Ordine internazionale e diritti umani
International Legal Order and Human Rights
Ordenamiento Jurídico Internacional y Derechos Humanos
Ordre Juridique International et Droits de l'Homme
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EDITORIALE SCIENTIFICA

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ITALY AS THE LAUNCHING STATE OF THE SAN MARCO I

CONTENT: 1. San Marco I in the List of Launches of the Early Sixties. – 2. Debates on Italy's Ranking in the Early Space Race. – 3. Establishing the Correct Order of Priority. – 4. Key Factors Supporting Italy's Claim as the Third Country to Launch a Satellite into Orbit. – 5. Strengthening Italy's Position: Legal Qualification as the Launching State. – 6. The French Satellite A-1 and the Irrelevance of the Launcher/Payload Relationship. – 7. The Registration of San Marco I: A Step Not Taken by the UK and Canada. – 8. The Misconception That San Marco I Was Also Registered by the USA – 9. The Other San Marco Satellites Launched from Malindi. – 10. Further Submissions about San Marco Satellites II to V.

1. *San Marco I in the List of Launches of the Early Sixties*

In 2024, social media and institutional initiatives have celebrated the 60th anniversary of Italy's first artificial satellite, San Marco I, which was successfully launched into orbit on December 15, 1964.[1] The excitement surrounding this historic milestone has been truly palpable. I am glad to join in commemorating this Italian achievement by addressing some of its legal aspects, specifically Italy's qualification as the satellite's launching State and the registration of San Marco I with the Secretary General of the United Nations. Additionally, I will take this opportunity to correct the UN Secretariat's assertion that San Marco I was «also registered by the USA».[2]

The anniversary of the San Marco I launch highlights the pioneering nature of the San Marco project, which was conceived by Professor Luigi Broglio and carried out between 1962 and 1980, as a bilateral cooperation initiative with the United States, focused on the conception, manufacturing and launching of eight satellites developed by the University of Rome "La Sapienza".[3] Formally, the control of the San Marco program was maintained by

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[1] The satellites belonging to the San Marco family, in total five, were named in the official documentation interchangeably in Roman or Arabic numerals, and even with alphabetical letters (San Marco A).

[2] *Infra*, para. 7.

[3] The San Marco satellites - of all-Italian conception - were always built and assembled at the laboratories of the University of Rome "La Sapienza" and always under the direction of Prof. Broglio and his collaborators.

the *Commissione per le Ricerche Spaziali* (CRS) set up in 1959 within the National Research Council (CNR) at the initiative of Edoardo Amaldi and Luigi Broglio.[4] While the launch vehicle was provided by the National Aeronautics and Space Administration (NASA), the satellite was entirely Italian built, launched by an Italian crew, and managed in orbit by an Italian team. This landmark result solidified Italy's *status* as a key player in early space exploration, marking a significant chapter in the country's scientific and technological history.

2. *Debates on Italy's Ranking in the Early Space Race*

One question remains unanswered: Why do opinions vary so widely regarding the ranking of Italy's San Marco I satellite among the early 1960s launches? The dominant institutional perspective in Italy holds that the country was the *third*, after the USSR and the United States, to place a national satellite into orbit.[5] However, various sources assert that Italy was actually the *fifth* nation to design and launch an artificial satellite, following the

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The Center for Aerospace Research (CRA) was founded by Broglio within the School of Aerospace Engineering. Centro Nazionale delle Ricerche, *Testimonianze. Franco Quintilli. Già collaboratore tecnico del CNR.* «Nel 1960 con il progetto San Marco il CNR si lanciò nello spazio. Ricordo del prof. Luigi Broglio, ideatore del programma "S. Marco" e padre dell'attività aerospaziale italiana», https://web.archive.org/web/20080101014100/http://www.fi.cnr.it/r%26f/n21/testimonianze.htm (last access 10.03.25). Broglio also involved the Italian Air Force in the San Marco programme, which financially supported and made technical equipment available to the CRA. See also G. DI BERNARDO NICOLAI, *Nella nebbia, in attesa del sole. Breve storia di Luigi Broglio, padre dell'astronautica italiana*, Roma, 2005.

[4] M. DE MARIA, L. ORLANDO, F. PIGLIACELLI, HSR-30, *Italy in Space*, 1946-1988, ESA Publications Division, 2003, p. 14.

[5] AGENZIA SPAZIALE ITALIANA, «Con questa impresa, l'Italia è entrata tra i grandi protagonisti dell'esplorazione spaziale», per l'ASI «seconda solo a Stati Uniti e Unione Sovietica nel lanciare un satellite *tutto suo*» [LinkedIn post], *LinkedIn*, https://www.linkedin.com/posts/agenzia-spaziale-italiana_60-anni-fa-litalia-conquistava-lo-spazio-activity-7272299654438952962-wHPz?utm_source=share&utm_medium=member_desktop. G. DE CHIARA (Technical and System Manager – Telespazio Spa), *LinkedIn*, https://www.linkedin.com/posts/giuseppe-de-chiara-92752341_60-years-ago-italy-became-a-space-nation-activity-7274020095079653376-QHtn?utm_source=share&utm_medium=member_desktop. See also, THALES ALENIA SPACE, «Yesterday's event was part of the initiatives leading up to the #ItalianSpaceDay, celebrated on December 16th. This special day, established by the Italian government, honors the anniversary of Italy's first satellite launch, San Marco-1, in 1964» [LinkedIn post], *LinkedIn*, https://www.linkedin.com/posts/thales-alenia-space_italianspaceday-paris-thalesaleniaspace-activity-7272261187969433609YvL?utm_source=share&utm_medium=member_desktop. AVIO, «It was the third nation in the world to succeed in this enterprise, after the USA and the USSR» [LinkedIn post], *LinkedIn*, https://www.linkedin.com/posts/avio-s-p-a_satellite-space-spaceiscloser-activity-7274045539917123589-JyWX?utm_source=share&utm_medium=member_desktop. ALTEC, «Nel lontano 1964, l'Italia fu il terzo Paese al mondo, dopo URSS e USA, a mettere in orbita un satellite artificiale, curandone la produzione e il lancio» [LinkedIn post], *LinkedIn*, https://www.linkedin.com/posts/altec-spa_nasa-asi-scienza-activity-7274430326955802624-_Y9D?utm_source=share&utm_medium=member_desktop. M. MOLINA (Managing Director – SITAEL), *LinkedIn*, https://www.linkedin.com/posts/marco-molina-81563175_microhetsat-satellite-sitael-activity-7268960441102475264-IIFv?utm_source=share&utm_medium=member_desktop. LEAF SPACE (Telecomunicazioni via satellite – Lombardia), «Precisely sixty years ago, Italy made history with San Marco 1, becoming the third nation to launch a satellite after Russia and the US» [LinkedIn post], *LinkedIn*, https://www.linkedin.com/posts/leaf-space_nationalspaceday-sapienza-sanmarco1-activity-7274391330586324994-YQoQ?utm_source=share&utm_medium=member_desktop.

Soviet Union, the United States, the United Kingdom, and Canada.[6] The same perspective is taken with regard to the UK satellite Ariel 1: «The United Kingdom's original space programme commenced in 1952. The first launch of a British satellite Ariel 1, on a US rocket occurred in 1962 making the United Kingdom the third nation in space».[7] Meanwhile, France also claims to have been the *third* nation, after the USSR and the United States, to launch a satellite, disregarding the earlier launches by the UK, Canada, and Italy.[8] At the same time, Canada is accredited for having launched «the first satellite built outside the Soviet Union and the United States».[9]

These contrasting rankings arise from differing criteria used to determine the order of nations that have launched objects into outer space. While a purely chronological approach may seem the most objective, alternative factors can influence the perceived rankings. Some of these alternative criteria emphasize the significance of Italy's achievement, reinforcing its claim to being the third country to place a satellite into orbit after the USSR and the United States.

Moreover, I believe that the legal aspects—largely overlooked—play a crucial role in supporting Italy's position. A legal perspective enables a meaningful comparison between Italy's launch, and, on one hand, the objects placed in orbit by the UK and Canada before San Marco I, and on the other, France's launch, which occurred later.

3. *Establishing the Correct Order of Priority*

Examining early US-European space cooperation since the late 1950s reveals a clear pattern: NASA primarily facilitated scientific collaborations by either offering space aboard its satellites for experiments or providing launch services for national scientific payloads. These arrangements were established through bilateral agreements with both European and non-European nations.[10]

One of the earliest examples of such cooperation was the Ariel 1 satellite, launched on April 26, 1962, from Cape Canaveral using a US Thor-Delta launch vehicle. Ariel 1 is often described as the first *British-American* satellite because NASA played a significant role in its development and management. The American Goddard Space Flight Center (GSFC) was responsible for key aspects of the project, including design, fabrication, integration, and testing of the spacecraft's structure, power supply, telemetry, command receiver, thermal

[6] Wikipedia quotes G. KREBS, *Chronology of Space Launches*, in *Gunter's Space page* (acceded November 8, 2016) and *L'Italia spaziale*, Wikipedia, *Progetto San Marco*, https://it.wikipedia.org/wiki/Progetto_San_Marco. The same is said by another Wikipedia page: «L'Italia è così diventato il quinto Paese a mandare in orbita un proprio satellite, dopo Unione Sovietica (1957), gli stessi USA (1958), Regno Unito e Canada (1962)», Wikipedia, *San Marco I*, https://it.wikipedia.org/wiki/San_Marco_1 (last access 20 February 2025). On the same line, R. D. LAUNIUS, *Reaching the Moon*, New Haven, 2019, table 4.

[7] J. WHEELER, ALDEN LEGAL LIMITED, *A general introduction to Space Law in United Kingdom*, https://www.lexology.com/firms/1260619 (last acceded 11 March 2025).

[8] *Infra*, para. 6.

[9] WIKIPEDIA, *Alouette 1*, https://en.wikipedia.org/wiki/Alouette_1 (last access 19 February 2025).

[10] H. P. VAN FENEMA, *The International Trade in Launch Services. The Effects of U.S. Laws, Policies and Practices on Its Developments*, Leiden, 1999, pp. 40-41.

control, and data storage; providing the launch vehicle and conducting the launch operation; data acquisition through the worldwide Minitrack network; and data processing.[11]

The United Kingdom's role in the project was limited, primarily focusing on the design, fabrication, and testing of the scientific instruments, particularly the flight sensors and associated electronics up to the telemetry encoder input. Additionally, the UK was responsible for data analysis and interpretation.

Despite these British scientific contributions, Ariel 1 was not constructed by the UK, underscoring a crucial distinction between scientific participation and a nation independently designing, building, and launching its own satellite.

This distinction is further reinforced by Canada's claim regarding Alouette 1, which has been described as «the first satellite constructed by a country other than the Soviet Union or the United States,» implicitly excluding Ariel 1 from the same category. However, much like Ariel 1, Alouette 1 was also part of a joint Canada-U.S. scientific program.

The idea for Alouette 1 originated from two scientists at Canada's Defence and Research Telecommunications Establishment (DRTE), John Chapman and Eldin Warren, who submitted a proposal to NASA to design and build a Canadian satellite capable of monitoring the ionosphere from above. NASA accepted the proposal, leading to the formation of a DRTE-led team under Chapman's leadership to design and construct two identical Alouette models.[12] It was launched from Vandenberg Air Force Base aboard a Thor-Agena rocket on September 29, 1962, under conditions different from those of San Marco I, particularly in terms of the team that launched and managed it in orbit.

Next came the second British satellite, Ariel 2, which was launched on March 27, 1964, by NASA using a Scout X-3 rocket from Launch Area 3 at the Wallops Flight Facility on the US East Coast. This satellite, designed for radio astronomy research, was once again developed under the leadership of NASA's Goddard Space Flight Center and built by Westinghouse Electric Corporation, an American manufacturing company.[13]

4. *Key Factors Supporting Italy's Claim as the Third Country to Launch a Satellite into Orbit*

Italy's San Marco I satellite was launched on December 15, 1964, using an US Scout rocket from Wallops Flight Facility. It had three defining characteristics that set it apart from previous launches:1. It was *fully designed and built* by Italy; 2. It was launched *by an entirely Italian launch crew*[14]; 3. It was *managed in orbit by an Italian team.*

These three elements were not evident in the cases of the two British Ariel satellites and the Canadian Alouette, as previously discussed.

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[11] To read more about Ariel 1, National Aeronautics and Space Administration, *Ariel 1*, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/display.action?id=1962-015A (last access 20 February 2025).

[12] To ensure mission success, various satellites were built for redundancy: a prototype, the one which became the launched satellite and a backup unit, ready to launch if needed. The satellites were assembled at the DRTE Electronics Lab in Ottawa, Ontario, with development and construction taking three and a half years from the initial proposal.

[13] To read more on Ariel 2, National Aeronautics and Space Administration, *Ariel 2*, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/display.action?id=1964-015A (last access 20 February 2025).

[14] *Supra*, para. 1. The team also integrated the payload to the launcher.

Regarding the first point, the development of the satellite, I have already stressed that San Marco I was entirely built by an Italian team. There is no dispute on that. It was the first in a series of five satellites under the Italian-U.S. San Marco program.

Regarding the second element, the Italian Launch Crew, relevant NASA documents confirm the significance of the Italian-led launch, stating: «The launch was the *first* satellite launch in NASA's international cooperation program that was conducted by non-U.S. personnel and was the *first* Western European launch».[15]

In other words, the Italian crew was trained by NASA, but the launch itself was executed entirely by Italian personnel. This mission served as a test before Italy's transition to fully autonomous launches.

When we focus on satellite management in orbit, a 1968 report by NASA's Goddard Space Flight Center, titled History of the San Marco, further reinforces Italy's role in satellite operations. It remarks: «The principal goals of Phase 2 were: the completion of the scientific and technical training of the Italian personnel, with the purpose of creating a totally self-sufficient Italian team for the launch of the Scout rocket from the Wallops Island base and the orbital-flight qualification of the experiments to be put on the San Marco I satellite».

Following the launch, a NASA expert panel met in January 1965 to assess the success of this phase. The report concludes: «The group of experts from NASA that had participated in the San Marco project met in January 1965 to verify that the goals of the second phase had been met and concluded that all of them were achieved with a high standard of excellence».[16]

Unlike the United Kingdom and Canada, the San Marco I launch was fully managed by Italians.[17] Although the rocket was provided by the United States and the launch site was in American territory, the operation itself was controlled by an Italian team. This distinction supports the argument that Italy was the third nation to *independently* launch its own satellite. The fact that in all three cases (UK, Canada, and Italy), the rockets and launch sites were provided by the United States does not change the evaluation of Italy's position, as this condition was common to all. What sets Italy apart is the independent execution of the launch by its own national team.

In conclusion, the Italian-built satellite, Italian-led launch, and Italian-managed mission clearly distinguish San Marco I from the earlier UK and Canadian launches. These factual elements strongly support Italy's claim as the third country to have successfully launched a national satellite into orbit through its own national effort. If we take this perspective the assumption that Italy was the third country seems to be correct.

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[15] H.T. WELLS, S.H. WHITELEY, and C.E. KARAGEANNES, *Origins of NASA names*, NASA SP-4402, The NASA History Series, Washington D.C., 1976, p. 67, https://www.nasa.gov/wp-content/uploads/2023/03/sp-4402.pdf.

[16] A.J. CAPORALE, *History of San Marco*, Goddard Space Flight Center, Greenbelt (Maryland), 1968, respectively 15, 40 (last access 15 February 2025).

[17] C. Buongiorno mentions in his interview with E. Ferrone that the second phase of the San Marco project was aimed at verifying the capacity of the Italian team to launch the Scout. E. FERRONE, *Carlo Buongiorno Lo spazio di una vita. Intervista al primo direttore generale dell'Agenzia Spaziale Italiana*, Firenze, 2011, p. 96.

5. *Strengthening Italy's Position: Legal Qualification as the Launching State*

At the time of these launches, there were no established legal instruments defining what constituted a "launching State" or how to identify one. This legal gap existed during the period following the launches of Ariel 1, Alouette 1, and Ariel 2, when no UN space treaties were in force, and the legal framework for outer space activities was still in its early stages.

There was, however, UN General Assembly Resolution 1721 B (XVI), which addressed the registration of space objects. Yet, none of the satellites launched by the UK or Canada were officially registered by their respective governments. In contrast, San Marco I was officially registered with the Secretary General.[18]

Moreover, the UN General Assembly played a crucial role in shaping early space norms through soft law instruments before the launch of San Marco I. In fact, a pivotal moment in this process occurred between the launches of Ariel 2 and San Marco I. On December 13, 1963, the General Assembly adopted, without a vote, Resolution 1962 (XVIII), which contained the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. This instrument reflected an international consensus among UN member States, regardless of whether they were spacefaring nations, on how outer space should be governed. It affirmed that outer space and celestial bodies should be free for peaceful exploration and use; activities in space should be conducted in accordance with international law; and no State could claim sovereignty over any part of outer space.[19]

By the time San Marco I was launched into orbit, the Declaration of Legal Principles had already been in place for over a year. A relevant provision for our case is Principle 8, which, for the first time in international law, identified the concept of "launching State" as the State liable for damages caused by space objects. At the same time, it outlined four categories of launching States. It establishes that: «Each State which launches or procures the launching of an object into outer space, and each State from whose territory or facility an object is launched, is internationally liable for damage to a foreign State or to its natural or juridical persons by such object or its component parts on the Earth, in air space, or in outer space».

By combining the identification of the launching State as the State that launches a space object with the previously discussed fact that San Marco I was launched by a team of Italian engineers—who initiated the launch, pressed the button, and oversaw the entire process—we can conclude that Italy should be considered the launching State of the satellite, despite the rocket and launch site being American. Principle 8 of the Declaration also considers as a launching State a State which commissions a launch rather than directly executing it. Furthermore, the four criteria are cumulative, not alternative, so that there could be more than one launching State for the same space object. This was not our case, because, as I shall

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[18] *Infra*, para. 7.

[19] A/RES/1962(XVIII), *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space*, 13 December 1963, https://digitallibrary.un.org/record/662677?ln=en (last access 29 January 2025). Another example of this kind of legal instruments is resolution 41/65 adopted by the General Assembly on 3 December 1986 and containing as an annex the Principles Relating to Remote Sensing of the Earth from Outer Space. S. MARCHISIO, *The 1986 United Nations Principles on Remote Sensing: A Critical Assesment*, in *Studi di diritto internazionale in onore di Gaetano Arangio-Ruiz*, Napoli, 2004, pp. 1311-1340. In order to ascertain the legal effects produced by a given declaration of principles, it is necessary to check its content, the circumstances of its adoption and the practice prior to and after its approval.

clarify, there were two launching States, Italy and US, but for two distinct space objects, the satellite and the rocket.

The Declarations of Principles adopted by the Assembly should be seen as crucial tools in the ongoing development of international law. As noted by the International Court of Justice in its Advisory Opinion of July 8, 1996, concerning the *Legality of the Threat or Use of Nuclear Weapons*, General Assembly resolutions, even though non-binding, can carry significant normative weight.[20] They often provide evidence of the existence of a customary international norm or an emerging *opinio juris*—the belief that a certain practice is legally obligatory under international law.

Afterward, all nine Principles of the Declaration acquired legally binding *status* when they were restated in the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, opened for signature on January 27, 1967, and entered into force on October 10, 1967 (OST).[21]

6. *The French Satellite A-1 and the Irrelevance of the Launcher/Payload Relationship*

Next, we turn to the French satellite A-1 (Astérix), which was launched on November 26, 1965, from the Hamaguir base in the Algerian Sahara to test the "Diamant" launching vehicle for the first time.[22] Thus, France asserts its *status* as the world's third "space power" to have placed a national satellite in orbit with a French rocket, emphasizing that both the satellite and the launcher were domestically manufactured.[23]

However, the Italian achievement predates the French launch by nearly a year, solidifying Italy's position as the first to enter the space age in this context. The fact that both the satellite and the launcher were of French origin does not change Italy's *status* as the launching State for San Marco I. Furthermore, France's case includes an external element: the launch took place at the Hamaguir base in Algeria, a country that had gained independence in 1962. Although France retained the use of certain military sites in Algeria under the Colomb-Béchar-Hamaguir complex, the 1962 Evian Accords preserved Algeria's sovereignty over the territory.[24]

This analysis highlights why Italy's claim to have been the third launching State, after the USA and the USSR, appears correct, while France's assertion of being third based on the launch of its first satellite on November 26, 1965, is less convincing.[25]

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[20] ICJ, *Reports 1996*, pp. 254-255.

[21] P.G. DEMBLING, D.M. ARONS, *The Evolution of the Outer Space Treaty*, in *Journal of Air Law and Commerce*, 1967, pp. 419-456, 425, and S. MARCHISIO, *The Law of Outer Space Activities*, Roma, 2021, pp. 59-70.

[22] See the *Note Verbale from the Permanent Mission of France to the UN Secretariat*, A/AC.105/INF129, 11 March 1966. L. SABESTA, *United States – European Cooperation in Space During the Sixties*, ESA HRS-14, Netherlands, 1994, 19-21.

[23] «With this launch, France joined the Soviet Union and the United States in space, becoming the 3rd space power», J. VILLAIN, *23 November 1965: France becomes 3rd space power*, in *Newsletter de l'Académie de l'Air et de l'Espace*, n. 94, 2015, 10-11.

[24] United Nations, *Treaty Series*, Volume 507, New York, 1965, pp. 25-100.

[25] If anything, we could acknowledge that France was the third "space power" in terms of developing and using its own launchers. However, this does not change Italy's precedence as the launching state and its position as the third country to place a national satellite into orbit.

7. *The Registration of San Marco I – A Step Not Taken by the UK and Canada*

Another important legal aspect to consider is the registration of San Marco I, a step that had not been taken for earlier satellites from the UK and Canada. Italy made a deliberate effort to comply with UN instruments governing space activities and to inform the international community about its achievement. Keeping the event secret or confidential would have undermined the significance of this national accomplishment.

The first step in this process came on March 5, 1965, when the Italian Permanent Representative to the United Nations, Piero Vinci, sent a letter to the UN Secretary-General, providing details about San Marco I. The letter stated: «In accordance with the provisions of Part B, paragraphs 1 and 2 of the UNGA resolution 1721 (XVI), the Government of Italy wishes to register the launching from United States territory of the space vehicle described in the attached report».[26] Regarding the satellite's function, the report provided detailed information: «The S. Marco I satellite is a scientific spacecraft containing two experiments: (1) special instrumentation for the measurement of ionospheric density at a continuous rate: (2) a transceiver for studies on radio propagation through the upper strata of the atmosphere».

It is worth noting that Italy was not legally obligated to register the satellite, as there were no binding treaties or established norms of general international law requiring this at the time. Instead, Italy complied with UN General Assembly resolution 1721 B (XVI), passed on December 20, 1961, which encouraged launching States to register space objects on a voluntary basis.[27] The resolution also called on the UN Secretary General to maintain a public registry of such objects to ensure proper identification and transparency. The concept of "identification" is crucial here, as it implicitly links the object launched in outer space to a State's jurisdiction, particularly in the event of damage to third parties, while also promoting transparency in outer space activities.

Since then, the UN Office for Outer Space Affairs (UNOOSA) has managed the public registry, known as the Resolution Register. This registry continues to play an essential role for countries that have not yet joined the Convention on the Registration of Space Objects (opened for signature on January 14, 1975, and currently with 76 parties).[28]

Italy officially became a party to the 1975 Convention in 2005, following the enactment of Law No. 153 on July 12, 2005, which authorized Italy's participation and mandated the full incorporation of the Convention's provisions into the domestic legal framework.[29] As a

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[26] A/AC.105/ INF. 91, *Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond. Letter dated 5 March 1965 from the Permanent Representative of Italy addressed to the Secretary-General*, https://www.unoosa.org/oosa/en/osoindex/data/documents/it/a/aac.105inf.091.html (last access 28 January 2025). The accompanying report provided technical details about the satellite, including International designation: 1964-84 A; Launcher: A Scout rocket; Date of launch: December 15, 1964. The report also included the orbital parameters for identifying the satellite's unique orbit: Nodal period: 94.9 minutes; Inclination: 37.80°; Apogee: 821 km; Perigee: 206 km.

[27] France registered the scientific satellite A-I launched on 26 November 1965. See the *Note verbale dated 11 March 1966 from the Permanent Mission of France* (A/AC.105/INF.12).

[28] Last official information A/AC.105/C.2/2024/CRP.3, 15 April 2024 (last access 20 February 2025).

[29] S. MARCHISIO, *International Law*, Torino, 2021, p. 169.

result, the Italian Space Agency (ASI) established and now maintains a National Registry of Space Objects, ensuring compliance with Italy's international obligations.[30]

8. *The Misconception That San Marco I Was Also Registered by US*

The principle that there should only be one registering State for each space object has been firmly established in space law since the inception of this practice, as registration involves recording information about an object in space on an official national registry. Therefore, I disagree with the UN Secretariat's statement in the online index of space objects, maintained by UNOOSA, under the search key "Notifications from States & Organizations" for Italy, where it is noted that San Marco I was «Registered also by the USA».[31]

Upon reviewing the relevant documentation, it becomes clear that on March 11, 1965, the United States submitted registration data to the UN for several US-launched objects.[32] As part of this submission, the US provided supplemental information indicating that certain objects, including the Italian satellite San Marco I, were launched using American facilities and a Scout rocket. However, this did not constitute a double registration of the satellite. The US would not have registered a foreign payload launched by another country, even if the launch occurred on American soil and involved an American launch vehicle. Therefore, San Marco I was registered solely by Italy, not by the United States.

Although the two States could not both be considered States of registry of the same satellite, as I have previously explained, they were both launching States, in accordance with Principle 8 of the 1963 UNGA Declaration, which outlined the four categories of launching States, later incorporated into Article VII of the 1967 OST. The US was the launching state in regard to the Scout rocket, while Italy was the launching State with respect to the San Marco I satellite, as the launcher and the payload were distinct space objects. It is not coincidental that the US correctly referred to San Marco I as the «object launched by Italy,» thereby recognizing Italy as the State that launched and was responsible for this national activity in outer space.

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[30] ITALIAN SPACE AGENCY, *Informazioni sul Registro nazionale degli oggetti lanciati nello Spazio*, https://www.asi.it/lagenzia/risorse_informative/registro-nazionale-degli-oggetti-lanciati-nello-spazio/informazioni-sul-registro-nazionale-degli-oggetti-lanciati-nello-spazio-2/#:~:text=La%20legge%20153%2F2005%20assegna,degli%20oggetti%20lanciati%20nello%20Spazio.&text=La%20Convenzione%20sull'Immatricolazione%20ha,l'identificazione%20degli%20oggetti%20spaziali (last access 20 February 2025).

[31] United Nations Office for Outer Space Affairs, *Notifications from States & Organizations: Italy*, https://www.unoosa.org/oosa/en/spaceobjectregister/submissions/italy.html (last access 20 February 2025).

[32] A/AC.105/INF.090, *Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond. Letter dated 5 March 1965 from the Deputy Permanent Representative of the United States of America addressed to the Secretary-General*, https://www.unoosa.org/oosa/en/osoindex/data/documents/us/a/aac.105inf.090.html (last access 28 January 2025).

9. *The Other San Marco Satellites Launched from Malindi*

Following the launch of San Marco I, a significant development occurred with the establishment and operation of the Italian San Marco station in Malindi, Kenya. This milestone was formalized through the Italian-Kenyan Exchange of Notes on January 10, 1964, which implemented a Memorandum of Understanding between the Italian Space Commission (part of the National Research Council) and the University of East Africa Royal College of Nairobi.[33] The agreements aimed to «jointly pursue a project for the peaceful exploration of the equatorial space region».[34] Since 1964, Italy's cooperation with Kenya has enabled access to a strategically important launch site near the Equator. [35]

The arrangement included two key components of the Malindi Compact: the first, land-based facilities located 28 km north of Malindi, designed to support satellite tracking and data acquisition; the second, sea-based facilities situated in Ungwana Bay (formerly known as Formosa Bay), which housed the San Marco platform, used for launching sounding rockets and satellites.[36]

Initially located in international waters, the platform's establishment did not require Kenyan consent under the legal framework of the time. However, subsequent changes in Kenya's domestic legislation regarding territorial waters altered the legal landscape, necessitating updated agreements to address jurisdictional and operational issues. Kenya's maritime jurisdiction expanded significantly between 1969 and 1989, in line with the evolution of international law of the sea. Key milestones were the extension of the Kenyan territorial waters to 12 nautical miles in 1969, and the Kenya's designation of Ungwana Bay as a historic bay, which increased the scope of Kenyan sovereignty over surrounding waters. At the end, the Territorial Waters Act (1972) and the Maritime Zones Act (1989) formalized Kenya's jurisdiction over these expanded maritime areas.

As a result, the legal *status* of the San Marco and Santa Maria platforms changed, placing them under Kenya's jurisdiction. Consequently, the bilateral agreements between Italy and Kenya were revised to reflect these legal shifts. The 1987 Agreement renewed the 1964 Exchange of Notes, incorporating adjustments to align with Kenya's expanded jurisdiction and addressing the evolving role of the platforms. The 1995 Agreement further developed the legal framework for continued cooperation, formalizing the platforms' role within the new legal context and ensuring that both parties continued to benefit from their partnership. The San Marco station in Malindi became a strategic asset for satellite tracking and data acquisition, while also serving as a unique platform for space science and technology research.

The collaboration also set an important precedent for international cooperation in space exploration, especially in developing countries like Kenya, where the partnership with

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[33] O. FERRAJOLO, *San Marco-Malindi: la base spaziale italiana in Kenya*, in *Rivista di diritto internazionale*, 1995, pp. 907-939.

[34] O. FERRAJOLO, *Launch and Tracking Stations: The "San Marco-Malindi" Case*, in G. LAFFERANDERIE (Ed.), *Outlook on Space Law Over the Next 30 Years*, The Hague/London/Boston, 1997, pp. 273-284.

[35] The agreement also detailed facilities and support provided by Kenya, including the permission to load and unload equipment at the Mombasa airport and port; the infrastructure for conveying communications from the launching platform through Mombasa; and other logistical support necessary for the smooth operation of the project.

[36] The 1964 Exchange of Notes outlined the land-based segment as an area of about 1,000 square meters, which was designated to function as a warehouse for the duration of the project.

Italy provided technological expertise and resources. This joint effort has contributed to a shared understanding of space exploration's potential, while fostering peaceful cooperation between nations, as envisioned by the principles outlined by the 1967 Outer Space Treaty.

10. *Further Submissions about San Marco satellites II to V*

Within this changed legal framework, a second submission was sent by Italy, again in accordance with Resolution 1721 B (XVI), to the Secretary General and the Committee on the Peaceful Uses of Outer Space (COPUOS) on 30 July 1967.[37] The accompanying Note Verbale, dated 21 June 1967, provided details about the launch of the satellite San Marco II, stating: «A scientific satellite, named San Marco II, was launched by a Scout vehicle on 26 April 1967, from a mobile range off Formosa Bay (Kenya). Basic characteristics: perigee 218 km; apogee 748 km; equatorial orbit».[38]

Both San Marco I and San Marco II eventually decayed, on 13 September 1965 and 14 October 1967, respectively.[39] Supplementary information about San Marco I was provided again to the UN by a note of the United States dated 11 November 1965, saying: «The following object, launched by the Government of Italy from United States territory with the use of United States facilities, was no longer in orbit as of 2400Z on 15 September 1965».[40]

Regarding San Marco 3, Italy did not provide registration information to the UN. However, its launch is documented again through information submitted by the United States on 30 June 1971 concerning objects launched by them. Consequently, we learn the following details about San Marco 3: Launch vehicle: a Scout rocket was used; international designator: 1971-36A.[41] An additional note specified that 1971-36A (San Marco 3) was an Italian satellite launched from the San Marco Range using a U.S. launch vehicle.

Italy placed afterward in orbit other two satellites of the San Marco family. According to the letter sent by the Permanent Representative of Italy to the UN, Eugenio Plaja, on 5 February 1975, the purpose of the satellite San Marco IV (international designator 1974-009 A) was the measurement of density, temperature composition of atmosphere. It was launched from the San Marco Equatorial Range, Ngomeni (Kenya) the 18 February 1974 (time of launch 10 h 05 min 28, 5 sec GMT) with a launch vehicle Scout-D. Here we have additional information, quite a novelty, apart the usual apogee, perigee, period and inclination, about the "anticipated life" of the satellite, indicated in 3 years. It decayed indeed on April 5, 1976. Again, the information is contained in a U.S. document addressed to the

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37 S. MARCHISIO, *The Evolutionary Stages of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)*, in Journal of Space Law, 2005, 219-242.

38 A/AC.105/INF.166. See also, E. FERRONE, *Carlo Buongiorno, lo spazio di una vita. Intervista al primo direttore generale dell'Agenzia spaziale italiana*, quot., 125-126.

39 On San Marco 2, National Aeronautics and Space Administration, *San Marco 2*, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/display.action?id=1967-038A (last access 20 February 2025).

40 A/AC.105/INF.116, *Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond. Letter dated 8 November 1965 from the Permanent Representative of the United States of America addressed to the Secretary-General.*

41 A/AC.105/INF.233, *Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond. Letter dated 28 June 1971 from the Permanent Representative of the United States of America addressed to the Secretary-General.* For more information regarding San Marco 3 see also, National Aeronautics and Space Administration, *San Marco 3*, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/display.action?id=1971-036A (last access 20 February 2025).

UN about the registration of American objects launched into outer space, where it is said: «The following object 1974-009A was no longer in orbit as of 2400Z on 31 May 1976».[42]

The last San Marco satellite of the series was placed into orbit on 25 March 1988 by a Scout rocket for the study of the relation between the solar activity and the phenomena occurring at the boundary between the thermosphere and the ionosphere. It was not registered by Italy. The decay of the satellite, on 6 December 1988 after 255 days of orbiting, coincided with the closure of the San Marco launch range.

That is a profound conclusion. By complying with international instruments, even those that were not legally binding, Italy demonstrated not only its commitment to transparency but also set a strong precedent for the future of space activities. It ensured that its actions were in line with evolving norms, even when those norms were still in development.

In the realm of outer space, this kind of proactive compliance fosters trust and builds a reputation for responsibility, which can be invaluable in international cooperation. It highlights how adhering to international frameworks can strengthen a nation's position in space law, ensuring that its actions are perceived as legitimate and responsible.

The San Marco program serves as a great example of how even non-binding norms, when respected, can enhance a country's standing on the world stage and provide clarity in times of legal uncertainty.

[42] A/AC.105/INF.349, *Information Furnished in Conformity with General Assembly Resolution 1721 B (XVI) by States Launching Objects into Orbit or Beyond. Letter dated 8 September 1976 from the Acting Permanent Representative of the United States of America addressed to the Secretary-General.*