122nd ASEE Annual Conference & Exposition
June 14 - 17, 2015
Seattle, WA
Paper ID #13678

Using a Former Governor's Archives as a Source of Scholarship in Engineering Technology

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Abstract
The archives of a former governor of Pennsylvania were utilized by an engineering technology faculty member to conduct research needed to develop curriculum materials for undergraduate civil engineering technology students. The research was intended to assess how the Governor's administration addressed new dam safety laws and funded water infrastructure improvements in the Commonwealth. The use of the archives was supported by a grant provided by a related University center encouraging faculty and student use of the archives. The archives not only yielded useful information addressing the original purpose of the research, they also revealed other interesting aspects of the Governor's years in office, which were of interest to the faculty member. This other information encountered has potential for providing additional opportunities for scholarship. The primary source materials contained in the archives provided the researcher a deeper understanding of the issues involved in the topics studied. It also was felt to be a more rewarding research experience for the faculty member because of the discovery of relevant information and insights that were not originally anticipated at the start of the research.

Introduction
The University of Pittsburgh houses the archives of Dick Thornburgh, former Governor of Pennsylvania (1979-1987), Attorney General of the United States (1988-1991), and Under-Secretary General of the United Nations (1993).[1] His years in office as Governor coincided with newly enacted dam safety legislation following the devastating 1977 Johnstown flood, in which several dams failed, most notably, Laurel Run Dam, which claimed 40 lives.[2] The efforts of the newly elected Governor to implement and support the call for greater state oversight of dams in the Commonwealth was of primary interest and can be related to the importance of public policy on the engineering profession. In engineering education, the ASCE Body of Knowledge (BOK-II)[3] and ABET[4] program criteria for civil engineering bachelor degree programs indicates that civil engineering graduates should possess an understanding of the role public policy plays in the civil engineering profession.

As the call to address the changes in the engineering profession and prepare the next generation of engineers continues, the incorporation of the role of public policy in the undergraduate civil engineering and civil engineering technology curriculum is being actively pursued at a number of institutions.[5-11] While some have implemented discussion of public policy issues throughout the curriculum, others have found the need to create new courses in which modules on public policy issues are combined with modules on other topics added to the curriculum as a result of BOK-II[3] recommendations and ABET[4] requirements. As an understanding of public policy and its influence on the practice of engineering is widely recognized as an important dimension of engineering education, the author sought to incorporate some aspects of how public policy affects the practice of dam engineering, in an introductory geotechnical engineering course. The author typically discusses the requirements for annual dam inspections and his experiences conducting these. Research on the 1911 failure of Austin Dam,[12] lead to consideration of

Pennsylvania's other dam failures (1889 South Fork Dam at Johnstown and 1977 Laurel Run Dam at Johnstown) and the resulting development of Pennsylvania's dam safety laws.[2]

The rationale to use the Thornburgh Archives for engineering scholarship resulted directly from the research into how Pennsylvania's dam safety laws developed over the years as a result of the historic dam failures studied. Elected in November 1978, Thornburgh became governor in 1979, shortly after the passage of Pennsylvania's Dam Safety and Encroachments Act (Act 325 of 1978). Of interest was how the new Governor's administration supported and implemented the new legislation.

The author became aware of the Thornburgh Archives and the faculty research grant shortly after preparing a paper on the development of Pennsylvania's dam safety laws. The grant program offered by the Dick Thornburgh Forum for Law & Public Policy provides $4,000 for undergraduate or graduate faculty employed by the University of Pittsburgh. Thornburgh, a Pittsburgh native, received his law degree from the University of Pittsburgh and the University houses his archives documenting his many years in public office. The purpose of the grant is to encourage utilization of the archival materials through incorporation into new or existing courses and to encourage student research in the collection and develop student recognition in the value of using primary source materials.[1]

Review of projects supported by past grants showed the variety of topics studied, including those related to civil engineering. This provided encouragement for pursuing the grant opportunity. Prior to applying for the grant, discussions with the curator of the Thornburgh archives about the proposed focus of the research helped the author refine the scope and expand into looking more broadly at how dam rehabilitation and water related infrastructure projects were related to the Governor's economic development program. The proposal was submitted and the grant awarded. Work at the archives occurred during the summer and fall of 2014.

Opportunities for Scholarship

Archival materials have been used by others to varying extents for scholarship in engineering education.[13-18] In this research, the work at the archives uncovered several areas from which scholarship is potentially possible. First was the original area of interest related to dam safety. As part of the research related to dams, the archives contained an interesting series of correspondence surrounding a US Army Corps of Engineers flood control dam for which hydropower had been planned but never constructed. A third discovery in the archives was Governor Thornburgh's college notebooks from Yale University where he studied engineering. Finally, the archives contained materials documenting Governor Thornburgh's visit to the author's institution as an invited guest speaker for Engineers' Week. A brief summary of each of these discoveries and the potential for scholarship follows.

Dams and Dam Safety

Prior to becoming governor, Thornburgh's transition team identified drinking water quality and supply as an important issue in the Commonwealth, including the need for safe dams. To address this, in 1980 a Water Bond Bill was proposed. The bill created a $300 million loan program to assist public and private water supply systems in improving drinking water supplies in Pennsylvania. An extensive campaign, "Vote Yes for Water," was launched to encourage voters to pass the referendum placed on the November 1981 ballot. The campaign used former Pittsburgh Steeler, Rocky Bleier, as spokesperson, but could not use state money to promote the

"Vote Yes" movement. Voters overwhelmingly supported the referendum on Election Day. Numerous water supply systems, including dams, were repaired through the water bond loan program. The water bond program developed by the Thornburgh administration eventually gave way to the current Pennsylvania Infrastructure Investment Authority (PENNVEST) program of loans and grants to help pay for sewer and water improvements across Pennsylvania. Incorporation of this case into the engineering curriculum can provide an example of how public policy affects civil engineering practice, and this can be documented in the literature.

Hydropower Dam

Using the archives search engine, the case of an Army Corps of Engineers (ACOE) flood control dam was discovered. The dam was first proposed in the 1960s to relieve downstream flooding. The dam was completed in 1973, replacing an older, smaller dam which generated electricity. The new dam was also designed with hydropower generation in mind. The original proposal was for a 500 MW pumped storage hydropower facility which would have served the local electric cooperatives in a rural, economically depressed part of the state. Early studies, however, identified detrimental effects the pumped storage facility would have on aquatic life and fishing at the lake. The repeated raising and lowering of the lake level would have an adverse effect on the aquatic habitat in the lake, harming the local recreational economy that had formed in the area following the lake's creation. The result was the Commonwealth had issued a statement to the ACOE that it did not support the hydropower development. The exiting governor, however, was heavily influenced by the rural electric cooperatives lobbying in favor of the hydropower project. In his final days in office, he sent a letter to the ACOE reversing the Commonwealth's previous stance and leaving it for Governor Thornburgh to address as he began his term. The debate continued for some time with the local outdoorsmen being against the development, while the electrical cooperatives supported it. Two draft letters prepared by the Governor's staff, one supporting the project, the other against it, allowed Governor Thornburgh to consider which side to support. Notes and correspondence encouraged the Governor to not take either side but to leave it to the Federal government and local congressmen to act on. The final letter sent to the ACOE by Governor Thornburgh indicated the Commonwealth did not support a pumped storage facility but that other options for hydropower at the site had not been ruled out. Eventually, a 21 MW run-of-the-river hydropower facility was constructed that satisfied both the power cooperatives and the sportsmen. This case highlights the role of public opinion and special interests on public policy relative to the development of civil engineering infrastructure. It also illustrates how engineering solutions can facilitate political compromises that satisfy the interests of multiple constituencies.

Undergraduate Engineering Notebooks

In addition to the items in the archives documenting Governor Thornburgh's years in public office, there are also items from his undergraduate studies in engineering at Yale University. His notebooks from structural analysis and water resources were especially interesting to review. The neatness and detail used in his notes were appreciated compared to the quality of work often exhibited by todays' students. While it may not lend itself to scholarly publication, it is of interest to faculty wishing to illustrate to current engineering students how the quality of student work has changed over time.

Guest Speaker at Engineers' Week

Another unusual piece of information found in the archives was that in 1986, during the governor's last year in office, he came to the researcher's institution to speak to the engineering technology students during Engineers' Week. The files in the archives contained everything from telephone message pad messages from a former faculty member to the Governor, to state agency briefings and a list of who from the local community the Governor wanted to invite to the presentation. The briefings from state agencies highlighted the preparation that goes into a public appearance by the governor. The briefings included state agency documents on transportation, environmental and economic issues in the Johnstown area. It was interesting to note that some of the issues in the local community some 28 years ago, are still issues of interest being discussed in the community today (better highway access, sewer line and waste water treatment issues, education and local unemployment). The archives contained the program from the presentation, newspaper clippings, and even the plaque presented by the engineering technology students to the Governor to thank him for his participation.

Limitation and Concerns

Although the work described here has yielded quite a bit of interesting information for potential documentation and publication, the real effort comes in writing the papers and seeking the proper publication venue. Thus the scholarly value of the archival research described is only in its potential for yielding scholarly publications at this time. One concern researchers might have is spending time and effort to search archival materials without finding worthwhile information. It is also possible that a poorly organized or incomplete archive may be frustrating to search and discourage its use. Copying materials for publication usage may also be prohibited or expensive due to the number of pages to be copied and the cost. In this work, instead of photocopying a tremendous number of pages at considerable cost, a digital camera was used to obtain images of documents and other materials. These then need to be sorted and combined to reassemble the documents from which the images were obtained. Also, some of the images were later found to be too dark or blurry and difficult to read. There also were files with multiple copies or versions of documents, some without dates, which can make discerning the sequence of events difficult. The shortcomings mentioned, however, should not discourage engineering educators from considering archival research, since the discoveries have the potential to be very rewarding.

Advice for Archive Curators and Engineering Librarians

While the focus of this paper has been on the specific engineering related findings obtained from researching a former governor's archives, engineering librarians and archive curators can also benefit from the experiences gained from this research. Having as good website provided a starting point for researching the archival materials. In addition to providing an overview of the materials contained in the archives, the website also highlighted the research conducted by others at the University using the archives. Not only were the archives used for research in political science and law, the research summaries revealed that nursing, communications and engineering related research studies had been conducted using the archives, as well. This highlighted the diverse nature of the materials present in the archives and how a variety of fields of study could benefit from their use. The author saw this previous use of the archives by a civil engineering faculty member from another campus and envisioned how he too could utilize the archive materials in a scholarly fashion.

To encourage use of the archives, a grant program was established by the Dick Thornburgh Forum for Law & Public Policy. Beginning in 2009, up to four grants of $2,500 each were awarded per year. In 2014 the grants were changed to offer two awards of $4,000 each. This small investment, which could be from endowed funds or part of an operating budget, is a catalyst to increase the use and visibility of the archive materials within the university community. Publicizing the grant program needs to reach appropriate faculty for which the archive materials could provide scholarship opportunities. While the archives of a political figure may have applicability in many fields of study, curators and librarians who know the major accomplishments of the politician's administration can easily draw connections between various disciplines at their institution and the materials contained in the archives. Their understanding of the research interests of engineering faculty relative to the archives they oversee will enable them to guide faculty from a variety of disciplines to use the archive materials appropriately.

The ability to search the holdings of the archives and find relevant materials may help faculty decide to use archival materials in their teaching and research. For the Thornburgh Archives used in this research, only a small portion of the materials have been digitized for online searches and retrieval. The rest of the archive materials are in numbered folders and boxes and can be viewed at the library's archive service center, housed in an off-campus location. These materials have been indexed using keywords which can be searched online yielding box and folder numbers which can then be requested and viewed. The cataloging of the archives' contents using keywords and the search engine provided on the website allowed for easy identification of boxes of most interest. Boxes and folders found by using several different keywords were felt to have more relevance and were viewed first. Those felt to be less relevant were viewed later. This allowed the researcher to prioritize which boxes might provide the materials most beneficial to the research.

Conclusions and Recommendations

The archival materials of a former governor of Pennsylvania were used as a source of materials for research on public policy related to dam safety. A grant to encourage their use helped create awareness of the archives themselves and fostered consideration of the materials they might contain relative to civil engineering practice. Civil engineering projects and infrastructure improvements are often directly related to economic development and the public policies of those who serve in public office. Their archives can show how public policy influences civil engineering practice and are worthy sources of information that can be used for scholarly papers. Case histories of public policy decisions and resulting civil projects provide information that can be researched and written about for the professional engineering and engineering education communities. Archival materials provide a more complete picture of the events and views of those involved, especially if they are complete and well organized for ease of searching. This experience also showed that materials not anticipated, but relevant to engineering education, may be encountered in the archive yielding a rich and rewarding research experience.

For engineering librarians and archive curators, publicizing the resources available for scholarship and highlighting past scholarly uses of the archive materials may encourage their use by a wider faculty audience. A good website, a searchable database of the archive's content, and knowledge of how the content may support various disciplines and faculty members' research interests are recommended to increase usage of archival materials by engineering faculty.

Finally, a grant program can be an incentive to get faculty to consider using archival materials at their own institution as a source of materials for curriculum development and scholarly research in engineering.

Acknowledgements

The author acknowledges the Dick Thornburgh Forum for Law & Public Policy for the financial support to discover, explore and utilize the Dick Thornburgh archives for this research. The assistance of Nancy Watson, curator of the Thornburgh Archives at Hillman Library of the University of Pittsburgh is gratefully acknowledged.

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