# President Eisenhower, the Antarctic Treaty, and the Origin of International Spaces

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**ABSTRACT.** The late 1940s and early 1950s was a dangerous period of cold war posturing, with few bridges between the United States and Soviet Union. Nuclear weapons were a reality, and ballistic missiles were inevitable. It was during this period in the wake of World War II (as revealed in minutes of U.S. National Security Council meetings from 1954 to 1959) when President Eisenhower became the catalyst for an unprecedented mixture of global strategies to achieve "a day of freedom and of peace for all mankind." One of the possibilities was to create an international status for the Antarctic area, as suggested in the draft agreement that was circulated by the United States to the seven claimant nations in 1948. Planning also was underway for the International Geophysical Year (IGY) in 1957–1958 with scientific satellites anticipated to advance upper atmospheric research and promote the freedom of space, which was seen to be analogous to the long-standing concept of the freedom of the seas. In support of this space policy, the White House restrained the Army Ballistic Missile Agency from launching its Jupiter-C rocket into orbit in September 1956, which enabled the freedom of space to emerge with the IGY launch of Sputnik in October 1957. Building on this momentum of scientific cooperation, in May 1958, President Eisenhower invited the Soviet Union and the 10 other nations involved with Antarctic research to begin secret negotiations that would result in adoption of the Antarctic Treaty in Washington, D.C., on 1 December 1959, creating an international space "forever to be used exclusively for peaceful purposes . . . with the interests of science and the progress of all mankind." Following the 1958 Convention on the High Seas that had created the initial international space beyond sovereign jurisdictions, the Antarctic Treaty also became the first nuclear arms agreement with nonarmament and peaceful-use provisions that would become precedents for the outer-space and the deep-sea regimes that further established these areas as international spaces. The statesmanship of President Eisenhower that led to the Antarctic Treaty and the other international spaces demonstrates the role of science as a tool of diplomacy to build on the common interests of allies and adversaries alike for the lasting benefit of all humanity.

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## INTRODUCTION

The Antarctic Treaty was signed by 12 nations in Washington, D.C., on 1 December 1959 (Figure 1). The following year, during ratification hearings in the U.S. Senate, it was suggested (Gould, 1960) that "the Antarctic Treaty is indispensable to the world of science which knows no national or other political


**FIGURE 1.** Signature of the Antarctic Treaty on 1 December 1959 in Washington, D.C., by Ambassador Herman Phleger from the United States, who chaired the Conference on Antarctica from 15 October to 1 December 1959 (Department of State, 1960). The inscription reads, "To Laurence Gould without whom there would be no Antarctic Treaty. Warm Regards Herman Phleger". Permission to reproduce the photograph courtesy of the Carleton College Archives.

boundaries; but it is much more than that . . . it is a document unique in history which may take its place alongside the Magna Carta and other great symbols of man's quest for enlightenment and order."

This comparison may seem presumptuous. Our civilization has nearly eight centuries of learning from England's Great Charter of 1215, which has ensured that "no freeman shall be captured or imprisoned . . . except by lawful judgment of his peers or by the law of the land." Even today, after 50 years, the Antarctic Treaty is still in its infancy relative to the Magna Carta, which has served as a worldwide precedent for constitutional law and national democracy.

The great symbol of the Antarctic Treaty and the quest for enlightenment and order were the genius of a man from Denison, Texas, who later served as the supreme commander of the Allied forces in Europe during the Second World War and then as 34th president of the United States. When President Dwight David Eisenhower entered office on 20 January 1953, he understood firsthand the devastation of global conflict as well as the dangers of a world with nuclear weapons (Eisenhower, 1953a): "The world and we have passed the midway point of a century of continuing challenge. We sense with all our faculties that forces of good and evil are massed and armed and opposed as rarely before in history."

Yet, rather than pandering to the prevailing paranoia in the United States, with McCarthyism rampant (Fried, 1997), President Eisenhower envisioned options for cooperation between the United States and Soviet Union,

asking in his first inaugural address (Eisenhower, 1953a): "Are we nearing the light—a day of freedom and of peace of all mankind?"

For President Eisenhower, this question was more than rhetoric. He was shaping postwar policy (Eisenhower, 1965; Bowie and Immerman, 1998), as elaborated early in his administration with his "chance for peace" speech to the American Society of Newspaper Editors on 16 April 1953. This speech, which was delivered the month after the death of Joseph Stalin, identified five precepts of international relations that resonate still (Eisenhower, 1953b):

> First: No people on earth can be held, as a people, to be an enemy, for all humanity shares the common hunger for peace and fellowship and justice.
>
> Second: No nation's security and well-being can be lastingly achieved in isolation but only in effective cooperation with fellow-nations.
>
> Third: Every nation's right to a form of government and an economic system of its own choosing is inalienable.
>
> Fourth: Any nation's attempt to dictate to other nations their form of government is indefensible.
>
> And fifth: A nation's hope of lasting peace cannot be firmly based upon any race in armaments but rather upon just relations and honest understanding with all other nations.

It takes a visionary head of state to articulate such international balance and build on "common" interests. However, it takes a statesman to actually achieve peace, which is what President Eisenhower accomplished with the Antarctic Treaty in establishing a firm foundation for nearly 10% of the Earth "forever to be used exclusively for peaceful purposes" (as stated in the Antarctic Treaty, Preamble).

Projecting forward, the Antarctic Treaty may be analogous to the Magna Carta at the international scale, revealing a grand experiment that will take centuries to assess for its value in our civilization. This story is as much about the origin of the Antarctic Treaty and international spaces as it is about the statesman who rose to the occasion by using science as a tool of diplomacy for the benefit of all humanity. This story is about hope for future generations.

## CONVERGING SECURITY MATTERS

The late 1940s and early 1950s was a dangerous period of cold war posturing, as the United States and Soviet Union raced to create ballistic missiles that could deliver nuclear weapons across continents (Joint Chiefs of Staff, 1957). Few bridges were being considered, much less built, between these superpowers. It was during this period of turbulence in the wake of World War II, as revealed in minutes of U.S. National Security Council meetings from 1954 to 1959 (Table 1), when President Eisenhower became the catalyst for an unprecedented mixture of global security elements (ballistic missiles, geophysical research, and international spaces) that will remain forever as part of our civilization.

The world was inexorably introduced to nuclear weapons after their 1945 deployment by the United States to end World War II in Japan. By 1949, the Union of Soviet Socialist Republics also had proven capacity to detonate atomic weapons (Rhodes, 1996). The risk of deployment was not limited to air delivery by planes, as was the case during World War II, it was the inevitability of nuclear weapons that could be delivered by rockets with ranges across continents.

Both the United States and Soviet Union clearly understood that such intercontinental ballistic missiles would become an enduring security threat to the welfare of all nations, people, and living systems on our home planet. However, with the iron curtain of the cold war descending (Churchill, 1946), cooperation between the two superpowers (especially regarding military topics, such as rockets) was at a standstill, with both nations independently pursuing the development of missiles that could annihilate the other. According to John Foster Dulles, US Secretary of State, it was a time of "brinkmanship" (Shepley, 1956:78): "The ability to get to the verge without getting into war is the necessary art. If you cannot master it, you inevitably get into war. If you try to run away from it, if you are scared to go to the brink, you are lost."

After World War II, discussions began appearing about the establishment of institutions to govern regions beyond the boundaries of nations, international spaces that today extend across nearly 70% of the Earth's surface (Kish, 1973). Among the first international spaces was Antarctica, where the United States had proposed "establishment of an international area" in its 9 August 1948 Aide-Memoire and Draft Agreement (Department of State, 1948). These documents were circulated in secret by the United States to the embassies of the seven claimant nations (United Kingdom, New Zealand, France, Australia, Norway, Chile, and Argentina) with specific exclusion of the Soviet Union. The associated Draft Agreement included eight articles that defined a "special regime" for the "Antarctic continent and all islands south of 60 degrees south latitude, except the South Shetland and South Orkney Groups." Although issues of resource exploitation and sovereignty were explicit, the Aide-Memoire clarified,

**TABLE 1.** Mapping of topics discussed in National Security Council (NSC) meetings that specifically referenced Antarctica or the International Geophysical Year (IGY) during the Eisenhower Administrations from 1954 to 1959, determined from copies of documents from the Eisenhower Presidential Library

| | Antarctic | | Nuclear | | | Science | | | |
|---|---|---|---|---|---|---|---|---|---|
| Reference | Governance | Resources | Weapons | Stockpiles | Missiles | Safety | IGY | Space | Satellites |
| NSC (1954a) | X[a,b,c,d] | | | | | | X | | |
| NSC (1954b) | X[a,b,c] | | | | | | | | |
| NSF (1955a) | | | | | X | | X | X | X[c] |
| NSC (1955b) | X[b,c] | | X | | X[c] | | | | |
| NSC (1955c) | X[a,b,c,e] | X | | | | | | | |
| NSC (1956) | X[a] | X | | X | X | X | X | | |
| NSC (1957a) | X[a,b] | X | X[c] | | | | | | |
| NSC (1957b) | X | | | | X | | | | |
| NSC (1957c) | X[a,b,c,f,g,h] | X | | | X | | X | | |
| NSC (1958a) | X[a,b,c,f,g,i] | X | | | | | X | | |
| NSC (1958b) | X[a,b,c,f,g] | | X | | X | | X | X | |
| NSC (1958c) | X | | X | | X | | X | X | X |
| NSC (1958d) | X[a,b,c,f,g] | | | | X | | X | | |
| NSC (1959) | X[a,b,c,f,g,j] | | | | | | X | | |

[a]References the Antarctic claimant nations (Argentina, Australia, Chile, France, New Zealand, Norway, and United Kingdom).
[b]References possible claim by the United States.
[c]References the Union of Soviet Socialist Republics.
[d]Includes map of Antarctica with the Antarctic Convergence and map of claimant sectors.
[e]Includes map of Antarctic claimant sectors.
[f]Includes nonclaimant nations participating in IGY research in Antarctica (Belgium, Japan, South Africa, Union of Soviet Socialist Republics, and United States).
[g]References the United Nations.
[h]Includes map of Antarctic claims.
[i]Includes 9 August 1948 U.S. Aide Memoire and Draft Agreement on Antarctica and 10 June 1950 Soviet Memorandum on the Antarctic.
[j]Includes 10 June 1950 Soviet Memorandum on the Antarctic; 2 May 1958 note delivered by the United States to the other 11 nations participating in Antarctic research during the IGY; and 3 May 1958 Statement by the president.

"The foreseeable values of Antarctica are predominantly scientific rather than strategic or economic. An international regime would be well calculated to promote the exploitation of these scientific values."

Moreover, the United States and other governments increasingly recognized that "without scientific progress no amount of achievement in other directions can insure our health, prosperity, and security as a nation in the modern world" (Bush, 1945). Although the value of science was largely seen in terms of "new products, new industries, and more jobs," there was nascent recognition that the "most recent example of large-scale international cooperation is to be found in the Second International Polar Year of 1932–33" (Roberts, 1949). Soon after, on 5 April 1950, in a historic meeting at the home of James Van Allen, the 3rd International Polar Year (IPY) was conceived, initially with a focus on upper atmospheric research (Korsmo, 2007). Studying the upper atmosphere would involve rockets, and it was this geophysical research tool that facilitated convergence between ballistic missiles and the international governance of Antarctica.

With a global focus under the auspices of the International Council of Scientific Unions (ICSU), the 3rd IPY was renamed in 1952 as the International Geophysical Year, the IGY (Jones, 1959; Berkman, 2003). At that time, the Soviet Union had yet to become effectively engaged in either ICSU or planning the IGY from 1 June 1957 through 31 December 1958, even though Russia had contributed to the 2nd IPY (Laursen, 1959) as well as the 1st IPY in 1882–1883 (Heathcote and Armitage, 1959). Soviet engagement largely began only after the October 1954 ICSU meeting in Rome, where the United States proposed that

satellite launches should become a significant component of the IGY (Siddiqi, 2000; Bulkeley, 2008).

Still, in 1954, the United States had no intention to interact with the Soviet Union in managing Antarctica, as reflected by the statements in the National Security Council (1954a): "Orderly progress toward a solution of the territorial problem of Antarctica which would ensure maintenance of control by the United States and friendly powers and exclude our most probable enemies." It was further believed that "any increase in activity in Antarctica, particularly by the U.S., may result in the announcement of claims by the USSR." More specifically, it was decided on 15 July 1954 "to make sure that Russia was not invited to take part in any discussions or negotiations respecting Antarctica" (National Security Council, 1954b).

These U.S. Antarctic policies began to reverse with active involvement of the Soviet Union in the IGY, as noted in a White House memorandum from the special assistant to President Eisenhower on 17 May 1955 (Rockefeller, 1955):

> B. I am informed that the IGY in its Rome meeting last year endorsed the launching of a satellite as a desirable scientific step.
>
> C. Since Russia is represented in this organization it would be in a position to know immediately of any U.S. offer made by the Government through the U.S. National Committee to launch a satellite.

The outcome of such discussions emerged on 20 May 1955 with the United States' first space policy to "endeavor to launch a small scientific satellite under international auspices, such as the International Geophysical Year, in order to emphasize its peaceful purposes" (National Security Council, 1955a): "a program for a small scientific satellite could be developed from existing missile programs already underway within the Department of Defense . . . the IGY affords an excellent opportunity to mesh a scientific satellite program with the cooperative world-wide geophysical observational program." Unknown at the time, the IGY was opening a new channel for U.S.-Soviet dialogue, and by 13 July 1955, with information about "plans of the Soviet Government for an expedition to Antarctica in connections with the International Geophysical Year," there was "desirability of a review of U.S. policy toward Antarctica" (National Security Council, 1955b).

## ROCKET PRIORITIES

Quite separate from the IGY, satellites clearly were linked to ballistic missiles and government considerations about the eventuality of humankind in space (National Security Council, 1955a):

> The inference of such a demonstration of advanced technology and its unmistakable relationship of intercontinental ballistic missile technology might have important repercussions on the political determination of free world countries to resist Communist threats, especially if the USSR were to be the first to establish a satellite. Furthermore, a small scientific satellite will provide a test of the principle of "Freedom of Space."

The concept of the "Freedom of Space" was seen to be analogous to the freedom of the seas (Hall, 1995). As a legal construct, freedom of the seas had been evolving for centuries. Notably, the Dutch jurist Hugo de Groot had written *Mare Liberum* in 1609 to describe certain freedoms beyond sovereign jurisdictions enjoyed by all humankind in the sea (Bull et al., 1990). The freedom of space would become a next step for humanity.

Recognizing the challenge of "weapons many, many times more destructive . . . than ever known or imagined before," President Eisenhower then introduced his Open Skies proposal in Geneva on 21 July 1955 (Eisenhower, 1955). Noting that "disarmament agreements without adequate reciprocal inspection increase the dangers of war and do not brighten the prospects of peace," President Eisenhower went on to propose that the United States and the Soviet Union would give each other a "complete blueprint of our military establishments" as part of a system of mutual aerial reconnaissance.

Before the day ended, Chairman of the Soviet Council of Ministers Nikolai Bulganin and First Secretary of the Communist Party Nikita Khrushchev rejected Open Skies as an obvious American attempt to "accumulate target information" (Hall, 1995). This result was not surprising to President Eisenhower, who later indicated in an interview that "we knew the Soviets wouldn't accept it" (Parmet, 1972; Rostow, 1983). Immediately afterward, on 29 July 1955, the White House publicly disclosed its intention to create a scientific satellite program as part of the IGY under the principle of the Freedom of Space (Hagerty, 1955): "On behalf of the President, I am now announcing that the President has approved plans for this country for going ahead with the launching of small earth-circling satellites as part of the United States participation in the International Geophysical Year."

Throughout this period, the United States also was continuing its rocket development programs through the Navy, Air Force, and Army (Erickson, 2005). An Advisory Group Committee on Special Capabilities was appointed

to determine which of these military branches would be in charge of launching the IGY satellites (Green and Lomask, 1970; Baker, 1978; Day, 2007).

Ultimately, the Navy was given responsibility for launching the IGY satellite with their Vanguard rockets, "first, to accent the scientific purposes of the satellite and, second, to avoid interference with topic priority missile programs" (National Security Council, 1957d). The most notable rocket progress, however, was under the technical direction of Wernher von Braun at the Redstone arsenal, which became the site of the Army Ballistic Missile Agency on 1 February 1956 to weaponize rockets and develop the Jupiter Intermediate Range Ballistic Missile (von Braun and Ordway, 1975).

As expressed with firsthand knowledge by von Braun's co-worker, Frederick I. Ordway III (F. I. Ordway, personal communication, 17 March 2007), it was during 1956 when an order was given to the Army Ballistic Missile Agency that it should not plan for, or attempt, a satellite launch because (Murphree, 1956) "satellite effort using the JUPITER reentry test vehicle may have the effect of disrupting our relations with the non-military scientific community and international elements of the IGY group." This order was given despite the "considerable prestige and psychological benefits [that] will accrue to the nation which first is successful in launching a satellite" (National Security Council, 1955a). What happened next is nothing short of amazing.

On 20 September 1956, the four-stage Jupiter-C (Composite Re-entry Test Vehicle) RS-27 was launched from Redstone with the fourth stage intentionally inactivated and filled with sand (Lethbridge, 2000), which continued in subsequent nose cone retrieval tests (Logsdon et al., 1999). The Jupiter-C RS-27 attained a range of 3335 miles (5367 km) and an altitude of 682 miles (1098 km) and "could have obtained sufficient velocity to place it in orbit, if the last stage had been activated" (Wade, 2008), more than a year before the IGY launch of Sputnik 1 by the Soviet Union on 4 October 1957 (Killian, 1977).

The fact that the United States deliberately did not utilize all means available to become the first nation in space is inescapable. The Sputnik 1 launch was no surprise considering the United States had intelligence in July 1957 that the President of the Soviet Academy of Sciences had stated (Dulles, 1957), "soon, literally in the next few months, the earth will get its second satellite." Moreover, in his press conference on 9 October 1957 regarding the Sputnik 1 launch, President Eisenhower indicated (Eisenhower, 1957): "There never has been one nickel asked for accelerating the program. Never has it been considered as a race; merely an engagement on our part to put up a vehicle of this kind during the period [i.e., International Geophysical Year] that I have already mentioned."

Launching the first satellite would neither have accelerated nor impeded the ballistic missile capacity of the United States. What did the United States have to gain or lose by withholding the Jupiter C?

Finally, on 31 January 1958 (three months after the world's first artificial satellite), following the failure of the Vanguard rockets, the United States successfully launched the Explorer 1 satellite using a fourth-stage-activated Jupiter-C rocket. Although this rocket chronology is well known (e.g., Green and Lomask, 1970), it still begs the question of why the United States chose not to be the first in space, in stark contrast to the race for "priority" that has motivated nations and explorers alike throughout human history. The answer is revealed in a White House meeting with President Eisenhower four days after Sputnik 1, when the originator of the Freedom of Space doctrine and the person who appointed the ad hoc Group on Special Capabilities, Deputy Secretary of Defense Donald Quarles, observed (McDougall, 1985): "There was no doubt . . . that the Redstone, had it been used could have orbited a satellite a year or more ago. The Russians have in fact done us a good turn, unintentionally, in establishing the concept of freedom of international space."

The implication of Quarles' statement is that a U.S. weapons system as the first in space would have exacerbated the cold war, which was a serious concern since the Soviet Union already had nuclear weapons that could be delivered by manned aircraft and there were "possibilities of a future war" (National Security Council, 1956): "The President asked the National Security Council to imagine a situation in which the United States had actually won a thermonuclear war. With so much destruction heaped on the country and with our ports in ruins . . ."

This question reflects the underlying philosophy that President Eisenhower had been developing since his 1953 "atoms of peace" speech to the United Nations General Assembly, seeking "an acceptable solution to the atomic armaments race which over shadows not only the peace, but the very life, of the world" (Eisenhower, 1953c). President Eisenhower was building toward a commitment from the Soviet Union not to weaponize space (Eisenhower, 2004).

Launching the first human-made satellite with the Jupiter-C, especially in 1956 before the IGY had even begun, would have contravened the first U.S. space policy (National Security Council, 1955a) and undermined the peaceful objectives of the IGY, very likely leading to the weaponization of space. Establishing "priority" with the Jupiter-C also would have destabilized international

scientific cooperation, which was growing in national security importance because the "major emphasis of U.S. programs in Antarctica was placed upon scientific activities in support of the International Geophysical Year" (National Security Council, 1957b).

## PEACEFUL PURPOSES ONLY

With the Soviet Union and United States both in outer space by early 1958, Antarctica "assumed some strategic importance in the light of recent technological advances and increased Soviet activity" (National Security Council, 1958a). This "strategic importance" of Antarctica provided the catalyst for the United States to finalize the governance of this international space, which had been considered on an ongoing basis since the Aide-Memoire in 1948 (Table 1).

Since 1948, the United States had been suggesting that the "promotion of scientific investigation in Antarctica and the solution of conflicting claims might be accomplished by some form of internationalization" (National Security Council, 1958a; Table 1). Alternatives for this internationalization included a "condominium," whereby Antarctic claims would be merged, as well as a United Nations' "trusteeship" that could be established over part or all of Antarctica.

By February 1958, with "urgency to the need to reconsider U.S. policy in Antarctica", the United States also was considering (National Security Council, 1958a): "the conclusion of a multilateral treaty—which would include provision for an Antarctic organization—among the countries having direct and substantial interests in Antarctica, including the USSR."It is noteworthy that this new policy position was opposed by the Joint Chiefs of Staff, who "wished to exclude the USSR from any voice in the administration of Antarctica" (National Security Council, 1958b).

However, as noted by Secretary of State Dulles, the interests of the United States were to "demilitarize the entire area," and there was "no way to push the Soviet Union out of Antarctica without resort to force" (National Security Council, 1958b). Moreover, the United States was specifically concerned about "Antarctica's becoming a scene of East-West conflict or being used for military or nuclear development purposes" (National Security Council, 1958a). It also was recognized that the Soviet Union would agitate against any multilateral treaty for Antarctica if they were not a party.

In the end, as reasoned by the Department of State (National Security Council, 1958a), the pros outweighed the cons for Soviet involvement, and on 3 May 1958, President Eisenhower extended an invitation to all nations conducting Antarctic research during the IGY (Eisenhower, 1958):

> The United States is dedicated to the principle that the vast uninhabited wastes of Antarctica shall be used only for peaceful purposes. We do not want Antarctica to become an object of political conflict. Accordingly, the United States has invited eleven other countries, including the Soviet Union, to confer with us to seek an effective joint means of achieving this objective.

Within three months of President Eisenhower's invitation, "all countries invited accepted; and preliminary information discussions with representatives of the 11 countries concerned have been held regularly in Washington since June 13, 1958" (National Security Council, 1959).

Over the next 14 months, at the height of the cold war, the two superpowers and the other 10 IGY Antarctic nations contributed to 60 secret preparatory meetings in Washington, D.C., to hammer out a firm foundation for the Antarctic Treaty (*Washington Post*, 1959). This "secret advance consultation" was conceived for these nations "to reach agreement on the broad basis for an Antarctic organization" with the overarching objective "toward a peaceful solution of the problem of Antarctica" (National Security Council, 1958a). As a contingency, the "secret advance consultation" also enabled the United States to "prepare the way for cooperative arrangements . . . in the event of failure to achieve such an Antarctic organization which includes the USSR."

With science as the "keystone common interest" (Berkman, 2002), the final negotiations were convened with the Conference on Antarctica at the Department of State annex on 1776 Pennsylvania Avenue in Washington, D.C., from 15 October to 1 December 1959, when the Antarctic Treaty was signed by the seven claimant and five non-claimant nations, which included the United States and Soviet Union (Department of State, 1960). Beyond prohibiting "any measure of a military nature," the Antarctic Treaty became the first nuclear arms agreement in our world (Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters, 2007) by establishing that "any nuclear explosions in Antarctica and the disposal there of radioactive waste material shall be prohibited." Moreover, the Antarctic Treaty instituted international inspection innovations that built on the Open Skies concepts proposed by President Eisenhower in 1955, so that unilateral "aerial observation may be carried out at any time over any or all areas of Antarctica

by any of the Contracting Parties." Although other nations were involved in negotiating the Antarctic Treaty, particularly with regard to territorial claims, the nuclear arms and inspection provisions were directed by the two cold war superpowers for their cooperation in that part of the world initially. As heralded by the press that week in December 1959 (*Cleveland Plain Dealer*, 1959), "Cold War Thaws in Antarctic."

The Antarctic Treaty, which has been unchanged since it was signed an half century ago, is groundbreaking in its 14-article simplicity and breadth to ensure that that the region south of 60°S latitude "shall not become the scene or object of international discord" (Antarctic Treaty, Preamble). As the catalyst for the Antarctic Treaty, the IGY demonstrates how science can serve as a tool of diplomacy that facilitates successful negotiations among nations beyond political, economic, or cultural barriers.

Moreover, with critical contributions, especially from the Scientific Committee on Antarctic Research (Summerhayes, 2008), the Antarctic Treaty has evolved into a resilient system (Polar Research Board, 1986) that has come to include diverse components such as the 1980 Convention on the Conservation of Antarctic Marine Living Resources and the 1991 Protocol on Environmental Protection to the Antarctic Treaty. Continuity of the Antarctic Treaty reflects the role of science as a "substantial" activity that inspires ongoing consultation among nations to resolve issues "in the interest of all mankind."

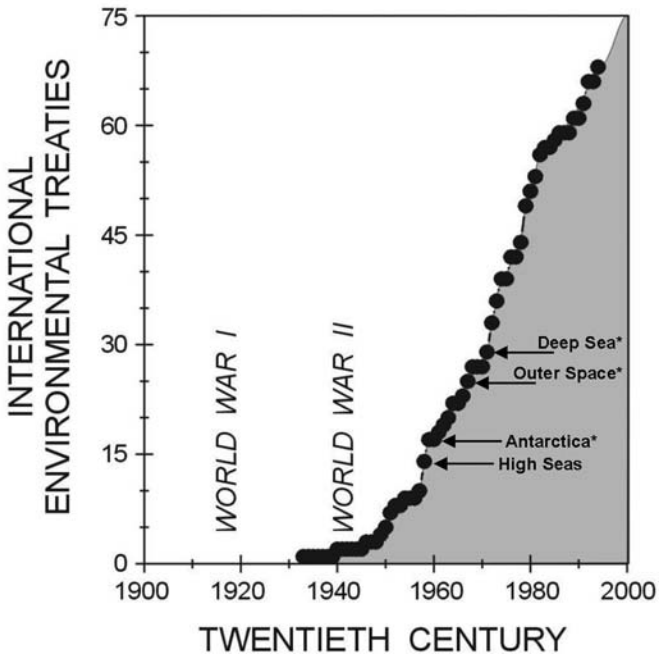


**FIGURE 2.** Emergence of global interdependence in our civilization during the twentieth century. Nearly 95% of the international ecosystem and environmental treaties and conventions that entered into force were signed after 1950. These frameworks for international cooperation are in stark contrast to the global conflicts represented by the two world wars during the first half of the twentieth century. Originating during the administration of President Eisenhower, international legal frameworks to establish international spaces beyond sovereign jurisdictions (arrows) were signed for the high seas and Antarctica in 1958 and 1959, respectively (Table 2). The 1959 Antarctic Treaty was the first nuclear arms agreement and the precedent for the nonarmament regimes (denoted with an asterisk, *) that were subsequently signed for outer space and the deep sea in 1967 and 1971, respectively (Table 2). Elaborated from Berkman (2002).

## BALANCING INTERESTS GLOBALLY

As a fundamental transition period in our civilization, the twentieth century was when we became a global community (Figure 2). The first half of the twentieth century was marred by devastating conflicts among nations on a global scale: the concept of world wars. In contrast, the second half of the twentieth century opened the door to a steep learning curve of international cooperation to resolve environmental and ecosystem issues that extend across as well as beyond the boundaries of nations.

Amid the stockpiling of nuclear weapons (Rosenberg, 1983) and cold war posturing for a nuclear war (e.g., Kissinger, 1957), President Eisenhower pursued peaceful alternatives to engage the Soviet Union in cooperative dialogues. He proposed Open Skies in 1955 (Eisenhower, 1955), and when that strategy was unsuccessful, he promoted the Freedom of Space and the launch of scientific satellites during the IGY (National Security Council, 1955a). Because priority in space had not been pursued at any cost, he preserved leverage to establish the peaceful use of regions beyond sovereign jurisdictions, "international space" as Secretary Quarles had presented to him in 1957 (McDougall, 1985).

During his watch, the 1958 Convention on the High Seas established the legal framework for the first international space "open to all nations, no State may validly purport to subject any part of them to its sovereignty." President Eisenhower then invited allies and adversaries alike (including the Soviet Union) to negotiate the 1959 Antarctic Treaty, which also was envisioned in relation to space law (National Security Council, 1958c): "If, by analogy to the Antarctic proposal of the United States,

international agreement can be reached in space and the rules and regulations to be followed with respect thereto, problems of sovereignty may be avoided or at least deferred."

With its adoption, the Antarctic Treaty also reinforced the international status of the high seas (Antarctic Treaty, Article VI): "nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area." Importantly, the peaceful-use and nonarmament provisions of the Antarctic Treaty as well as its firm foundation on common interests became the precedent for the outer-space and the deep-sea regimes, establishing those areas as international spaces as well (Berkman, 2009).

More than accelerating the development of international legal frameworks to resolve environmental and ecosystem issues across national boundaries, President Eisenhower paved the way for humankind to establish international spaces across most of the Earth and in the cosmos (Table 2). With Antarctica as the centerpiece among the international spaces, he established strategies for balancing national interests and common interests for the lasting benefit of all. The vision President Eisenhower presented in his first inaugural address (Eisenhower, 1953a) remains a guiding light. With hope and inspiration, the signature day of the Antarctic Treaty, December 1st, deserves to be celebrated forever as "a day of freedom and of peace for all mankind." In this spirit, 'Antarctica Day' was inaugurated on 1 December 2010 (Antarctic Treaty Summit Website Archive, 2010).

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**TABLE 2.** Initial agreements to establish international spaces beyond sovereign jurisdictions in the high seas, Antarctica, outer space and the deep sea.

| Agreement name | Signature location and date | Entry into force | Peaceful purposes | Nonarmament region |
|---|---|---|---|---|
| Convention on the High Seas | Geneva, 29 April 1958 | 30 September 1962 | Not Specified | Not established |
| Antarctic Treaty | Washington, D.C., 1 December 1959 | 23 June 1961 | Matters of common interest | Yes |
| Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies | London, Moscow, Washington, D.C., 27 January 1967 | 10 October 1967 | Common interest of all mankind | Yes |
| Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil | London, Moscow, Washington, D.C., 11 February 1971 | 18 May 1972 | Common interest of mankind | Yes |

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