

## **The Existence and Development of the Astronomical Library in the Digital Age**

Zhang Jian

*Purple Mountain Observatory, Chinese Academy of Sciences, 2 West Beijing Road, Nanjing 210008, The People's Republic of China*  
*JZhang@pmo.ac.cn*

**Abstract.** In recent years, the development of many complex technologies such as electronic publishing, computer information processing, and network communication, has challenged the effectiveness of the traditional library. In addition, traditional methods of data acquisition and the ever increasing demand from users, now threaten to undermine the librarian's survival. The author seeks to analyze the present challenges in observatory libraries and offer some thoughts for discussion on the modern astronomical library.

### **1. Introduction**

The services targeted in an astronomical library are mainly for astronomers and the support staff, who are engaged in scientific work at the observatory. Therefore, in order to best satisfy their demands, the most important task of librarians is to acquire, manage and protect our library collection. However, in recent years, the rapid development of electronic publishing, computer information processing, and network communication has conflicted with the previous traditional methods of service. Under these accelerating conditions and complexities, how will librarians continue to meet the many challenges of the old versus the new? How will our librarians handle the relationship between collecting and using documents? How can librarians resolve the contradiction of an unlimited supply and rapidly increasing demand with a limited filter between the two? These are the new problems the librarians must meet in the digital age. They also represent the central struggle for survival of libraries as they emerge from the world of print into the world of the net.

### **2. Main problems to ponder**

#### **2.1. Decrease in the number of library readers and the cause of that decrease**

In recent years, we have seen a decrease in those who borrow and read books for the specific purpose of consulting a topic in astronomical literature. Middle-aged and young scientists, who are fluid in English and possess advanced computer skills, are visiting the library with less frequency. Why is this? Can astronomers

observe without a star chart? Can they continue to do research without the knowledge of other current research or theory? In a few words, why do they not need astronomical publications? Yes, they need current data and technical work to meet and surpass current research efforts; however, unfortunately, although they need more current documents and data, they do not want to waste valuable time traveling to and from the library in order to locate a resource. Instead, they prefer new ways of acquiring information that are not limited by time or space. They need resources that satisfy their immediate demands.

## **2.2. Diversified ways and methods of service**

In recent years, we have noticed that some researchers and postgraduates, especially theorists, favor paper publications. But younger scientists seek more information about online astronomical journals and data banks. Thus, the new librarian will not only be responsible for providing new internet sources, but will also have to continue to disseminate and to understand the different kinds of web resources available for each astronomer's particular needs.

## **2.3. The changes of document carriers in the library collection**

In recent years, electronic technology seems to change daily. The challenge of updating and upgrading publication carriers is daunting. Various web and electronic versions seem to spring up like mushrooms. Suddenly the print and electronic library meet at home and abroad. How can the traditional library, filled with paper resources, built by several generations of astronomers and librarians, continue to exist and develop? How do we resolve the relationship between the paper and electronic version of publications? What is to be the focal point of a library's collection? Will it be a paper or an electronic format? This is a major matter we must resolve.

## **2.4. Coping and existence skills for the modern library**

In light of emerging problems and apparent changes in the traditional library, what measures must we take to survive and thrive? What should be our prototype? Will we be able to adapt and diversify in order to satisfy researcher's demands while still maintaining important astronomical publications for coming generations? The answer is that it must be a "mixed library". One that functions as not only an electronic library, but also one that is able to collect and preserve the important astronomical publications in their traditional formats. For example, we must subscribe to the most important astronomical publications in their paper versions, and at the same time, we must properly collect and register web versions. We must consider options such as CDROMs, a technology that possesses the advantage of having a large capacity for memory (within a compact format), is convenient to maintain and allows easy transferal of information. However, we cannot ignore its weaknesses. First, and most limiting, is the fact that it cannot be read without a computer. Furthermore, developing, predominantly non-English speaking countries are not accustomed to using this technology on a daily basis. In addition, technological advances in computer programs and their operating systems may be rendered inaccessible and outmoded. It is for this reason, the electronic library, while convenient, cannot entirely replace the traditional library because of the uncertain methods

of archiving data and print information. Thus, while the traditional library cannot be updated as quickly or as extensively, its advantages become obvious. We can still access information reliably. Longevity and easy access is still the most recommended method for preservation of the traditional library. The electronic and internet versions are only supplementary tools that allow access alternative means of access to additional information that might not otherwise be available in print. They continue to serve as a complement to the resources maintained in a traditional library. At present, libraries must continue to subscribe to the paper version of astronomical publications. Electronic libraries must continue to provide the bridge of the old and the new, but not be the bridge of and by itself. Of course, the price of some of the paper publications is too high for the institutes of developing countries, such as the Purple Mountain Observatory. Still, for over seventy years, through the great efforts of several generations of astronomers and librarians, the observatory library has managed to store many international astronomical publications. The library collection is the most extensive in China. However, in the last ten years, due to financial difficulties, we have had to take many austere measures in terms of collecting and exchanging astronomical publications. As a result, there are still many journals and books out of stock and our astronomical community is suffering the consequences. We regret these times for both the researcher and the librarians, who cannot adequately meet the scientific community's needs. Consequently, we hope that the astronomical libraries, all over the world, can give full cooperation to aiding in the continuing construction and development of library collections. We hope that librarians can coordinate with each other in this common cause and that the astronomical societies and libraries of the developed world can come to the aid of the developing nations' libraries. For instance, the sharing of duplicate publications and the distribution of slightly used publications would make a huge difference to libraries that suffer in their absence. In recent years, the International Astronomical Union, the Royal Astronomical Society (UK), the American Astronomical Society and Astronomical Society of the Pacific, many astronomers, and librarians at home and abroad, have given us much support and assistance. We express our heartfelt thanks to them for their contributions both now and in the future.

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