

Audiovisual Documentation of the Joseph Tykociner Sound on Film Preservation Project

University Library Innovation Funding Proposal

Submitted by:

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The University of Illinois was the site for one of the earliest demonstrations of functioning sound-on-film technology. Joseph T. Tykociner's June 9, 1922 screening of several minutes of test footage showed colleagues and family members speaking, ringing bells, and playing instruments and predated Lee de Forest's sound-on-film demonstrations by several months. Although rarely known, this test screening was indeed the first known successful demonstration of synchronized sound and moving image contained on a single film carrier.

In fall 2013, Joshua Harris, Media Preservation Coordinator, successfully obtained a grant from the National Film Preservation Foundation (NFPF) to preserve the motion picture film elements and potentially restore the unknown sound elements from Tykociner's experiments which are held in the University Archives. The full grant application has been attached to the end of this proposal for reference.¹

This proposal for University Library Innovation Funding seeks to audio-visually document the Tykociner preservation and sound restoration project. This will be in the form of video and audio capturing, in real-time, the very unique processes and precise practices that will be necessary for the successful initiation of this project. Additional interviews, commentaries and real-time explanations of the processes by experts involved will enhance the value of this material. Given the historical significance of Tykociner's collection, documentation of this sort has long-ranging potential for both the Library and the fields of both Media Preservation and Film and Cinema History.

Film and sound preservation is not a straightforward or simple process. The age, physical condition and array of mysteries surrounding the Tykociner collection make its preservation extremely challenging. Documentation of this potentially ground-breaking project would likely be utilized to produce any number of finished products over time: a full documentary film, website or enhanced access to these digital collections are all potential outcomes. This material would likely create the foundation for a myriad of innovative projects over time.

All elements resulting from this project would be processed in house by the Media Preservation Unit and Media Commons collaboratively. The resulting audiovisual elements of this would be deposited into the Medusa digital repository and would likely be accessioned by the University Archives. The value to future scholars and the general public at large is immense given a project of this stature. These benefits could easily be measured over time as metrics and uses are tracked both through the Medusa repository and the University Archives. Due to already-expressed interest in this project from throughout campus, it is likely that this work will garner some amount of press coverage as well as future buy-in from other campus units to develop enhanced materials based on the initial assets collected during this time.

¹ Unforeseen circumstances, including permanent closure of a major motion picture lab, have caused a delay in progress on this grant.

Since we will be utilizing equipment from the Library's Media Commons and Media Preservation Unit, this funding proposal seeks primarily to cover the cost of travel to the one or more potential sites (motion picture film and audio preservation and restoration laboratories) in which the preservation and audio research will be carried out. As of this time, the work will likely be carried out in New York City. The research and potential success or failure of the audio restoration portion of the project may require visits to additional facilities or experts in the field (outlined in the draft budget as "Travel #2). Being that there are several "unknowns" in this project, we hope to document as much of the work as possible.

A draft budget for this project is as follows:

Type	Amount	Notes
Materials	\$500	Additional A/V equipment as needed
Travel #1	\$2,000	Josh Harris and Eric Kurt to project sites
Travel #2	\$2,000	Only to be used if needed due to potential continuation of project
TOTAL	\$4,500	

There is no knowledge or evidence of the Library documenting or producing content in this manner in the past. This is truly an opportunity to utilize our collections and the unique media expertise that exists within our staff to add value to our collections as well as highlight the innovative work done within the University Library.

We thank you for your consideration.

Joshua Harris
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TO: The National Film Preservation Foundation

FROM: Joshua Harris

DATE: July 12, 2013

RE: Joseph T. Tykociner Film Preservation Project. National Film Preservation Foundation: Basic Preservation Grant

Dear National Film Preservation Foundation,

Please let the below proposal serve as our application for the National Film Preservation Foundation's Basic Preservation Grant. As we have previously discussed, this proposal is a foundational piece in our attempts to understand, preserve and fully restore some of the earliest known sound-on-film experiments. These experiments, performed by Joseph T. Tykociner in the early 1920s at the University of Illinois, represent a unique landmark historic moment in the history of motion picture film and sound technological development. We greatly look forward to working with the NFPF as we attempt to research and restore Professor Tykociner's monumental, yet often forgotten, scientific achievements.

A. Research Significance

The University of Illinois was the site for one of the earliest demonstrations of functioning sound-on-film technology. Joseph T. Tykociner's June 9, 1922 screening of several minutes of test footage showed colleagues and family members speaking, ringing bells, and playing instruments and predated Lee de Forest's sound-on-film demonstrations by several months.

Born in Poland, Tykociner (1877-1969) first immigrated to the United States at the age of eighteen, and over the following two decades worked for several electrical research companies in Europe and the United States, including the Marconi Company in London. Through this period, Tykociner maintained an interest in synchronizing sound and film, but was unable to secure sustained funding and support until the University of Illinois offered him the position as the university's first Research Professor of Engineering in 1921. Less than a year after his arrival, Tykociner gave the first of two 1922 demonstrations of his research, first at the University of Illinois on June 9, and again in July at the Chicago Exhibition. As arguably the first successful public demonstrations of synchronized optical sound and image, Tykociner's "talking, laughing, singing screen" was hailed as revolutionary, and was the subject of articles in the *New York World* and *Popular Science*, among others.² But because of internal tensions with the University of Illinois over patent ownership, Tykociner's research into sound-on-film largely ended by late 1923, and a final 1926 screening of the original footage, assembled into a composite print with new inter-titles (See Figure 1), was given at an event called "Electrical Show 1926."

The Motion Picture Association of America attempted to recreate the experimental variable density optical soundtrack in 1956, with mixed results. As documented by engineer Joseph Aiken in the *Journal*

² Tykociner, "Talking, Laughing, Singing Screen to Rival the Silent Drama Films," *New York World*, July 30, 1922.

of the *SMPTE*, vol. 67 (1958)³, the MPAA were able to extract only two of four sections of audio from the film: a section of Tykociner counting, and a section of Professor Leyde playing a solo violin piece. Two remaining sections of film remain to be restored: Tykociner's wife Helenka speaking and ringing a bell, and Professor E.B. Paine reading. Aiken was a student of Tykociner's and was present at both 1922 demonstrations, and his memory of the original sound suggested that the quality level of the MPAA's audio transfer was significantly lower than that of the original film. Illinois' long-term goal is a full recreation of this soundtrack, along with the creation of film-to-film prints, and derivative digital files for research and public access.

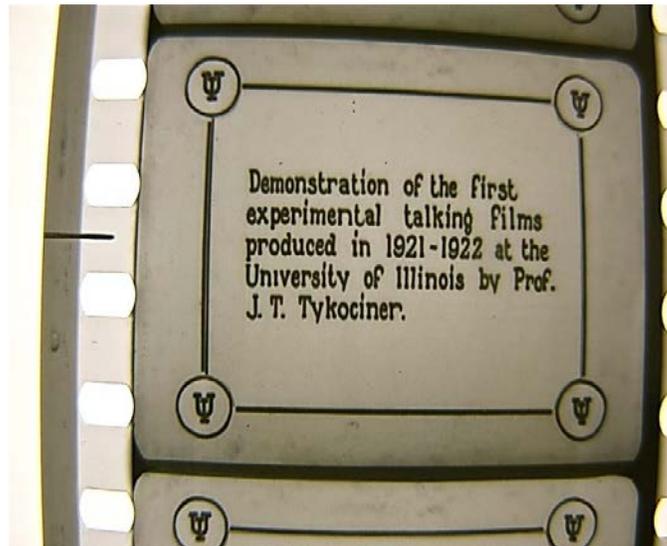


Figure 1. Intertitles added by Tykociner for demonstration at “Electrical Show 1926.”

B. Uniqueness of the Film and Copies

Held by the University of Illinois University Archives, and acquired directly from Tykociner between 1965 and 1970, the Joseph T. Tykociner collection contains 23.5 cubic feet of papers, photographs, audio tapes, video tapes and motion picture film. The motion picture film held in the collection is entirely related to Tykociner's sound-on-film research, and all elements are unique to the University of Illinois and have not been shared or loaned with any other agency or individual since they were acquired. A poor quality video transfer (from a Betamax tape transferred from one of the MPAA's film prints) of the Tykociner film is currently accessible through the Archives' website.

The Archives' holdings consist of materials from Tykociner's nearly fifty year tenure at Illinois, and the materials specific to his sound-on-film research include several cubic feet of patents (Tykociner's and competing researchers'), correspondence with manufacturing firms including Westinghouse and Bell, letters from financiers such as Charles Botsford (who provided Tykociner with a small strip of a circa 1921 Harry Grindell Matthews optical sound film), and correspondence from Eugene Augustin Lauste, arguably the first person to attempt to merge the moving image with optical sound. In addition to the 1932 correspondence from Lauste, the collection includes a small trim of a circa 1910-11 Lauste sound-on-film demonstration, which, along with the Grindell Matthews film strip, provides a wider context for worldwide attempts to develop optical sound in the early twentieth century.

³ Aiken, Joseph E., “Technical Notes and Reminiscences on the Presentation of Tykociner's Sound Picture Combinations,” *Journal of the SMPTE*, Vol.67, No.8 (August 1958), pp.521-523

C. Physical Film Description

The motion picture film in the Tykociner collection was fully examined and assessed by Illinois' Media Preservation unit in April and May, 2013. Because the 35mm nitrate and polyester prints have in most likelihood never been screened, and have been stored in relatively stable conditions, they are in strong condition with little shrinkage, and a small number of tears and weak splices on these prints have been repaired by the unit in preparation for this project. The acetate prints are in somewhat more embrittled condition, but consultation with vendors in preparation for the project suggests that they would likely be robust enough for the eventual creation of new prints.

The motion picture film elements consist of:

1. A 1940 (2nd generation) 6 minute, 35mm nitrate negative, struck from the composite screening print assembled in 1926, which included the original 1921 and 1922 reversal prints of the original sound-on-film research. Film frame contains moving image and sound band. (see Figure 2)
2. A 1956 (2nd generation) 6 minute, 35mm polyester negative, made by the MPAA from the 1926 composite screening print.
3. A 1956-58 (3rd generation) 7.5 minute, 35mm polyester positive print made from the 1956 negative. (This includes new titles made in 1957, as well as an optical soundtrack of the two restored sections, added to the print in 1958, and following the main film's original tail leader).
4. A 1959 (3rd generation) 6 minute, 16mm polyester positive print, with a standard optical soundtrack made from ¼" audio tapes of the MPAA's restoration transfer, and synched to two of the film's sequences. This is the source for the 1984 Betamax tape and subsequent internet-accessible video.
5. Positive and negative 35mm acetate prints (2.5 minutes) that appear to be enlargements of the experimental sound band, made in either 1946 or 1966.
6. Positive (1946 or 1966, 45 seconds) and negative (1962, 1 second) 35mm acetate sections of Tykociner's wife Helenka speaking and ringing a bell
7. A tiny trim (2 partial frames) of a circa 1910-11 35mm nitrate Eugene Lauste experimental sound film.
8. A strip (7 frames) of a circa 1921 35mm nitrate Harry Grindell Matthews experimental sound film.

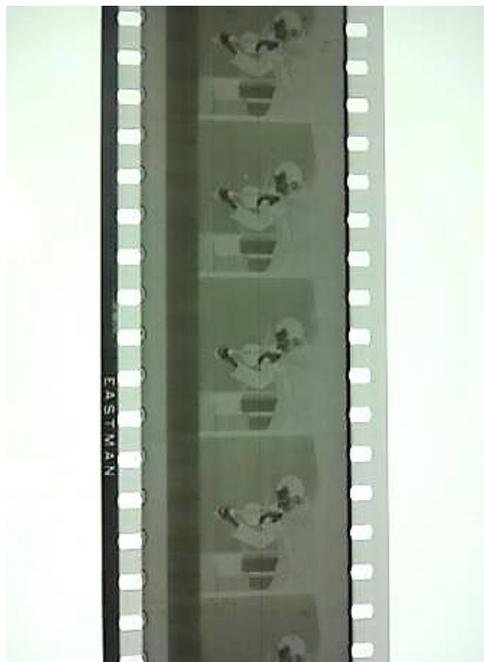


Figure 2. Portion of 1940 nitrate negative of Mr. Leyde playing the violin with experimental sound band running along image.

D. Description of Preservation Work and Cost Estimate

The request is for an NFPF Basic Preservation Grant to contract Film Technology Company, Inc. to create new prints and a duplicate negative of the 1940 35mm nitrate negative contained in the Tykociner collection (item #1 above). This is the earliest and most complete known film element to exist in the collection. Since this pre-dates the MPAA's attempt to restore the visual and audio elements of the experiments and the MPAA's subsequent discarding of the original 1921 and 1922 elements, this film can be considered to be the closest original master element which exists from Tykociner's sound-on-film experiments.⁴

The project will begin with Film Tech evaluating, repairing and cleaning the nitrate negative as necessary in order to create a new 35mm Answer Print. A 35mm Fine Grain positive will be produced in order to properly create a new duplicate negative, thus properly preserving this integral piece of Tykociner's sound-on-film work. Due to the importance of film date codes in our attempts to retrace the story of Tykociner's work, Film Tech will evaluate whether contact printing or optical printing will provide the best replication of original date code information onto the new preservation elements.⁵

Following the successful creation of new preservation masters we will attempt to begin the first of what we see as a several stage process to research and fully restore the sound track from the Tykociner picture and successfully sync it to the original motion picture. In consultation with Chace Audio, the new elements will be evaluated (along with the 1956 MPAA film print, item #3 above) and recommendations for the preservation and restoration of these elements will be made. We have included documentation from Chace Audio relating this information. While we understand that the NFPF may not fund this portion of the project we want to make the foundation aware of the larger overarching project of which the Basic Preservation Grant will be the first of hopefully many steps to fully preserve and restore Tykociner's pioneering work.

The following are price estimates from the various vendors involved in this project. All original, detailed quotes have been attached to the end of this document.

Service	Vendor	Price Quote
Film to Film Preservation	Film Technology Company, Inc.	\$3,901.20
Audio restoration analysis	Chace Audio	\$550.00
Packing and shipping of Nitrate Film	Transport Consultants Intl.	\$1700.00
	TOTAL	\$6151.20

E. Storage

At the present time the University of Illinois does not have on-site vaults with temperature and relative humidity levels suitable for the long term preservation of motion picture film elements. We will therefore plan for all elements produced as a result of this project, as well as the entirety of the Tykociner film collection, to be held in an off-site storage location with adequate standard media vaults. At present time, we are in discussion with both Iron Mountain in Boyers, PA. and Underground Vaults and Storage in Hutchinson, KS., both of which have climate controlled film vaults with temperature at 40°F and 40%RH. The University of Illinois will assume all ongoing costs associated with off-site storage for the protection of the motion picture and sound elements.

⁴ Aiken's article relates that the MPAA discarded an original nitrate print, thought at that time to be the only surviving Tykociner film.

⁵ For this reason, the attached quote from Film Tech contains pricing for both contact and optical printing workflows.

F. Access Plans

Access to the preserved Tykociner film will be through digital surrogates created from the new film print master. A Digital Betacam film transfer master will serve as a duplication master for making all access copies. DVD copies will be used for patron circulation and lower resolution Mpeg 4 web streaming files will be accessible through the University Archives web site both within the University and to the outside public. Since this is the first step in the on-going preservation and restoration of Tykociner's original sound experiments, all access copies will contain clear descriptive information putting the current iteration of the film (ie. a silent motion picture film without its accompanying soundtrack) into the proper context within the overall framework of the project.

G. Public Service Mission

The University of Illinois at Urbana-Champaign Library holds more than thirteen million volumes, more than 120,000 serial titles, and more than nine million manuscripts, maps, slides, audio tapes, microforms, videotapes, motion picture films, photographs and other non-print material. The University Library is ranked highly nationally and globally, and its collections and services are used heavily by students, faculty, and scholars. More than one million items are circulated annually, and many more are used on site and virtually from anywhere in the world. For more information, please visit www.library.illinois.edu.

The University Library is central to the intellectual life of the University. By providing and stewarding collections and content that comprise a current and retrospective record of human knowledge and by offering a wide array of services, it enhances the University's activities in creating knowledge, preparing students for lives of impact, and addressing critical societal needs. The Library advances the University's goals by ensuring unfettered access to information and by providing a network of expertise that ensures value, quality, and authenticity of information resources. The Library integrates and manages knowledge to enable learning and the creation of new knowledge.

H. Tax-exempt Status

See IL tax exempt status doc.

I. Supplemental Funds

The University of Illinois is prepared and willing to provide supplemental funds for the completion of this project in the event the project goes over-budget

E. Contact Information

Project Coordinator:

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