DIGITAL LIBRARIANS: THE CHALLENGES AHEAD

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The advent of Information and communication technology has revolutionized the way information was accessed and disseminated; one of the most visible changes came in the arena of librarianship. Suddenly, the idea of easy, fingertip access to information became widely prevalent and phrases like "virtual library," "electronic library," "library without walls" and, most recently, "digital library," very popular. However, this produced a new and confusing bog of electronic "stuff" that is hard to find, hard to use, buried in restrictions, unreliable in content, and useless to researchers baffled by bad choices of material for expensive digitisation investments? Now, the question is sustaining digital libraries will require overcoming substantial uncertainties about long-term preservation, institutional commitments, and financing. AND here lies the challenge for the digital librarian!!!! Playing the balancing act between management, fast changing needs of the user community and ever changing information storage media and technologies.

In the light of these facts, we need to rediscover the roles played by librarians and equip ourselves to face the challenges ahead that are as multi-fold as the media of access/ storage available today. What can be an efficient technology today may turn to costly tomorrow and in the worst cases, the whole medium as well as the means to access it may become obsolete. But, at the same time if we don't emphasize on preservation of digital collections today, then present generation of digital librarians will be responsible for creating a "Dark Digital Age", with no information & documentation available.

Last century has seen significant investment, of both human and financial resources, in building and maintaining digital collections. Utilising digital technology for enhanced access is simple now, however, to keep the investment secure and to guarantee long-term access to that information is turning complex day by day. The irony of the ever-developing information technology lies in the inverse relationship of a rapidly increasing information density, to a steady decrease in the life expectancy of successive media. In this situation, the digital librarian is expected to react pro-actively, consider ways of minimising identified future risks associated with new media, and to look back into the past to understand the nature & development leading to their creation. No doubt, preservation management should now be essentially included in the training schedule of the digital librarian. This management strategy is all about identifying risk, and effectively allocating resources to minimise it.

Of late there has been growing concern for future access to all information objects & digital resources. But to define what preservation exactly means in a digital environment presents a challenge in itself. Is it only about the maintenance or recreation of the original function of information objects and their meaning to retain their authentically, validity and evidential value? The factor that makes the process most complex is the dependence of the information object on its technical environment. The problem needs to be addressed not only at the level of physical deterioration of media, but also at the level of software & hardware, as both are vulnerable to the high rate of obsolescence. Although digital technologies present more complex preservation problems, the fundamental principles of preservation remain unchanged, to define priorities to extend the useful life of information resources and to ensure future access. In this scenario, libraries have gradually grown to become service providers on digital technology.

Digital technologies find their place in the preservation strategies of research libraries in improving public access to on-line digital surrogates. By limiting the handling of rare and fragile original materials, their rate of physical deterioration has considerably slowed. Digitisation is now a mainstream activity being carried out at most of the institutions/ archives/ museums, aimed at collecting, preserving & organising vast inventory of information in a manner that is widely accessible. The efforts are also on to reformat rapidly deteriorating materials, with the aim of preserving the intellectual content, separately from the medium or carrier. Further, it allows the librarian to make repeated copies of digital files without the informational loss associated with analogue copies, the impact of the technology is beguiling. No longer the life expectancy of materials seems limited to the durability of the medium, since the digital data can be copied repeatedly without loss. Data replication can be

achieved in various ways, by mirrors, differential and full backups, off site duplicates, procedures for validating migrations and data integrity

The separation of the information and the object is a new philosophy being practised in the digital environment. Complete digital conversion comprises two process, the capture by scanning of digital data, and that of the associated metadata, wrapped as a digital object & stored using containers to hold the objects and related software modules. But just going ahead with digitisation is not the solution to the problem; the DARK DIGITAL AGE is lurking ahead, where the rate of change of media technology will be faster than the rate of information generation. The most serious problem facing digital librarians is not unstable media, but data format and software obsolescence. Transforming information from one digital format to another seems to be the only solution to the problem, but this migration has to dogmatically adhere to international standard formats.

Digital librarian could choose from the following options:
- ✓ Routine refreshing, copying the bit stream from one location to another, whether the physical medium is the same or not
- ✓ Changing file formats from one application to another
- ✓ Changing file formats from one format to another
- ✓ Creating derivative access copies

One needs to be aware of infrastructure risks also that include presence/ lack of persistent institutional support (in terms of funding, hardware, software and staff) to manage the repeated migration of digital collections. Nonetheless there are technical risks also viz. the modification of the structural elements of the file during migration, which may become corrupt etc. The recent Emulation technology has shown new possibilities where one can develop a set of specifications for the building of emulators that can render the content of digital documents on future unknown platforms, it totally obviates the need to make multiple copies of the digital/ digitised resource. The representational information contains all the technical characteristics, including format, navigational structure etc.

Preservation of digital resources, especially born digital resources, is becoming more challenging both technologically and socially. Digital preservation, including Web archiving, is currently one of the major research issues in digital libraries, especially for deposit libraries and archives. We need to preserve not only the resources but also the technologies and environments required to use the resources in order to perfectly preserve them. The digital librarian needs to evolve sound policies at the inception and also keep on modifying them in due course of development.