AJNR

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AJNR Am J Neuroradiol 2010, 31 (7) 1161-1162
doi: https://doi.org/10.3174/ajnr.A2028
http://www.ajnr.org/content/31/7/1161

Are Libraries an Endangered Species?

When was the last time you stepped into your institution's library? A few weeks ago my son asked me to get him some books from the undergraduate library, and this stirred in me the desire to learn more about the current status of libraries. It is obvious that our "libraries" are moving from dedicated, stand-alone buildings into our computers and becoming portable. Are these changes helping or hurting our traditional libraries? Are libraries running the risk of becoming extinct?

The UNESCO Institute for Statistics offers some interesting insights with respect to global public library usage.[1] It seems that North Americans borrow only 0.7 books per person per year. The rest of the world fares only slightly better with 1.2 books per person, perhaps reflecting the fact that many countries are underserved and have fewer libraries. What is clear is that printed circulation in libraries worldwide is consistently decreasing as time goes by.[2] If books borrowed are a measure of library usage, it seems that libraries in Western and Eastern Europe, Japan, the Middle East, as well as those in Russia are much more active than those in the Americas. Unfortunately, poor regions such as Africa show the lowest rate of borrowed books, reflecting a higher rate of illiteracy and a lack of libraries. Library usage may also be inferred by the amount of subject searching in their catalogs, which is also decreasing.[3] Gate counts at libraries are down as people prefer to access their materials through the Web.

I will review what I think are some of the main characteristics of academic libraries and try to describe what is happening to them.[4]

Budgets and Collections. Increasingly limited budgets have led to libraries canceling more journal subscriptions. This is particularly true of independent subscriptions (such as *AJNR*) and not of huge packaged ones that include some extremely valuable journals accompanied by literally hundreds of less valuable ones. Thus, if a library wants a subscription for a very prestigious journal, it must buy a package that includes many that perhaps are not even needed or ever requested. When a print subscription is cancelled a library retains previous materials and their usage continues, but when an electronic subscription is cancelled, previous collections are often no longer available. This forces libraries to continue subscribing. Electronic publication has not decreased acquisition costs as initially expected. In reality, the cost of monographs per volume has increased from 60% to nearly 100% since only 2007. These data were published on October 2009 by the American Library Association and were obtained from 1533 academic libraries.[5] A different article analyzed the change in cost of 111 medical journals over a 25-year period and concludes that the "unprecedented rise in prices negatively affects the purchasing power of libraries."[4] The specialty of radiology is no different from others as publication monopolies control the costs of most imaging-related journals, determining their price.[6]

Staff and Equipment. The numbers of staff in libraries are decreasing and this may reflect the fact that younger generations are self-sufficient and able to manage data searches mostly on-line and independently. The numbers of questions asked at reference desks in academic health sciences libraries has decreased, but those remaining have increased in complexity.[7] Equipment expenditure has been shifted from microform, photocopying, and cataloging to computers and software. The number of computers that a library must have has not been determined as more and more users arrive with their own computers.[8] Curiously, the desire to have information on paper has increased. Overall printing in libraries is increasing independently of its cost to the user. For example, at Carnegie Mellon where printing is free, its usage has decreased and not increased as initially expected.[9] Increased printing is welcomed by libraries because from a business standpoint it offsets decreasing revenues from photocopying.

Materials and Circulation. Print resources and overall circulations are decreasing. This is not surprising and a large study found that the Internet was preferred to libraries as it was easier to get to, has flexible hours of access, offers a wide range of resources, gives users the ability to act immediately on the information obtained, and enables them to work alone.[9] The same study indicates that 94% of library readings are of publications less than 2 years old. We physicians read more and faster with an average of 322 articles per year, spending 20 minutes per article (by comparison, engineers read 72 times per year and each reading lasts 80 minutes).[9] More than 80% of all academic reading is done electronically. Because there is no need to house older print collections, many libraries have moved them to off-site warehouses. This does not seem to have created much of a problem because more than 90% of students claim to use the Web for finding information and most no longer know how to use the Dewey Decimal or Cutter numbering systems and therefore would be unable to find books in libraries. What good is having a collection that only very few use and know how to search? The ability to freely download e-books from providers such as Google and store them in e-readers will also affect these collections. Decreasing numbers of on-site collections have resulted in a higher number of interlibrary loans and this also provides an extra source of revenue for libraries.

It is obvious that libraries need to reinvent themselves if they are to survive. On September 4, 2009, CNN said: "The stereotypical library is dying—and it's taking its shushing ladies, dank smell and endless shelves of books with it."[10] Decreasing revenues from governments, photocopying, and late dues (now you can renew on-line and never be late!) are a few of the activities that have suffered. Fees for printing and interlibrary loans are up, but are not enough to sustain these institutions. The number of personnel is down, but those individuals who remain have a greater depth of knowledge as they need to field more complex questions. Unfortunately, salaries for these individuals have basically remained unchanged for decades. Libraries now offer classes and courses (in-house and on-line), rent rooms for meetings ranging from simple ones to those housing multimedia equipment, and many have small museums and coffee shops. Wifi and comfortable furniture attract individuals to libraries.

Most students use the usual popular search engines, and these provide information from what has been called the "surface Web".[11] Single-search engines only skim the Web and

data seem to indicate that most researchers are generally satisfied with results obtained from only one of these services. The term "deep Web" refers to high-quality Internet contents that are not immediately obvious without specific browsers. The contents of the deep Web are growing at a much faster pace than those of the surface Web. Brightplanet is a Website that "harvests, federates and normalizes regardless of source language, document encoding, format, or storage mechanism these data and provides qualified, relevant data for analysts, analytic technologies and data enrichment technologies."[12] Unlike the information found in libraries, data from the deep Web are not indexed and not accessible by using popular search engines. If one uses only standard Web searches, most information contained in books, journal databases, and other scholarly materials will be missed.[8] Fortunately for many of us, larger academic medical libraries nowadays offer most of the content in digital formats accessible from our computers.

The concept of a virtual library has received mixed attention. The WWW Virtual Library (http://vlib.org) is the oldest voluntarily supported catalog that contains sections ranging from law and medicine to less common topics such as Chinese and Japanese Art to Egyptology. ITT Technical Institute offers different degrees (including one on health information technology services), and because it has more than 100 campuses in the United States, it houses its library electronically (http://itt-tech.edu). The states of Alabama and Kentucky host on-line libraries that contain basic books (including several encyclopedias) and magazine and journal collections that may interest the general public and help students (www.avl.lib.al.us and www.kyvl.org). Florida State University offers a mathematics-only on-line library (www.math.fsu.edu/Science). The University of Pittsburgh began digitizing its collection in 1998 and their system now hosts 70 collections (www.library.pitt.edu). These are just some of the virtual library offerings that can be found on the Web. Libraries are no longer only for warehousing books but are becoming gathering places for the virtual community.

It is obvious that the ways in which we access music, radio, cinema, and television have changed more in the last 10 years than in the last 100. A few days ago I told a radiology resident that I needed to go to the library and search the meaning of a word in a dictionary and she looked at me as if I lived in a different world. I guess she was right, as I went to my office and found the same dictionary on-line, saving me a trip to the library.

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DOI 10.3174/ajnr.A2028

EDITORIAL

The Neurointerventional Bubble

There will be no interruption of our permanent prosperity.
Myron Forbes, 1928

Could the neurointerventional specialty be heading into a market-like bubble? The term "bubble" is generally applied to products or assets with inflated values. The inflated values in a bubble are due to a speculative mania. There seems to be a widespread perception that there is a great demand for neurointerventional services,[1,2] which results in a large number of physicians seeking neurointerventional training and a large number of hospitals hiring them. I believe that the potential market for neurointerventionalists is undergoing an inflated valuation due to speculative mania, which will lead to an excessive number of neurointerventional providers. I will lay out some relevant facts, and you can decide for yourself.

During the past 2 decades, the demand for neurointerventional services has increased substantially. Most of that growth has been due to the development and adoption of effective endovascular therapies for cerebral aneurysms. Most who work in the neurointerventional field seem to think that there must be a next "big thing" coming, and acute stroke intervention seems to be it. Moreover, some even think that acute stroke therapy is such a "big thing" that it is going to create a shortage of neurointerventionalists.[1,2] Stroke is the third leading cause of death in the United States, after heart disease and cancer, so it is tempting to speculate that neurointerventions for stroke must be headed for rapid expansion. Would not a denial of the need for expansion of neurointerventional services for stroke be a horrific example of callous disregard for the more than 700,000 Americans who face death and disability from stroke each and every year? As far as I can tell from the available relevant statistics, it would not.

Let us review some relevant statistics to help us decide if we should expect a huge demand for stroke intervention or if it might be speculative mania. Hirsch et al[1] estimated that the number of intra-arterial ischemic stroke therapies performed in the United States in 2006 was 3500–7200. The number is undoubtedly increasing, but it is unclear how high it will rise. It will certainly not reach the level of 720,000, which is sometimes inappropriately suggested.[2] Hirsch et al recently came up with an estimate of 10,400–41,500 potential cases per year. In the Mayo Clinic analysis of demand in the United States for intra-arterial ischemic stroke therapy, we found that the demand is quite likely to be no more than 20,000 cases per year,[3] which fits nicely within the range estimated by Hirsch et al. An