NATIONAL ENDOWMENT FOR THE HUMANITIES

DIVISION OF PRESERVATION AND ACCESS

Narrative Section of a Successful Application

The attached document contains the grant narrative of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and each applicant is urged to prepare a proposal that reflects its unique project and aspirations. Prospective applicants should consult the NEH Division of Preservation and Access application guidelines at http://www.neh.gov/divisions/preservation for instructions. Applicants are also strongly encouraged to consult with the NEH Division of Preservation and Access staff well before a grant deadline.

Note: The attachment only contains the grant narrative, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

Project Title: Accessible Civil Rights Heritage Project

Institution: Dartmouth College

Project Director: Mark J. Williams

Grant Program: Research and Development

3. Narrative

3.1. Significance

3.1.1. Introduction

The Accessible Civil Rights Heritage (ACRH) Tier II proposal seeks to develop processes and guidelines supporting the delivery of annotated archival video to the higher education community with a specific focus on blind and visually impaired (BVI) users. Historic video, especially in education, presents a particular problem for BVI users who cannot see the content of the video because it is filled with small clues that may be critical to its interpretation. Humanities scholars pore over information-dense resources like video to closely read it as a primary historic text at a level of detail that goes far beyond the ability of traditional accessibility adaptations like captioning to capture. ACRH proposes that time-based annotation[1] techniques can provide support for humanistic interpretation of video far better than existing adaptive technology. Beyond the BVI community, though, researching best practices for time-based annotation will provide scholars with a new perspective on how to integrate data-centric digital heuristics with deeply cultural hermeneutics.

ACRH will use civil rights newsfilm as a test corpus to investigate strategies for creating meaningful time-based annotations. To create an effective video annotation, an annotator must:

- Have access to the video and an available toolset to create, store, and play back annotations
- Identify what the significant features of the video are within a given research context
- Understand how to consistently encode and contextualize those significant features as data
- Write annotations that are clear and comprehensible to a diverse set of users who may have different backgrounds, abilities, and vernaculars

In a previous NEH-funded grant the ACRH team developed the Semantic Annotation Tool (SAT), a web-based video annotator that fulfills the first requirement of using technology accessible to BVI users. This proposal brings together scholars in discipline, cataloging experts, and cognitive neuroscientists to research best practices for the remaining three requirements. The result will be an evidence-based set of guidelines for creating accessible video annotations, documentation on how to implement those guidelines using open-source software, and a demonstration corpus of civil rights newsfilms showing humanities scholars how to apply these guidelines to their own research. Just as there is a concept of resources that are "born-digital," ACRH proposes to build a humanities corpus that includes video, annotation, and metadata so it is, as a body, "born-accessible."

3.1.2. Background

Context – BVI Accessibility on the Web

The state of BVI accessibility on the web is, in short, disastrous. Web browsers in general are riddled with inconsistent implementations of reference specifications and vendor-exclusive features. Adding accessibility features that are often poorly understood and costly to implement to that unstable environment has resulted in–at best–inconsistent efforts to ensure web content meets accessibility guidelines.[2] The type of content that ACRH is targeting, online videos with time-based annotations, is so new that accessibility has not yet been

[1] For the purposes of ACRH, an annotation consists of a reference to a specific time and geometric region of a video, a textual body describing the content in that region, a set of tags associated with the textual body, and additional provenance metadata as needed to attribute an annotation to an author.

[2] See, for example, Clossen, Amanda & Proces, Paul. "Rating the Accessibility of Library Tutorials from Leading Research Universities." portal: Libraries and the Academy, vol. 17 no. 4, 2017, pp. 803-825. Project MUSE, doi:10.1353/pla.2017.0047

thoroughly considered in this context. By researching key guidelines and technologies, ACRH has an opportunity to push the accessibility conversation around time-based annotations in positive directions.

As the online market has matured, though, the penalties for organizations that fail to make content accessible online have grown. In 2015 the Department of Justice settled with online education giant EdX for failure to comply with the Americans with Disabilities Act and forced EdX to implement a number of accessibility standards including WCAG 2.0 and WAI-ARIA[3]. UC Berkeley decided to remove thousands of hours of open educational audio and video content because it did not have the resources needed to make it ADA compliant[4], touching off a heated back and forth between university administrators and faculty.[5] Accessibility problems are not limited to higher education either, as in the case of a 2014 lawsuit brought against Seattle School District 1 that resulted in a consent decree that was estimated to cost the district in the range of three-quarters of a million dollars.[6]

Context – Adaptive Technology Options

We have previously addressed some of the technical problems surrounding accessible time-based annotations by building the Semantic Annotation Tool. SAT is an annotator that can be dropped into a web page with video and renders annotations so screen reader software will voice them at the appropriate time. SAT has shown that, while the conflict between time-based media and text-based annotation modalities presents a challenge to users, it also creates an opportunity that can be exploited to expand the accessibility of media content. As closed captioning assists hearing-impaired television watchers, video annotations presented in a multimodal interface can assist those who are visually impaired.[7]

Existing accessibility guidelines for online video usually focus on creating secondary audio or caption tracks that synchronize playback with the video itself. The closest these recommendations come to SAT's methodology is Mozilla/A11y's recommendation to embed a timed text track into Ogg video.[8] Setting aside the browser restrictions introduced by using Ogg video, timed captions have a number of drawbacks in an educational setting when compared to full annotations: they are only delimited by time, not geometric space in the frame; they do not carry additional metadata like tags that are useful for cataloging and search; and they do not include authorship information that is important to convey in a scholarly context. Additionally, SAT's separation of annotation data from the video file provides opportunities to readily query that data using external tools–a key feature that streamlines the workflow of digital humanities scholars.[9]

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[3] https://www.justice.gov/usao-ma/pr/united-states-reaches-settlement-provider-massive-open-online-courses-make-its-content

[4] https://www.insidehighered.com/news/2017/03/06/u-california-berkeley-delete-publicly-available-educational-content

[5] https://ucbdisabilityrights.org/2016/09/22/faculty-response-to-koshland/

[6] https://marketbrief.edweek.org/marketplace-k-12/ed-tech_accessibility_lawsuit_settled_by_seattle_district_advocates_for_blind/

[7] Increasing accessibility also improves the experience for other users. See Schmutz, Sonderegger, and Sauer, "Implementing Recommendations From Web Accessibility Guidelines: A Comparative Study of Nondisabled Users and Users With Visual Impairments," *Human Factors* Vol 59, Issue 6, pp. 956 – 972

[8] https://wiki.mozilla.org/Accessibility/Video_a11y_requirements

[9] WebVTT (b) (4) is also worth mentioning in this context, but it has limitations similar to A11y's Ogg recommendation except the data is not stored within the Ogg container file.

Context – The Semantic Annotation Tool

SAT consists of two main parts:[10]

- **Statler**–Statler is the server half of the Semantic Annotation Tool[11]. Built on a Ruby on Rails framework, Statler is a standalone linked data server that allows persistent annotations to be added to media files with minimal changes to the host platform. Statler's public face is an API that serves W3C Web Annotation[12]-compliant metadata describing arbitrary media URLs[13].
- **Waldorf.js**–Waldorf.js is the client half of the Semantic Annotation Tool. It is a jQuery plugin that can be added to any HTML page with only a few lines of code. Once installed it searches the page for HTML5 media tags and dynamically wraps them in an interface that supports annotation of time- and geometrically-delimited media fragments. Waldorf.js was developed in collaboration with VEMI Lab to ensure that accessibility was forefront in its development and that playback of annotations is compatible with screen reader software[14].

Developing the Semantic Annotation Tool–Waldorf.js and Statler–was a prerequisite to studying the accessible annotations ACRH proposes to work on because there was not previously an environment that allowed BVI users to directly work with time-based media annotations on the web. When an annotated video is played back using SAT, the text bodies and tags of each annotation can be spoken aloud in synch with video playback by screen reading software commonly used by the BVI community.

Context – Close Reading in Film & Media Studies Practice

The Media Ecology Project at Dartmouth College (MEP) has a history of supporting projects exploring intersections between different methodologies of study and critical approaches to varied archival content. Over time, we have found time-based annotations and tags to be a key enabling technology that allows scholars the freedom to engage with digital media texts from multiple perspectives that can then be programmatically linked to one another to discover emergent relationships.

The development and deployment of time-based annotations produces new forms of digital scholarship about these archival materials. MEP uses time-based annotations to develop:

- emerging relationships between traditionally valued methods of close-textual analysis that have always been axiomatic to study and research within the humanities
- new capacities for time-based modalities of close-textual analysis within specific media texts and across media texts within large collections of historical media
- new research that analyzes and interrogates these new time-based annotations as a dynamic dataset evolving from primary scholarly research

For the purposes of ACRH research, annotations featuring close reading analysis of civil rights newsfilm will merge extant metadata and newly-generated time-based descriptions contributed by scholars. ACRH's research into communicating the hermeneutics of moving images using annotations will result a synthetic process that engages archivists, scholars and students to share their experience of these key cultural heritage texts with others–even those who cannot see the original texts.

The team of consultants enlisted for this project are renowned experts in media studies and issues of racial and ethnic representation. Their varied personal and professional backgrounds will help create annotations

[10] A third related tool is Onomy.org, developed by MEP to facilitate collaborative creation and sharing of vocabularies. Waldorf uses Onomy.org to constrain annotation tags to controlled vocabularies.
[11] Both the client and server components of the Semantic Annotation Tool are the result of a previous Tier I NEH Research and Development Grant (PR-234316-16).
[12] http://www.w3.org/TR/annotation-model/
[13] See https://github.com/VEMILab/Statler for details and code.
[14] See (b) (4) for details and code.

highlighting the significance of the selected corpus of newsfilm and evaluate the value of those annotations to scholarly study (see Section 3.6 for details on consultants).

Context – Developing a Test Corpus: Civil Rights Newsfilm and Annotations

Given the special concerns of close textual analysis and its importance to humanities researchers, it is critical that any toolset designed to support such research be developed with that specific application in mind. However, any existing collection of materials and scholarship would carry with it the limitations of the tools that were originally used to create it–vocabulary and metadata that was designed to fit into a particular schema, for example.[15]

The test corpus will engage archives, scholars, and students to create a newly annotated collection of historical newsfilm drawn from public archives. It will be constructed from television newsfilm and select instances of newsreel newsfilm from the period 1950-1980 related to the topic of civil rights and social justice. Much of the footage to be considered for this study is what would be termed "raw" newsfilm, the footage captured in-camera before it was edited and broadcast by journalists. ACRH will repurpose approximately 100 hours of newsfilm to produce a corpus of material that is uniquely challenging to describe: unedited video laden with context but with little extant metadata.

For example, at the 2011 Orphans West Coast symposium, Dr. Williams was asked to present a program about historical 1970s newsfilm from Los Angeles television station KTLA. A particularly poignant example of unedited footage from their archive depicted a public protest by dozens of concerned African-American women at Parker Center in Los Angeles after the shooting death by police of Eula Love, a recently widowed mother of two young girls. It is not known if any of the footage ever aired, but the power and salience of the imagery is deeply instructive today regarding the value of historical newsfilm. These women collectively and elegantly performed a public demonstration of the question "Can we speak back to power?"

3.1.3. ACRH Goals and Outcomes

ACRH will produce several important deliverables:

- **Best Practices for Accessible Annotations Guide**–It is important to note that this document combines two key ideas–accessibility and scholarly use. The best practices guide will contain data-driven guidelines on how to create vocabularies, how to identify significant properties in time-based annotations, and how to craft the language and scope of annotations so they are inclusive of BVI users. ACRH's partnership with the VEMI Lab, a prominent research group studying adaptive technology with membership in leading BVI advocacy groups,[16] will help ensure these best practices are disseminated and discussed throughout the BVI community.
- **Civil Rights Newsfilm Demonstration Corpus**–When complete, the demonstration corpus will be both a supplement to the best practices guide and a significant scholarly resource in its own right that recognizes and underscores the ethical and representational complexities of engaging these important historical materials. Metadata about newsfilm in the corpus will be provided back to the source archives to help make their material more discoverable and provide an example of annotation-based cataloging practices. The corpus itself will be built using the Scalar web publishing platform.[17] The Demonstration Corpus will be featured in a special edition of *The Journal of e-Media Studies*.
- **Semantic Annotation Tool Scalar Plugin**–While building a Scalar plugin for the Semantic Annotation Tool is a prerequisite to creating the demonstration corpus website, it is also a valuable standalone deliverable that makes accessible video playback more feasible for all Scalar users.

It is important to recognize that abstract technical guidelines are rarely implemented without an easy-to-use platform that supports them. Releasing the ACRH best practices guide alongside a tool that makes those

[15] See http://www.trevorowens.org/2014/08/where-to-start-on-research-questions-in-the-digital-humanities/ for an extended discussion on the relationship between tools and humanist inquiry.
[16] See section 3.5 for details on how VEMI Lab will participate in dissemination.
[17] See https://scalar.me/

guidelines easy to execute will provide a much greater effect than releasing either a guide or a tool alone. The demonstration corpus is a critical pedagogical tool supporting both of the other two deliverables. ACRH's target audiences are the scholarly and educational technology communities, both of which have high standards for adoption and little time to waste on immature concepts. The trio of ACRH deliverables is designed to have maximum impact by ensuring a comprehensive rollout of technical and pedagogical resources supporting the guide as soon as the project is complete.

3.2. Background of Applicant

3.2.1. Media Ecology Project

The Media Ecology Project (MEP) is a coalition of scholars, archivists, and technologists dedicated to expanding the scope of interaction between the academy, the public, and the archive. Directed by Prof. Mark Williams at Dartmouth College, MEP enables new research capacities toward the critical understanding of historical media and facilitates a dynamic context of research that develops in relation to its use over time by a wide range of users. MEP has worked along a number of simultaneous fronts to advance this agenda, including bringing together scholars and archives around specific pilot projects, extending existing software platforms like Mediathread and Scalar to better support distributed research groups, and developing standalone tools like Onomy.org and SAT to fill niches in the semantic web landscape upon which cross-platform collaborative research depends. MEP's technical work is supported by Dartmouth's Research Information, Technology, and Consulting group, where MEP's Associate Director John Bell is a lead developer.

3.3. History, Scope, and Duration

Media Ecology Project Studies

MEP has worked for six years to connect scholars with archival collections and analytic tools to demonstrate the potential of granular media annotation on deep scholarship. In these studies scholars are seeking to use time-based annotations to produce close reading-style analyses of moving image content. The ACRH civil rights newsfilm corpus will be developed using techniques similar to these successful scholar/archive collaborations.

- **Paper Print Collection**[18]–The Paper Print Collection at the Library of Congress is the equivalent of the Rosetta Stone for those who study moving image history in relation to visual culture. In conjunction with Prof. Tami Williams at the University of Wisconsin, Milwaukee, MEP works with several members of the renowned DOMITOR research society to annotate these early silent films.
- **In the Life**–*In the Life* is a historic public television program that assayed the history of gay and lesbian lived experience in the United States. Scholarly participation includes prominent members of the Society of Cinema and Media Studies and the Gender Research Institute at Dartmouth.
- **The Biograph Girl**–This developing pilot is an offshoot of the Paper Print Collection pilot that studies the work of Florence Lawrence, also known as "The Biograph Girl," from a variety of formal perspectives based on her films archived in the Paper Print Collection. Participating scholars include Jennifer Oyallon-Koloski at the University of Illinois and Virginia Kuhn and Andreas Kratky at the University of Southern California. The combination of granular annotations with an unusual–for annotations–set of disparate data types makes The Biograph Girl pilot a particularly apt experience to build from in the construction of the ACRH civil rights newsfilm corpus.

Technical History

In addition to developing the Semantic Annotation Tool, MEP has contributed to the toolset for time-based media study by:

[18] See Mark Williams, "The Media Ecology Project: Library of Congress Paper Print Pilot" The Moving Image: The Journal of The Association of Moving Image Archivists, 16:1 (Spring, 2016), 148-151.

- Developing Onomy.org, a tool for building and publishing linked-data vocabularies.
- Extending MediaThread, a classroom platform developed by Columbia University, to publish video annotation data in a format that can be read by Scalar.
- Creating various machine vision techniques for the automated analysis of video.

3.4. Methodology and Standards

3.4.1. Video Technical Standards

For testing purposes, video files selected for the corpus will be transcoded into HTML5-compatible codecs (h.264/aac) by ACRH personnel when they are not already available in these formats. In production, SAT will load videos from existing archive sources whenever possible.

3.4.2. SAT Data Standards

As is typical for linked data-compliant systems, annotations created by SAT are structured using a combination of multiple, type-specific data standards. A SAT annotation consists of:

- A Media URI describing the location (source) of the object being annotated
- Basic identifying metadata for the source object (e.g., title, author) when available
- Provenance information for the annotation
- A textual annotation body and a number of tags that apply to the delimited media fragment

SAT annotations create relationships between these components and the media object being annotated using several standards, including subsets of Friend of a Friend (FOAF),[19] Simple Knowledge Organization System (SKOS),[20] W3C Open Annotations (OA),[21] and Dublin Core (DC).[22] Annotations are encoded for transmission using JSON-LD. See the Appendix 7.5 for a sample annotation record.

3.4.3. SAT Operational Standards

SAT is built as a plugin to jQuery, a Javascript framework originally designed to standardize programming practices between browsers with support for different types of access to web pages. Building SAT atop jQuery makes it a cross-browser tool and positions it to work with a wide variety of media technologies.

Communication between Statler and Waldorf.js follows the standards described in the W3C Linked Data Platform recommendation.[23] The LDP defines the behaviors used to create, read, update, and delete data using standardized queries across distributed clients and servers (CRUD operations). Creating the Waldorf.js Scalar plugin will require implementing behaviors similar to the LDP within the Scalar framework. To simplify distribution of the plugin, the Statler annotation server will be replaced by extensions to Scalar's API.

3.4.4. Accessibility Standards

Web accessibility standards have spent much of the last two decades as a moving target that is subject to quickly changing technologies and laws. As a baseline, ACRH research will result in tools and methods that implement applicable Section 508 accessibility guidelines.[24] However, the premise of the ACRH project is that these guidelines are necessary but not sufficient and therefore our research products will also implement the best practices for annotation and video that are developed throughout the course of the research.

Also relevant to ACRH are the W3C Web Content Accessibility Guidelines (WCAG). As with Section 508 rules, ACRH leadership regards WCAG 2.0[25] as necessary but not sufficient as it defines key principles but

[19] http://xmlns.com/foaf/spec/
[20] http://www.w3.org/2004/02/skos/
[21] http://www.w3.org/TR/annotation-model/
[22] http://dublincore.org/documents/dcmi-terms/
[23] http://www.w3.org/TR/ldp/
[24] https://www.section508.gov/content/learn
[25] https://www.w3.org/TR/WCAG20/

rarely goes into the type of detail necessary to build specific technologies. SAT was designed with these principles in mind however, and ACRH will build on VEMI Lab's long experience with the shortcomings of typical accessibility interventions to further develop the goals described by these guidelines.

3.5. Work Plan

3.5.1. Semantic Annotation Tool Upgrades

While additional updates may be added based on the results of VEMI Lab's experiments, planned SAT upgrades include:

- SAT is built on top of browser-native HTML5 media players that can be dropped into existing web pages with minimal effort. We will extend its compatibility to key non-native media players.
- SAT currently exists as a jQuery plugin that requires intervention by web developers to implement. To support the ACRH demonstration corpus we will create a SAT Scalar plugin.
- Modifications to Scalar that allow it to serve as an annotation server, removing the need for a standalone server when using the Scalar SAT plugin.

3.5.2. Workflow and Timeline

Phase I: Test Collection Development (Year 1 Q1-Q2)

Dr. Williams and consulting civil rights experts will design a set of questions intended to highlight significant properties in civil rights newsfilms. This intellectual framework will form the basis for selection criteria used to choose materials for the civil rights newsfilms that will be studied by ACRH. Newsfilms will be selected from archives including The Bay Area Television Archive, The Minnesota Historical Society, The Mississippi Department of Archives and History, The UCLA Film and Television Archive, The University of Arkansas, The University of Georgia, The University of South Carolina, WGBH, and the Wolfson Archive.[26]

Dr. Williams will work with consultant experts to select up to 100 hours of video for use in researching accessible annotation standards and practices. Dr. Williams will make the selected footage available to VEMI Lab for review, and they will select a sub-collection that is most useful for their research. Dr. Williams will then work with cataloging consultants and Dartmouth students to annotate the selected footage according to current practices. The test corpus is expected to include 20-40 hours of video total.

Phase II: Annotation Research (Year 1 Q2-Q4)

The test corpus and associated metadata will be sent to the VEMI Lab to assist in a data-driven assessment of best practices for accessible annotations. During summer of Year 1 VEMI Lab will design and carry out experiments probing key questions such as:

- How do current metadata standards and annotation practices for archival video differ from existing audio description and annotation guidelines intended to increase video content accessibility for people who are blind or visually impaired (BVI)?
- In what way might descriptive tags and annotations developed for the BVI community be dual-purposed to make video collections more discoverable in traditional archival video catalogs?
- What is a minimum level of contextual detail necessary in order for a BVI user to comprehend a basic level of information about a short archival scene?
- How can existing contextual and spatial controlled vocabularies used in tagging and annotation be best employed to provide additional meaning for a BVI audience?

[26] Note that archival footage used in the corpus will be drawn from publicly available collections; MEP has relationships with these archives and has confirmed availability of materials and access with each institution. Rights for these materials will remain with the originating archive. MEP will only hold rights to annotation data and metadata created for the ACRH (which will be published under a cc-by license.)

- What challenges do these vocabularies present for use by a non-visual audience that may be mitigated by changing traditional archival annotation practices?

Phase III: Synthesis of Best Practices (Year 2 Q1)

VEMI Lab, in consultation with Dr. Williams, Dr. Bell, and cataloging consultants, will develop a set of recommendations for the development and deployment of accessible descriptive annotations.

Phase IV: Application (Year 1 Q3-Year 2 Q3)

Upon completion of the recommendations document, Dartmouth students led by Dr. Williams will create accessible annotations for the test corpus. These annotations will form the basis of both a demonstration site and a final round of experimental testing by VEMI.

VEMI Lab and Dr. Bell will collaborate on integrating the most significant recommendations identified during experimentation into version two of the Semantic Annotation Tool's interface. The development team will also work on the existing planned upgrades to SAT during this time.

For the demonstration site, Dr. Bell will create a Scalar plugin that integrates SAT v2 into a Scalar site presenting the ACRH test corpus[27]. This site will be hosted at Dartmouth College and made public as part of the ACRH dissemination and training plan[28]. The demonstration site will include all the student-generated annotations made using ACRH recommendations as well as the recommendations themselves.

Phase V: Evaluation (Year 2 Q3-Q4)

Annotations created as part of ACRH research will be evaluated using a final round of experimental testing at VEMI Lab.

VEMI Lab's evaluation phase will determine if their guidelines successfully assisted Dr. Williams and Dartmouth students in the creation of accessible annotations. VEMI will test the annotations to establish whether key accessibility goals identified during Phases II and III were met with additional questions:

- What is the best practice compliance rating of expert (without the ACRH recommendations) vs. non-expert (with the ACRH recommendations) annotations?
- How much contextual information is available to non-visual users based on expert vs. non-expert annotated videos? How does this impact varying levels of user comprehension of video information?

The final research results will be integrated into the ACRH demonstration corpus site alongside the recommendations document and technical documentation on SAT.

Phase VI: Dissemination (Year 2)

In Year 3, Dr. Williams will present ACRH's results at conferences and workshops focusing on media studies, digital humanities, and educational technology. Targeted conferences include the Association of Moving Image Archivists, and the Alliance of Digital Humanities Organizations conference. Drs. Bell and Williams with co-edit a special edition of the e-journal *The Journal of e-Media Studies* featuring the tools and collection created for ACRH. VEMI Lab will disseminate the results of the research and lessons learned to national organizations serving the BVI community such as American Council for the Blind (ACB) and the IRIS Network.

3.6. Staff

Project Director: Mark Williams, PhD (Dartmouth Film and Media Studies, 1 mo/yr)

Mark Williams, Associate Professor of Film and Media Studies at Dartmouth College, received both of his graduate degrees in Critical Studies from The School of Cinema-Television at the University of Southern

[27] The Scalar site will not itself host the media; it will simply present it in SAT's annotation interface.
[28] If a particular selection of footage cannot be made public due to rights restrictions, it will be included in the Scalar demonstration site but password protected so the clip is only available for academic fair use.

California. In conjunction with the Dartmouth College Library he is the founding editor of an e-journal, *The Journal of e-Media Studies,* and with Adrian Randolph he co-edits the book series Interfaces: Studies in Visual Culture for the University Press of New England. With Michael Casey, he received an NEH Digital Humanities Start-Up Grant to develop the ACTION tool kit for the machine-reading of digital moving image files (HD-51394-11). Working with Dr. Bell and the VEMI Lab, he was the primary investigator on the 2015 Semantic Annotation Tool tier I NEH Research and Development Grant (PR-234316-16).

Co-Project Director: John P. Bell, PhD (Dartmouth RITC, 200 hrs/yr)

John Bell is a Lead Application Developer in Dartmouth's Research Information, Technology, and Consulting department, where he also is the Associate Director for the Media Ecology Project and lead developer for arts and humanities. His previous development and design work includes conceptualization and development of the SAT; contributions to *Scalar*, a semantic web publishing platform from the Alliance for Networking Visual Culture; and *The Variable Media Questionnaire*, an online system and epistemological model used to preserve ephemeral art that was created as part of the NEH-funded Forging the Future project (PR-50011-07). In addition, he is Assistant Professor of Digital Curation at the University of Maine and Senior Researcher at the Still Water Lab.

Accessibility Consultant: VEMI Lab (University of Maine)

The Virtual Environment and Multimodal Interaction (VEMI) Laboratory is a lab at the University of Maine that focuses on developing solutions for digitally mediated research, including virtual and augmented reality, mobile applications, and information systems. The VEMI Lab is the creation of Director Dr. Nicholas Giudice and is jointly operated by Dr. Richard Corey, VEMI's Director of Operations. The lab is staffed by twenty interdisciplinary student workers who come from a host of degree tracks and academic foci. This diverse collective of individuals has developed work studying spatial cognition, navigation, multimodal interface design, mobile and pervasive computing, information virtualization, and augmentation of complex spatiotemporal datasets or environments. VEMI Lab is part of the Spatial Informatics (SI) program in the School of Computing and Information Science (CIS) at the University of Maine.

Metadata and Cataloging Consultants

Kathy Christensen joined CNN in 1980 to develop the CNN Library to support the twenty-four-hour newsroom. She retired from CNN in 2007 and has remained involved in video archiving through freelance cataloging work with an educational website of documentary content, the American Archive project, and the Sherman Grinberg collection of Paramount and Pathe newsreels.

Laura Treat is a Moving Image Preservation and Digitization Librarian at the University of North Texas, where she preserves, digitizes, and describes the libraries' moving image assets, including a large local television news collection (ca. 1951-2012). She is currently the co-principal investigator on a grant-funded research project evaluating how different user groups instinctively tag digitized television news collections.

Civil Rights and Social Justice Consultants

Becca Bender is a documentary archival producer who has worked on films including *Black America Since MLK: And Still I Rise* (2016) and the Peabody Award-winning *Chisholm '72 – Unbought & Unbossed.*

Matthew Delmont researches histories of civil rights and media. In *The Nicest Kids in Town: American Bandstand, Rock 'n' Roll, and the Struggle for Civil Rights in 1950s* Philadelphia (University of California Press, 2012) and *Why Busing Failed: Race, Media, and the National Backlash to School Desegregation* (University of California Press, 2016), he examines how the news media brought civil rights activism to local and national audiences.

Desirée Garcia has been a producer of nonfiction film and television for WNET and the PBS flagship station, WGBH, where she worked on historical documentary films for American Experience and produced Latino-themed content for La Plaza.

Jacqueline Stewart is a renowned media studies scholar whose research focuses on the "orphan" status of much African-American film history. She has engaged in extensive archival work to preserve and make

accessible films by and about African-American subjects, including the L.A. Rebellion Preservation Project at the UCLA Film and Television Archive and the *Pioneers of African American Cinema* box set.

3.7. Evaluation and Sustainability

Evaluation of ACRH's research is built into its experimental design and will be incorporated into iterative development of its deliverables. This primary investigators and consultants will evaluate the toolset and best practices through multiple lenses including:

- Do the ACRH guidelines clearly describe workflows and evaluation criteria for accessible scholarly annotations?
- Does SAT effectively convey the meaning of video annotations to a BVI audience?
- Is the ACRH toolset (SAT and its Scalar plugin) easily integrated into educational settings?

In addition to community feedback, VEMI Lab will complete a set of assessment experiments on annotations created by Dartmouth students. These experiments will produce evidence-driven rationale for the recommendations published by the ACRH project. For details on VEMI Lab's evaluation and data handling methodology, see their extended research description in Appendix 5.3 and the data management plan.

ACRH's goal is to have an impact on the educational community. How successful it is will take some time to become apparent as adoption of new technology and methods requires quite some time. However, ACRH is committed to supporting adoption through thorough documentation and dissemination of its research.

After the grant period ends, ongoing support for ACRH's software products (SAT and its plugin) will be provided to the open source community that uses it by MEP for a minimum of three years. GitHub will provide long-term access to the code and documentation that is developed and be the canonical download source for any who wish to use the tools. Similarly, Dartmouth RITC will support the demonstration corpus site and best practices documentation for at least that long.

3.8. Intended Audience

ACRH's intended audience includes:

- Scholars across disciplines who conduct research or publish using time-based media, particularly in online environments.
- Educational technologists and administrators seeking guidelines for accessibly publishing video, particularly at liberal arts institutions.
- Developers who need accessibility-ready technology they can integrate into their platforms.
- Archivists who want to enhance discoverability and presentation of their media collections.
- Civil rights and social justice scholars who can conduct research based on ACRH's published demonstration corpus and annotations.
- BVI users who visit the demonstration corpus for its civil rights content or reference it as an example of how to support their needs in other contexts.

The Dartmouth-hosted demonstration corpus site will provide a persistent reference implementation of ACRH tools and guidelines. In addition, the Scalar site hosting the corpus will also host the best practices guidelines themselves as well as documentation for how others can create a similar site using the Scalar SAT plugin. Though the demonstration corpus will be maintained at Dartmouth for the foreseeable future, static resources like the best practices document will also be archived in Dartmouth's institutional repository and appropriate disciplinary archives like Humanities Commons.

The only new software developed for ACRH will be the SAT Scalar plugin. It will be released as open source software under the same MIT license that Waldorf.js and Statler are subject to. The plugin's code will be available on GitHub alongside updated versions of Waldorf.js and Statler as well. ACRH will provide the Alliance for Networking Visual Culture pedagogical materials supporting use of the SAT plugin that can be integrated into the extensive network of workshops and training sessions already provided on Scalar.