Final Report

Recommendations of the

Advisory Committee to Re-envision the Engineering Library

April 29, 2010

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Recommendations

There are both important needs and significant opportunities for the Engineering Library over the next several years. The central role of the Library in supporting the research mission of the College is increasingly focused on provision of online materials, especially electronic journals, but the Library materials budget is significantly underfunded. As the role of the Library has evolved to support online access to research journals, the role of librarians is also changing. Although research use of the Library is increasingly online, the physical space in Carpenter Hall is an important study area and provides access to the ACCEL computer workstations equipped with software required for student coursework.

These three themes: enhancing the electronic collection, providing effective study space and computer access, and reconsidering the role of librarians, are central to the recommendations from this Advisory Committee. There is an opportunity to identify a portion of the money required to increase the materials budget from reallocation of some current staff expenditures if the print collection currently held in Carpenter Hall is moved. This reallocation will not completely fund the needed increase in the materials budget, but it will help.

The University’s 2010-2015 “Strategic Plan for Excellence” announces a goal of placing “25 fields in the top ten among U.S. peers.” The 1995 NRC ranking shows seven engineering fields in the top ten nationally, but five of those seven are ranked 8, 9 or 10, and there is significant risk of losing important ground in fields that have contributed so importantly to Cornell’s overall reputation. It is vital that the library system, a primary building block of the research infrastructure in the institution, not be allowed to deteriorate. On the contrary, it must be enhanced. This is the goal of our recommendations.

The specific recommendations, which represent a consensus of the Committee, are as follows.

1) There is a need to enhance the Engineering Library’s collection of electronic journals and e-books. This is clearly in line with the Provost’s directives to the Library, and additional funds should be allocated to the Library material budget for this purpose. The level of indirect cost recovery from sponsored research contracts and grants provides explicit justification for such increases.

2) The print collection currently held in the Engineering Library can be moved. The high circulating portion should be retained in central campus libraries, primarily the Olin/Uris Library complex, but the majority of the collection can be relocated to the Library Annex. The current Course Reserve operations for engineering students can be moved to Uris Library. The savings in staffing expenditures could be reallocated to the materials budget and partly fund the needed enhancement of that budget. The majority of the use of the collection is moving to electronic format. Existing discovery and browsing tools are not adequate to support researchers’ intellectual needs and should be enhanced.
3) Study space and access to high-end computers on the Engineering Quad is vital, especially for undergraduates. This space should be maintained in Carpenter Hall, and if possible, it should be available on a 24/7 basis. Undergraduates also want, and would use, much more group study space. After relocation of the Library collection to other facilities, the staffing to service and provide security for the collection is not necessary, making 24/7 access more feasible. Renovation to create group study rooms from part of the space vacated by the collection relocation would be ideal. This project could potentially attract a donor and provide a naming opportunity.

4) A restructured Engineering Library must engage in development of information technologies and the polices that oversee them. In this regard, the role of the librarian in Engineering is essential and they are active members of the College. They provide expertise in the literature utilized in research and learning and steward the Engineering Library’s virtual presence and materials budget. It is vital that the librarians remain in a highly visible and accessible location within the College. While the majority of the collection is online and the circulating print materials could go elsewhere, the librarians are the tangible link between the College’s needs and library services.

The following section of the report provides more details and background in support of each of the recommendations

Enhancing the Electronic Collections

A great research university must have a great library if it is to promote the very highest level of scholarship. The discovery of anything new requires an understanding of all that is old and in Engineering today that means having broad and easy access to electronic journals, electronic conference proceedings, and electronic books. Nothing jeopardizes the future of a submitted publication or a submitted research proposal more than the impression that the author failed to canvass the existing literature. To guard against this, the Cornell must provide adequate e-collection support for Engineering and regard the Library allocation as an investment with real economic benefits. A substantial portion of this investment should be recoverable from indirect costs on sponsored research.

The total materials budget for the Engineering Library is approximately $1 million per year. Two thirds of that comes from university funds allocated to the library system and one third comes from endowments restricted to the Engineering Library. Over 96% of the materials budget of the Engineering Library is devoted to journal subscriptions. In 2010 there was an 8% reduction in the materials budget and an average journal price increase of approximately 5%. The Library coped by transferring all journals to “online only” where that option was available, and by canceling 262 titles outright (for a savings of $155,000). Many of these cancellations were industry and trade journals traditionally collected by engineering libraries; they were heavily cut to preserve the research collection. A few were retained based on faculty input. Further cuts will seriously
impact the research collection. The Engineering Library now subscribes to 800 journals and has canceled over 700 titles in the past 15 years to keep within budget.

The materials budget is currently underfunded by approximately 25%. This gap needs to be addressed with both reallocation of the funds saved from staffing reductions and additional funding. The Committee believes the stakeholders would be willing to trade the traditional library facility in order to secure additional funding for the materials budget.

There are many materials in demand that the Library is not acquiring that are more needed than what the Library has already canceled, including additional e-books, e-journal back files, and online reference tools. This list includes CRC EngrnetBase, ASTM digital library, ASM materials information online, ASME digital library archive, SAE digital library, the SPIE digital library, AIAA electronic library, the Springer materials database, and several more.

Printed copies of articles from older issues of journals can be provided as scans from the Annex collection, but this access is not as seamless or timely as direct online access. The Library has acquired some electronic back files that enjoy high use, but there are significant gaps in the holdings. There is a need to analyze what paper back files have the highest use for potential acquisition in electronic format. Journal back files are a one-time cost, but are generally sold in packages (which complicates purchase decisions).

The Library has negotiated package contracts with the largest publishers (Elsevier, Wiley and Springer) that provide access to all the titles they publish and help to restrain Cornell’s annual price increases. In return, we are allowed only a very small number of cancellations for the duration of the contracts. Approximately $500,000 per year of the Engineering Library’s materials budget is locked up in these contracts. Another $200,000 per year is spent on society package plans (IEEE, ACM, ASCE, ASME, etc.) that provide a lot of quality research materials at very reasonable prices. The remaining funds are spent on a wide variety of publishers and societies that have high use and have been very carefully examined by the librarians. While they are not under contract or in packages, they are essential. To date, the Library’s cancellations have been wise and have not generated much faculty discontent. There is very little more that can be cancelled that will not seriously impact research. The Engineering librarians monitor use data from e-resources and the level of use for what is left is very substantial.

It is also important to emphasize that indirect cost recovery from contracts and grants in Engineering would easily justify a larger materials budget for the Engineering Library. Current sponsored research in Engineering is approximately $70 million per year, and Engineering faculty account for a portion of the additional $60 million per year of research through centers. The indirect costs recovered from Engineering investigators in this total level of research are estimated to be about $30 million. Under the current agreement negotiated with the Federal government, 5.6% of the indirect costs are attributed to supporting the research function of the library, which implies that about $1.7 million per year is being recovered from research in Engineering that should be directed
to the library, in addition to funds from the university to support the “educational” portion of the library’s budget. The research recovery appears to be larger than the total budget of the Engineering Library, making a budget increase appropriate.

As mentioned in the university’s draft strategic plan for 2010-2015, in the 1995 assessment of doctoral program quality done by the National Research Council, there were 19 Cornell programs ranked in the top ten nationally. Seven of these were from the Engineering College (of the nine engineering programs considered in the assessment). The health of Engineering programs and the research they represent is critical to success in the announced goal of placing 25 fields in the top ten nationally by 2015. The Engineering Library is a central element of the basic research infrastructure, and if it is allowed to deteriorate there is significant risk of losing important ground in fields that have contributed so importantly to Cornell’s overall reputation. It is critical to enhance the electronic collection of the Engineering Library to support the research mission of the College.

Relocating the Print Collection and Services

The tilt towards a more digitized collection makes it possible to consolidate certain library functions. Transferring the bulk of the Engineering collection to a more effective Library Annex and shifting most of the high-use component to the Uris/Olin Library complex will save money with little degradation in service. A fringe benefit of this reorganization of services is that it will induce a modest level of Arts-Engineering interaction, especially at the undergraduate level. Overall, the College sees this opportunity to redistribute its collection as a way to promote a healthy, less-is-more mindset that is vital to the long term well being of the library system.

The print collection of the Engineering Library is not used heavily, but a small core is active. Of the 183,000 volumes in its collection, only about 14% have circulated in the last five years. The use of the paper collection is 56% by graduate students, 28% by undergraduates, 8% by faculty and 6% by staff. The remaining 2% are interlibrary loan, etc. The highest use items should be retained on center campus and most would be best located in the Olin/Uriss complex that offers proximity. Some books might be better located with related materials in appropriate subject libraries. All of the bound journal volumes could be relocated to the Annex where articles can be scanned and delivered electronically to users. A small number of serials are still received in paper form, primarily trade and news-type journals that have not moved to electronic publishing. This number is likely to continue to decrease in the future.

The print collection of books is aging. There has been little active acquisition of print monographs during the last ten years, reflecting ongoing budget constraints. As a replacement for print books, the Library has been quite active in recent years in acquiring electronic books – through Safari e-books, Books 24/7, Springer e-books, MyiLibrary, etc. This has made available many more books than could be acquired in the paper environment and the data on usage level is very encouraging.
The library online systems are not adequate to support the intellectual needs of researchers to use online books. The committee would like to see enhanced discovery and browsing tools to emulate and replace the serendipitous discovery and content browsing that was possible in a paper environment. There is also the need to go beyond the paper experience to take full advantage of the online text for searching. The committee supports a system-wide, one-Cornell approach that will serve all users and take advantage of existing or new initiatives.

The heaviest single usage of print materials is for course reserves. About 500 items are placed on reserve each semester. In 2008-2009, there were about 16,300 course reserve check-outs, ~90% by undergraduates. The Uris Library reserve desk could accommodate the volume of activity from the Engineering Library, and there is sufficient seating in Uris for engineering students using these materials. Going forward more reserve materials will be online. The committee believes that Engineering undergraduates being in Uris and interacting with undergraduate from other colleges will foster a greater sense of community at Cornell.

**Study Space and Computing**

An appealing undergraduate study center that includes computer instruction laboratories, conference rooms, collaborative learning facilities, group study spaces, high-bandwidth internet services, and on-site reference librarians is a critical component of a re-imagined Engineering Library. Funds for the renovation of the Carpenter space could be raised through an intelligent capital campaign that connects the reshaping Carpenter Hall to a reshaping of the undergraduate experience that resonates with how students learn in the Information Age.

Study space in Carpenter Hall is essential for undergraduates. The Library had to cut back its hours of operation this year because of the cuts in the staff budget. This was not well received by students using the library. Operating 24/7 with key card control, security cameras and the existing Blue Light phone outside the front door would be a significant service improvement. In our discussion, the students on the committee felt that such an interior space in a visible location on the Engineering Quad would be a safe place. The operation 24/7 of Duffield Hall, Clark Hall and other campus spaces has not resulted in any significant incidents and the Carpenter space would be more controlled.

The Library would leave behind all seating, study carrels, furniture and furnishing it has purchased that is used for study. Presently there are 102 study seats in the Library and at peak time between classes and in the middle of the evening most seats are full. With the removal of the books, the stack tower could be reconfigured and more seating could be added. The College would incur some modest expense to change timer switches in the stacks so that the lighting would be suitable for study space. The Library might be able to supply carrels and chairs from other libraries being reconfigured. Very little seating is now located in the large basement stacks area which is also the most isolated and perhaps
least desirable for study space. The college has expressed interest in repurposing that space which can be easily segregated from the other library space.

The committee discussed the computing situation, and for the immediate future the ACCEL lab is a very valuable service for both undergraduates and graduate students and it should be maintained. The software it offers is often expensive for students to mount on their own machines and the expense is onerous for software only needed for one project or one course. The ACCEL computers also have a lot more computing power to handle high-end programs than the computers the students typically own. Some students do not own computers and depend on ACCEL. ACCEL provides valuable classroom space for software instruction that is utilized by professors and teaching assistants. Like the study space, 24/7 operation will be a significant improvement of the service. The Library purchased 28 of the workstations and other incidentals managed by ACCEL and would leave those behind for the College. Paul Davis, the Director of Engineering IT, has reported to Steve Rockey that CIT operates labs on campus (including on the Engineering Quad) 24/7 with no staff presence at night. They operate with key card access and security cameras and report no significant problems. Paul is open to ACCEL having this sort of operation. The committee members report that in their experience at other comparable institutions and here at Cornell such operation of computer labs works well.

**Engineering Librarians**

The Engineering subject librarians provide expertise in the literature and information resources utilized in research and learning across the Engineering College. They develop the collections of journals, books, technical papers, and databases and manage the budget for these materials. They track developments in scholarly communications, information technologies, emerging data sources and information policy. They are engaged in supporting faculty and student navigation of this complex environment through reference assistance, teaching and facilitating access and delivery. They advocate on behalf of engineering researchers for improved information resources and enabling services.

As the Engineering Library transitions to an online work environment, the engineering librarians will steward the enhancement of the online collections and virtual presence. To support the reference work of the librarians within the College, it will be necessary to significantly increase the number of online reference resources, including the ASTM standards, SAE technical papers, SPIE conference proceedings and hundreds of handbooks. It will be much more efficient for the research process if faculty and students can also use these directly online, with librarians nearby to help users navigate these online tools.

The graduate students on the committee expressed a strong need for increased literature orientation and instruction. The focus groups showed that there are significant gaps in the students’ understanding of what resources and services are available through the library. The engineering librarians currently provide teaching support for undergraduate
and graduate classes and project teams across the College and there are additional opportunities to engage students through college-wide orientation, TA training and department survey courses. Information competency has also recently been defined as a Cornell-wide learning goal for every undergraduate student and the librarians will continue to support this effort through teaching and instruction.

The engineering librarians are active members of the College. While the majority of the collection is online and the circulating print materials could go elsewhere, the librarians are the tangible link between the College needs and the library services. They solve problems for researchers and students to expedite matters when standard services are not adequate for specialized needs. The committee expressed a desire for the College to retain input on decisions about collection development and services and this will be best achieved by having the librarians deployed in the College. The committee also advocated for increased visibility and networking of the librarians within the College through participation in department seminars and social gatherings. It is important that the librarians remain embedded in the college in a highly visible and accessible location. Their present office space is less than ideal to maximize interaction.

A restructured Engineering Library must engage in development of information technologies and the policies that oversee them. In this regard, the role of the librarian in Engineering is essential. Opportunities for the engineering librarians involve teaching the Engineering community how to use the latest search tools and databases, soliciting input from the Engineering community on ways to improve library services, engaging campus researchers who may wish to use the Library as a test bed, participating in publication initiatives of professional societies and not-for-profit publishers, and exercising information science leadership on campus through supporting the evolving needs of a technically-savvy faculty. Working as a team with the physical sciences and mathematics librarians, the engineering librarians will continue to expand their expertise and support of the College.

**Concluding Remarks**

As part of the emerging Strategic Plan for the University, an explicitly identified objective is to “maintain and selectively strengthen in cost-effective ways the core infrastructures for research, scholarship, and creativity, including in particular libraries and shared research facilities.” In December, 2009, the Provost asked the Library system to develop a plan consistent with that objective. As a part of this overall activity within the Library system, the Advisory Committee to Re-envision the Engineering Library was formed through appointments made by the University Librarian and the Interim Dean of Engineering. The Committee was constructed to include representation from important stakeholder groups, including faculty, graduate students, undergraduate students and librarians. The explicit charge given the Committee is included as Appendix A of this report.
The Committee met four times through March and April, 2010, to review data on operations, results from focus groups with undergraduate and graduate students, the Engineering Library budget, discuss various options for how the Library might function in the future, and to reach conclusions on recommendations. This document is the Final Report of the Committee.

Appendix A

Charge for the Advisory Committee to Re-envision the Engineering Library

In the Provost’s response to the academic task force reports issued December 18, 2009 (http://www.cornell.edu/statements/2009/20091218-fuchs-task-force-response.cfm), three of the sections for the University Library report are particularly relevant to the future of the Engineering Library.

- Develop a concrete plan to enhance resources devoted to collections and other scholarly resources.
- Initiate a planning process to explore the consolidation of some unit libraries.
- Review programs, initiatives, and service functions to determine whether they have a demonstrable value that exceeds the value of reallocating these resources to collections and other scholarly resources.

Background: Even during the current period of budget reductions, the library needs to realign how it uses its resources. Much of the research literature of Engineering has moved online. The Engineering Library spends approximately 95% of its $1,000,000 materials budget for subscriptions to online materials that constitute 99% of the collection use. However, due to budgetary constraints, there are significant gaps in the online holdings, including cancelled journal titles and standards and technical reports that were never purchased. Online subscriptions to collections, such as SPIE Digital Library ($45,000/yr); SAE Digital Library ($20,000/yr), AIAA Electronic Library ($189,000 one-time purchase), and ASTM Standards Digital Library ($18,000/yr) are regularly requested but the Engineering Library has not had the funds to purchase access to these titles. While most of the collection use in Engineering has migrated online, there is still some use of the print collections, particularly among students. Undergraduate students use the print reserve collection, and graduate students use some stacks materials.

Many libraries are moving to a new model of library service that focuses on the online collections coupled with the subject expertise of librarians. This has resulted in budget savings as well as some reallocation of resources from operations to online collections. In addition, online access is being enhanced to facilitate discovery and use of the resources. We would like to consider how models such as this could work in engineering and ultimately provide better service to faculty and students.
**Charge:** The charge of this committee, co-convened by the Interim Dean of Engineering and the University Librarian, is to re-envision the service model of the Engineering Library in light of the current budget situation and the Provost’s directives. The committee should think about the future needs of faculty, students, and researchers in the Engineering College, and think creatively about alternate means of providing those services. It is expected that the committee will benchmark other libraries and identify trends, best practices, and what others consider to be services that will be provided in the libraries of the future.

**Scenario(s):** At a minimum, the committee should consider the scenario that there may be no physical presence of the collection on the Engineering Quad. Other scenarios (e.g. smaller presence, different use of space) may also be addressed if the committee believes there are alternative models that will meet our needs, while reflecting the reality of limited resources. The committee should answer the following:

- How will faculty and students want to access information?
- What strategies could be used to provide access to the collections? Examples may include redistribution of key collections, digitization, online subscriptions, etc.
- What other services do libraries of the future need to be provided (such as study space for students)?
- What kinds of reference support will the faculty and students need? How will they want to access the support (e.g. through a physical meeting with a reference librarian, online, etc.)
- Given the interdisciplinary nature of engineering, are there natural alliances with other fields that the library should consider when thinking about realigning services?
- The current library dedicates a fair amount of space to computer labs and student workstations. What level of computing (if any) will be needed in the future?
- Should the library provide individual and group study spaces for students? If so, how much?
- Are there services we currently do not provide that should be considered for the future?

**Committee:** The committee will consist of faculty, administrative staff, undergraduates, and graduate students from the Engineering College as well as librarians. The committee may choose to confer with others as needed. The final report of recommendations will be issued to the Dean of the Engineering College and the University Librarian by April 30, 2010.