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SCIENCE IN THE PRESS, RADIO AND TV: FRANCO'S REGIME AND THE POPULARIZATION OF SCIENCE

Televising the Space Race in Francoist Spain: Sebastià Estradé and the “Friends of Outer Space” (1967-1969)

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Abstract: In the context of the space race, space science became an area of collaboration between the Spanish dictatorship and the United States of America during the 1960s. The Francoist regime leveraged its collaboration in the space race as an internal tool for political legitimization. This article examines the role of science popularization in this legitimization process by focusing on the TV show *Amigos del Espacio* (“Friends of Outer Space”), broadcast between 1967 and 1969 and aimed at young audiences. Specifically, it analyses the available episodes of the show and the trajectory of its scriptwriter, science writer and PhD in Law Sebastià Estradé (1923-2016). The article examines three key dimensions of *Amigos del Espacio*: the celebration of Spanish science and technology; the portrayal of the relationship between Spain and the United States; and the program's integration of Catholic faith with the popularization of space science.

Keywords: Science popularization; dictatorship; television; space race; Franco's dictatorship; Cold War

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Introduction

When Man sets his foot on the Moon, he will be the heir of the great discovery
that Spain gave to the world.¹

In September 1965, American astronauts Gordon Cooper and Charles Conrad landed in the airport of Gran Canaria Island (Spain). It was the last stop of a long diplomatic tour that had taken them to several countries, from Greece to Nigeria. After meeting the Spanish authorities and the United States ambassador, the astronauts of Gemini V were greeted by thousands of Spaniards who had gathered in Las Palmas before proceeding to the Maspalomas satellite tracking station in the southern part of the island. Built by the National Aeronautics and Space Administration (NASA) in collaboration with the Spanish National Institute of Aeronautical Technique (Instituto Nacional de Técnica Aeronáutica, INTA), Maspalomas had been the first result of the agreements forged between the American and Spanish governments to collaborate in space activities.² Before heading to the US, astronaut Gordon Cooper delivered a grateful message from President Lyndon Johnson: “thanks to Chief of State Franco and the Spanish people for their cooperation in United States space achievements.”³

In the two decades following the end of the Spanish Civil War (1936-1939), the Francoist dictatorship shifted its alliances from close collaboration with Fascist Italy and Nazi Germany to becoming a key US ally during the Cold War. Building on the diplomatic and economic cooperation with the US that materialized in the Pacts of Madrid (1953), the first Spanish agreement with NASA was approved in 1960. It marked a pivotal moment that positioned Francoist Spain as a partner in the space race. This partnership not only underscored Spain’s strategic role in Cold War geopolitics but also served as a source of political legitimization and prestige for the dictatorship.⁴

Within this framework, science popularization in general—and about astronautics and space science in particular—served as ideological reinforcement for the Francoist state. Recent studies on science popularization during the Franco regime, notably by Clara Florensa, Agustí Nieto and Miquel Carandell have demonstrated that a public sphere for science also existed in nondemocratic regimes such as the Spanish dictatorship. These authors underscore the political

¹ “Amigos del Espacio: Fechas importantes de la astronáutica americana en 1967.” *RTVE a la carta*. Accessed February 15, 2024, <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-fechas-importantes-astronautica-americana-1967/5250921/>.

² José M. Dorado, Manuel Bautista, and Pedro Sanz-Aranguez, *Spain in Space: A Short History of Spanish Activity in the Space Sector*, ESA HSR (Paris: European Space Agency, 2002), 3–4.

³ *La Vanguardia Española*, 29 September 1965, 7; *Spanish Newsletter*, 4:10, 31 October 1965, 5.

⁴ Neal M. Rosendorf, “Spain’s First ‘Re-Branding Effort’ in the Postwar Franco Era,” in *US Public Diplomacy and Democratization in Spain. Selling Democracy?*, ed. Francisco Javier Rodríguez Jiménez, Lorenzo Delgado Gómez-Escalonilla, and Nicholas J. Cull (New York: Palgrave Macmillan, 2015), 155–90.

goals of science popularization under Franco and lay out the importance of researching both science popularizers and its audiences. In this regard, questions arise regarding the Francoist regime's balancing between supporting the discourse of the United States in the Cold War and promoting its own achievements. How did the popularization of space science convey political messages about the Francoist regime? Through censorship and other means, how did the dictatorship shape science popularization about the space? What stances did science popularizers take in this context?⁵

This article addresses these questions by examining *Amigos del Espacio* ("Friends of Outer Space"), a Spanish TV program dedicated to astronautics and aimed at a young audience. During a period of rapid television expansion, the state-owned *Televisión Española* (TVE) broadcast *Amigos del Espacio* from 1967 to 1969.⁶ The episodes of the show followed the fictional "Tungsten family" in their visits to Spanish state agencies, research institutes, industrial facilities and public companies, connecting their activities to space technology and science. While celebrating the present (and future) of Spanish science and technology, *Amigos del Espacio* did not shy away from spiritual and religious aspects of space exploration.⁷ In addition, as illustrated by the quote that opens this article, it framed space exploration as a continuation of Spain's legacy, likening humanity's journey to the Moon to the Spanish conquest of America. These features make *Amigos del Espacio* a fitting case study to analyse the popularization of space science in the context of Spanish National Catholicism.⁸ Moreover, the analysis of a TV

⁵ Clara Florensa and Agustí Nieto-Galan, "Introduction: Science Popularization, Dictatorships, and Democracies," *History of Science* 60, no. 3 (2022): 329–47; Clara Florensa, "Struggling for Survival: The Popularization of Darwinism and the Elite's Fight for Power in Franco's Spain (1939–1967)," *History of Science* 60, no. 3 (2022): 348–82; Agustí Nieto-Galan, "A Puzzling Marriage? UNESCO and the Madrid Festival of Science (1955)," *History of Science* 60, no. 3 (2022): 383–404; Miquel Carandell Baruzzi, "Animals for the Mayor: Barcelona's Zoo in the Making of Local Policies and National Narratives (1957–73)," *History of Science* 60, no. 3 (2022): 405–29; Geert Somsen, "Afterword: Science Popularization, Dictatorships, and Democracies," *History of Science* 60, no. 3 (2022): 430–35.

⁶ Between 1965 and 1970 the number of televisions in Spanish homes grew from 1,750,000 to 4,115,000. Francisco José Montes Fernández, "Historia de Televisión Española," *Anuario Jurídico y Económico Escurialense* 39 (2006): 637–96. *Amigos del Espacio* is mentioned in connection to the beginning of popular science for young adults in Spanish television in María Luisa Ortega Gálvez and Ana Albertos, "La Ciencia en Televisión Española: Primeros Acercamientos a la Divulgación," *Secuencias* 8 (1998): 61–74; María Antonia Paz Rebollo and Lizette Martínez Valerio, "La Primera Conformación de una Audiencia Infantil y Juvenil para la Televisión en España (1958–1968)," *Estudios sobre el Mensaje Periodístico* 20 (2014): 43–58. María Luisa Ortega discusses *Amigos del Espacio* and Sebastià Estradé in the preface to David Moriente, «España, ¿me reciben?»: *Astronáutica y Cultura Popular (1957–1989)* (Cuenca: Ediciones de la Universidad de Castilla-La Mancha, Ediciones Universidad Cantabria, 2019).

⁷ On the integration of religious and spiritual aspects with national imaginaries of space exploration, see Joshua Barker, "Engineers and Political Dreams: Indonesia in the Satellite Age," *Current Anthropology* 46, no. 5 (2005): 703–27, <https://doi.org/10.1086/432652>.

⁸ On Spanish National Catholicism, see Frances Lannon, "Modern Spain: The Project of a National Catholicism," *Studies in Church History* 18 (1982): 567–90; Hilari Ragner i Suñer, "El nacionalcatolicismo," in *En el Combate por la Historia: La República, la Guerra Civil, el Franquismo*, ed.

show that popularized astronautics in Francoist Spain constitutes a relevant subject for the cultural history of outer space, which so far has mainly focused on the United States, Britain or France, but neglected Iberian dictatorships.⁹

This research combines archival and oral primary sources with media analysis and historical press reviews. Its primary focus is on twenty-four episodes of *Amigos del Espacio*, which are available online.¹⁰ In order to analyse the show's contents and narratives, this article delves into the work of its scriptwriter, Sebastià Estradé (1923-2016). Estradé was an active popularizer of astronautics, a PhD in Law, and a science writer.¹¹ The study draws on an extensive review of his published works on science popularization, as well as selections from his personal archive. When available, reports produced by Francoist censors on his books have been consulted at the General Archive of the Administration (Archivo General de la Administración, Alcalá de Henares, Madrid). Additionally, Estradé's personal testimony has been gathered through interviews and personal accounts, accessed both online and in archival records.¹²

The paper is organized as follows. After this introduction, I explore the role of television in popularising the space race, with particular attention to the earliest science popularization programs broadcast by Spanish television. Next, I discuss the origins and main features of *Amigos del Espacio*. The twenty-four available episodes of the show, listed at the end of the paper, are referenced throughout using episode numbers in brackets. The analysis is divided into three sections: first, the strong celebration of Spanish science and technology; second, the portrayal of the relationship between Spain and the United States; and third, the discourse

Ángel Viñas (Barcelona: Pasado y Presente, 2020), 547–65.

⁹ Alexander C. T. Geppert, "European Astrofuturism, Cosmic Provincialism: Historicizing the Space Age," in *Imagining Outer Space: European Astroculture in the Twentieth Century*, ed. Alexander C. T. Geppert (London: Springer, 2018), 13.

¹⁰ The archive of TVE contains records of 28 different episodes, but only 24 are available online. Unidad de Difusión, Préstamo y Conservación, Fondo Documental RTVE, e-mail communication, February 20, 2019. While there are 25 episodes available online, one of them appears twice under a different title. See "Amigos del Espacio – RTVE a la carta." *RTVE a la carta*. Accessed May 15, 2020, <http://www.rtve.es/alacarta/videos/amigos-del-espacio/>. The specific broadcasting dates of each episode, provided in the website, are incorrect. More accurate dates are provided in the list of episodes at the end of this article.

¹¹ On the trajectory of Estradé after the 1960s, see Santiago Gorostiza, "Cuando la Realidad Supera la Ficción. Sebastià Estradé i Rodoreda (1923-2016) contra la Montaña de Residuos Salinos," *Ecología Política* 57 (2019): 109–14; Santiago Gorostiza and David Saurí, "Naturalizing Pollution: A Critical Social Science View on the Link between Potash Mining and Salinization in the Llobregat River Basin, Northeast Spain," *Phil. Trans. R. Soc. B* 374 (2019), <http://dx.doi.org/10.1098/rstb.2018.0006>; Santiago Gorostiza et al., "Corrosive Flows, Faulty Materialities: Building the Brine Collector in the Llobregat River Basin, Catalonia," *Environment and Planning E: Nature and Space*, 2022, <https://doi.org/10.1177/25148486221105875>

¹² "Autobiografia i missatge pòstum de Sebastià Estradé i Rodoreda," fonoteca històrica Jaume Font, Arxiu Nacional de Catalunya, ANC1-563-N-342. See also several short video interviews at "Memoro, el banc de la memòria. Sebastià Estradé." *Memoro*. Accessed February 19, 2024, <http://www.memoro.org/es-ca/testimone.php?ID=651>.

that combined the popularization of space exploration with Catholic faith. In the conclusions, I emphasize that *Amigos del Espacio* was not merely a vehicle for disseminating information about the advancements of the space race. Instead, it functioned as a platform to highlight the scientific and technological achievements of the Francoist dictatorship. In *Amigos del Espacio*, the United States was portrayed as recognizing Spain's technological progress and its contributions to the space race. This message echoed the gratitude expressed by the Gemini V astronauts to "Chief of State Franco and the Spanish people" during their brief stop in the Canary Islands before heading to the United States.

Television and Science Popularization in the Space Race

Two years before Sputnik became the first artificial Earth satellite and dramatically accelerated the space race, a television program marked a turning point for space travel in the United States. Premiering in March 1955, Disneyland's *Man in Space* presented the physical and psychological challenges of human space travel while delving into the history of rockets and aeronautics. With a light-hearted tone blending animation with explanations from several engineers and science popularizer Willy Ley, the program combined education with entertainment in a style reminiscent of documentary filmmaking. *Man in Space* introduced space travel to the American public as an imminent reality—and one where the United States should take a leading role. The program reached an audience of approximately 40 million viewers and was followed by two more episodes in 1955 and 1957: *Man and the Moon* and *Mars and Beyond*. The broader social, cultural and even political impact of these episodes to attract public and political support for space science has been underlined, with De Witt Douglas Kilgore describing them as "a key turning point in postwar astrofuturism."¹³

The influence of *Man in Space* illustrates the important role of television in shaping perceptions of science and technology, as well as its potential for popularization.¹⁴ As television broadcasting expanded in many countries during the 1950s and 1960s, the development of science content emerged as both a crucial objective and a challenge for educational strategies.¹⁵ Space science

¹³ De Witt Douglas Kilgore, *Astrofuturism: Science, Race, and Visions of Utopia in Space* (Philadelphia: University of Pennsylvania Press, 2003), 57–60. The audience of 40 million viewers is mentioned in Willy Ley, "For your information," *Galaxy*, October 1955, 60. Disneyland's *Man in Space* is available at <https://www.youtube.com/watch?v=WFXza9RH7-E> (accessed 19 February 2024).

¹⁴ On science on television, see the special issue edited by Clara Florensa, Oliver Hochadel, and Carlos Tabernero, "Science on Television: Theory Meets Practice. An Introduction," *Actes d'Història de la Ciència i de la Tècnica* 7 (2014): 11–16.

¹⁵ Carlos Tabernero, "The Changing Nature of Modernization Discourses in Documentary Films," *Science in Context* 31, no. 1 (2018): 61–83; Tim Boon, "Formal conventions in British science television, 1955–1965," *Actes d'Història de la Ciència i de la Tècnica* 7 (2014): 51–69; Timothy Boon, "'The Televising of Science Is a Process of Television': Establishing Horizon, 1962–1967," *The British Journal for the History of Science* 48, no. 1 (March 2015): 87–121; Marcel Chotkowski LaFollette, *Science on American*

and technology occupied a central position among these. In the case of the BBC, for instance, space-related activities were pivotal for the modernisation of television broadcasting. In a context of increased commercialization, the prestigious, dramatic and visually attractive character of space technology, coupled with its association with famous scientists, made it a crucial asset for business success.¹⁶

However, *Man in Space* also underscores the significant role that science writers and popularizers like Willy Ley had in shaping the public understanding of space science. The biographer of Willy Ley, Jared S. Buss, describes him as “a showman of the Space age” who made a tireless effort “to inspire Americans to support a publicly funded “conquest of space.”¹⁷ Despite not having formal academic training, Ley became a rocket expert and engaged in a wide variety of dissemination activities. These included writing books and articles, giving public talks, participating in documentaries, as well as serving as a technical consultant for science fiction and educational television shows. Above all, Ley understood that television represented a huge opportunity “to bring science into the homes of American families.”¹⁸ In essence, it offered a platform to both foster interest in space and educate the viewers.

Similarly, the case of Francoist Spain illustrates how television could be used to communicate messages that celebrated Spain’s role in the space race and its collaboration with the United States. It also highlights the critical role played by science popularizers in shaping and disseminating these narratives. First established in 1956, the Spanish national television broadcaster Televisión Española (TVE) was under the direct control of the Ministry of Information and Tourism (Ministerio de Información y Turismo). During the late 1950s television programming included educational programs on agricultural and medical topics, but in the following decade these expanded to include a wide array of cultural and educational programs, including science popularization. The dissemination and celebration of Spanish science was part of these efforts, as shown for instance by the section “Spanish Science” in *Academia TV* (1963) or the eight episodes that *Temas de Nuestro Tiempo* (1964-1965) devoted to the benefits of nuclear energy for the progress and development of Spain, with the participation of top engineers of the Spanish Nuclear Energy Board (Junta de Energía Nuclear).¹⁹ Drawing on Lino Camprubí’s

Television: A History (Chicago: University of Chicago Press, 2013); Jean-Baptiste Gouyon, “Making Science at Home: Visual Displays of Space Science and Nuclear Physics at the Science Museum and on Television in Postwar Britain,” *History and Technology* 30, no. 1–2 (2014): 37–60; Bernd Mütter, “Per Media Ad Astra? Outer Space in West Germany’s Media, 1957–87,” in *Imagining Outer Space: European Astroculture in the Twentieth Century*, ed. Alexander C. T. Geppert (London: Springer, 2018), 165–86.

¹⁶ James Farry and David A. Kirby, “The Universe Will Be Televised: Space, Science, Satellites and British Television Production, 1946–1969,” *History and Technology* 28, no. 3 (2012): 311–33.

¹⁷ Jared S. Buss, *Willy Ley: Prophet of the Space Age* (Gainesville: University Press of Florida, 2017), 8–9.

¹⁸ Buss, 169.

¹⁹ Ortega Gálvez and Albertos, “La Ciencia en Televisión Española: Primeros Acercamientos a la Divulgación,” 66.

research about Franco's engineers and the making of the dictatorship, the presence of Spanish engineers in televised science programs can be interpreted as a conscious effort to broadcast the building and modernisation of the dictatorship to the Spanish public.²⁰

Space science and technology were no exceptions to this pattern. Between 1960 and 1964, the Spanish and United States governments forged an agreement to establish a satellite tracking station in Spain, located in Maspalomas, Gran Canaria, as well as a tracking and data acquisition station for space vehicles in Robledo de Chavela.²¹ After these accords, the space race increasingly featured in Spanish television. It was discussed in *Visado para el Futuro*, a TV program launched in October 1963 and devoted to the concept of scientifically “anticipating” the impact of new technologies and science. Many of the show's episodes were dedicated to aeronautics and astronautics, such as the May 1965 edition, featuring the presence of German physicist and rocket engineer Hermann Oberth (1894-1989) under the title “Yesterday, Today and Tomorrow of Astronautics.” At the helm of *Visado para el Futuro* was the university professor and science popularizer Lluís Miravittles (1930-1995), who led various science popularization programs at the Spanish TV throughout the 1960s and 1970s.²²

According to Miravittles, his main objective as a science popularizer in television was to inspire scientific vocations among the youth.²³ Most of his work in the Spanish TV developed in the context of the “liberalization period” initiated by the new Press Act of 1966, which replaced the previous regulations, established during the Spanish Civil War (1936-1939). The aim of the new act was to establish a legal framework “halfway between the preventive control and censorship needs of the regime and more unrestricted conditions for knowledge circulation.”²⁴ Taking advantage of his international contacts, Miravittles often used foreign recordings and other materials in his programs, resorting to dramatizing and spectacularising science, and at times even incorporating elements of fiction.²⁵

The writer and lawyer Sebastià Estradé (1923-2016), who held a PhD in Law (1963) and a diploma in Industrial and Electrical Engineering, shared Miravittles' ambition to influence

²⁰ Lino Camprubí, *Engineers and the Making of the Francoist Regime*, Transformations: Studies in the History of Science and Technology (Cambridge, Massachusetts: The MIT Press, 2014); Lino Camprubí, *Los Ingenieros de Franco: Ciencia, Catolicismo y Guerra Fría en el Estado Franquista* (Barcelona: Crítica, 2017).

²¹ Dorado, Bautista, and Sanz-Aranguez, *Spain in Space*, 3–4.

²² Ortega Gálvez and Albertos, “La Ciencia en Televisión Española: Primeros Acercamientos a la Divulgación,” 67–73; Josep A. Salvà i Miquel, “«In Memoriam». Lluís Miravittles i Torras, 1930-1995,” *Revista de la Reial Acadèmia de Medicina de Catalunya* 11, no. 1 (1996): 57–58.

²³ Ortega Gálvez and Albertos, “La Ciencia en Televisión Española: Primeros Acercamientos a la Divulgación,” 69.

²⁴ Tabernero, “The Changing Nature of Modernization Discourses in Documentary Films,” 72.

²⁵ Ortega Gálvez and Albertos, “La Ciencia en Televisión Española: Primeros Acercamientos a la Divulgación,” 71–73.

youth's educational choices. Passionate about the possibilities of the space era and convinced of the compatibility of scientific research and religious belief, Estradé authored both popular science books and science-fiction novels. In 1965, Miravittles wrote the preface to Estradé's book *De la Terra a l'Infinit* ("From Earth to the Infinite"), a volume devoted to popularising space science that delivered an optimistic appraisal of the future of space technology and science for humanity. Two years later, Estradé became the scriptwriter of a new program announced for the 1967-1968 TV lineup: *Amigos del Espacio* ("Friends of Outer Space"). Unlike previous science popularization programs, this one focused exclusively on astronautics and was specifically aimed at children and young adults.²⁶

Amigos del Espacio: Origins and Main Features

In May 1968, the weekly magazine of the Spanish Radio and TV, *TeleRadio*, devoted an entire feature to *Amigos del Espacio*. Presented as the "creator and scriptwriter" of the program, Sebastià Estradé explained that the program originated from the 18th International Astronautical Congresses he had attended in Belgrade the previous year. One of the presentations at the congress discussed the negative effects that some science-fiction movies caused in the understanding of space challenges, particularly among the youth. As a result, the congress' conclusions highlighted the importance of making "the reality of Man's Work in space conquest" better known among this audience. According to Estradé, he decided to answer the congress' call preparing a proposal for a TV program and presenting it to the Department for Children and Youth of Spanish Television, which approved it and named him scriptwriter.²⁷

A few years later, however, Estradé gave a slightly different account. Instead of portraying the origins of *Amigos del Espacio* as his own initiative, he stated that he had "received instructions" from the Department for Children and Youth of Spanish Television "to prepare a series of programs that would be informative, educational, and modern and which would enable young people to acquire new knowledge" on space. According to Estradé, the reason why he was chosen to lead *Amigos del Espacio* was his numerous publications on astronautics.²⁸ Finally, almost 30 years later, he provided an additional detail: the invitation to collaborate with Spanish TV came from the head of censorship of youth publications, who had taken good notice of his written work.²⁹

²⁶ Paz Rebollo and Martínez Valerio, "La Primera Conformación de una Audiencia Infantil y Juvenil para la Televisión en España (1958-1968)."

²⁷ L.T.M., "Amigos del Espacio," *TeleRadio*, 543, May 1968, 14-17.

²⁸ Sebastià Estradé, "A Concrete Experience: Television and Training for Astronautics through the IAF," in *Organizing Space Activities for World Needs*, [1st ed.] (Oxford: Pergamon Press, 1971), 354-57.

²⁹ "Autobiografia i missatge pòstum de Sebastià Estradé i Rodoreda," ANC1-563-N-342, 3 April 1997, Arxiu Nacional de Catalunya (ANC).

While the limited archival records available at Televisión Española make it difficult to clarify the reasons why *Amigos del Espacio* was conceived, approved and Estradé chosen as scriptwriter, other archival records confirm the positive impression that Estradé's science popularizing work on astronautics had on Francoist censors. In his report on Estradé's book *De la Terra a l'Infinit* (1966), the censor praised a key aspect: "Science popularization book. At all times it tries to unite science with faith."³⁰ In fact, the censors' view on Estradé's work coincided with that of TV presenter Lluís Miravittles. In the preface to the same book, Miravittles underlined the religious motivations of Estradé and the compatibility of religion with a scientific understanding of the Universe. In addition, he praised Estradé's use of Law to reconcile science and religion and concluded stating that the Universe had spiritual—not material—foundations.³¹

Estradé, a member of the generation of Catalan writers dedicated to the revival of the Catalan language, did not easily align with the diverse ideological factions of the Francoist dictatorship. However, during his PhD studies, he established connections with high-ranking Francoist diplomats, including José Félix de Lequerica (1890-1963), the first permanent Spanish ambassador at the United Nations. Lequerica was acknowledged in the book resulting from Estradé's PhD dissertation: *El Derecho ante la Conquista del Espacio* (1964), which was officially declared as valuable by the Spanish Ministry of Air.³² In the years that followed, Estradé remained in contact with military officials and a broad range of authorities, some of whom were directly or indirectly involved in space-related activities.

By commissioning the scriptwriting of *Amigos del Espacio* to Estradé, TVE representatives relied on an author who had made explicit his strong "trust in science and faith in our religion."³³ Estradé insisted that Catholic faith was perfectly compatible with the possibility of life in other planets, and that there were many points of contact between science and religion. Faith – he warned – could not be substituted by scientific research.³⁴ In addition, both in his science writing and his more academic works on space law he likened space exploration to Columbus' "discovery" of America – and the role of the Spanish Empire in it.³⁵ His emphasis on the

³⁰ Archivo General de la Administración, (03)050.000, signatura 21/16911, expediente 9504, "De la Terra a l'Infinit." Fecha de entrada 23-12-1965, fecha de resolución 21-4-1966.

³¹ Lluís Miravittles, Preface to Sebastià Estradé, *De la Tierra al Infinito* (Barcelona: Ramón Sopena, 1968), 5–7.

³² Sebastià Estradé, *El Derecho ante la Conquista del Espacio* (Barcelona: Ariel, 1964). See also Estradé's own testimony, in "La indústria, el dret, l'espai i l'escriptura." *Memoro*. Accessed February 19, 2024, http://www.memoro.org/es-ca/La-ind%C3%BAstria--el-dret--l-espai-i-l-escriptura_1929.html. On the official recognition by the Ministry, see Orden Ministerial núm. 1.232/65, Ministerio del Aire, *Boletín Oficial del Ministerio del Aire*, June 8, 1965, 627.

³³ Estradé, *De la Tierra al Infinito*, 66.

³⁴ Estradé, *De la Tierra al Infinito*, 65, 194–206.

³⁵ See for instance Estradé, 13, 26; Sebastià Estradé, *El Derecho ante la Conquista del Espacio* (Barcelona: Ariel, 1964), 56.

importance of space law came hand in hand with the reclamation of sixteenth and seventeenth century Spanish theologians belonging to the School of Salamanca, whom he celebrated as pioneers of international law.³⁶ This combination of religious, scientific, and historical perspectives made Estradé a potentially appealing figure for the state-owned Televisión Española, aligning with the broadcaster's interest in promoting Spain's contributions to modern scientific, cultural, and technological advancements.

However, Estradé's written work was also characterised by his interest in science-fiction. In the year that he published *De la Terra a l'Infinit* (1966), Estradé also released three science-fiction novels aimed at young adults, with four more following the next year.³⁷ One of these novels, *Més Enllà No Hi Ha Fronteres* (There are no borders beyond), was reprinted several times and reflects several of Estradé's personal concerns. Set in a future where space travel is common and three different states are mining on the Moon, the novel's protagonists are young adults from various countries. They collaborate against the threat of international conflict on the Moon, advocating that there should be no national borders beyond Earth. Throughout the novel, the Universe is referred to as the creation of God, envisioned as a space to be (peacefully) conquered by humanity.³⁸

In *Amigos del Espacio*, Estradé combined his interests on science popularization and science-fiction. The episodes typically followed the “Tungsten family”—a professor, his son, daughter and their young friend—on visits to Spanish research centers, state facilities, public companies or laboratories. There, they met scientists and engineers—always Spanish—and learned about the applications of their work, drawing connections to space science and technology. As María Luisa Ortega has pointed out, there are clear parallels between the main characters in *Amigos del Espacio* and those in Estradé's science-fiction novels.³⁹ They are young adults whose parents are engineers or professors, intellectually curious about science and technology and committed to the future of space exploration. This idealized youth reflects well Estradé's views, for whom the coming age of space exploration required “a youth far beyond that of The Beatles era.”⁴⁰

In line with the goal of connecting to children and young adults, the youth department of *Televisión Española* established the Club de Amigos del Espacio (Friends of Outer Space Club) as soon as the show was launched. According to the broadcaster, membership was open to

³⁶ Estradé, *El Derecho ante la Conquista del Espacio*, 41, 145, 152.

³⁷ Estradé's novels published in 1966 were Sebastià Estradé, *Més Enllà No Hi Ha Fronteres* (Barcelona: Estela, 1966); Sebastià Estradé, *Alarma en el Cosmódromo* (Barcelona: Ferma, 1966); Sebastià Estradé, *Alarma en el Desierto* (Barcelona: Ferma, 1966).

³⁸ Estradé, *Més Enllà No Hi Ha Fronteres*, 25, 58, 67, 72, 75-79, 82, 94, 104-105, 129.

³⁹ Preface of María Luisa Ortega to David Moriente, «Espanña, ¿me Reciben?»: *Astronáutica y Cultura Popular* (1957-1989) (Cuenca: Ediciones de la Universidad de Castilla-La Mancha, Ediciones Universidad Cantabria, 2019).

⁴⁰ Estradé, *De la Tierra al Infinito*, 139.

anyone between eight and twenty years old and required only contacting *Televisión Española*, which provided a membership card. The final segment of each episode was introduced by the presenters—president and secretary of the Friends of Outer Space Club—who read selected letters from the audience. By August 1968, the club boasted a membership of more than 4,500 (episode 20, see numbered list of episodes at the end of the article).⁴¹

Amigos del Espacio was first broadcast on 28 October 1967 on the first channel of Spanish television and remained on the air until late January 1969.⁴² When it premiered, the Spanish press described it as “a brief dramatic action involving a family deeply interested in space issues, news and reports on discoveries related to astronautics.”⁴³ Between late 1967 and March 1968, it was followed in the TV schedule by “Lost in Space”—the CBS series dubbed into Spanish. Each episode of *Amigos del Espacio* lasted around twenty-five minutes and was broadcast every two weeks, initially on Saturdays and later on Fridays, at about 7:45 p.m. The following sections delve on three key themes of the program, from the importance of national science and technology to the portrayal of Spanish collaboration with the United States or the emphasis on religious themes.

“Do you want a Spanish expert to tell you about it?” – Nation, Science and Space Technology

First and foremost, the focus of *Amigos del Espacio* on space exploration came hand in hand with an emphasis on the progress of Spanish science and technology. Through visits to national agencies, technical facilities, and research laboratories across Spain, the TV show positioned Spanish scientific and technological advancements at the heart of its narrative. The iconic space station of Robledo de Chavela was visited in the first episode and mentioned often throughout the show (1, 4, 5, 6, 7, 10, 12, 14, 20). The Tungsten family also visited the National Institute of Aerospace Technique (INTA) (2), the company Construcciones Aeronáuticas S.A. (17) or the Spanish national airlines (16, 12).

However, the facilities visited were not always directly connected to astronautics. Some episodes explored how space science, technology and infrastructure were used for communication and various other applications on Earth. Among these, *Amigos del Espacio* focused on telecommunications (with the support of Telefónica, the Spanish national company; 4, 5) and meteorology (by visiting Madrid airport’s meteorological station and the National Institute of Meteorology; 11, 15). During their visit to the National Institute of Meteorology, the Tungsten

⁴¹ See also “Amigos del Espacio,” *TeleRadio*, 543, May 20-26, 1968, 14-17.

⁴² The earliest reference to the show in TVE schedule is *La Vanguardia Española*, October 20, 1967, 28; the last reference identified appears in *La Vanguardia Española*, January 23, 1969, 49.

⁴³ *La Hoja Oficial del Lunes*, 23 de octubre de 1967, 6.

family learned about the importance of data from weather satellites for meteorological purposes and observed the reception of a satellite image of Spain. In line with Estradé's efforts to popularise space science, the benefits of satellites for communication, meteorology and industrial innovation on Earth served as key arguments to justify the investment in space-related activities.⁴⁴ Similarly, the potential use of nuclear power for astronautics justified the visits to nuclear power facilities, consistently emphasizing that the scientists involved were Spanish (10, 19, 20). In other words, the connection of each episode of *Amigos del Espacio* to astronautics—explicit or otherwise—served as a means of highlighting diverse Spanish technological, scientific and industrial advancements, embodied by state companies or institutes and the engineers and researchers they employed, who were presented as role models for the program's young audience.

In comparison to the national newsreels (Noticiario Documental, No-Do), broadcast mandatorily in all Spanish cinemas, episodes of *Amigos del Espacio* allowed for a more prolonged and creative engagement with science and technology. The No-Do covered visits by American astronauts to Spain, emphasizing their recognition of Spanish collaboration, and newsreel segments on the importance of Spanish science often focused on state-led inaugurations of new facilities or relevant events taking place in them.⁴⁵ In contrast, *Amigos del Espacio* engaged with the Spanish engineers and scientists working in these facilities and research institutes.

"Do you want a Spanish expert to tell you about it?" asked the professor-father to his daughter before introducing the secretary of the Junta de Energía Nuclear, who explained the relation between nuclear power and astronautics (19). In many episodes, as they walked through bustling laboratories and control rooms, the professor's son and daughter, along with their young friend, posed questions to the Spanish engineers, researchers and officials guiding the visits, learning about the different instruments and experiments underway. From aeronautics to telecommunications and nuclear power, Spanish scientific and technological progress featured prominently in *Amigos del Espacio*, conveyed through the voices of its engineers and researchers. Using a different format than that of the newsreels, the TV show reinforced and deepened the discourses of No-Do.

One of the most recurrent messages delivered by the show's presenters to their audience emphasized the importance of training and education for the forthcoming age of astronautics, closely aligning with Estradé's own beliefs. Constantly underlining the importance of studying

⁴⁴ Estradé, *De la Tierra al Infinito*, 182–85.

⁴⁵ See for instance the newsreels devoted to the first images received of Mars, No-Do, 1177 A, July 26, 1965, available at "NOT N-1177," RTVE Filmoteca. Accessed May 15, 2020. <http://www.rtve.es/filmoteca/no-do/not-1177/1476000/>; or the visit of astronaut Colonel Glenn, No-Do 1190 C, October 25, 1965. RTVE Filmoteca. Accessed May 15, 2020. <http://www.rtve.es/filmoteca/no-do/not-1190/1479197/>.

sciences, engineering, and acquiring proficiency in foreign languages, *Amigos del Espacio* highlighted these pursuits as crucial elements in preparing viewers for careers potentially related to space exploration. Wondering how to become scientists or astronauts, the young members of the Tungsten family visited engineering schools in Madrid (23), Barcelona (10) or Terrassa (8), as well as the Leonardo Torres Quevedo Research Centre in Physics (6) or the Madrid's Aerospace Medicine Center (13).

Through the character of the professor's daughter, Taina, *Amigos del Espacio* integrated girls and young women into its narrative, reflecting themes from Estradé's own novels. The presenters consistently encouraged both boys and girls to engage with space activities, and the notion that girls outsmarted boys was repeated in several episodes (1, 19). However, rather than viewing this as a progressive shift in the Francoist state-owned broadcast, the influence of Estradé is especially evident in these scripts. Estradé's own daughter, who passed away in 1965, influenced his dedication to popular science and science fiction, with her presence felt through the character of a brilliant, young girl in almost all his novels.⁴⁶ While some episodes of *Amigos del Espacio* perpetuated discourses linking women to housekeeping roles (1, 17), numerous episodes underscored girls' aptitudes for technical training. For instance, during a visit to Madrid's Higher Technical School of Aeronautical Engineers (23), the young daughter of the Tungsten family expressed, "If I were a boy, I would like to study here, but I guess..." Her statement was cut short by her brother, who claimed the school only admitted men. However, the father-professor immediately intervened, clarifying that the school accepted both men and women, and proceeded to interview a young female student who was to become Spain's first female aeronautical engineering graduate (23).

Overall, hand in hand with the portrayal of a fascinating future, *Amigos del Espacio* offered an optimistic perspective on the development of space technology and science in Spain. Even in late 1967, when the Francoist dictatorship abandoned the European Space Research Organisation, the program's presenters calmed down their audience. They stated that Spain "does not resign from its participation in the space race" and pointed to the multiple space-related institutional and industrial activities visited by the Tungsten family as proof (5). Echoing the autarkic narratives popularized by the dictatorship in the 1940s and also 1950s, they implied that Spanish national technology and expertise could perhaps be enough.⁴⁷ In a later episode, one

⁴⁶ "Autobiografía i missatge pòstum de Sebastià Estradé i Rodoreda," ANC1-563-N-342. According to Estradé's testimony, *Més enllà no hi ha fronteres* was the most symbolic representation of his lost daughter.

⁴⁷ On autarkic ideas and Spanish science and environment, see Néstor Herran and Xavier Roqué, "An Autarkic Science: Physics, Culture, and Power in Franco's Spain," *Historical Studies in the Natural Sciences* 43, no. 2 (2013): 202–35; Santiago Gorostiza and Miquel Ortega Cerdà, "'The Unclaimed Latifundium': The Configuration of the Spanish Fishing Sector under Francoist Autarky, 1939–1951," *Journal of Historical Geography* 52 (2016): 26–35; Miguel Ángel del Arco Blanco and Santiago Gorostiza, "'Facing the Sun': Nature and Nation in Franco's 'New Spain' (1936–51)," *Journal of Historical Geography*, no. 71 (2021): 73–82.

of the presenters directly addressed the National Institute of Aerospace Technique stating that “our Friends of Outer Space hope that we will soon be able to launch rockets and have a fully Spanish-made satellite at our disposal” (24).

“A continuation of Columbus journey”: United States and Spanish Collaboration in the Space Race

While most episodes of *Amigos del Espacio* maintained a clear national focus on Spain, United States collaboration was evident in different ways. Videos and images produced by NASA were constantly used (1, 3, 5, 7, 12), and a full episode was devoted to showcasing United States achievements in the space race during the year 1967 (14). When visiting United States and Spanish facilities in Robledo de Chavela or Fresnedilla de la Oliva (21), there were profuse references to the American space missions. However, as mentioned above, all engineers and researchers met in person by the Tungsten family were Spanish. In general, *Amigos del Espacio* portrayed space exploration underlining international collaboration and rejecting military activities.⁴⁸ For instance, when questioned if Russians were annoyed because of the achievements of the United States, professor Tungsten replied that “the pacific conquest of space tends to consolidate the peace of the future world” (22). However, little information was provided about the Soviet progresses throughout the program in comparison with the attention devoted to the United States (8, 18).

In line with the show’s main political message, the portrayal of American leadership in space exploration was used to reinforce the image of Spain in two different ways. Firstly, by presenting statements of NASA officials about the significance of Spanish collaboration. In the episode dedicated to the United States accomplishments, for instance, one of the managers of McDonnell Douglas aeronautical corporation celebrated “the great Spanish contribution to science” (14). The presenter of *Amigos del Espacio* encouraged the audience to contact the United States Consulate in Barcelona introducing themselves as members of the Friends of Outer Space Club and requesting pictures of NASA missions (19).

Secondly, and perhaps more significantly, *Amigos del Espacio* consistently underlined the cultural connection between the United States and Spain, portraying space exploration as the continuation of a quest that Imperial Spain had led in the fifteenth and sixteenth centuries. The young members of the Tungsten family drew a historical parallel between the Spanish “discovery” of America and the prominent role of the United States in space exploration. As explained to the show’s audience by professor Tungsten’s daughter, the American landing

⁴⁸ The show’s presenters reminded the audience several times that they did not accept drawings with weapons, because *Amigos del Espacio* supported the “peaceful conquest of space” (4, 11, 14).

on the Moon was framed as “a continuation of Columbus’ journey” (14). Reinforcing this historical parallel, the broadcast juxtaposed images of Spanish caravels with United States spaceships as she proclaimed that “when Man sets his foot on the Moon, he will be the heir of the great discovery that Spain gave to the world.” Accordingly, she continued, Spain had the right to be remembered when the “great space feat” was finally achieved. “It would be fair that when Americans arrive to the Moon, they baptize some places with Spanish names. In the meantime, Spain, from Robledo de Chavela, Maspalomas, Fresnedilla . . . , from its schools, and we, from our club, will be tirelessly supporting the peaceful conquest of space” (14). In sum, the collaboration between Francoist Spain and the United States was presented by *Amigos del Espacio* as diplomatic, material and spiritual—each aspect reinforcing the America’s public image in Spain, but also that of the Francoist regime.

The references to *baptizing* illustrate the religious undertones that permeated *Amigos del Espacio*. Among the activities directed at the program’s club members, the presenters asked the audience to suggest names for naming the first Spanish satellite: “We want Spain to launch a satellite into our space . . . and [w]e also believe that the kids from Spain should be the ones to baptize the genuine representatives of our space program.” (24). Most of the names read aloud by the presenters from the public’s letters reflected themes drawn from Spanish imperial history, Catholic tradition and nationalist tropes: *Madre Patria*, *Plus Ultra*, *Colón I*, *Hispaniola*, *Cristóforo I*, *Campeador*, *Anmaria*, *Católico I*, or *Criscon* (24). Spanish nationalism was inextricably linked to Catholicism, and *Amigos del Espacio* inscribed both in the culmination of space technology: the future Spanish satellites or rockets.

The Bible and Life in Outer Space

Following Estradé’s published work, discourses combining science and religion permeated several episodes of *Amigos del Espacio* and were central to two of them (9, 24). Some of the script lines of these episodes were nearly identical to those published in *De la Terra a l’Infinit*. In “Our Galaxy” (24), the main concern of the Tungsten family was the possibility of life in outer space. This episode adopted a dreamlike narration, following the subconscious of professor Tungsten as his son, daughter and their friend posed questions to him. The professor explained that other higher life forms in outer space may exist and should be regarded as part of God’s creation, underlining that Christian faith was based in God as the creator of all things—visible and invisible (24).

These visions of life in outer space were reinforced with quotations from authoritative figures, including among other the famous yet controversial German-American rocket scientist Wernher von Braun (1912-1977). Involved in the development of the V-2 rocket program for the Nazi regime, Von Braun was recruited by the United States at the end of the World

War II and became a key figure in the American space program. Between 1960 and 1970, he was the director of NASA's Marshall Space Flight Center. Estradé had been in contact with Von Braun since the early 1960s—acknowledging him in *El Derecho ante la Conquista del Espacio* (1964)—and had secured short letters and autographed photos from him for the Catalan children's magazine *Cavall Fort* as well as for *Amigos del Espacio*.⁴⁹ On the TV show, Von Braun was presented as a “great friend of the program.” The presenters explained that Von Braun believed that “life is a divine and universal concept” and that he was “convinced that God spread his seeds through all the Universe, so it would be very arrogant to think that we are the only higher life beings in the breath-taking immensity of the Universe.” The segment concluded with the presenters inviting the audience to share their own opinions on the matter (24).

A second episode devoted to religious topics was “Prophets” (9). Similarly to “Our Galaxy” (24), it started with a long, dreamlike scene where a narration of a round-trip space flight to the Moon in 1968 was combined with texts from the Bible. This juxtaposition suggested similarities between the two, such as the chariot of fire that took Elijah to heaven, or Luke the Evangelist warning for heaven signs, among other. After awakening, professor Tungsten reached out to the Bible and referred to several verses whose interpretation left the door open to be associated with the existence of life in other planets (9). While in later episodes the presenters stated that the ideas discussed in “Prophets” caused a certain stir (11, 20), no discussion about it has been found in the general press.

The religious ideas presented in “Prophets” (9) were backed with the presence of Father Antonio Romañá (1900-1981), interviewed in the second half of the episode. Romañá, a Jesuit mathematician and astronomer, directed the Ebro Observatory and presided over CSIC's Patronato Alfonso el Sabio, a key body in Spanish scientific research under Franco. His scientific work focused on rapid magnetic variations and storms, and in line with the Jesuit tradition, he merged scientific inquiry with religious faith.⁵⁰ Responding to questions posed by *Amigos del Espacio*, Romañá argued that life in outer space was perfectly compatible with a religious worldview, suggesting that God may have placed “other Humanities” across the Universe so that they could admire the Creation. He also discussed the probability of extraterrestrial life based on the potential existence of Earth-like planets. To conclude, Romañá thanked the program for the invitation, adding that he believed *Amigos del Espacio* would

⁴⁹ Estradé, *El Derecho ante la Conquista del Espacio*. The exchanges continued during the 1970s, see letter from Wernher von Braun to Sebastià Estradé, 6 March 1972, personal archives of Sebastià Estradé.

⁵⁰ Agustín Udías Vallina, *Searching the Heavens and the Earth: The History of Jesuit Observatories* (Dordrecht: Kluwer Academic, 2003). Antonio Romañá, *El Problema de la Vida Fuera de la Tierra: Discurso Inaugural del Año Académico 1969-1970* (Madrid: Real Academia de Ciencias Exactas, Físicas y Naturales, 1969). See also Cristina Vergara, “El Debat Cosmològic a l'Espanya de Franco” (master's thesis, UAB-UB, 2012).

inspire the careers of “researchers of space sciences and brave astronauts that will show the value of your association and of Spanish science to the world” (9).

While Romaña’s statements aligned with the show’s goal of integrating faith and science, the broader reception of *Amigos del Espacio* by religious authorities remains unclear. Notably, other science popularizers who sincerely sought to reconcile religion and science often faced censorship, reflecting the tension within Francoist Spain’s efforts to promote technocratic modernisation while adhering to conservative Catholic orthodoxy.⁵¹

Conclusion

Reflecting on his trajectory in science popularization in the late 1990s, Sebastià Estradé considered his involvement in *Amigos del Espacio* as the pinnacle of his career. Many years after the end of the TV show, he took pride in the influence he had exerted on young adults, and claimed to have met grown-up telecommunication engineers, astronomers and even a NASA employee who showed him their old badge from *Amigos del Espacio*, proclaiming it had changed their lives.⁵² Shaping the careers of young Spaniards had been precisely the aim of the program. As summarized by the piece published by TVE’s magazine in 1967, “The conquest of space by man is already a reality. And it is good that a youth program on TVE is moulding, in this land of conquerors, discoverers, and colonizers, a legion of enthusiastic and youthful ‘friends of space’.”⁵³

Through its portrayal of Spanish engineers and scientists—key figures for the making of the Francoist dictatorship, as argued by Lino Camprubí⁵⁴—the message of *Amigos del Espacio* legitimized Francoist institutions and connected to Spain’s imperial and colonial past. The declared mission of moulding the Spanish youth to produce engineers and scientists at the service of national development illustrates well how, during the second half of the 1960s, the regime’s indoctrination aims turned “to a wider concept of guidance focused on practical socio-economic outcomes.”⁵⁵

⁵¹ Carlos Acosta Rizo, “Un Pie en el Cielo y Otro en la Ciencia. Las Interacciones Productivas de Miquel Crusafont (1910-1983),” *Dynamis* 33, no. 2 (2013): 321–42; Carlos Acosta Rizo, “La Teoría de la Evolución y la Censura en TVE. Entre el Fijismo, el Finalismo y el Neodarwinismo?,” *Actes d’Història de la Ciència i la Tecnologia* 1, no. 1 (2008): 271–77.

⁵² “Autobiografía i missatge pòstum de Sebastià Estradé i Rodoreda,” ANC1-563-N-342.

⁵³ L.T.M., “Amigos del Espacio,” 17.

⁵⁴ Camprubí, *Engineers and the Making of the Francoist Regime*; Camprubí, *Los Ingenieros de Franco: Ciencia, Catolicismo y Guerra Fría en el Estado Franquista*.

⁵⁵ Taberner, “The Changing Nature of Modernization Discourses in Documentary Films,” 72.

The interest of Francoist officials in popularising the space race combining science and religion made Estradé's work more visible and contributed to his participation in *Amigos del Espacio*. For Estradé, the possibility of reaching out to millions of Spanish homes, together with the prestige associated with television at the time, constituted a unique opportunity as a science popularizer. By emphasizing the importance of national science and technology in *Amigos del Espacio* he could also put forward a strong message about the importance of education and training for both boys and girls, portraying the new generations of Spaniards as the leading actors of the coming age of astronautics. But the Spanish focus of *Amigos del Espacio* diverged from the internationalist narratives that characterized Estradé's published work. The "world patriotism" of astronauts in his science popularization books was reshaped into a celebration of Spanish science and technology that fostered nationalism in *Amigos del Espacio*.⁵⁶

Above all, the program's core message revolved around the technocratic modernisation of national-catholic Spain through science and technology, delivered within an optimistic narrative about the Space Age and faith in technological progress. The many laboratories and control rooms visited by the Tungsten family provided a sense of modernity, while the references to international space activities—including Soviet achievements—added a dose of cosmopolitanism. Meanwhile, American achievements and authority were mobilized to certify Spain's progress and its new international role as partner in the space race. Together, the program conveyed an apolitical message of modernisation and development of the Francoist regime, which overlooked the conflictive social and political reality of the late 1960s. As illustrated by Professor Tungsten's rebuke to his son's friend: "Leif, don't get into politics! It's none of our business" (7).

Finally, as previous research on science popularization in nondemocratic regimes has shown, the case of *Amigos del Espacio* attests to the existence of a public sphere for science, in this case focused on young adult audiences. As presented in this article, the launch of the show came accompanied by the creation of a club that, according to TVE sources, reached more than four thousand members. However, the participation of the audience remained largely superficial, confined to activities such as drawing competitions, defining concepts presented in the show's episodes, or suggesting names for future Spanish rockets and satellites. Selected letters were read aloud by the presenters, who frequently directed viewers to the US embassy and consulates in Spain. This limited participation is well illustrated by the names proposed for baptizing satellites and rockets, such as *Católico I*, *Madre Patria* or *Colon I*, which exemplify the strong intertwining of Catholicism and Spanish nationalism displayed throughout *Amigos del Espacio*.

⁵⁶ On astronauts as "patriots of the world," see Estradé, *De la Tierra al Infinito*, 151.

List of available episodes of *Amigos del Espacio*

1. Spatial rockets and satellites (Christmas 1967), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-cohetes-espaciales-satelites/5133060/>
2. National Institute of Aerospace Technique (January 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-instituto-nacional-tecnica-aerospacial/5000358/>
3. Questions and answers about Astronautics (January 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-preguntas-respuestas-sobre-astronautica/5159383/>
4. Radio link stations (February 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-estaciones-radioenlace/5133047/>
5. Satellite communications station (February 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-estacion-comunicaciones-via-satelite/5002913/>
6. Research Centre in Physics Leonardo Torres Quevedo (March 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-centro-investigaciones-fisicas-leonardo-torres-quevedo/5121593/>
7. The National Astronomical Observatory (March 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-observatorio-astronomico-nacional/5024096/>
8. Terrassa School of Industrial Engineers (March 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-escuela-ingenieros-industriales-tarrasa/5057019/>
9. The Prophets (April 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-profetas/5133276>
10. Engineering School of Barcelona (April 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-escuela-ingenieros-barcelona/5080918/>
11. Meteorological station of Barajas (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-estacion-meteorologica-barajas/5207300/>
12. General Directorate of Navigation and Air Transport (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-direccion-general-navegacion-del-transporte-aereo/5164584/>
13. Aerospace Medicine Center in Madrid (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-centro-medicina-aerospacial-cima/5273292/>

14. Important dates in United States astronautics during 1967 (date unknown, Spring - Summer 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-fechas-importantes-astronautica-americana-1967/5250921>
15. National Institute of Meteorology (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-instituto-nacional-meteorologia/5186431/>
16. Iberia - Spanish Airlines (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-iberia-lineas-aereas-espana/5229959/>
17. Aeronautical Constructions, S.A. (CASA) (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-construcciones-aeronauticas/5243674/>
18. The Nuclear Energy Board (date unknown, Spring - Summer 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-junta-energia-nuclear/5257692/>
19. Nuclear energy (date unknown, Spring - Summer 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-energia-nuclear/5284290/>
20. Summary of the first year of broadcasts of Amigos del Espacio (date unknown, Summer 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-resumen-del-primer-ano-emision/5355798/>
21. Antenna of the Spanish space station in the base of Fresnedillas de la Oliva (Madrid) (October 1968), <https://www.rtve.es/play/videos/amigos-del-espacio/amigos-del-espacio-antena-fresnedillas/5374451/>
22. Amigos del Espacio in the 19th Conference of the International Federation of Astronautics (November 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-19-congreso-federacion-internacional-astronautica/5391133/>
23. Higher Technical School of Aeronautical Engineers of Madrid (December 1968), <http://www.rtve.es/alacarta/videos/amigos-del-espacio/amigos-del-espacio-escuela-tecnica-superior-ingenieros-aeronauticos-madrid/5384811/>
24. Our galaxy (date unknown, Fall – Winter 1968), <http://www.rtve.es/alacarta/videos/programas-y-concursos-en-el-archivo-de-rtve/amigos-del-espacio-nuestra-galaxia-1968/2846535/>

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