev's death, see A. S. Eliseev, *Kaplya v more* (Moscow: Aviatsiya i kosmonavtika, 1998), pp. 100–101.

world of Soviet missile command, creating public missions for the vast infrastructure of Soviet space technology and in the process giving the Soviet Academy of Sciences a visible and important say in civilian space exploration and diplomacy.[32]

Technically, Keldysh was the Soviet Union's most important scientific bureaucrat, but in fact he was acting as a diplomat and politician, using the authority of his scientific position to reach out to the ideological enemy just as the astronaut Borman, following Apollo 8, was essentially working for Nixon on diplomatic assignment to the Soviet Union. Equally important, Keldysh also acted as an intermediary between Soviet political leaders and Soviet space industry engineers, many of whom were eager to learn about foreign space capabilities and work with their American colleagues. As Aleksei Eliseev, the Soviet flight director of ASTP, observed, Keldysh prepared Brezhnev and other political leaders for "the psychological reorientation" of sharing technology and working with the ideological enemy, skillfully arguing for the political utility of technological cooperation and countering resistance from the Soviet military-industrial complex to the various efforts at declassification that would be necessary to make joint missions possible.[33]

The "Chief Theoretician of Space," as Keldysh was known, thus urged joint projects with Communist and non-Communist countries, heading Soviet delegations to the United Kingdom, France, and Japan, where he described space exploration and science as something that "transcends nationalism."[34] In August 1969 he told Borman he was interested in bilateral agreements to limit the development of space-based offensive strategic weapons. Keldysh (who in 1973, perhaps aware that Korolev had died at the hands of an incompetent Soviet surgeon, traveled to the United States for a six-hour heart operation performed by the well-known cardiac surgeon Michael DeBakey) suggested the joint tracking of space probes and the "complete advance publication of all scientific probes, manned and unmanned," as well as joint meetings of cosmonauts and training personnel. Keldysh thought the latter was particularly important, given "the public awareness of the cosmonauts

32. Paine to Keldysh and the Academy of Sciences, 4 September 1970, in Library of Congress (LOC), Thomas O. Paine Papers, Box 25, Folder 4; and Paine to Keldysh and the Academy of Sciences, 15 September 1970, in LOC, Thomas O. Paine Papers, Box 25, Folder 4. Various items of correspondence between NASA and Keldysh in 1970 illustrate the active role Keldysh played in connecting the formerly secret Soviet space program to the outside world.

33. Eliseev, *Kaplya v more*, p. 100.

34. "Unorthodox Soviet Science Chief Mstislav Vsevolodovich Keldysh," *The New York Times*, 19 October 1967, p. 32; "Scientific Internationalist: Mstislav Vsevolodovich Keldysh," *The New York Times*, 19 July 1969, p. 10; and "Soviet Reveals Keldysh Is Chief Space Planner," *The New York Times*, 31 May 1971, p. 32.

and astronauts," who would symbolize the new relationship between the superpowers. Borman, in a letter to National Security Adviser Henry Kissinger, said that Keldysh had told him "the publicity focused on cosmonauts and astronauts looking at common problems in a field that offers no direct threat to either country's national interests would be favorable and conducive to closer relations in all fields."[35]

As for the idea of a cosmonaut and astronaut flight, Nixon instructed Borman to explore the possibility of a joint mission and to emphasize points Nixon had made in public speeches since his inauguration in January 1969. In those speeches and elsewhere Nixon had described the Apollo missions as a common human achievement devoted to scientific progress and "all mankind," emphasizing NASA's role in the spirit of the international collaborative mandate of the 1958 Space Act. Although many in the Nixon administration had initially advised against Borman's trip to the Soviet Union, the NASA official went there in July 1969 and told the president afterward that he had encountered a "tremendous response to my assertion that the space program may eventually draw people of the earth together. References to the fact that national boundaries and political differences were not visible from 240,000 miles inevitably drew enthusiastic applause." Borman also received an enthusiastic response to the idea of managing moon stations in the same way as Antarctica—as an international scientific collaborative project.

In a memorandum to Peter Flanigan of the White House staff, Borman emphasized that "the time to take the initiative in this field is ripe." Although he expressed doubt that the Soviet Union was ready for such a venture—a belief that proved to be incorrect—he said that keeping lines of communication open was the best strategy. By 1970, political leaders on both sides had come to see cooperation in science and technology—in particular, space exploration, which supposedly was a neutral sphere—as an ideal way to begin moving toward what became known as "détente" in the United States and "peaceful coexistence" in the Soviet context.[36] As the lead docking engineer on ASTP, Vladimir Syromyatnikov, wrote in his memoirs, referring to the supposedly non-ideological nature of technology: "A rocket delivers a satellite not only beyond the atmosphere and Earth's gravity, but also beyond political

35. Frank Borman to Henry Kissinger, 5 August 1969, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

36. Frank Borman memorandum to Peter Flanigan, 2 December 1969, WHCF FO 8 International Travel NASA memorandum to the White House, 24 January 1969, and Borman to Nixon, 6 March 1969, all in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

activity."[37] A consensus thus seemed to be emerging that if the United States and the Soviet Union were to be at peace with each other, the new relationship would have to begin in a technical area seemingly divorced from ideological entanglements. The high-profile successes of the Apollo missions and the Soviet space program fit the bill, appearing to the political establishments of both countries as leading catalysts of détente.

Earthrise and the New Imaginary

The experience of space flight, meanwhile, had triggered the emotional response that allowed many of the military officers in both space programs to think about peaceful initiatives.[38] During the first space walk in 1965, Leonov said he experienced a "rebirth" that made him aware that "earthlings are members of one family" and that space exploration should solve "scientific problems having purely peaceful purposes." Recounting his experience before the United Nations (UN) in 1968, he said that space flight would be crucial in "expanding the point of view of people" and in overcoming "psychological and social barriers between people."[39] The Apollo astronaut Russell Schweickart had a similar response. "By going up into space and back down, we were able to leapfrog the normal barriers which exist to touch and experience each other directly. This magic must be shared."[40] And indeed it was. The view of the earth from space—the "earthrise" image from Apollo 8 on Christmas Eve 1968, the same view cosmonauts had experienced since Yurii Gagarin's first trip into space in 1961—was splashed across the front pages of newspapers and shown on television in artistic representations, and on the cover of

37. Syromyatnikov, *100 Stories*, p. 373.

38. I explore the attempts by astronauts and cosmonauts to use space for peaceful purposes in the 1980s in Andrew Jenks, "Transnational Utopias, Space Exploration and the Association of Space Explorers, 1972–85," in Alexander Geppert, ed., *Limiting Outer Space: Astroculture after Apollo* (London: Palgrave-Macmillan, 2018), pp. 209–235.

39. "Rebirth Conveyed by 'The Man Who Walked in Space,'" *Evening Bulletin*, 17 May 1965, p. 1; A. A. Leonov, "The First Egress into Space" (paper presented at the XVI International Astronautics Congress, Athens, Greece, 13–18 September 1965), in NASA Historical Reference Collection, LEK 1/10/3, Leonov (Post Voskhod 2 to ASTP); A. A. Leonov, "Vospriyatie prostranstva v kosmose: Konferentsiya Organizatsii Ob'edinennykh Natsii po issledovaniyu i ispol'zovaniyu kosmicheskogo prostranstva v mirnykh tselyakh," 14 June 1968, in NASA Historical Reference Collection, LEK 1/10/3, Leonov (Post Voskhod 2 to ASTP); and "Astronauts Find God in Space," *San Diego Union*, 19 May 1973, p. 9.

40. "Interview: Georgii Beregovoi," *Space World*, March 1985, p. 15; and Schweickart to James Hickman, 6 June 1983, in Hoover Institutions and Archives, Association of Space Explorers, Folder 6.

the *Whole Earth Catalog*, where it became the banner of a newly emerging environmental and planetary consciousness.[41]

Those images pushed people's imaginations beyond the boundaries etched on political maps, just as earlier technological innovations had helped people imagine the modern nation-state. Benedict Anderson pointed to the role of print capitalism and newspapers in helping people to imagine themselves as members of the modern nation-state. The nation was a community of millions of people who physically lived far apart but who nonetheless imagined themselves—through newspapers, textbooks, and images on maps—as sharing a common national identity. The anthropologist Mary Louise Pratt has suggested that new European technologies of travel and conquest, starting in the eighteenth century, combined with new ways of representing distant corners of the globe to produce a planetary consciousness, a "picture of the planet appropriated and redeployed from a unified, European perspective."[42] Space exploration and satellite imagery similarly advanced visions of a global community united by a shared commitment to peace, science, and the preservation of the planet. The transnational individual, whose identity emerged from a cosmic perspective, was thus a byproduct of the Space Age and a direct challenge to Cold War images in Soviet propaganda about the United States or in NSC 68's depiction of the Soviet Union. In the same way that newly emerging national identities in the nineteenth century had made the modern nation-state possible, so, too, had new transnational communities given birth, first in space and then on earth, to a new kind of person: the post–Cold War subject, conceived in an act of peaceful scientific and technological collaboration.[43]

Several factors thus converged to encourage a policy shift toward space cooperation: the earthrise image from Apollo 8, the ever-deepening Franco-Soviet collaboration, Soviet eagerness to cooperate, and, finally, bipartisan support for collaboration at a time in U.S. politics when bipartisanship was considered desirable and feasible. On 23 January 1969, Senator J. William Fulbright wrote to Nixon that the image of earthrise had "made people everywhere acutely aware of the reality that this is indeed one world." The senator wanted Nixon to "capitalize on that spirit by taking steps toward closer

41. Robert Poole, *Earthrise: How Man First Saw the Earth* (New Haven: Yale University Press, 2008), p. 8.

42. Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (New York: Verso, 1991); and Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (New York: Routledge, 1992), p. 36.

43. Jenks, "Transnational Utopias," p. 214.

cooperation with the Soviet Union in future space activities." Fulbright thought it unfortunate that national competition had driven space exploration. "There are already all too many areas where our interests and those of the Soviet Union conflict." He noted that both sides, with the International Space Treaty of 1967, had formally rejected

> the use of outer space for military purposes. . . . The beginning of your Presidency, coupled with the recent successes of Apollo 8 and Soyuz-4 and 5, make this an especially appropriate time for new approaches to the Soviet Union concerning closer cooperation in space activities. I am sure that the world would applaud such a move on your part.[44]

Fulbright's point was echoed in letters to Nixon from other major national figures of both parties, including Pennsylvania Governor William Scranton, who thought that the Apollo successes offered an ideal opportunity to display "American leadership . . . in advancing technology and understanding," along the lines of Dwight Eisenhower's Open Skies proposal as well as the Communications Satellite Act of 1962, which offered U.S. "satellite know-how to world communications."[45] Right before Nixon assumed the presidency, he received a memorandum that claimed that the Apollo successes had bolstered the national image and in so doing had also improved the U.S. "international negotiating position" and provided a potentially unifying goal, internationally and domestically, at a time of increasing social tensions between races, countries, and generations.[46] Meanwhile, a bipartisan congressional delegation called the "Members of Congress for Peace through Law" sent Nixon a letter in October 1970 echoing Keldysh's emphasis on the 1967 Outer Space Treaty, which committed both the United States and the Soviet Union to make space "the province of all mankind." Nixon responded warmly to the congressional delegation and indicated that he would not hesitate to follow their advice, which dovetailed with Brezhnev's own wish to be remembered in world history as a "man of peace."[47]

44. J. William Fulbright to Richard Nixon, 23 January 1969, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

45. William Scranton to Nixon, 20 August 1969, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

46. White House memorandum on the National Conference of Aerospace Companies, 8 December 1968, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

47. "Members of Congress for Peace through Law" to the White House, 1 October 1970, in RMNPL Research Files, FG 221-18 Space 1969–1970; and Donald J. Raleigh, "'Soviet Man of Peace': Leonid Il'ich Brezhnev and His Diaries," *Kritika: Explorations in Russian and Eurasian History*, Vol. 17, No. 4 (Fall 2016), pp. 837–868.

The Fig Leaf of Scientific Objectivity

The Soviet Union's willingness to cooperate surprised many U.S. officials and ultimately challenged their assumptions about the Cold War. Even as late as July 1970, just half a year before the signing of bilateral space exploration agreements that led to ASTP and helped usher in the broader policy of détente, Kissinger had expressed doubts about the potential for cooperation, noting that "the prospects for expanding cooperation with the Soviets, in contrast with other countries such as Germany, continue to be limited." The Soviet space program, he argued, was "controlled by the military and there is undoubtedly great reluctance within the leadership to risk compromise of military space programs."[48] An NSC memorandum prepared in April 1970 noted,

> We doubt that the Soviets will readily undertake substantial programs of space cooperation with us in the near future. Because of U.S./USSR differences . . . they probably wish to avoid direct cooperation with the U. S. Further, their program is encumbered by security to a far greater degree than our own.[49]

NASA Director Paine persisted, however, sending a letter to Keldysh in July 1970 (against the recommendations of the Pentagon) in which he invited two Soviet engineers to examine U.S. docking technology in Houston. He reiterated that he had Nixon's authority to negotiate directly with the Soviet Union.

> If we indeed can agree on common systems, and I foresee no technical difficulty, we will have made an important step toward increased safety and additional cooperative activities in future space operations. This is particularly timely in my view as we proceed toward the initial experiments leading to the orbiting space station.[50]

Keldysh, for his part, made clear that he also had the support of Soviet leaders in negotiating a collaborative project. In response to Paine's July letter, he urged his NASA counterpart to accept a final agreement for a docking project:

48. Kissinger memorandum to Nixon, 6 July 1970, in RMNPL Research Files, OS 6-1-70 to 7-7-70.

49. "Cooperation between the U.S. and USSR in Space Activities, Prospect and Opportunities," 8 April 1970.

50. Thomas Paine to Mstislav Keldysh, 31 July 1970, in RMNPL Research Files, WHCF EX OS-3.

> I want to assure you that the leadership of the USSR Academy of Sciences understands the entire importance and timelines of this problem. There is no doubt that a positive solution of this question would constitute an important contribution in the interests of world science and the progress of all mankind.[51]

He reiterated that the Soviet Union was ready to enter into final talks immediately and form technical working groups to work out the details. Behind the scenes, in October 1970, Soviet space officials were developing several docking proposals with their U.S. counterparts. Keldysh impressed NASA's Robert Gilruth, director of human spaceflight, as a "powerful" and "bright" leader who was determined to "make the project a reality. Keldysh went out of his way to treat us Americans well, thus showing his subordinates that he and his superiors were squarely behind the effort." NASA's Arnold Frutkin described Keldysh as "extremely intelligent, very constructive, very sensitive, and responsive to our requirements, and very forthright in putting his own problems on the table." Keldysh, who "seems head and shoulders" above other Soviet space managers who had dealt with U.S. officials, told NASA administrators that he was also facing budgetary constraints and that collaborative projects were essential to maintaining and expanding on the gains made by both space programs.[52]

As it became apparent that Moscow was serious about cooperation, the real challenge proved to be internal to the U.S. national security state.[53] Concerns about security threats grew out of deeply embedded attitudes that space was a territory to be conquered for national power and democratic values, despite the collaborative mandate of the Space Act of 1958. The Department of Defense was against collaboration of any sort, reasoning that it would be a waste of time at best and a dangerous giveaway of technology at worst. The Pentagon's recommendation in the summer of 1970, regarding cooperation with the Soviet Union, was to "cold-shoulder the Soviets because they have

51. Keldysh to Paine, 11 September 1970, in RMNPL Research Files, NASA Historical Reference Collection, WHCF EX OS-3.

52. Ibid.; "Gilruth, Robert K. (Bio)," 1/6/2, 25 March 1975, interview by E. C. Ezell, and "Moscow Negotiations, January 1971," Memorandum, in NASA Historical Reference Collection, ASTP Inception-1971. Soviet conceptions of possible docking systems as of late 1970 are laid out in documents in ARAN, F. 1678, Op. 1, D. 207.

53. Elsewhere I examine in more detail the challenges posed for both sides in the ASTP project by national security restrictions and secrecy. Surprisingly, the greatest barriers to opening up regimes of secrecy often came from the United States rather than the Soviet Union. See Andrew Jenks, "Securitization and Secrecy in the Late Cold War: The View from Space," *Kritika: Explorations in Russian and Eurasian History*, Vol. 21, No. 3 (2020), pp. 659–689.

not been responsive to our past efforts seeking to develop a closer working relationship."[54]

It is surprising, then, that Nixon was able to overcome opposition and reach the historic agreements that culminated in ASTP. Partly, the outcome was a result of the Soviet Union's unexpected willingness to cooperate. But it also had to do with the allure of scientific objectivity, which suggested that science and technology transcended ideological and national borders. The technocratic way of thinking reduced ideological and political tensions and provided an alternative to traditional diplomacy.[55] The Franco-Soviet science and technology agreements of 1966, which produced a deep and sustained collaboration in multiple fields, established an important precedent, suggesting that space exploration was devoted to scientific progress rather than Cold War competition. The Soviet Union had recognized the utility of space technology with the Interkosmos program, which provided a soft-power alternative for building relationships with other countries in the name of universal scientific progress.[56]

Nixon similarly viewed space exploration as a powerful tool for pursuing the broader politics of collaboration and détente that would be "for the benefit of all mankind," as he was fond of saying after Apollo 8.[57] In July 1969, he instructed Apollo 11 astronauts who were visiting the Soviet Union to carry Soviet medals honoring the late cosmonauts Gagarin and Vladimir Komarov during their visit to the Soviet Union. Nixon noted in a White House press announcement:

> This adds to the historic mission of Apollo 11 the aspect of cooperation between the people of the Soviet Union and the people of the United States. We trust that this reach across national boundaries, demonstrating good will between the Russians and Americans closest to exploration of space, bodes well for mutual peace and progress in the future.[58]

54. NSC memorandum to Henry Kissinger, 19 June 1970, and "Second Report of the NSSM-72 Committee," 10 April 1970, both in RMNPL Research Files, National Security Study Memorandums, NSSM 70–76, Box H-162.

55. Davidson and Montville, "Foreign Policy According to Freud," p. 155.

56. "Before the Meeting in Orbit," *New Times*, No. 1 (January 1975), p. 20. On the creation of Interkosmos to solidify Soviet relations with Communist and non-Communist countries, see the documents in ARAN, F. 1678, Op. 1, D. 1. See also ARAN. F. 1678, Op. 1 more generally.

57. On the shift in the U.S. space program from competition to portraying "space accomplishment as a global accomplishment," see Teasel Muir-Harmony, "Project Apollo, Cold War Diplomacy and the American Framing of Interdependence," Ph.D. Diss., MIT, 2014, p. 36.

58. "Proposed White House Press Release to Be Issued on July 17," 31 July 1969, in RMNPL Research Files, OS 3-1 Astronauts.

The astronaut Frank Borman, meanwhile, was warmly received at all levels when he traveled to the Soviet Union just before the Apollo 11 mission in July 1969.[59] He encountered the Russian tradition of hospitality (*gostepriimstvo*), which without fail impressed U.S. officials and negotiators during their many trips to the Soviet Union.[60]

Meanwhile, since May 1967, when Michael Collins, David Scott, and Pavel Belaev drank a vodka toast together to peace and collaboration at the Paris Air Show, official and unofficial visits and meetings of cosmonauts and astronauts had helped to create the goodwill that made both sides less fearful of making additional proposals for cooperation. What both sides discovered in these meetings was that they could get along and that ideology mattered much less than a shared technocratic mindset and commitment to problem-solving. This shared sense of professionalism allowed them to transcend their ideological differences and to view space as, in the words of astronaut Scott, a "universal language."[61] The Russian émigré and veteran U.S. translator for the Apollo-Soyuz project Alexander Tatistcheff recalled that ASTP was among the most effective U.S.-USSR encounters he witnessed in his long career in U.S. diplomacy precisely because it featured problem-solving as its central purpose. ASTP was a

> bunch of American engineers, scientists, sitting down with a bunch of Soviet scientists and engineers, discussing some very unprecedented and difficult engineering problems, trying to find a solution, not in terms of political advantage but in terms of joint interest in a successful flight. The result of it is a friendship, a camaraderie, a relationship developed which is very heartening. . . . And after the meeting, slapping each other on the back . . . having Cokes, having vodka, of course, visiting in their houses and swimming together in the swimming pool, and in general behaving like normal human beings. I think that such programs as this are extremely important and I hope to God that this thing continues in some way, shape, or manner.[62]

The feelings of camaraderie that Tatistcheff described produced what the historian of emotions William Reddy refers to as an "emotional regime." The

59. Thomas Paine, NASA Director, to Academician A. A. Blagonravov, 23 January 1969, in LOC, Thomas O. Paine Papers, Box 22, Folder 1.

60. "Soviet Hospitality," *Aviation Week and Space Technology*, 5 August 1974, p. 62. On a post-trip mission tour of the Soviet Union, the U.S. astronauts received half a ton of gifts.

61. "Astronaut Scott 'Eager' to Join Russian in Flight," *The Baltimore Sun*, 24 August 1971, p. 2.

62. "Interview with Alex Tatistcheff by E. Z. Ezell," 30 April 1974, in NASA Historical Reference Collection, ASTP July 1975. See also "Transcript of Interview with Major General Thomas P. Stafford by Edward Ezell," in NASA Historical Reference Collection, ASTP July 1975.

emotional regime of scientific and technological collaboration constructed a reality for its participants—a willingness to collaborate grounded in a technocratic commitment to problem-solving—that ultimately challenged Cold War ideological divisions and the feelings of fear and mutual distrust that fueled negative images on both sides.[63]

Each meeting produced more momentum for further meetings, leading both sides to a more benign image of each other. On 21 October 1969, the cosmonauts Georgii Beregovoi and Konstantin Feoktistov met with Nixon in the White House. The ASTP cosmonaut Valerii Kubasov remembered that the cosmonauts' visit with the president and with space officials and politicians left an important and positive impression on Soviet political and technical circles that greatly aided the advocates of collaboration on both sides.[64] Attending the meeting with Nixon were Kissinger and Borman, who had invited Beregovoi during his July 1969 trip to the Soviet Union, in which the cosmonauts praised U.S. hospitality and ingenuity, with "receptions, food and wine everywhere." Beregovoi and Feoktistov visited Disneyland, where they were photographed wearing Mickey Mouse hats, and then stayed in Hollywood at the house of the film star Kirk Douglas, who hosted a party that included two other actors of Russian heritage, Goldie Hawn and Natalie Wood (who spoke Russian and who was the only movie star the Soviet scientists recognized at the gathering). Feoktistov greeted reporters and declared an end to the space race and the beginning of a new era of cooperation—though he was apparently completely baffled by an American football game they watched, which his colleague Beregovoi described this way: "All fall down. All get up. All fall down." Feoktistov wrote a detailed account of his impressions, hailing the skill of the organizers and the friendliness of the people they met and noting a particularly fruitful conversation with NASA Administrator Paine in which they discussed collaboration, philosophy, the state of the world, and the future of space exploration. The two-week visit was a modest but important step in the ongoing thawing of relations.[65] The event sparked an immediate

63. Mark Steinberg and Valeria Sobol, *Interpreting Emotions in Russia and Eastern Europe* (DeKalb, IL: Northern Illinois University Press, 2011), pp. 5–6.

64. *Kosmos: Vremya moskovskoe: Sbornik dokumentov*, 2nd ed. (Moscow: Russian State Humanitarian University, 2018), p. 494.

65. "Visit of the Cosmonauts," Memorandum, 21 October 1969, in RMNPL Research Files, EX OS 3-1, through 12/70; Yuri Karash, *The Superpower Odyssey: A Russian Perspective on Space Cooperation* (Reston, VA: American Institute of Aeronautics and Astronautics, 1999), pp. 78–89; K. P. Feoktistov, *Sem' shagov v nebo* (Moscow: Molodaya gvardiya, 1984), pp. 182–204; "Visiting Cosmonauts Assert Space Is for Science and Not for War," *The Washington Post*, 24 October 1969, p. A3; "Cosmonauts Ending 2-Week U.S. Visit," *The Evening Star* (Washington, DC), 4 November 1969, p. A2;

response from Paine, who wrote heartfelt letters to Keldysh, Beregovoi and Feoktistov in which he also included a copy of his report to the president on NASA's new strategy of international collaboration.[66]

A year later, in October 1970, the courting ritual continued as the cosmonauts Andriyan Nikolaev and Vitalii Sevastyanov, with the Soviet authorities' calculated blessing, visited the United States to reiterate hopes of cooperation. Shortly thereafter, Gilruth, NASA's director of human spaceflight, traveled to Moscow for more negotiations and took with him a plaque from NASA honoring Gagarin and presented it to the Soviet cosmonaut corps. "It was an emotional moment, and it was obvious that they were pleased at the recognition by us of their being first in space," Deputy NASA Administrator George Low noted. "The plaque was just perfect in every way." Six months later, on the tenth anniversary of Gagarin's flight, Low sent a letter to Keldysh to "honor the achievement of this brave man"—Borman had emphasized the importance of the Soviet cult of Gagarin after his Soviet visit—and to express his desire for "increasingly significant cooperation between our two countries in space research and exploration."[67]

Helping to pave the way for closer collaboration was the exchange of condolences when cosmonauts or astronauts died. That tradition began with the death of three U.S. astronauts in January 1967 and was followed by expressions of sympathy for the deaths of the cosmonaut Komarov in April 1967 and Gagarin in March 1968. Similarly, both sides began offering aid when the other side experienced some difficulty, as when Apollo 13 ran into problems on its lunar mission in April 1970. On 15 April, Kosygin wrote to Nixon that

> with alarm we are following the flight of the spaceship Apollo 13, which finds itself in an emergency situation. I want to inform you that the Soviet government has commanded all civil and military aviation of the Soviet Union to use all means, if necessary, to lend aid in the saving of the American cosmonauts. In the name of the Soviet government I express my hope for the safe return of the brave cosmonauts Lovell, Schweickart, and Hays.[68]

"Cosmonaut Sees Football: 'All Fall Down, All Get Up,'" *The Washington Star*, 27 October 1969, p. A5; and "Disneyland 'Blastoff': Cosmonauts 'Fly' to the Moon," *The Washington Star*, 25 October 1969, p. A3.

66. Paine to Feoktistov, 21 November 1969, in LOC, Thomas O. Paine Papers, Box 24, Folder 1.

67. "Gilruth, Robert R. (Bio)," George Low to Robert Gilruth, 27 January 1971, and "Foreign Relations and Keldysh," 12 April 1971, Low to Keldysh, both in NASA Historical Reference Collection, 1/612.

68. Kosygin to Nixon, 15 April 1970, in RMNPL Research Files, WHCF EX OS 3/3/13; and "Kosygin Offers Apollo Help as Ships Move into Position," *The Baltimore Sun*, 16 April 1970, p. 1.

That offer put into stark relief the horrific death of three cosmonauts during reentry in the Soyuz 11 mission of June 1971. Stafford, the future commander of ASTP, attended the funeral of the three cosmonauts on behalf of Nixon. The Soviet personnel treated him as one of their own ("as though he were a member of the cosmonaut group"), placing him alongside other cosmonauts, including Leonov, his future Soviet colleague on ASTP, as a pallbearer. Later, Stafford was thanked personally by Brezhnev, Kosygin, and Defense Minister Andrei Grechko.

The dangers of space travel evoked feelings of shared human sacrifice—an emotional regime based on the "anguish of their tragedy," as Nixon stated in regard to Soyuz 11—and produced a sense of common humanity that transcended the national security mindset. The U.S. side followed up in July 1971, during the Apollo 15 mission, by filming the placement of a ceremonial plaque on the moon in honor of all Soviet and U.S. space travelers who had lost their lives. Interkosmos officials received a copy of the film in a diplomatic pouch through the auspices of the U.S. embassy in Moscow. These moments of commemorating the other side's sacrifices gave additional momentum to the ASTP project, which was seen above all as a test of emergency docking procedures that would allow either side to come to the aid of the other in the event of a mishap in earth's orbit. As such, the project involved a crucial shift in both space exploration and politics, away from risk-taking and brinkmanship and toward a new focus on safety in the narrower technical sense and in the broader political context. The docking engineer Syromyatnikov, for example, conceived of ASTP as an attempt to ensure the survival of cosmonauts and astronauts in space as a well as human "survival in any political climate" on earth. The project was thus both a literal and a metaphorical escape hatch, providing an alternative to Cold War hostility and, in the process, according to the ideology of scientific objectivity, advancing the cause of science and universal human progress.[69]

Enemy Images and Bureaucratic Resistance

Resistance within the U.S. government constituted the last major barrier to cooperation. From the 1940s on, bureaucratic structures such as the Coordinating Committee for Multilateral Export Controls, designed to protect the

69. Department of State Telegram, 17 April 1970, and Department of State Telegram, 30 June 1971, both in RMNPL Research Files, WHCF EX OS 3-1; and V. S. Syromyatnikov, *100 Rasskazov o stykovke i o drugikh priklyucheniyakh*, Vol. 2: *20 let spustya* (Moscow: "Logos," 2010), p. 80.

U.S. technological advantages, created seemingly insuperable barriers to international cooperation. On 18 June 1970 a memorandum from Nixon's Office of General Counsel reviewed the complex issues involved in technology transfer. The central question was, "What authority does NASA and its contractors have to disseminate technical information to foreign countries?" The question had rarely been asked with regard to space technology. Until the Nixon administration the U.S. government had placed little emphasis on internationalizing the space program. The memorandum noted that "purely scientific data is treated more leniently" than data "relating to technological applications." Control over the export of technical data was realized "through a series of statutes, Executive orders and comprehensive regulations, placing the responsibility for prior approval of exports within several government agencies. There is a certain amount of overlap and it is not always clear which agency has primary jurisdiction." However, one thing was clear in this tangle of bureaucratic control, namely, that "any release of technical data . . . exported from this country is controlled." That presented a challenge, the memorandum observed, to NASA's enabling legislation, which mandated foreign collaboration and stipulated that "it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind" and for "international collaboration." But many of the basic technologies of space travel had potential military applications, and this made collaboration a potentially treasonous activity because the same peaceful technologies could be converted "to strategic delivery applications." Open exchanges of scientific and technical information might be a policy goal, but that policy was undermined by national security considerations. As the memorandum noted, almost everything NASA did had "direct or indirect military potential or applicability."[70]

Meanwhile, the Soviet system lacked the legal and bureaucratic system of technology-transfer control that had often thwarted the desires of even the most powerful political leaders in the United States. To be sure, the secretive Soviet space industry was often divided by bitter internal politics, but the authoritarian structures of the Soviet Union also gave Soviet officials more flexibility in collaborating with foreign powers in science and technology, once the political leadership gave its approval.[71] Strong managerial personalities such as Keldysh, armed with the approval of the political bosses, could cut

70. "Dissemination of Technical Information Abroad," 18 June 1970, in RMNPL, WHCF, FG 164 NASA, Box 1.

71. "Cooperation between the U.S. and USSR in Space Activities, Prospect and Opportunities," 8 April 1970.

through red tape in ways that NASA colleagues envied. As a NASA delegation to Moscow later observed,

> strong, dynamic personalities can have an influence on events and programs orders of magnitude beyond what an equivalent person can do in the U.S. . . . On a day-to-day basis it means that there is actually more flexibility in their system . . . than in ours.[72]

Managerial cults of personality were aided by the Leninist legacy of "democratic centralism," so that "once a general policy is decided or elaborated, there is virtually no discussion and it serves as a guiding light for a wide range of discussions (and entrepreneurs!)."[73] The upshot was that once leaders on both sides decided they were willing to cooperate, as they did by the end of 1969, Soviet officials faced far less internal resistance than the Nixon administration did.[74]

Well aware of the bureaucratic challenges, Nixon in November 1969 had his aide Flanigan send a letter to Kissinger, Borman, and Paine reiterating his personal commitment to "multinational participation in our future space flights." The president said he was dismayed by the "technical difficulties he had encountered" but also wanted them to know that he was determined to "press" the idea of collaboration whenever possible and requested updates from everyone regarding efforts to cut through the thickets of red tape in the technology-transfer bureaucracy.[75] Nixon also formed an interagency group to deal with "the technical data exchange between the United States and foreign governments and agencies desirous of entering into cooperative arrangements with us."[76] But even with Nixon's prodding, the White House discovered that cooperation "turns out to be more difficult than might be expected."[77] When Paine left NASA for the private sector in September 1970, he seemed less than optimistic about the prospects for collaborative activities, despite positive

72. "Field Trip Report for the NASA Advisory Council International Relations Task Force, Moscow, USSR 11–17 April 1987," in NASA Historical Reference Collection, 10/14/4 15591.

73. Ibid.

74. NASA Memorandum from George Low, 14 February 1972, in NASA Historical Reference Collection, 10/14/4, 15590.

75. Peter Flanigan memorandum to Kissinger, Paine, Borman and DuBridge, 25 November 1969, and Nixon memorandum to Flanigan, 24 November 1969, both in RMNPL, WHCF, EX OS-3.

76. Memorandum to the NSC, 17 July 1970, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

77. White House memorandum, 6 March 1970, in RMNPL, OS Outer Space Box 1, 1969–1970, 2 of 2.

Soviet responses to his outgoing overture: a September 1970 proposal for a joint docking system.[78]

Meanwhile, as the Nixon administration continued to try to overcome the technology-transfer challenge, NASA Deputy Administrator Low traveled to Moscow in late 1970 to hash out details of Paine's proposed docking system—which eventually became ASTP. The NSC characterized the meeting as "unexpectedly productive." After finalizing most of the details of the docking system, and despite expressing grave doubts before the trip, Low was enthusiastic, privately invoking the lofty rhetoric of earthrise that Nixon had taken up in his public pronouncements. "No other human activity has so captivated the imagination of peoples everywhere," Low wrote in a January 1971 memorandum to Kissinger. Space, he said, was "not a frontier of one nation or another but of man himself. Here there are no boundaries." A joint docking system, he said, would be a keystone in a growing relationship of "mutual trust and regard" that would "contribute toward a broader confidence for working together on earth."[79] Meetings between NASA and Soviet space working groups in August 1971 honed a long list of recommendations and areas for collaboration that both sides had endorsed by the beginning of 1971—making ASTP a linchpin of the broader science and technology agreements that Nixon consummated with his May 1972 visit to Moscow. With ASTP as the centerpiece, those science and technology agreements represented a key testing ground for a new relationship of cooperation embodied by détente.[80]

Androgyneity and the Handshake in Space

By the end of 1972 the Nixon administration had developed a formal statement about the docking agreement that satisfied the technology-transfer bureaucracy. The docking technology would be a "clean interface," meaning that both sides would be involved only in the linkups between the Soyuz and Apollo aircraft and not in sharing basic information that did not directly pertain to the creation of the docking mechanisms. The docking system was to be "androgynous": neither side would have to be the "male" or the "female" in the

78. Paine to Kissinger, 15 September 1970, in RMNPL, OS Outer Space Box 1, 1969–1970, 1 of 2.

79. NSC memorandum to Kissinger, 19 November 1970, and George Low memorandum to Kissinger, 29 January 1971, both in RMNPL, OS Outer Space Box 1, 1/1/71 [1971–1972], 1 of 3.

80. George Low to Nixon, 11 August 1971, in RMNPL, WHCF, FG 164 NASA Box 1. One historian called ASTP the "star of the show" for broader science agreements. Sher, *From Pugwash to Putin*, p. 26.

linkup, a matter of some importance to the macho engineers in the space programs of both countries; instead, both sides would jointly design the interface to which they would attach their separate capsules in an interlocking rather than penetrating fashion, creating a neutral territory of contact between the Apollo and Soyuz capsules—a kind of Switzerland in space. The success of the program, in the minds of its managers, depended on finding a way to avoid the impression that one side was dominant, with all the associated baggage of sexual innuendo (being the submissive or the active partner, having the female or the male part) that in turn would suggest an unequal power relationship between the two superpowers.[81] Although in space, one crew would enter the docking chamber between the two capsules to adapt to the air and different pressure environments of the host capsule (the Soviet capsule had an atmosphere that was more like earth's, whereas the U.S. side used pure oxygen) before social visits to the other side for proclamations of peace and friendship. As a further means of alleviating concerns about technology transfer, NASA officials pointed out that information about the Apollo technology was largely available in the public domain, whereas the Soviet technology was mostly secret, so the U.S. side had nothing to lose and everything to gain. From the perspective of the NSC, the ASTP now had few downsides—a remarkable shift in attitude from just two years earlier, and certainly from the stark NSC 68-style images of the Cold War.[82]

One of the more surprising aspects of cooperation for those on the U.S. side was that it turned out to far easier to achieve with the Soviet Union than with U.S. allies in Europe. The main reason was that the plan for West European collaboration would involve the direct participation of Europeans in developing any post-Apollo flight system, and West European partners were expected to pay NASA for their involvement even while accepting their status as junior partners.[83] By contrast, ASTP involved only a limited exchange of technologies, both sides already had their own fully developed space-transportation systems, the United States recognized the Soviet Union as an equal partner, and the two countries needed only to construct the "androgynous" interface for docking in space. Each side, moreover, funded its own efforts. Thus, whereas attempts at cooperation with West Europeans

81. On the challenges engineers faced in overcoming the sexually charged problem of domination and submission in docking, see Syromyatnikov, *100 Stories*, pp. 340, 395, 421–422.

82. National Security Defense Memorandum 187, 30 August 1972, in RMNPL, NSDM 187, 1 of 2.

83. Draft letter to the European Space Conference, 13 August 1971, and Draft of President's report to Congress on space activities for 1971, 13 December 1971, both in RMNPL, OS Outer Space Box 1, 1/1/71[1971–1972], 2 of 3 and 3 of 3.

went nowhere in the summer of 1971, the ASTP project experienced, according to Low, "definite forward movement . . . in terms of levels of detail, the extent of commitment, and the immediacy of exchanges which they are prepared to accept."[84]

The final science and technology agreements—which formalized work that had been ongoing for nearly two years—came in May 1972, when Soviet officials informed NASA that they were ready to sign an agreement for the joint crewed mission, which NASA also supported and which the Office of Management and Budget had approved with a budget of $250 million. Both sides, moreover, were clearly excited about the prospects for expanding cooperation from ASTP to joint projects, crewed and uncrewed, to explore Venus and Mars.[85] As for ASTP, the U.S. and Soviet sides agreed

> that rendezvous and docking systems of future generations of manned spacecraft of both countries will be compatible, to permit rendezvous, docking, rescue, and possible joint experiments in space. It is further agreed that the first flight to test these future systems will be carried out in 1975, using specially modified Apollo-type and Soyuz-type spacecraft. In this flight the two spacecraft will rendezvous and dock in space, and cosmonauts and astronauts will visit each other's spacecraft.[86]

Subsequently, the "rapport and understanding" of both sides improved with every meeting, according to U.S. astronaut David Scott, creating a project "on firmer ground than any in recorded history" and inspired by "an obvious desire by both sides at all levels to insure the project gets off the ground on 15 July 1975."[87] True, engineers from both sides encountered challenges as they began to develop the "androgynous" interface between their two systems. Those barriers were in part linguistic, as each program had developed its own specialized vocabulary and jargon, and in part cultural, as the Soviet personnel had to adapt to working in a far more open and less secretive way, including allowing U.S. journalists and space officials to visit the many formerly closed

84. George Low to Nixon, 11 August 1971, and Peter Flanigan memorandum to Nixon, 9 August 1971, both in RMNPL, OS Outer Space Box 1, 1/1/71[1971–1972], 2 of 3.

85. On U.S. and Soviet proposals for post-ASTP ventures, see the documents in ARAN, F. 1678, Op. 1, D. 383, Ll. 6–7.

86. Memorandum for the president, 17 May 1972, in RMNPL, OS 1 [1971–1974]. On plans to expand collaboration into other areas, see George Low and Keldysh communications, 7 September 1972–3 April 1974, in NASA Historical Reference Collection, 14/10/4 15590.

87. "ASTP Mission to Moscow, June–July 1973" Memorandum, in NASA Historical Reference Collection, ASTP 1972–73, LEK 7/14/1.

training, production, and launch sites of the Soviet space industry.[88] Yet Soviet engineers and managers, like their U.S. counterparts, were surprised at how easy it was to work with their U.S. colleagues. They attributed this in part to a shared commitment to technical problem-solving but also to the revelation that "Americans in many respects turned out to be similar to us." The U.S. scientists, like their Soviet counterparts, worked hard and played hard. They were friendly and gracious hosts, inviting the Soviet participants over for barbecues and beers in Houston. The Soviet scientists returned the favor in their territory by hosting outdoor parties with fishing, hunting, vodka, and shashlik (the Caucasian equivalent of shish kebabs).[89]

From 1971 through the culmination of the mission in July 1975, technological and diplomatic regimes were mutually constitutive. The Soviet engineers and designers quickly adapted the U.S. term "interface" to describe the human and technical connections that were required to make the project a success. Both sides began to build these interfaces between engineers, managers, and politicians. The interfaces linked two fundamentally different systems at the personal, technical, and political levels. Teams of designers and engineers met in Houston and Moscow and outside Los Angeles to hash out problems and coordinate docking mechanisms, retreating afterward to their respective systems to overcome bureaucratic, political, and technical barriers and to spread their own transformed understanding of the "other." The lead Soviet docking engineer Syromyatnikov remembered that it was a "unique experience, for which precedents are rarely found in the history of technology," with a technological project transformed into an instrument for changing the relationship between two military rivals and enemies. Boris Chertok, one of the founding fathers of the Soviet space program, noted that "even space engineers do not fully realize that such a single piece of space technology as the docking system . . . is only the visible tip of the iceberg." The invisible part "includes the process of space system development itself, and the activities of many people . . . sometimes so distant from the field of engineering."[90] Ultimately, as Syromyatnikov emphasized in his memoirs, the docking mechanism

88. On Moscow's surprising willingness to declassify many secretive parts of the Soviet space program, see Jenks, "Securitization and Secrecy in the Late Cold War." Yuri Mozzhorin, head of the Soviet mission control and also responsible for providing information to the foreign and domestic press, recalls the many dramatic moments of Soviet declassification. See "Istoriya TsUPa: Trud, radosti, mytarstva," *Nauka i zhizn'*, No. 8 (2005), available online at http://epizodsspace.airbase.ru/bibl/n_i_j/2005/7/istoria-tsupa.html; and N. A. Anfimov, ed., *Tak eto bylo . . .: Memuary Yu. A. Mozzhorina: Mozzhorin v vospominaniyakh sovremennikov* (Moscow: OAO 'Mezhdunarodnaya programma obrazovaniya, 2000), ch. 6.

89. Eliseev, *Kaplya v more*, p. 102.

90. Syromyatnikov, *100 Stories*, pp. 8, 429.

of ASTP was not simply a work of engineering but a mechanical manifestation of the Soviet doctrine of peaceful coexistence that had sought to create connections with the capitalist world to aid the Soviet economy and reduce the potential for nuclear war—in short, to enhance global security for all.[91]

ASTP's Place in History

In the history of technology and science ASTP was little more than its name suggested: a test project that involved already reliable launch systems and crewed spaceflight systems on both sides. It was successful but produced little valuable new space science or technology. In this narrower technical sense it was less significant than the Apollo moon landings or Gagarin's first flight.[92] But ASTP's importance was less in the history of technology than in the history of the Cold War and diplomacy, where it represented a "moral and ethical" achievement, according to Kurt Vonnegut and the Soviet writer Chingiz Aitmatov.[93] The Soviet docking engineer Syromyatnikov refers frequently in his memoirs to a single phrase that encapsulated for him the larger significance of ASTP: "docking, by definition, is already a form of cooperation," bringing two separate systems together in a way that enhances feelings of mutual security and safety and that opens up previously unimagined opportunities for exchange and communication on both sides of the docking site.[94]

ASTP, moreover, played a seminal role as a catalyst in Brezhnev's and Nixon's historic policy of détente, using the supposedly objective realm of science and technology to pave the way for the policy's broader cooperative agreements in science, technology, and busines. It provided a compelling alternative to the previous Cold War mentality in which both sides had constructed images of the other as implacable enemies incapable of cooperation. History, of course, cannot be written in the conditional tense, but the evidence presented in this article indicates that both sides saw ASTP as a jumping-off point for détente (and what Soviet officials called peaceful coexistence). The "frankness, confidence and personal working relationship" of Keldysh and Low (and

91. Syromyatnikov, *100 Rasskazov o stykovke i o drugikh priklyucheniyakh*, Part 2, pp. 55–56.

92. The "androgynous" docking technology was one critical exception. I am currently exploring the contributions of ASTP in producing critical new docking technologies that are now fundamental to the International Space Station and to the crewed Chinese space program.

93. "Vstrecha nad planetoi," *Literaturnaya gazeta*, 23 July 1975, p. 21; "Cosmos: Arena dlia sotrudnichestva," *Sotsialisticheskaya industriya*, 17 November 1973, p. 4; and "Soyuz y Apollon," *Sovetskaya Rossiya*, 28 June 1974, p. 3.

94. Syromyatnikov, *100 Stories*, p. 391.

of the Technical Directors Glynn Lunney and Konstantin Bushuyev) helped to bring the project to a successful close, as did the dynamic personality of Leonov, who was a "remarkably wise choice" as Soviet commander, according to the ASTP's U.S. translator. Leonov got along with everyone and especially with his equally outgoing U.S. counterpart, Stafford. "When they walk into our offices in Houston," Stafford said about the cosmonauts, "they carry very businesslike briefcases. Then they grin and open them up and you see black bread, sturgeon, caviar, crabmeat and, naturally, vodka." Leonov, meanwhile, was an "extrovert . . . an outgoing man . . . he will conquer you, heart and soul, because he is that kind of man. And any audience, he will have it in his hand in a minute." Ultimately, the most important achievement of ASTP was to destroy Cold War stereotypes at the highest levels of government and among thousands of program managers and engineers and to forge professional and personal relationships that transcended the mutual hostility of the two superpowers.[95]

The ease with which both sides cooperated and brought the docking project to a successful conclusion made many believe that ASTP had permanently eroded the Cold War.[96] That conclusion turned out to be premature. In the late 1970s and early 1980s, cooperation was replaced by a renewed Cold War and the emergence of what one U.S. historian has termed "Fortress America," referring to a culture of fear that she believes imperiled democracy and openness in the United States in the 1980s.[97] The Soviet Union did more than its share to stoke new tensions by supporting Marxist-Leninist insurgents in various parts of the developing world through the 1970s, by deploying new SS-20 nuclear missiles, and by invading Afghanistan, which intensified the Cold War divide. Entrenched Cold War mindsets on both sides thwarted proposals for expanded collaboration, in space and more generally. That resistance was evident even when Nixon was president, gaining momentum with the 1974 Jackson-Vanik Amendment that restricted trade with the

95. "Interview with Alex Tatitscheff by E. Z. Ezell," 30 April 1974; "U.S./USSR July Working Group Meeting," 24 July 1973, in NASA Historical Reference Collection, ASTP-73, 7/14/1; and Thomas P. Stafford (1976–1979), "Transcript of Interview with Major General Thomas P. Stafford by Edward Ezell," in NASA Historical Reference Collection. On the importance of trust and friendship in overcoming Cold War hostilities, see A. A. Leonov, B. F. Lomov, and V. I. Lebedev, "K probleme obshcheniya v internatsional'nykh kosmicheskikh poletakh," *Voprosy filosofii*, No. 1 (1976), pp. 56–69.

96. That was certainly the hope expressed in the official Soviet history of ASTP, which contains the expected overlay of Soviet propaganda but also reflects the excitement and hope engendered by the act of technical collaboration—emotions that characterized the memories of participants on both sides. See Bushuev, ed., *Soyuz i Apollon*.

97. Elaine Tyler May, *Fortress America: How We Embraced Fear and Abandoned Democracy* (New York, NY: Basic Books, 2017).

Soviet Union unless the Soviet government improved its emigration policies. Those tensions grew during the Carter administration (especially the final two years) and were further enflamed by President Ronald Reagan's Strategic Defense Initiative (SDI), or Star Wars program, which emphasized the military uses of space. Soviet officials and media outlets invariably denounced SDI as a violation of the 1967 International Space Treaty that had demilitarized space.[98] The relatively short life of détente seems to vindicate the conclusion that projects such as ASTP had little effect on the Cold War beyond the few hundreds of engineers, bureaucrats, and politicians who were directly involved and perhaps a few thousand more who participated in one way or another and were impressed and surprised by their ability to get along with those on the other side.

But it would be a mistake to dismiss ASTP as merely a propaganda spectacle with little long-term impact on attitudes and policies. The prominent Soviet space engineer and manager Syromyatnikov noted that, despite the seemingly short-lived policy of détente in the 1970s, ASTP's influence and memory endured in the Soviet Union (and then Russia), thus highlighting public wariness of war in a country that had lost some 25 million people in World War II. The experience of cooperation set an important precedent of openness in formerly secretive, classified sectors of the Soviet military industrial complex that allowed officials to argue, even at the grimmest times of the resurgent Cold War in the early 1980s, that the United States and the Soviet Union could work together. "I cannot say that the Iron Curtain was fully destroyed," Syromyatnikov notes, "but a breach was made in the wall. Although this 'breach was repaired' after ASTP, it was impossible to return to the old ways completely."[99] That view was confirmed in 1985 by the rise to power of Mikhail Gorbachev, whose policies of openness and international cooperation drew in part on the previous practices of détente, especially on cooperation in the scientific and technological spheres.[100]

Soviet officials were also inspired by ASTP to expand their Interkosmos program from uncrewed scientific collaborative projects to joint international missions, a commitment that led to joint Soviet flights with Communist and non-Communist countries in the 1970s and 1980s and to the development

98. "Field Trip Report for the NASA Advisory Council International Relations Task Force, Moscow, USSR 11–17 April 1987," in NASA Historical Reference Collection, 10/14/4 15591; and "Interview: Georgii Beregovoi," p. 15.

99. Syromyatnikov, *100 Stories*, p. 561.

100. On challenges to the idea that the Brezhnev era was one of stagnation, in supposed contrast to the Gorbachev era, see Dina Fainberg and Artemy M. Kalinovsky, eds., *Reconsidering Stagnation in the Brezhnev Era: Ideology and Exchange* (Lanham, MD: Lexington Books, 2016).

of the Mir Space Station and eventually the International Space Station.[101] At the same time, and especially in the Soviet Union, where the memory of ASTP was much stronger than in the United States, ASTP inspired numerous initiatives in public diplomacy and in popular culture that sustained the idea of cooperation in technology and science as an antidote to ideological and military conflict. ASTP thus remained a powerful symbol of cooperation that inspired collaborative ventures in other areas, as illustrated by the anniversary celebrations of ASTP in Soviet and later Russian mass media and also by the relative preponderance of memoir literature, as compared to the U.S. case.[102] Following the example of ASTP and emerging from the spirit of the science and technology agreements of 1972 in which ASTP was a centerpiece, Soviet physicists through the 1980s argued against the militarization of space represented by SDI, and they reached across ideological barriers to their U.S. and West European colleagues, invoking the authority of scientific objectivity to strengthen their claims and protect themselves from political attack.[103]

U.S. scientists were also affected by the example of ASTP. The astronaut Edgar Mitchell developed the idea of forming a group of astronauts and cosmonauts to work toward cooperation and the peaceful use of space exploration to solve global problems. From his position as director of the Institute for Noetic Sciences, Mitchell explored alternative science, politics, and diplomacy based on the vision of global unity that he experienced in space. In October 1973, he mentioned the idea of an astronaut-cosmonaut group in a letter to the State Department, suggesting that the group work as "goodwill ambassadors for peace and unity on a global scale." That was the first step toward what became, more than a decade later, the Association of Space Explorers, whose membership would include Leonov, the ASTP commander, as a leading advocate on the Soviet side, along with ASTP flight director Eliseev.[104]

101. The issue of *Pravda* published on 12 April 1977, International Cosmonautics Day, was devoted to the theme of international crewed flights and cited ASTP as a landmark event in ushering in this new phase of space history.

102. For examples of the memoir literature by Soviet engineers and managers, see Anfimov, ed., *Tak eto bylo . . .*; Syromyatnikov, *100 Stories*; Eliseev, *Kaplya v more*; Bushuev, ed., *Soyuz i Apollon*; and "Istoriya TsUPa." The newspaper and periodical literature, especially on the anniversaries of ASTP (17 July), is voluminous and continually projects the idea of collaboration through science and technology to the more general population.

103. Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca, NY: Cornell University Press, 1999).

104. Kenneth Dam to Edgar Mitchell, 10 October 1973, in RMNPL, WHCF GEN OS 3-1 Astronauts. On the Association of Space Explorers, see Jenks, "Transnational Utopias."

ASTP provided a constant source of inspiration for these and other initiatives in the United States, often led by the Esalen Institute in Big Sur, California, which was motivated by ASTP to embark on citizen diplomacy to connect Soviet cosmonauts, astronauts, thinkers, and regular citizens. In the early 1980s Carl Sagan became a powerful public voice for a certain vision of scientific progress that was also connected with global peace and environmentalism, as did the singer John Denver and the science fiction writer Arthur Clarke, all of whom were encouraged and inspired by the example of ASTP (in *2010: Odyssey Two*, Clarke's sequel to *2001*, the spaceship is even named after Leonov). They were joined by the French marine explorer Jacques Cousteau, who had ardent followers in Europe, the United States, and the Soviet Union and who attended the inaugural meeting of the Association of Space Explorers in 1985 in Paris.[105]

On the Soviet side of the ideological divide, the cosmonaut and science popularizer Sevastyanov published numerous books and articles in the 1970s and 1980s, in English and in Russian, on the important role of science and space exploration in saving earth from violence and nuclear war. He turned the core idea of ASTP—a common docking system that would allow both sides to come to the rescue of the other in the event of an emergency in space—into a metaphor for what the world needed and the title of an extended philosophical discussion of space flight and new political thinking. The title of his 1989 book, *Rescue: Emergency Escape Hatch: Cosmonautics and New Political Thinking in the Thermo-Nuclear Era*, was also motivated by a fragment from the Space Shuttle *Challenger* that had been written in Russian and English: "Rescue—Avariiinyi vykhod." Sevastyanov's words convey the post–Cold War aspirations that are more necessary than ever and that for a time in the mid- to late 1980s, brought the world closer to peaceful cooperation than it has been at any time since.

> Peace, constructive collaboration on Earth and in space, that is the only exit from the emergency situation on the spaceship "Earth." And it is deeply symbolic that the vision of a nuclear-free and violence-free world comes from the country that laid the road to the cosmos for humanity. This vision instills optimism and faith that international collaboration will resolve the dilemmas of the space age, and that the strength will be found to exit from an emergency situation on the spaceship "Earth."[106]

105. On Denver's and Cousteau's support of these efforts, see "Denver's Soviet Trip: Peace, Not Politics," *USA Today*, 13 December 1984, p. 2D; and John Denver, "Why I Want to Grasp Space's Opportunity," *The Houston Chronicle*, 16 October 1988, p. 12.

106. Sevastyanov and Pryakhin, *Rescue*, p. 143.

The International Space Station is the mechanical offspring of ASTP's alternative approach, connecting adversaries in a common cause in which the ritual of docking is a technical and moral enterprise that helps to counter war-mongering back on earth.

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