

Artificial intelligence has made only a few inroads into the library sector: **Marshall Breeding**

Marshall Breeding is one of the celebrated American library professionals known worldwide. He is an independent consultant, speaker, author, blogger and tech-expert. He is known for his expert-articles on technological issues related to the libraries being published in leading international periodicals. His books and articles are widely read and he has got a strong reader base globally. He has spoken on a wide range of topics in several workshops and seminars in several countries.



Open Interview brings you Breeding's interview with **Gopakumar V.** The interview was aimed at knowing the global technological trends in the libraries.

While sharing his observations on the trends, Breeding also shares his ideas and observations on the status of acceptance of artificial intelligence and robotics; level of adoption of open source software as compared to the proprietary software in terms of market share; and technological acceptance by the libraries and disparities. Being a prolific author, he gives some valuable tips for the library and information professionals who aim to excel in academic writing.

- **Presently, what innovative technologies are entering into the libraries globally?**

The new technologies supporting innovation in libraries take several different forms. Academic and research libraries are increasingly deploying technologies that go beyond processing their electronic and print collections to support services such as greater involvement in research and teaching.

University libraries are increasingly implementing tools to help manage resource lists for courses as well as to support greater involvement in institutional research through data repositories. These libraries are well into a new phase of implementation of platforms for comprehensive management and discovery of their collections and are now working to leverage these platforms to support other activities.

Public libraries continue to implement technologies to increase engagement with their communities. These include tools that enable them to deliver services based on the specific interests of their patrons using some of the techniques and technologies derived from the business marketing sector, though tuned to reflect library values related to data collection, retention, and patron privacy.

Libraries of all types are implementing makerspaces or innovation labs where they can place new technologies for use by their patrons. These facilities provide access to technologies that may not yet be affordable or easily accessed.

● **How artificial intelligence and robotics are impacting the functioning of the libraries and what would be the future trends of such technologies?**

So far, artificial intelligence has made only a few inroads into the library sector. One example can be seen in the discovery arena with products such as Yewno based on concept extraction and machine learning rather than keyword indexing. I anticipate increased use of artificial intelligence technologies to improve predictive analytics for collection development, increased personalization of library services, and other scenarios that involve large-scale data sets.

Artificial intelligence takes many forms, but often uses algorithms to find patterns in large data sets and to automatically generate new algorithms based on the patterns learned. It will be important for libraries to ensure that as it increases the use of artificial intelligence, it avoids bias or manipulations that may impede the objectivity of its services.

● **How positively the technological innovations and their applications have impacted the library and information services?**

Technology innovations make a positive impact on libraries in many ways. Each new round of systems developed for libraries have increased the efficiency of library work, freeing its personnel to spend less time on manual work in favour of more meaningful activities. The earliest automation systems, for example, transformed labour intensive library functions such as circulation and cataloguing. These efficiencies enable librarians and other workers to spend their time in ways that have more of an impact on library users. But these innovations not only increase efficiency, they also enable new services.

New semantic web and mobile technologies, for example, enable libraries to make their information resources more easily discoverable on the web and also to make digital content in their collections retrievable.

● **What kinds of issues and challenges are of concern for the library professionals in terms of rapid innovations taking place in the technological arena?**

Library professionals face a key challenge in keeping up with the pace change in technology. In the broader sphere, technology changes very rapidly, with new architectures, applications and devices emerging continually. In contrast, the adoption patterns of libraries turn much more slowly. It is common for libraries to continue to rely on technologies based on architectures decades out of date. The long decision making and procurement cycles of libraries and aversion to risk are not conducive to quick adoption of new technologies. I don't necessarily think that

libraries should be on the cutting edge of technology adoption but should find a better balance that might avoid missing opportunities to implement new technologies with proven benefits.

• **The application of technology in the public libraries in the developing countries is still in developing stage as compared to U.S.A. or UK or any developed countries. How do you see this trend?**

The global disparity of wealth inevitably has implications on libraries in each region. Libraries in the developed world have easier access to more recently developed applications. The costs of many of the new library management platforms often exceeds the limits of budgets of libraries in the developing world. These differences drive trends in the adoption of technologies by libraries.

Open source automation systems, especially Koha, see much stronger adoption by libraries in developing nations relative to wealthier ones. Public libraries in wealthier nations also have much higher use of RFID, self-service kiosks, automated material handling, 3D printing, digital signage, and other technologies. Libraries in the developing world, however, are not necessarily less effective but rely less on expensive technologies to provide their services to their communities. Public libraries as institutions are not as well established as those in the United States, Europe, and other wealthier countries.

I observe that developing regions tend to have a small number of larger public libraries, mostly in major cities, and sparse facilities in neighbourhoods, small towns and rural areas. As public libraries gain more traction in these areas, they may also find appropriate technologies to support their work.

• **There is a techno-infrastructure divide between developed and developing countries. What are your observations on this realistic issue?**

I can respond not as a global economist but only from my own observations and research. I've been fortunate to be able to visit many different parts of the world as I speak at library conferences and work on consulting projects.

Sure, there are significant differences in the availability of technology among global regions. The levels of available wealth mean less access to higher-end technology products for businesses and individuals. At the same time, technology permeates globally. Smartphones and cellular data services tend to have very wide adoption in the developing world. In some ways, these countries have essentially skipped over some generations of technology, such as universal deployment of landlines or wired networks.

It is also the case that much software development takes place in developing countries such as India. The offshoring of software programming is based not only on lower costs of labour but also on a relatively advanced level of technical talent.

While the technical divide seems to be a major barrier today, there also seem to be factors underway that will strengthen the availability of technology over time.

- **Many libraries in India are now catching up with open source software for automation. Would there be a time when proprietary LIS software would fail to sustain their commercial market or business?**

In the broader global arena, proprietary software continues to thrive and the trends point toward ongoing adoption of these systems. Some of the companies developing proprietary software have made major investments and have created products that resonate with specific types of libraries. Large academic and public libraries in the developed world almost exclusively rely on proprietary software. That said, the use of open source software has gradually increased in the developed world. I estimate that around 15 percent of libraries in the United States, for example, rely on open source integrated library systems. These implementations mostly involve support and hosting services from commercial companies.

Open source and proprietary library software will continue to exist for the indefinite future though the proportions may vary over time.

- **Considering the changing trends in LIS and LIS becoming one of the fastest emerging subjects, are libraries opening its doors to non-LIS professionals for employment than ever before?**

Libraries in the United States employ both LIS professionals and those with other types of education or experience. Support positions are typically held by those with degrees in other fields or individuals with practical experience. Libraries also tap those with advanced education in specialized fields. It's not unusual for a library to hire a marketing professional to manage its outreach efforts. US libraries also attract many professionals with education and experience technology or engineering instead of library science.

Many libraries are involved with advanced development projects that require significant technical expertise. In some cases, the needs can be met by librarians that have also been trained in the needed technical areas, in other cases, professionals from other fields can be brought in. These individuals would gain knowledge about the library over time. Although policies vary for each institution, many libraries have flexibility regarding whether a LIS degree is required for all professional positions.

- **In your views, how should LIS schools prepare their students to meet the growing industry/market/professional expectations?**

It is important for programs in library and information science to adapt to the current realities of libraries, especially in regards to the types of technologies in use and emerging. While libraries continue to perform their traditional roles, they are increasingly using new technologies, metadata standards, and business principles. Library schools must adopt to these changes rapidly if their students are to be successful as they enter the library workforce.

I would also encourage a strong emphasis on strategic planning so that students will be able to work beyond their immediate circumstances and help their institutions adopt to the ever changing scenarios in the institutions and communities served by libraries and in new generations of technology.

• **You are an amazing speaker, writer, blogger, etc. How ‘Marshall Breeding’ in you prepares for all these and executes?**

My work is informed by constant information gathering and research. I am fortunate to have been able to have opportunities to develop data resources and software tools to help me manage and analyze data so that I can present relevant information to the broader library community.

• **You are one of the successful and popular writers globally in LIS domain writing, especially on technology and libraries since long. What is your message to librarians who write?**

I would advise those librarians interested in becoming more established in writing to focus on a defined niche, and to deepen their knowledge and experience surrounding that topic. Becoming the recognized expertise on a topic can lead to opportunities to publish or present in many different channels.

No one can be an expert on all topics. But it is more attainable to gain mastery of one or two specialized areas, informed by more general knowledge of the broader field. I have also found it important to present practical information that can be well understood by those within the profession and beyond.

• **What are your impressions about the Indian libraries, especially of academic libraries?**

My impressions of academic libraries in India have generally been quite positive. They seem very responsive to their parent institutions and are doing work along very similar lines to what I see in the United States. I observe a high level of rigour in the papers and presentations given by academic librarians in India.

There are naturally some differences. Academic libraries in the US, for example, devote higher proportions of their collection budgets to electronic resources relative to print materials. These differences are driven by the needs of the institution and available financial resources. The ability to fulfill the expectations of their parent organizations with limited resources also reflects a quality of adaptability and a practical approach which is in itself another positive quality I see in the academic libraries in India.



Note • All the answers/ opinions expressed in this document are of the interviewee.



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Interviewee: For more details about Marshall Breeding's professional profile and contributions, visit: <https://librarytechnology.org/marshallbreeding/>



Gopakumar with Breeding

Gopakumar V, PhD heads University Library of Goa University, India. He has served in different academic institutions and has rich experience of academic librarianship. He was instrumental in initiating UG and PG courses in library and information science at Goa University. He has been serving the library community as a trainer, speaker, research supervisor and organizer. He has a great interest in photography.
Email: gopan@unigoa.ac.in



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