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How to Use the Italian Astronomical Heritage for the Dissemination of Scientific Knowledge in the Society

Mauro Gargano[1], Valeria Zanini[1], Antonella Gasperini[2]

[1]INAF - Astronomical Observatory of Capodimonte, [2]3INAF - Arcetri Astrophysical Observatory

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ABSTRACT

Astronomical Observatories are the most ancient scientific institutes in Italy. They preserve an incredible treasure made by rare books, astronomical sketches, documents and letters, and a noteworthy instrument collection used to realize discoveries and studies in the fields of classical astronomy and astrophysics. In the last few years the National Institute for Astrophysics has promoted a project to preserve, catalogue, and present a great part of the Italian astronomical heritage on the web with “Polvere di stelle”, the gate to arrive at the origin of modern astronomy in Italy. The studies made by some Italian researchers on the history of observatories, on the development of the astronomical instruments, on astronomers and their discoveries, activities, and scientific journeys, have revealed a complex pattern of relationships with other scientific and cultural communities, politicians and the society of their time. So you can study the foundation of Padua and Naples Observatories and you have to talk of Napoleon, Murat, and the Congress of Vienna. You can trace the birth of astrophysics and run into the events of the unification of Italy. Or you can be involved in the biographical study of Schiaparelli and you find yourself talking about archeology and fashion. And vice versa.

To disseminate the scientific culture, and valorize the Italian astronomical heritage in a much wider context, we have realized exhibits, laboratories, and theatrical experiences to give life to cultural heritage. Through a powerful emotional involvement, these methods of non-formal communication of science establish a strong relationship between performers and spectators and give a more homogeneous view of the work of astronomers, and the cultural heritage they have left behind.

This paper illustrates the projects we have created and the results obtained to transform the history of astronomy into the men’s stories.

Introduction

The main goal of the National Institute for Astrophysics (INAF), the most important Italian research body for the universe’s study, is to execute and promote scientific research in astronomy and astrophysics considering earth- and space-based activities, and also to develop innovative technologies and advanced instrumentation to explore the cosmos. Moreover, INAF has the aim to disseminate and popularize its scientific results and knowledge both in school and society. INAF was established in 1999 including the astronomical observatories, which are the ancient research institutions in Italy and beyond. The seventeen INAF departments are placed in twelve Italian

cities: Bologna, Catania, Cagliari, Florence, Milan, Naples, Padua, Palermo, Rome, Teramo, Trieste and Turin, and one in Spain at Canary Islands.



Figure 1a. An engraving of the Milan Observatory taken from the Astronomical Ephemeris: Ephemerides Astronomicae anni 1781 ad meridianum mediolanensem.

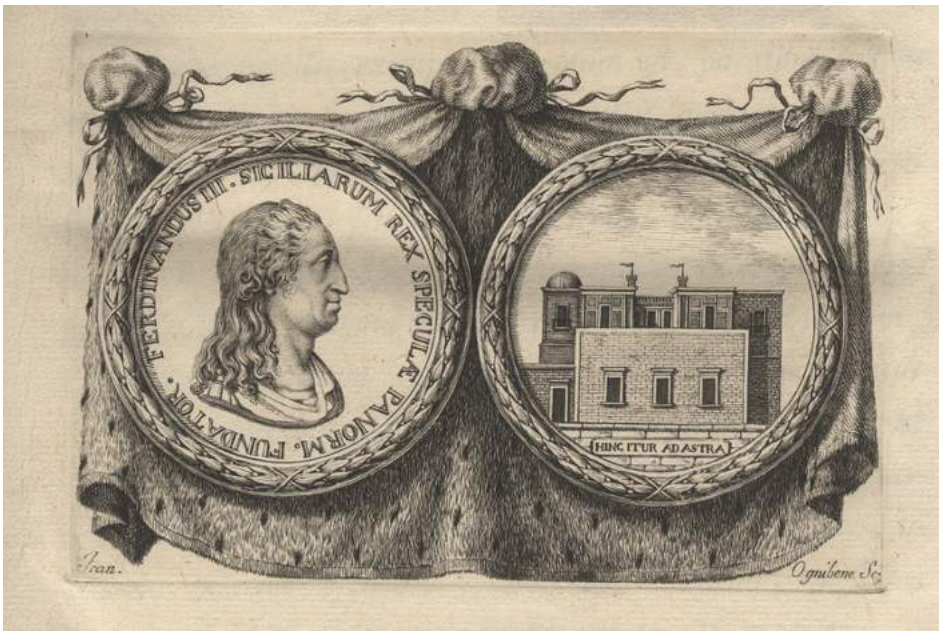


Figure 1b. Two medalions with Ferdinand of Bourbon king of Sicily and Naples, and the building of the Palermo Observatory, the engraving is taken from the frontespice of Piazzi stellar catalogue: Praecipuarum stellarum inerrantium, Panormi, 1803.

The first Italian observatories, Bologna and Pisa, were founded at the beginning of the 18th century. The historical heritage of the first one, established by the scientist Luigi Ferdinando Marsigli (1658-1730) in 1712 in a tower on the top of “Palazzo Poggi”, is now part of the collections of the University of Bologna, while the tower of observatory of Pisa, founded in 1734, was demolished in 1826 because of the unsteadiness of the ground. Now the building houses the Domus Galileana.

The oldest Observatories, which still carry out astronomical research in INAF, were established in the second half of 18th century: Brera in Milan, founded between 1762 and 1764 by Louis Lagrange (1711-1783) and Roger Boscovich (1711-1787) on the top of the Brera palace (see Figure 1a), Padua, established by Giuseppe Toaldo (1719-1797) in 1767 on the tower of the Carraresi’s medieval castle, Turin, created in 1790 in the Collegio dei Nobili palace, and Palermo, founded in 1791 by Giuseppe Piazzi (1746-1826) in the highest tower of the Royal Palace (see Figure 1b). In the 19th century arose the observatories of Naples (1807)[1], Rome, placed on the Campidoglio tower in 1827 and first moved to the Monte Mario hill in the 1930s, and later in the modern building of Monte Porzio Catone[2], Florence, founded by Giovan Battista Donati (1826-1873) in 1869 on the top of the Arcetri hill, close to the last residence of Galileo Galilei (1564-1642), and Catania, established by Pietro Tacchini (1838-1905) in 1876

on the Etna Volcano. Finally, in the first two decades of the 20th century, other three observatories were established: Cagliari, transformed from astronomical station into an observatory in 1911, Teramo, a private observatory donated by Vincenzo Cerulli (1859-1927) to the Italian government in 1917, and Trieste, created as observatory after the end of the First World War [1][2][3].

This quick summary on the formation of the Italian Observatories demonstrates the great cultural richness, in addition to the scientific one, that the INAF research units testify with their monumental buildings, ancient libraries, historical archives and museum collections, as well as the great little scientific events of Italian astronomers who have contributed to the progress of science of the cosmos.

The cultural heritage of INAF

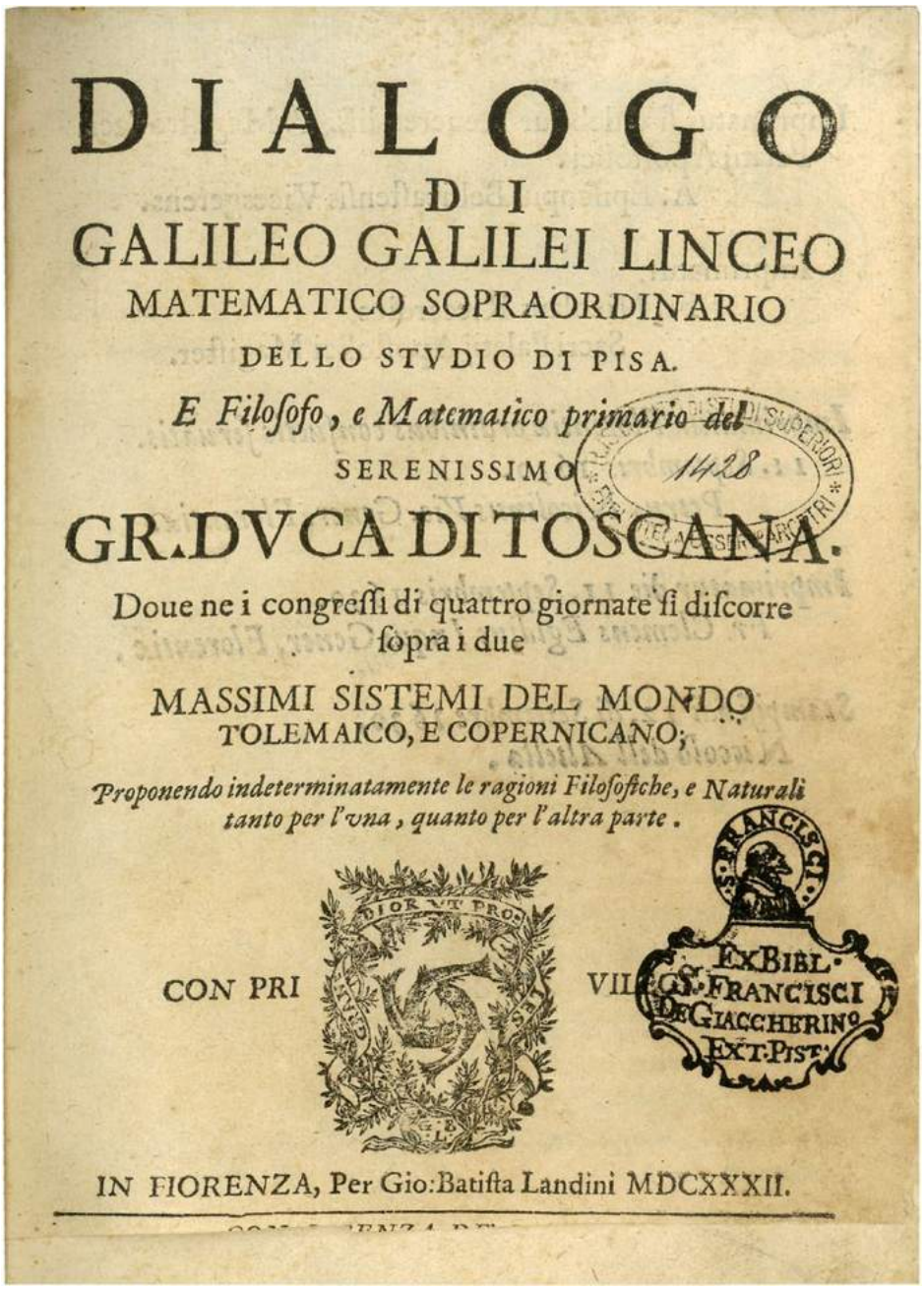
The historical and scientific heritage of INAF, consisting of books, archival documents and instruments, testifies the development of astronomy in Italy from pre-Galilean observations to present.

Ancient libraries

The INAF bibliographic heritage held in its libraries consists of about 7000 rare books published from 1470 to 1830, including 30 manuscripts, some dating back to the early 14th century, 19 incunabula and 551 sixteenth-century editions. Each collection has peculiar aspects due to the history of its Observatory. In the case of Brera, for example, the first volumes came from the exceptionally fine library of the Brera Jesuit College, to which the observatory was annexed. In Palermo, instead, the library originated from the legacy of the Observatory's first director, Giuseppe Piazzi, who donated his own personal collection of books and papers. In Naples the library of the Capodimonte Observatory was started by Federigo Zuccari (1783-1817) in the years 1812–1815, while the observatory was being built, and was later enriched by private donations. In Padua, the original collection of books dating back to the foundation of the Observatory was greatly enriched in 1873 by a donation of Giovanni Santini (1787-1877), the third director. In all cases, however, the libraries have gradually been enriched with the acquisitions necessary for the increasing scientific activities carried out by astronomers [4].

Some precious volumes owned in the INAF libraries represent true cultural milestones, such as the works of Galilei, Copernicus, Ptolemy, Kepler and Newton which paved the way for modern science. A lot of these volumes are often valuable first print editions. For examples, the library of Capodimonte Observatory has the first and the second

edition of “De Revolutionibus orbium coelestium” by Copernicus, the first one, published in 1543, has handmade corrections imposed by the Holy Inquisition in 1616, after the sentence which obliged Galilei to abjure. Another rare book that marks a milestone toward the new astronomy is the "Dialogo" by Galilei published in 1632, preserved by the library of Arcetri Observatory (see Figure 2a). These books are interesting for their contribution to the development of Western culture, as well as for the magnificent engravings and illustrations they present. Between the second half of the 16th century and the beginning of the 17th, illustrated scientific books spread throughout Europe. Astronomers and engravers represent the new planets, the new stars, the solar maculae, and the craters of the Moon with painstaking care in some precious volumes of rare beauty, merging art, mythology and science.



DIALOGO
DI
GALILEO GALILEI LINCEO
MATEMATICO SOPRAORDINARIO
DELLO STVDIO DI PISA.
E Filosofo, e Matematico primario del
SERENISSIMO
GR.DVCA DI TOSCANA.
Doue ne i congressi di quattro giornate si discorre
sopra i due
MASSIMI SISTEMI DEL MONDO
TOLEMAICO, E COPERNICANO;
Proponendo indeterminatamente le ragioni Filosofiche, e Naturali tanto per l'vna, quanto per l'altra parte.
CON PRI VIL
EX BIBL. S. FRANCISCI DE GIACCHERINO EXT. PISTOR.
IN FIORENZA, Per Gio: Batista Landini MDCXXXII.

Figure 2a. The frontespice of Dialogo di Galileo Galilei, in orenza, 1632

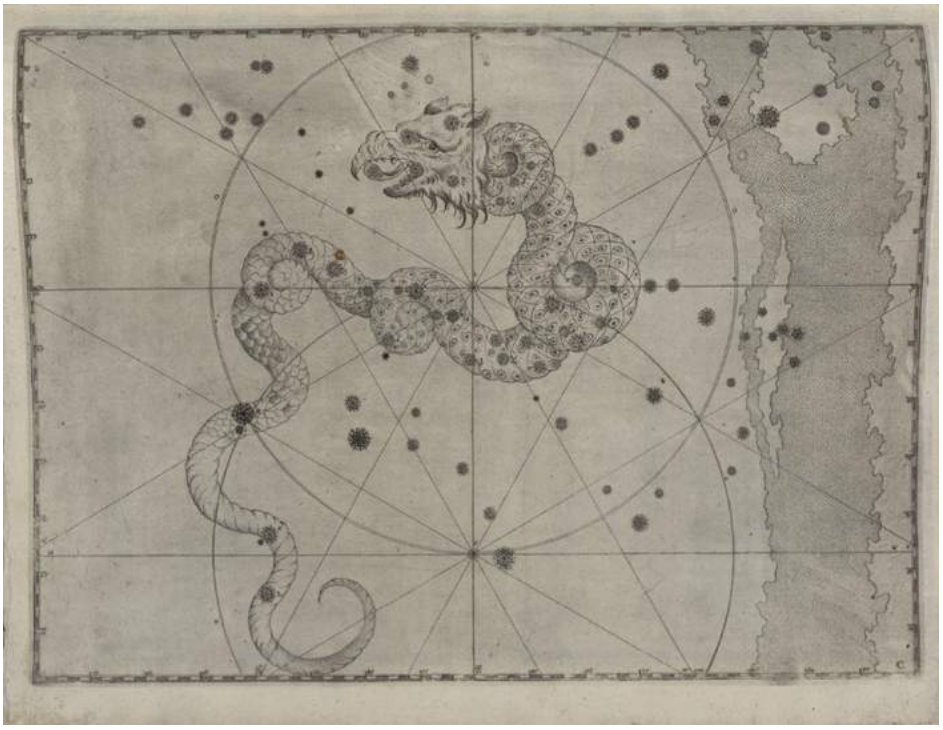


Figure 2b. The Draco constellation taken from the Ioannis Bayeri Rhainani I. C. Vranometria, Ulmae, 1661.

Precious masterpieces are the wonderful star atlases, such as the “Uranometria” (1661) of Johann Bayer (see Figure 2b), the “Atlas coelestis” (1742) of Johann Gabriel Doppelmayer. Moreover there are the cometographies and selenographies of the Northern Europe astronomers, as well as the meticulous representations of the scientific instruments, such as the “Astronomiae instauratae mechanica” (1602) of Tycho Brahe.

Historical archives

While libraries were and still are working tools for the astronomers, historical archives served a different purpose. The archives of the astronomical observatories consist of records providing written evidences of the scientific activities carried out by each institution. They originated from the natural accumulation of documents produced or received by astronomers. The astronomer’s daily activity logs show how the Observatories created and archived documents, mainly hand-written administrative and scientific materials. They include records from countless nights spent at the telescope, beautiful sketches of nebulae, comets and planets, made during the night observations under the dome, letters revealing the mind paths leading to extraordinary scientific discoveries, journey logbooks, meteorological observations, settled bills, book receipts, reports from journeys, maps, drawings as a continuum line throughout

the centuries. Due to the role played by astronomers in past centuries, the archival materials preserved in the Observatories are a source of primary importance both for studies in the history of science and for research in a wide variety of thematic areas that had crucial outcomes in the civil and political life of their time. For example, the astronomical archives preserve documents related to the construction of the great sundials in the cathedrals of Palermo, Milan and Bologna; the compilation of ephemeris for nautical almanacs; correspondence with engineers for drawing up detailed maps, and for regulating public clocks; collaborations with the judicial authorities. A cultural legacy consisting of over three millions documents, including 122 series of archival fonds of the Italian astronomers [5].



Figure 3a. The historical collection of the astronomical museum at the Capodimonte Observatory



Figure 3b. The Inscription Room at the Padua Observatory, the Dembowsky telescope in the foreground.

Museum collections

The development of the cosmic sciences and the contribution to the progress of astronomy, made by Italian astronomers over the centuries, are amply testified by the historical instruments preserved in the astronomical Observatories. The entire collection of INAF includes a total of over a thousand pieces: quadrants, sextants, telescopes, theodolites, clocks, stopwatches, globes, mathematical and surveying instruments, thermometers, barometers, hygrometers and meteorological instrumentation, ranging from the sixteenth 16th century to the first half of 1900s. Any museum is formed by collecting observatory equipment, purchased or specially built by skilled mechanics, used in the past by astronomers for their scientific research. The exception is the Astronomical and Copernican Museum in Rome that has a different story for its establishment. It was founded in 1873, during the celebrations of the 400th anniversary of the birth of Copernicus, thanks to the precious donation made by Artur Wołyński (1844-1893). This collection includes Copernican memorabilia and other legacies of high scientific and cultural value. In the other Observatories, such as Capodimonte, the original collection has been enlarged and enriched with the acquisition of other precious scientific and artistic objects. Among all the pieces preserved and exhibited in the INAF museums there are: the Arabic astrolabe (1096), manufactured in Spain and one of the oldest astrolabes in the world, the celestial globe (1589) made in German by Roll and Reinhold, the mural quadrant of Ramsden

(1776) with which Toaldo measured double stars in the Cygnus constellation, the Ramsden Circle (1787ca.), used by Giuseppe Piazzi to discover Ceres in 1801, the equatorial telescope of Fraunhofer (1814), the largest telescope made in the first two decades of 19th century, the achromatic lens of Amici (1840), employed by Donati to discover the great comet of 1858, the spectroscope of Hofmann (1862), used by Secchi for the first spectroscopic stellar classification, the dome and the telescope of Merz (1863ca.) exploited by Giovanni Virginio Schiaparelli (1835-1910) to realize the first cartography of Mars.

The astronomical instruments are objects representing both the research carried out by the Italian astronomers for the development of astronomical sciences in the past centuries, and the expertise endowed by the mechanics and technicians who built them. In this sense, each object have to be considered as a unique piece.

Polvere di Stelle and the astronomical history

In order to valorize and share the historical heritage of Italian astronomy to the largest audiences, including scientists, historians, students, and general public, INAF realized “Polvere di Stelle” (Stardust), the web portal of the Italian astronomical cultural heritage (www.beniculturali.inaf.it). The project was conceived in 2009 for the International Year of Astronomy. It originated from the growing interest in historical archives that has engaged the archivists and librarians of Italian observatories in the last 30 years. The first release of “Polvere di Stelle” can also be considered a final result of the “Specola 2000” project. It has increased the knowledge of the historical legacy of Italian astronomy, presenting in a complete and homogeneous way the treasures hidden in the folders of the Italian astronomical archives. The idea underlying “Polvere di Stelle” was to offer a stargate to access twelve historical archives, to consult a first group of archival data recorded in a professional database, and to browse a large gallery of the most important documents. In addition an elegant booklet and a video were published to present archival series and documents, and to show the Stardust pearls held by the historical archives of Italian Observatories. The project had a turning point in 2013, when INAF decided to create a web platform to host all the cultural heritage of the astronomical observatories in Italy (see Figure 4). The experiences acquired in the previous years with initiatives for the preservation and enhancement of the INAF collections of libraries, archives and museums raised the awareness of its uniqueness in the panorama of Italian cultural heritage. The main goal of this platform is to make all these sources accessible in a wide and articulate way, presenting a wealth of useful tools both for studies and for teaching ancient and

modern astronomy. At the same time the portal wants to offer information for the dissemination of scientific culture and for the preservation of historical memory on Italian astronomy.



Figure 4. The English homepage of Polvere di Stelle.

Tangible heritage and historical research

The ancient and historical books, and the scientific instruments are the tangible heritage of the research activities of Italian astronomers, to which are added the historical documents preserved in the INAF archives. All these materials testify both to the scientific path developed by the protagonists, and to the personal relationships of Italian astronomers with other scientists and with the political and cultural personalities of the time. In particular, the archival documents describe in detail the scientific activities carried out in the Italian Observatories over the last 200 years, in some cases even more than 250 years. The letters and documents also tell the interconnection with the political and social events that characterized the Italian

history of the 18th and 19th centuries. Articles, exhibitions and public conferences published or made in various national and international contexts, including LISA, have brought out these peculiarities.

A few examples:

Historians have traditionally believed that the astronomer of Padua, Jacopo Michez (1839-1873), had been removed from his office in 1866 after the annexation of Veneto to the new Kingdom of Italy, due to his loyalty to the Habsburg Empire. However, some documents suggest that he was actually fired for his bad relations with the astronomers and staff of the Padua Observatory [6].

Giulio Tomasi Prince of Lampedusa (1815-1885), ancestor of Giuseppe the author of the famous book “the Leopard”, was a lover of astronomy, and he also set up a private observatory in a country villa near Palermo, in Sicily. In 1877 he sent a telegram to Florence for the astronomer Wilhelm Tempel (1821-1889) accusing him of having stolen the comet "l’arrubbatina della cometa", but Tempel observed and discovered a new comet on 2 October at the Florence Observatory, while the Prince of Lampedusa a few days later [7].

Elsa Schiaparelli (1890-1973) was the granddaughter of the astronomer who observed Mars (and the Martian plumbers too) from Milan. She was in correspondence with her uncle and she was inspired by the scientific knowledge of Giovanni Virginio Schiaparelli realizing wonderful fashion creations based on astronomy [8].

The discovery of nine asteroids by Annibale de Gasparis (1819-1892) in Naples intertwined with the Risorgimento riots of 1848 until the events that led to the formation of the Kingdom of Italy and the first Italian parliament in 1861 in which de Gasparis was appointed senator [9].

The reading and study of these documents, which show the private as well as the scientific side of the Italian astronomers, pushed us to carry out cultural initiatives for the public to emphasize both the intellectual path and scientific research, and the human aspect and personal events of the big and small protagonists of Italian astronomy.

Dissemination of astronomy through its stories

For several years, theatrical performances have fully entered the non-formal communication methods of science, thanks to the powerful emotional involvement that

can be established between actors and spectators. Therefore, we have also tested these alternative methods of communication in the public activities of the Italian Observatories. In Padua, for example, some theatrical visits have animated the ancient medieval tower which houses the observatory and the historical and museum collections (see figure 5a). During these performances, costumed actors played astronomers of past centuries, illustrating the astronomical instruments or explaining the scientific activities in which they were engaged.



Figure 5a. Actors impersonate the astronomer Giovanni Santini and his wife in the Figures Room of the Astronomical Observatory of Padua.



Figure 5b. Settemillimetridiuniverso on the stage of "teatro della Tosse" in Genoa during the Science Festival - photo by Andrea Signori.



Figure 5c. Desideribus, premiere of the theatrical show dedicated to Father Angelo Secchi staged at the prestigious "Trocolo Flag Hall" in Reggio Emilia.

On the occasion of the centenary of the death of Giuseppe Lorenzoni (1843-1914), director of the Padua Observatory and professor of astronomy at the University, a complete theatrical performance focused on the historical figure of the astronomer was promoted. Written and dramatized by a professional theater company in 2014, the show tells both the story of one of the main protagonists of modern astronomy and the scientific and human figure of the this scientist. Lorenzoni has given a decisive contribution to making the Padua Observatory one of the most important and competitive astronomical centers in Italy and in the world. Thanks to Lorenzoni, the Padua school of astronomy became fundamental for the training of the new generations of astronomers, who have always kept an affectionate memory of their professor.

In 2015 we realized the project "Starlight: the birth of astrophysics in Italy", an exhibition held in the observatories of Florence, Naples, Rome, Padua and Palermo and a virtual visit in these buildings and among the objects on display. From this experience was born the show "Starlight: sevenmillimetersofuniverse" produced by Zelda (see figure 5b), a professional theater company, which completes the visit to the exhibition. Summarizing and dramatizing all the different sections of the exhibition spread throughout the country, the theatrical show describes the transformation of astronomy into astrophysics in Italy, in a crucial era such as that between the Risorgimento and the unification of Italy. The storytelling of the show points out the political and social events that are intertwined with the vicissitudes and the passion of men who dedicated their lives to observe the sky and to decode it.

The biographies of the astronomers, the studies and documents produced by them, the books and the instruments, they used, have thus become the main subject of the theatrical text, and they have come to life for the interpretation of a professional actor. He talked about the progress in astronomy and astrophysics in an innovative and exciting way. The show proved to be multidisciplinary and engaging, and it offered both to the large audience of the general public and to middle and high school pupils. Commented the show, a 13-year-old young spectator said: "I liked Starlight a lot, because it combined different subjects such as history and science and made them beautiful and fun, not boring like in the classroom!" The project Starlight was awarded the medal of the President of the Italian Republic, and the Italian public broadcaster RAI recorded the show and programmed it on channels dedicated to history (RaiStoria) and school (Raiscuola). Sevenmillimetersofuniverse was also presented in some science festivals in Italy, and a podcast was created for spotify. This approach was also used in the project for the bicentenary of the birth of Angelo Secchi, the pioneer

astronomer in astrophysical studies who realized the first spectral classification of stars in 1866. In 2018 INAF created a virtual exhibition, a catalogue, and a theatrical piece titled "Desideribus", a story that proposes a journey through the fundamental stages of Angelo Secchi's scientific activities, showing the modernity of his approach to science, his open, curious and speculative mind, but at the same time extremely hand-on.

In 2019 to celebrate the foundation of the Florence Observatory on the Arcetri hill, near the house of Galilei, Villa il Gioiello, a theatrical show relaunched the great astronomical event starring the astronomer Giovan Battista Donati. He invited Italian astronomers and academics to lay the first stone of the new building in Florence, which in 1869 was the capital of the Kingdom of Italy.

Historical studies, meetings and public activities were carried out also to remember the bad pages of Italian and European history. In 1938, due to fascist racial laws, some Italian astronomers were also expelled from their offices. We have realized on Stardust a page to collect biographies, documents and books of these astronomers. We have also organized public meetings and a publication to remember this sad page of history, also inviting some heirs of these astronomers to witness their family memories. A similar story concerned Maja (1881-1951) Einstein who lived in Florence from 1921. Maja was passionate about music, and her brother Albert Einstein (1879-1955) gave to Maja a piano that played melodious and moving music. But even Maja had to suffer the inhuman Nazi-Fascist ferocity, moving to United States in 1939 [10]. Since 2016 the Einstein piano is in the Library of the Arcetri Observatory where it has resumed playing cosmic music in many public initiatives, like the one scheduled every year on 27 January on the occasion of the international holocaust remembrance day.

Communicating astronomy at the time of the pandemic

During the ongoing pandemic, cultural activities have suddenly changed, becoming exclusively online. So we have realized “Racconti di Astronomia” and “Universi da ascoltare”. They are short and emotional videos and podcasts to talk about historical collections and to disseminate astronomical knowledge in the society.

"Universi da ascoltare" (Universe to listen) is produced by the Arcetri Astrophysical Observatory for "Polvere di Stelle", and it is currently the first and only INAF-branded podcast. It was created to reach a remote audience with a storytelling approach and to bring new audiences closer to our Institute. It proposes readings of stories to discover the sky with a curated selection of tracks from the best literature in the field of space

sciences and astronomy. The readings are performed by actors or professional readers in order to offer to the public a high-level listening experience. Universe to listen will became more and more a relevant way to disseminate contents to the large audience and in the next season the age-target will be expanded by producing episodes with selected readings from Italian and international literature relating to astronomical and cosmic themes, including science fiction.

"Racconti di astronomia" (Tales of astronomy), dedicated to the historical and cultural heritage of INAF, narrates the astronomers, instruments and events that have made Italian astronomy and astrophysics great. These short video pills want to be an open window on a precious and little known treasure of the tangible and intangible heritage of Italian astronomy (see figure 6). We told the story of the telescopes of Padua and Naples Observatories, as well as the events that led to the discovery of the planet Ceres by Piazzi in Palermo, and to the Martian observations by Schiaparelli in Milan. An episode is dedicated to the invention of the tasselled-mirror telescope and the private events of the Jewish astronomer Guido Horn d’Arturo (1879-1967), also using comics and animations.



Figure 6. A frame from the episode: "the cradle of radio astronomy" of the "Tales of Astronomy" video series. This scene is taken from the film: "Red Desert" directed by Michelangelo Antonioni starring Monica Vitti, who died on 2 Febraury 2022.

Furthermore, during the pandemic, a short video was produced to point out how the cultural and historical heritage can be a bridge connecting distant people in difficult times. It was 16 March 2020, and the Bavarian city of Bamberg dedicated a video to

Italy during the first emergency for Covid-19. The inhabitants of that city sang the Italian song: "Bella Ciao" from balconies and streets. This sign of closeness touched us a lot, so we wanted to return our heartfelt thanks to the citizens of Bamberg by making a video. We did it through the historical instruments preserved in our Observatories, made by the German instruments maker Carl Bamberg (1847-1892), namesake of the German town https://youtu.be/0FMfV3yIJUw.

Conclusion

All these experiences: visits and theatrical performances, emotional videos and podcasts, had the aim of disseminating correct information on Italian historical astronomy and on the Italian contribution to the development of modern astrophysics. The promotion of successful initiatives with historical and cultural contents of astronomy for the general public, in particular middle and high school students, demonstrates that it is possible to trace the progress of scientific knowledge and the complex relationships existing between science and technology, to starting from the knowledge of the ancient instrumentation and bibliographic material. The positive feedback obtained shows that it is possible to educate by intriguing and having fun, so it encourages INAF to continue on this path.

Footnotes

1. The observatory was placed in the ancient monastery of San Gaudioso by Giuseppe Bonaparte in 1807. The present Observatory on Capodimonte hill was founded by Joachim Murat and the astronomer Federigo Zuccari in 1812. ↩

2. In Rome there were two observatories, in addition to the Campidoglio one, Pope Clemens xiv established the observatory of the "Roman College" in 1774, which became Vatican Observatory after the unification of Italy. ↩

Citations

1. Chinnici, I. (2009). Italian Astronomical Observatories and their Historical Instruments Collections. In *Cultural heritage of astronomical observatories: From classical astronomy to modern astrophysics* (pp. 227–231). ↩
2. Bianchi, S., & Galli, D. (2015). Les Observatoires astronomiques en Italie. *Nuncius*, *30*(1), 195–227. https://doi.org/10.1163/18253911-03001008 ↩
3. Gargano, M., Zanini, valeria, & Gasperini, A. (2020). Stardust: preserving and sharing the Italian astronomical heritage. *Heritage and Modern Times*, *3*(1), 54–72. ↩

4. Gargano, M., Gasperini, A., Schiavone, L., & Brunetti, F. (2018). Polvere di stelle The Italian platform for data-sharing and data-preserving of modern and ancient astronomical resources. In *European physical journal web of conferences* (Vol. 186, p. 07002). https://doi.org/10.1051/epjconf/201818607002 ↩

5. Gargano, M., Gasperini, A., & Mandrino, A. (2010). Polvere di Stelle Stardust: The National Historical Archive for Astronomy on the Web. In E. Isaksson, J. Lagerstrom, A. Holl, & N. Bawdekar (Eds.), *Library and information services in astronomy VI: 21st century astronomy librarianship, from new ideas to action* (Vol. 433, p. 244). ↩

6. Zanini, V. (2011). L'Osservatorio Astronomico di Padova e l'Unità d'Italia. *Giornale Di Astronomia*, *37*(4), 2–6. Retrieved from http://digital.casalini.it/10.1400/175054 ↩

7. Bianchi, S., & Chinnici, I. (2014). L'arrubbatina della cometa. *Giornale Di Astronomia*, *40*(2), 38–41. Retrieved from http://digital.casalini.it/10.1400/221971 ↩

8. Arosio, I. (2018). Carissimo zio ... : 1908 : da Elsa a Giovanni Virginio (Schiaparelli). *Giornale Di Astronomia*, *44*(1), 45–48. Retrieved from http://digital.casalini.it/10.19272/201808801008 ↩

9. Gargano, M. (2011). Ausonia : il pianetino dell'Unità d'Italia. *Giornale Di Astronomia*, *437*(4), 10–20. Retrieved from http://digital.casalini.it/10.1400/175056 ↩

10. Ciardi, M., & Gasperini, A. (2021). *Il pianoforte di Einstein. Vite e storie in bilico fra Firenze, Europa e America*. Hoepli. ↩