

THE UNIVERSITY OF ALASKA SCIENCE LIBRARY: A DIGITAL INFORMATION AGE SOLUTION TO A TRADITIONAL PROBLEM

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Introduction

The University of Alaska Fairbanks, UAF, is the only high-latitude doctorate-granting university in North America and one of just a few in the world. UAF has long been a leader in high-latitude research, education and service, and now it is experiencing major expansion across the sciences, including the aquatic and marine sciences and fisheries. Much success in external research funding acquisition is contributing substantially to this growth.

The capacity in UAF for providing science information in physical and digital forms, information services, and a proper environment for information access and use is in increasing jeopardy as expansion in the sciences continues. The traditional problem addressed here is severe lack of library space and inappropriate location of materials, such that a new science library is urgently needed. An overview of the problem is presented, then a condensed description of the proposed University of Alaska Science Library, or UASL, as currently envisioned. The vision embraces the concept of the ideal or model academic science library, thoroughly adapted to the digital information age and the Age of Science. A comprehensive vision as represented here in condensed form is a first essential, to guide the broader planning and fund-raising process, even though it will continue to evolve as science information concepts, resources and user needs continue to evolve.

Methodology

Designing the model physical/digital “hybrid” UASL has two major foundations. First, there is a constant stream of published research and thought concerning the future of the library in general and the nature of science information and its organization, accessibility, retrieval and use. Results from much of this creativity have been the primary contribution to the UASL vision so far. Second, an ambitious and responsible science librarian will know the broader mission and long-term strategic planning of his institution, the specific information needs of the diverse members of his constituency, and how providing for the latter complements the former. Such knowledge is essential to library design and planning.

Knowledge of a science librarian’s responsibilities is often informed by user surveys. The next major evolutionary phase of UASL design will incorporate analyses of data from a custom designed survey of most of the nearly 200 current UAF faculty and research staff members and 138 of some 325 graduate students in the sciences. It is an integrated survey

aimed not only at informing the UASL vision, but also at optimizing science information service in the near term. Such service will, of course, feed directly into the functionality of UASL.

The model UASL is currently defined on the basis of five criteria. First, it will meet all the regular information needs of its users in terms of print and digital information resources and in terms of reference and other services. Second, it will meet certain needs many in its constituency might not have clearly realized they had, particularly in terms of information literacy instruction, web-based science metasites and artificial intelligence capabilities. Third, UASL will be sufficiently imposing both physically and in terms of its collections and services to be an intellectual hub of the UAF campus, and it will also be an aesthetic hub. Fourth, as a primary repository of the scientific record for high-latitude regions, it will be an information resource for other institutions and agencies in northern Europe, Russia and other countries as well as in North America. Fifth, and most importantly, the ideal UASL will be adaptable to future major changes in conceptual and technological aspects of science information form, access, and use.

The need for UASL

According to its mission statement, UAF “. . . as the nation’s northernmost Land, Sea, and Space Grant university and international research center, advances and disseminates knowledge through creative teaching, research, and public service with an emphasis on Alaska, the North and their diverse peoples.” Two of six specific goals in its strategic plan call for UAF to “. . . be a world leader in Arctic research and related graduate education . . .” and “. . . an academic gateway to the North Pacific and the Circumpolar North.” Thus a substantial mandate is imposed on its library system to support this mission and these goals. Inadequacies are all the more apparent with major increases in research funding over the past few years. UAF, with a 2001 full-time equivalent of only about 5,000 faculty/staff members and students, attracts \$5.70 from external sources for every dollar of State funding. Funding from the US National Institutes of Health, for example, has increased from \$0.07 to \$4.5 million in just two years. The sciences are a much larger component of overall UAF research, instruction and service relative to the arts and humanities than in many other universities.

The UAF campus has two main parts. Instruction, research and service in mathematics, engineering, technology and the arts and humanities are based on Lower Campus, the original campus. The sciences, on the other hand, are now mostly in a newer area, the West Ridge. While these two parts of campus are only about a mile and a healthy hike apart, that is too far for most to take full advantage of physical library materials, services and spaces according to modern standards of convenience, especially during the long subarctic winters.

The UAF BioSciences Library, BSL, is located on the West Ridge and serves UAF users and many others in the broad realm of the biological and certain medically-oriented sciences. A special library serving the Geophysical Institute and International Arctic

Research Center is also on the West Ridge and serves in the realm of physics, astronomy, meteorology, geology and related disciplines. However, that library's mission and capabilities are limited to the needs of GI, IARC and closely associated personnel. The Departments of Physics, Chemistry & Biochemistry and Geology & Geophysics, and various entities such as the Institute of Marine Science with much overlap into the physical sciences, are dependent on the main academic library system.

BSL occupies antiquated space built in the 1960s. Life sciences research, instruction and service since then has expanded many-fold, as in the aquatic/marine sciences and, most recently, the neurosciences. Thus BSL is now pushed well beyond its physical limits. Much new space is needed for continued development of the print collection and for transfer of the extensive collection of physical sciences materials in the main library on Lower Campus to the West Ridge where most of their users are now located. Beyond that, the lack of space is affecting very seriously the ability of students and others to use BSL for reading, study, Internet connectivity and intellectual interaction, and the ability of the Science Librarian and his colleagues to provide information literacy instruction.

Major UAF research entities distant from Fairbanks are the Seward Marine Center and Alaska SeaLife Center in Seward, the Fishery Industrial Technology Center in Kodiak, the Palmer Research and Extension Center (agriculture and forestry), the Juneau Center of the School of Fisheries and Ocean Sciences, and the forthcoming new \$18 million Lena Point Fisheries Research Station to be located near JCSFOS. Personnel in all of these have access to the likes of major CSA, NISC and OCLC FirstSearch index packages, the ISI Web of Knowledge platform, BioOne, JSTOR, and journals of the American Meteorological Society, Elsevier Science, Nature and other major publishers. UASL will have a primary responsibility for providing these as well as non-digital information materials in all distant research facilities, as BSL does now. Indeed, three have BSL branch physical libraries, one of which, the Alaska Marine Science Library in Seward, will have evolved into a world-class facility, according to current planning, by the time UASL is functional.

Books and journals

According to the literature, most science librarians see no reason to assume, with the advent of electronic books, that the demand for books in print form for teaching and research purposes will decrease significantly in the foreseeable future. Thus there will continue to be a need for additional space to accommodate new books. Even with selective withdrawals, a net book collection expansion will continue. Ongoing acquisitions of older research materials in print form, as by donation from retiring faculty members, will add to the continuing need for physical collection expansion space. The ideal UASL will provide space for book collection growth over at least 25 years. By then books will probably be more widely preferred online, although comprehensive scientific treatises and textbooks will still be more practical in print form.

The outlook for journals in the sciences is quite different from that for books. While a relatively small portion of books, mostly lighter-reading titles, will be wanted in digital form, nearly all journals will be in that form and thereby desktop-accessible. Researchers and students almost overwhelmingly prefer the common-sense convenience and economy of online journals. This preference is widely reported in the literature and is indicated in preliminary returns from the survey of UAF scientists.

The ideal UASL will subscribe to journals in digital form to the extent they are available as such. It is assumed that technological advances will deal with the current problem of poor graphics in printed-out journal articles, particularly those with subtle color differences. It is also assumed that the archiving of and continued access to online journals, including e-only journals per se, will become quite secure. This assumption is based on the considerable amount of attention being given the problem, as by the LOCKSS initiative (Lots of Copies Keep Stuff Safe) based in Stanford University, SPARC (the Scholarly Publishing and Academic Resources Coalition) of the Association of Research Libraries, and new commercial initiatives such as that of Elsevier Science aimed at journal archiving.

Thus it is clear that the amount of space in the ideal UASL necessary for new journal issues will be small relative to that for books. Moreover, the amount of space needed for backruns of journals will decrease considerably from that currently needed as more and more backruns are digitized and made accessible via online collections. But as the backruns of some lower-priority titles will remain only in print form, space for those will be needed. That is particularly so because of the importance of UASL as a major repository for the published, quasi-published and unpublished scientific record for Alaska and other high-latitude lands and seas. The repository responsibility of UASL, in conjunction with that of the Alaska and Polar Regions Department in the main UAF library on Lower Campus, is being strongly endorsed by the user survey.

Other online resources and science information literacy

Science librarians are well aware that an increasing amount of literature and various forms of data for the sciences are being made available on the web at no cost to anyone who can find them there and use them. In the ideal UASL, science librarians will monitor the web for new data and information to be reviewed and evaluated in the context of research and instructional activities in UAF. Those determined to be of value will be brought together in a highly organized and streamlined science library metasite. That will be a major component of UASL's provision of artificial intelligence capabilities, the use of which will be aggressively promoted through science information literacy instruction.

The ideal UASL will contain an electronically replete smart classroom to optimize convenience for scheduled and impromptu science information literacy sessions. Online information resources for the sciences and other subject areas have become exceedingly numerous, diverse and variable in quality, and no leveling off of the trend is in sight. Recent developments of web metasites and artificial intelligence capabilities further

complicate the situation. Much professional attention is being directed toward researchers' and students' limited inherent abilities to deal with the ever-increasing hodgepodge. Instruction, and the enhanced transformation of online data and information into human knowledge following from it, will be facilitated by wireless Internet connectivity in the smart classroom and throughout UASL's people space.

People space

In addition to the 29,000 ft² of floor space determined necessary for physical materials and the smart classroom, the ideal UASL will provide on the order of 5,000 ft² for library users. The literature is exhaustive on the value of public, academic and many special libraries as places, in the traditional sense, for individual reading and study, for intellectual interactions and group study, for reference service, and for information literacy education. Most recently the concept of the library as a campus information commons is being touted. UASL will be that as well as a computer lab, enhanced beyond the regular campus computer lab by its location in an information service setting.

Early survey results indicate a preponderance of science information seekers at UAF consider the physical library to be still a very important entity, even with the abundance of desktop-accessible library-provided resources.

External design and location

Academic libraries are widely recognized as physical as well as intellectual hubs of their campuses. As such it is optimally obvious that they are the places for accessing, evaluating and using much of the information needed by students, researchers and the simply curious, and for various other learning, intellectual and life-enhancing involvements.

The ideal UASL will not need to be cathedralesque or otherwise monumental architecturally. But it will be centrally located, readily recognizable, reasonably attractive visually, and inviting in appearance within the complex of research buildings on the West Ridge. It will have all-weather connections to those buildings, an adaptation to the long cold and snowy winters which will further enhance UASL's appeal as a physical, intellectual, aesthetic and perhaps even a spiritual place to be. A most important building on the West Ridge will be the UAF Museum. That already has the largest natural history collection in the State, is one of the largest museums physically, is a top State-wide visitor attraction, and is now undergoing an enormous expansion. UASL will be a major supplement to the Museum, not only as an information source for its many researchers but also as an appealing visitor destination.

In many cases it is not necessary to construct a wholly new building to accommodate a new library. Sometimes it's feasible to renovate or add on to an existing structure. Such a possibility exists for the ideal UASL in the form of a building which might be mostly vacated when a very large, world-class, \$70 million geo- and bioinformatics building,

now in the advanced planning stage, is finished nearby on the West Ridge in 2007. Obviously, the additional and very progressive research and instruction that facility will accommodate adds to the urgency that a nearby UASL be fully functional as close to 2007 as possible.

For its new use as UASL, the existing building has the advantage of being centrally located and situated somewhat higher and more imposingly than the surrounding buildings, and its internal space, on three floors, is approximately that determined necessary for the ideal UASL. Unfortunately the existing structure, the O'Neill Building, is quite ugly, and its internal configuration is highly unsuitable for a science library. Renovation, therefore, will be costly. But the drive for funding will be substantially compelled by the ongoing evolution and promotion of a comprehensive, published and appealing vision of UASL, an academic science library fully adapted to the digital information age, the Age of Science and the current and future needs of its users and institution.