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Astronomy for Everyone! – The Library of Arcetri Astrophysical Observatory and the Public: An Example of Integration of Information Resources

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Abstract. This talk illustrates how a research library can work in the public communication of science. It describes some experiences at Arcetri Astrophysical Observatory library in the dissemination of astronomical information for the general public. Particular attention is devoted to (1) the integration of information resources to support public outreach to children; and (2) the use of the historical archives for the dissemination of the history of astronomy.

1. Introduction

The diffusion of scientific knowledge is essential for economic and social progress as well as for the state of democracy. People need scientific knowledge, especially now, since science plays a crucial role in their lives. In Italy the diffusion of scientific culture is not seen as a primary priority; science seems not to be considered an important part of cultural development. Consequently, innovation and research are not supported by funding. Italy spends less than 1% of its GNP on research activities. One of the objectives of the European Council in the Lisbon Conference in 2000 was to invest up to 3% of GNP in science research and development by 2010.[1]

However, the scientific culture is now offering many new opportunities to communicate with the public in our country: festivals, scientific cafes, theaters and exhibits are now beginning to play a role in Italian scientific culture. If we look at astronomy, we find that it is the most popular area of science in our country. For this reason, astronomy may be considered as the "main attraction" for the diffusion of scientific information to enhance the scientific culture.

In Italy, there are four popular astronomy journals: *L'Astronomia*,[2] *Coelum: Astronomia*,[3] *Nuovo Orione*,[4] *Le Stelle*.[5] Nothing comparable is seen in other scientific disciplines. There are also many amateur associations, planetaria (about 130 in the nation) and astronomical observatories. The diffusion and

[1] `http://europa.eu/scadplus/leg/en/lvb/i23021.htm`

[2] `http://www.lastronomia.it`

[3] `http://www.coelum.com`

[4] `http://www.orione.it`

[5] `http://www.lestelle-astronomia.it`

dissemination of their activities are a clear demonstration of the popular interest in astronomy.

2. The Role of Italian Astronomical Observatories in the Communication of Astronomy to the Public

Astronomical observatories and other astronomical research institutes play a significant role in the diffusion of astronomical information. Besides research activities, the observatories contribute to advanced education, assist in the dissemination of knowledge and implement educational and public outreach projects.

In Italy, research is carried out by the National Institute for Astrophysics (INAF) which is formed by twelve observatories and by three institutions belonging to the National Research Council.[6] Each is different in terms of historical heritage, dimensions and scientific activity. Some of these are very old institutions; for example, the Specola of Padova dates back to the 17th century, and the Capodimonte Observatory in Napoli was built at the beginning of the 1800s, when the town was the capital of an independent kingdom.

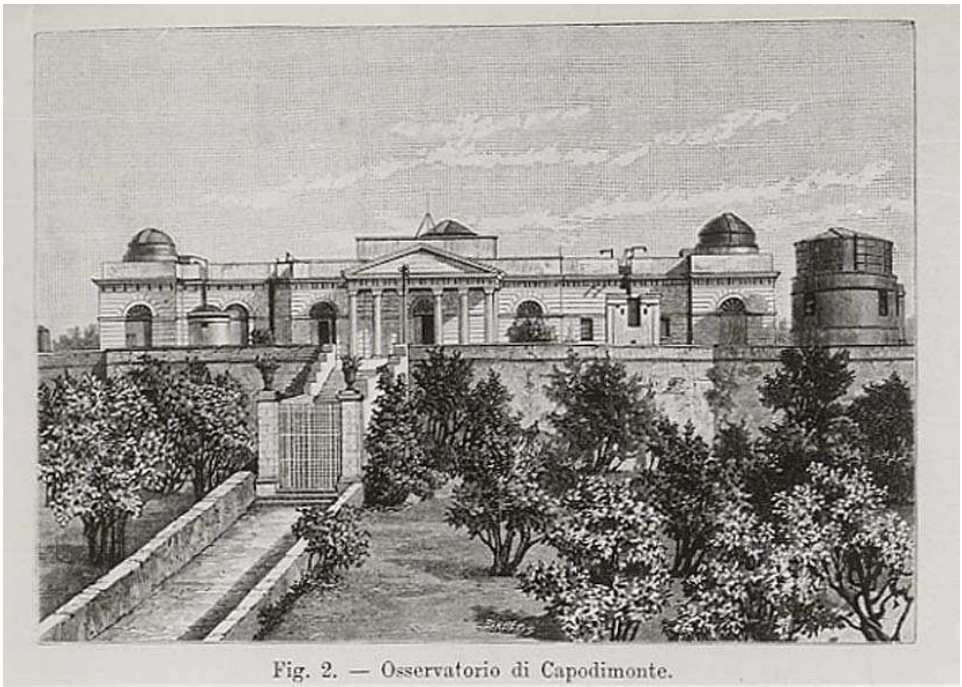


Fig. 2. — Osservatorio di Capodimonte.

Figure 1. Capodimonte astronomical observatory

Most of the observatories have a long tradition in astronomical studies. In general, they are connected to the local universities, to the town and to the local geographical area. They may be considered to form the core of astronomical culture. The origins of the Arcetri Astrophysical Observatory, for example,

[6]For a list of the observatories and institutes participating in INAF, see Schiavone (this volume).

are linked to the history of the Specola Tower of Florence. The Specola (from the Latin specula, look out, observe) of the Imperial Observatory was built in 1775 where the Royal and Imperial Museum of Physics and Natural History of Florence was hosted. In 1872, the Specola "moved" to a hill near Florence, called Arcetri. This place is known over the world as a symbol of astronomy: here Galileo Galilei lived his last years in the villa "Il Gioiello".

Like other observatories, Arcetri Astrophysical Observatory is involved in public outreach activities. It organizes activities for the public: visits, lessons for students, conferences and courses. Since 2000, once or twice a year, there is a special activity for children called "Bambineidi". The Arcetri Astrophysical Observatory is also responsible for the scientific activities in Planetario di Firenze (Florence Planetarium).[7] The observatory astronomers are members of the Scientific Committee of the "Museo dell'Universo" – a project for a Science Centre in Florence.[8] Through these activities, we can confirm that there is a large public interest in astronomy. Children, students, families, teachers are eager for information and for anything that can deepen their knowledge about astronomy (events, news, trends, discoveries). For this reason, the library of Arcetri Astrophysical Observatory chose to actively engage in communicating science to the public. A start was using the library to host the Starlab Planetarium. During the "Bambineidi", the open day for children, the Arcetri Library provided its physical spaces for the activities of the mobile planetarium.

3. The Arcetri Astrophysical Observatory Library and Activities for Children

Right from the start, since 1872, the Arcetri Astrophysical Observatory Library (AAOL) has dealt with astronomical research. It has some clear and specific characteristics. The library holds modern publications consisting of more than 10,000 books and a wide collection of periodicals (about 700). The holdings cover international astronomical and astrophysical research starting from the beginning of the last century. The collection includes theoretical and observational studies of the solar system, stellar physics, external galaxies, interstellar medium, high energy astrophysics and modern optics. About 90% of AAOL users are professional astronomers; researchers or graduate students join the library as local or remote users. The other 10% is made up of non-professional users – amateurs and the general public.

From 2003, the "traditional" features of the library changed in some respects, when one of the most important journals in children's literature, *LiBeR* (Libri Bambini e Ragazzi) asked for the collaboration of the Arcetri library.

LiBeR,[9] born from the experience of the Public Library of Campi Bisenzio, located in the metropolitan area of Florence, provides bibliographical information on children's books, creates materials to support literacy and reading, and

[7] `http://www.planetario.fi.it`

[8] `http://www.arcetri.astro.it/Italiano/EduPage/museouniverso/`

[9] `http://www.liberweb.it`



Figure 2. Starlab Planetarium in the library

aids in making reading and enjoyment of children's books an essential part of educational and social culture.

The journal invited the library to work on promoting astronomical culture on its webpages. Promotion of reading is certainly one of the important activities of children's libraries. In Italy, it is however rare to find activities promoting science books or science culture in general. Scientific books for children constitute about 10% of the children's book market. They are not promoted well by the publishers or by the media in a convenient way. Due to current cultural and educational reasons, the "invisibility" of scientific children's books may be considered a liability for Italian scientific culture.

AAOL and *LiBeR* published a special issue on topics such as the Sun, the stars, the planets etc. that would interest children. The primary goal of the issue was to show the different methods of communicating astronomy to children: from books to games (see interview in Liber 2003).

Due to its success, the collaboration continued. In 2004, the library published a second special issue on scientific communication that was presented at the 42nd Bologna Children's Book Fair, one of the most important international events dedicated to the children's publishing and multimedia industry.[10]

[10] `http://www.bolognafiere.it`



Figure 3. *LiBeR* at the 42nd Bologna Children's Book Fair

This collaboration has helped us to think about creating reference tools in astronomy for children. At the end of 2004 the *Bibliography of Italian Astronomical Books for Children* was published, using the LiBeR Database, the archive which holds editorial productions for children since 1987. The bibliography is intended for teachers, parents, public librarians and consists of all Italian astronomical books for children published since 2000. It is divided into four age groups: 3–5 years, 6–8 years, 8–10 years and 11–14 years, and it is updated every three months. The library is also involved in promoting specific children's scientific books by providing book reviews on its webpage. Every three months an astronomer is invited to review a book selected by the library staff.

AAOL also maintains on its webpage a special section for the public called "Astronomia per il pubblico". It provides links to some national informative resources in astronomy. To name a few: "Urania", the INAF weekly astronomical news, through radio, articles, flash, MP3, updates on interests, trends, problems in astronomy and astrophysics.[11] "Catch the stars in the net!!!" is a web portal created by Padova Astronomical Observatory, which presents websites in a well structured way to facilitate their use by different kinds of users for different purposes (Boccato et al. 2005). It won the Bologna New Media Prize for having exceeded 100,000 users a year. "Scienza Giovane" is a science portal created by Bologna University.[12]

The Arcetri library website also offers a selection of international resources from Eduspace NASA Educational Portal. It also offers Sky Maps prepared by Arcetri astronomers. Finally, it contains sites of some planetaria, scientific museums and other Italian informational sites on science like "Jekyll: journal on science communication" created by SISSA (Scuola Internazionale Superiore di Studi Avanzati) and "GalileoNet", created by the National Research Council (CNR).

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[11] `http://www.pd.astro.it/othersites/realmedia/`

[12] `http://www.scienzagiovane.unibo.it`

4. Ongoing Work

The Arcetri Library webpage for the public communication of science is cited and linked to by other sites. This demonstrates the rising interest in this field. For example, the Planetarium of Florence and "Scienza Giovane", the science portal of Bologna University, both link to our webpage on their sites. `Liberweb.it`, the first website dedicated to children and young adult books, which had about 170,000 visitors in 2005, hosted our bibliography and reviews on its site.

There have been other developments in the work on integration of information resources for the public during these last years. The library, besides providing information support for the Arcetri public outreach staff, was involved in a project called "Gianni Rodari e le stelle" (Gianni Rodari and the stars) at the end of 2005. Gianni Rodari (1920–1980), an Italian journalist and very popular writer of children's books, wrote extraordinary stories, poetry and rhymes using astronomical themes. The aim of this project was to consider such astronomical aspects of Rodari's works as a way to enter into the sky and to explore the universe.

Once a month, the Planetarium of Florence dedicates the "Gianni Rodari and the stars" show to children. Two astronomers read Gianni Rodari's stories and rhymes to children in an interactive way to help them learn about constellations and other astronomical topics. The success of "Gianni Rodari and the stars" has allowed the Arcetri staff to take this interactive show onto the road to other places and different contexts, such as in Pistoia, an ancient town in Tuscany. There, an exhibition on Gianni Rodari books, "Gianni Rodari nel mondo: mostra delle edizioni straniere di Rodari", was an opportunity to present the unknown aspects of Rodari's poetry in an unusual context. Children love being in an environment that simulates the sky. For this reason, the use of the Starlab Planetarium, a mobile planetarium in which stories can be told to children in a place that looks like the sky, has always had a lot of success.

In April 2006, the public outreach staff was invited to the "Tutti i colori del mondo: Mondadori Junior Festival" in Verona. The Festival, promoted by the publisher Mondadori, brought together more than 100,000 visitors in four days and provided a special opportunity to promote astronomy to children. During this event stories, legends and myths on the origin of the Universe captured the attention of children and families in the Starlab Planetarium.

Furthermore, the Children's Library Center of Tuscany asked for Arcetri advice on organizing meetings for children's librarians, and the Istituto Nazionale di Geofisica e Vulcanologia (INGV) Library System requested our assistance for similar projects.

5. The Historical Archive as Repository for the History of Astronomy

Historical documentation can play an important role in the communication of science to the public.

In 1993, during the renovation of the library premises, some boxes containing historical records were found. The archive, made up of letters, reports, drafts of papers, scientific notes, conference proceedings and observations, covers

a period which runs from 1870 up to the early 1970s. It contains information linked to the observatory's research activities and to scientific activities carried out by Antonio and Giorgio Abetti, past directors.

The observatory library, together with the Sovrintendenza Archivistica of Tuscany, took part in the project to preserve and make known to the public the contents of the observatory archives. At present the archive is being reorganized. The Abetti Archive materials, together with the Photographic Archive pictures, were used to create two interesting exhibitions on specific aspects of the History of Science. "Dal Colle di Arcetri alla California: nascita della collaborazione tra Arcetri e gli Stati Uniti" (From the Arcetri Hills to California: the birth of collaboration between Arcetri and the United States)[13] is the name of an exhibition that showed the relationship between Tuscany and the United States, organized in 2003 with the collaboration of Regione Toscana.

"Quando l'Himalaya era piu' lontano delle stelle: le fotografie della spedizione De Filippi, una spedizione geo-astronomica del 1913–14 nel Caracorum" (When the Himalayas were farther away than the stars: photographs of the geo-astronomical expedition De Filippi from 1913 to 1914 in Caracorum),[14] is a photographic exhibition, in collaboration with the Astronomy and Space Science Department of the University of Florence, about a scientific expedition in Caracorum which included among its participants Giorgio Abetti, an astronomer and director of the observatory.

6. Conclusions

Considering the Arcetri Library experiences in the field of public outreach, the work to integrate different kinds of information resources seems to have a lot of potential and there are possibilities for further development.

The work on the historical archive, the support of public communication of science, and the promotion of scientific children's books are contributions provided by the Arcetri research library for the purpose of disseminating scientific information to the general public.

The library can be considered not only as an information repository for research, but it may also be seen as a center, making it possible to meet the information needs of both professional astronomers and astronomy lovers, independent of age and cultural or educational levels – a sort of bridge between the public and astronomical resources.

References

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Intervista di Francesca Brunetti a Franco Pacini 2003, Liber, 57, 20

[13] `http://www.arcetri.astro.it/BIBLIO/abetti2003/index.html`

[14] `http://www.arcetri.astro.it/Mostre/DeFilippi`