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## The Discoverability of Award-Winning Undergraduate Research in History: Implications for Academic Libraries

Running Head: Discoverability of Undergraduate Research in History

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### **Abstract**

Making scholarly information visible to web search engines is an ongoing challenge, and undergraduate research is no exception. Using a sample of award-winning undergraduate history papers and journals, the authors searched Google, Google Scholar, Microsoft Academic, and the authors' institutional repository to gauge the difficulty of locating these works. Given that many of these works were not easily found, results suggest that libraries and their institutions could be doing more to increase the discoverability of undergraduate research. Based on the success stories observed in this study, we offer strategies to libraries and librarians for increasing the visibility of undergraduate student research.

Keywords: undergraduate research; history; visibility; institutional repositories; student journals; search engine optimization

## **Introduction**

Undergraduate research is becoming more ubiquitous in higher education, and students in the field of history are increasingly participating in undergraduate research. Award-winning history papers are evidence of exemplary scholarship by undergraduate students. While it is clear that undergraduate students are producing praiseworthy research, the discoverability of their work is unknown. How often can scholarly articles by undergraduate researchers be located online? Where are full-text examples of commendable undergraduate research in history found? Academic libraries already play an active role in supporting undergraduate research. Could the role of academic librarians in the undergraduate research process be further strengthened by promoting the dissemination and visibility of research by undergraduate students? This paper investigates the web visibility of award-winning history papers written by undergraduate students, and then more broadly considers the implications for academic libraries and librarians. What strategies can librarians use to make the contributions of undergraduate researchers to the scholarly community more visible?

## **Literature Review**

The Boyer Commission on Educating Undergraduates in the Research University recommended research-based learning for undergraduate students in the 1998 report, *Reinventing Undergraduate Education: A Blueprint for America's Research* (15). Since the publication of this influential report, interest in undergraduate research by institutions of higher education has increased (Katkin 2003). The Council on Undergraduate Research (CUR) defines undergraduate research as “an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline” (n.d., n.p.). Undergraduate research

is now recognized as a high-impact educational practice for students at colleges and universities (Association of American Colleges & Universities 2008).

Several challenges to supporting undergraduate research in the discipline of history have been identified. Humanists, particularly historians, have been slower to lead efforts in undergraduate research than scholars in other disciplines (Corley 2013). Some faculty in the humanities prefer solitary work rather than the collaborative nature of undergraduate research (Stephens and Thumma 2005; Crawford and Shanahan 2014). Other cultural barriers to undergraduate research in history include the perceptions that legitimate historical research commences at the graduate level and that students may not want to engage in an inquiry-based experience (Stephens and Thumma 2005). Lack of incentives and compensation exist as structural barriers for both faculty and student participation in undergraduate research (Stephens and Thumma 2005).

Despite the aforementioned challenges, interest in undergraduate history research is starting to grow. Many history majors are now required to complete a research-based project as part of the curriculum (Jones et al. 2012). The literature offers several instances of historians successfully engaging in the research with undergraduate students. Students and a professor have worked to collaboratively produce a research paper in a seminar on legal history at Davidson College (Wertheimer 2002). A professor and undergraduate student at Virginia Tech developed a module on the global events of 1968 as a part of a digital history project funded by the National Endowment for the Humanities (Stephens and Thumma 2005). Also at Virginia Tech, essays written by senior history majors in the capstone seminar are published in an edited book (Stephens, Jones, and Barrow 2011). Through a grant for faculty members, a professor mentored four students through an archival project in Belgium to create a database of unpublished tax

records (Johnson and Harreld 2012). A historian at Minnesota State University has recruited several students to collaborate on research using materials photographed at archives in France (Corley 2013). There are also examples of historians and librarians partnering together to support students in their research (Cook 2015; Daniel 2012; Hicks and Howkins 2015).

Students participating in undergraduate research produce scholarship that contributes to scholarly discourse. The Boyer Commission (1998) identified dissemination as an “essential and integral part of the research process” (24). Three common models for increasing the visibility of capstone research by history majors are public presentations, portfolios, and undergraduate student journals (Jones et al. 2012). Digital history projects now offer another platform for students to share their work with the world in a creative manner (Harbinson and Waltzer 2013; Lawrence 2013). Research manuals for history majors suggest students consider presenting at conferences or publishing articles (Galgano, Arndt, and Hyser 2013; Presnell 2013).

Publication of historical scholarship in an academic journal by students is an ambitious achievement. Galgano, Arndt, and Hyser (2013) instruct students, “Publication opens our research to a potentially global audience, and it is enduring. If your work is accepted and published, it exists forever” (152). Accepted submissions go through a review process that indicates an unusually high quality of work by undergraduate students. Benefits to undergraduates who publish in a journal include increased autonomy and confidence, the ability to communicate according to the standards of a discipline, and the experience of the review process for academic papers (Spronken-Smith et al. 2013, 109).

Academic libraries have begun to support undergraduate research in a variety of ways. While librarians have long facilitated research by students, Stamatoplos (2009) urged librarians to specifically consider the needs of those engaging in undergraduate research experiences

independent of coursework. He advocated, “Librarians need to support these students’ essential needs to acquire and build upon previous scholarship, to help them to work effectively in such contexts and add to the body of scholarship” (Stamatoplos 2009, 245). In a survey of students who were mentored on a research project in the arts, humanities, or social sciences at Hope College, a majority of students identified sources, services, equipment, and spaces as multiple ways that the library affected their experience (Wiebe 2016, 244). A study by Hensley, Shreeves, and Davis-Kahl (2014) serves a benchmark of how libraries are supporting formal undergraduate research programs. The range of library support includes instruction, space, dissemination, awards, collections, extended loan periods, publishing support, and the design and printing of research posters and publications (Hensley, Shreeves, and Davis-Kahl 2014, 430). Instruction is the most prevalent form of support for undergraduate research programs (Hensley, Shreeves, and Davis-Kahl 2014). A subsequent study by Hensley (2015) found database searching was the most common topic of information literacy instruction for undergraduate research programs, but the author identified a growing emphasis on instruction related to scholarly communication practices.

Libraries have begun specific efforts to bolster the dissemination of undergraduate research and promotion of their visibility as scholars. Students with participation in the scholarly communication process reported less than moderate confidence in their knowledge of author and publishing rights and publication and access models (Fraser Riehle and Hensley 2017, 163). Librarians can engage students in topics related to scholarly communication, such as creator rights and open access (Davis-Kahl 2012). Indeed, work by librarians on the intersection of information literacy and scholarly communication has expanded (Fraser Riehle and Hensley 2017). An undergraduate research training program at the University of Tennessee, Knoxville

teaches students about outlets for sharing their work, including academic publications and institutional repositories (Douglass and Mack 2015). Caprio (2014) has recognized undergraduates as emergent authors and has encouraged libraries to further support student publishing. Academic libraries are often poised to facilitate undergraduate publication through their expertise, services, infrastructures, and partnerships (Weiner and Watkinson 2014). Many libraries have implemented electronic theses and dissertations programs (Wang, Bulick, and Muyumba 2014). Yet sometimes undergraduates remain on the fringes of who is considered among scholars: a comprehensive literature review of scholarly use of social media and altmetrics included graduate students, but not undergraduates (Sugimoto et al. 2017).

Institutional repositories are an online venue where students can distribute their scholarship, such as capstones, theses, and undergraduate publications (Caprio 2014). A study by Stone and Lowe (2014) of undergraduate theses held in digital institutional repositories found that these works are being cited in refereed journals, dissertations, and other theses. In addition to libraries hosting undergraduate research, some librarians serve as managers or collaborative managers of undergraduate research journals, which may or may not be included in the institutional repository (Farney and Byerley 2010; Weiner and Watkinson 2014; Johnson, Mears, and Drescher 2017). Farney and Byerley (2010) described how using Open Journal Systems (OJS) for hosting undergraduate journals allows Google Scholar to easily index content. Fully one-quarter of online visitors to *Undergraduate Research Journal at UCCS* (University of Colorado at Colorado Springs) access the journal via a web search engine (Farney and Byerley 2010, 328). Many papers from the journal's first two issues have been viewed over 350 times (Farney and Byerley 2010, 328).

The widest dissemination of research, including undergraduate student research, depends on public search engines. As the web has evolved, scholars from all disciplines have begun using search engines for research (Van Noorden 2014). Several studies testify to the use of Google and Google Scholar by humanities scholars specifically (Inger and Gardner 2016; Kemman, Kleppe, and Scagliola 2013; Martin and Quan-Haase 2016; Van Noorden 2014), despite the uncertainty surrounding coverage of humanities scholarship in web search engines (Fagan 2017).

Despite *using* web search engines for research, humanities scholars seem slower than those in other disciplines to make their scholarly selves visible on the public web. The sciences and social sciences have focused on citation frequency and other scholarly performance indicators as motivators (Ebrahim et al. 2013; Ward, Bejarano, and Dudás 2015), which may be of less interest or utility in the humanities (Gumpenberger et al. 2016; Hammarfelt 2014; Hammarfelt 2016; Zuccala 2016). Other motivators may be more cogent: for example, Dagienė and Krapavickaitė (2016) reported humanities scholars believe listing research activities online improves public awareness. Interviews by Wu, Stvilia, and Lee (2017) suggest that identifying oneself on the public web can support finding relevant literature and other researchers, improving dissemination of research, and interactions with peers.

Although search engine optimization (SEO) of undergraduate research is not specifically addressed, librarians and information scientists often lead efforts to increase general discoverability of scholarly publications on the public web. For example, Gasparotto (2014) and Lee et al. (2016) described SEO strategies for improving discovery of online scholarly bibliographies. Ever since Arlitsch and O'Brien's (2012) study found low indexing of institutional repositories in Google Scholar, studies have investigated the presence of institutional repositories in Google or Google Scholar. Fagan (2017) has provided a full



discussion of recommendations for improvement. Metadata experts are working to improve metadata in institutional repositories (Steele and Sump-Crethar 2016; Yang 2016b) and introduce semantic web standards into institutional repositories to support discovery (Hilliker, Wacker, and Nurnberger 2013). To make articles more findable, librarians can advise on collecting standard metadata and obtaining digital object identifiers (DOIs) (Johnson, Mears, and Drescher 2017). However, as recently as 2016, search engines are still struggling to discover PDFs and sometimes metadata in institutional repositories (Yang 2016a).

In light of the increasing interest among librarians and higher education institutions concerning undergraduate research, this study investigated the web visibility of award-winning undergraduate research papers in history, as well as their associated scholars, undergraduate journals, and institutional repositories.

## **Methodology**

### **Sample**

This research involved four samples: 1) 15 award-winning student papers; 2) the 22 authors and faculty advisors of those papers; 3) 14 undergraduate history journals; and 4) the 19 institutional repositories associated with the entities in the other samples. The first sample identified was that of the student papers (see Appendix). Each year, the American Historical Association (AHA) offers the Raymond J. Cunningham Prize for the best article published in a history department journal written by an undergraduate student (American Historical Association 2017). Similarly, Phi Alpha Theta and the World History Association (WHA) annually award an undergraduate and graduate student paper prize (unrelated to journals) (World History Association 2017). The 15 winners of these two awards since 2010 formed our sample of papers. Recent WHA award-winners were not identified on the site as graduate or undergraduate

students, so web searches were performed to ascertain which winner was an undergraduate. In one case (McDonough-Tranza) the student's status could not be verified, and his paper was not included in the sample. The seven AHA papers appeared in five journals, and one WHA paper appeared in one of the same five journals. To this we added all the active history journals listed on the CUR website, resulting in a total sample of 14 journals.

### **Procedure**

The researchers both searched for the article titles in the tools Google (<https://www.google.com/>), Google Scholar (<https://scholar.google.com/>), Microsoft Academic (<https://academic.microsoft.com/>), *America: History and Life*, *Historical Abstracts*, and the institution's repository. For each tool, we used a title search (no quotes), and a keyword search using the most unusual words from the title. The keyword search was not intended to replicate a user's search but was simply a second attempt to find the paper. Thus, all papers were searched for twice by both researchers.

For each paper, we recorded:

- the total number of results retrieved
- the result list ranking(s)
- whether the paper could be found in full text by the public (i.e., we did not use our institutional link resolver)
- the full-text sources, if any
- notes of interest.

We reviewed the top 10 results for each search tool. We defined a "hit" as a structured metadata record for the paper (e.g., a catalog or institutional repository record) or the full text of the paper. In Google Scholar, any type of result was considered a "hit." In Google, sometimes a "result"

has links nested underneath the main result, and in Google Scholar, sometimes a “result” has multiple versions (via a link “All X Versions”). We did not count such subsidiaries as a “result” when enumerating their rank, but did explore whether subsidiary links led to a “hit” because the full-text version is not always the visible one (Fagan 2017; Pitol and DeGroot 2014). We numbered the results 1-10, and any subsidiary links were given a decimal (1.1, 1.2, 1.3). We opened PDF links to be sure the PDF was actually accessible.

We searched for author profiles for the students and AHA advisors in ORCID and Google Scholar by entering their full name as it appeared on the award website, and then we searched for variants of their name (for example, excluding middle initials). We also included the names of faculty advisors of AHA award-winning students in this study because we were curious to see if advisors’ own practices had influenced their students.

For each journal, we searched for the journal title in the search tools, plus *Ulrich’s Periodical Directory* and Facebook. In addition to recording where the journal could be found, we also noted the URL of the associated institution’s repository and the date of the last Facebook post, if available. For Google Scholar, we used the “Return articles published in” feature available in the drop-down menu in Google Scholar. This feature appears to be the equivalent of the “publication” box in *America: History and Life* and *Historical Abstracts*.

Finally, we created a list of institutional repositories associated with either the papers or the journals, and noted the institutional repository software used, whether the institution’s journal could be searched or browsed in the institutional repository, and whether the institutional repository contained other undergraduate research.

## Results

Google Scholar and Microsoft Academic results may link directly to full text, metadata-only records, or both. Although we had planned to count both metadata records and full-text results as “hits,” this turned out to be an unnecessary detail for this sample: full text was available for all “hits.” Specifically, eight of the fifteen papers could be found in full text. If full text was available *somewhere*, Google always found it. Google Scholar only found four of the eight full-text papers, three of which were on a departmental journal website and one of which was in an institutional repository. Of the four Google Scholar did not find, two were on the journal website, one was in the institutional repository, and one was on the magazine platform *issuu* (<https://issuu.com/about>). Searching on the title versus keywords made almost no difference in retrieval or ranking in Google or Google Scholar. One exception was Antiglio (2014-2015 WHA award), for which only a title search worked in Google; using keywords did not retrieve the article. Microsoft Academic found two of the full-text papers, both on the Chapman University departmental journal site. However for one of the papers, (Giczy, 2010 AHA award), only a title search worked in Microsoft Academic; using keywords did not retrieve the article. Two papers were found full text in their institution’s institutional repository, however only when using keyword searching; literal title searches for Welker’s paper (2015 AHA award) and Wemer’s paper (2013 AHA award) returned no results. In all but one case, the found papers were ranked as the first result in Google, Google Scholar, Microsoft Academic, and the institutional repositories for at least one of the searches (title or keyword). The two research databases, *America: History and Life* and *Historical Abstracts*, contained none of the papers in the sample (see Table 1).

**Table 1. Which papers were found?**

<b>Author and Award Year</b>	<b>Google</b>	<b>Google Scholar</b>	<b>Microsoft Academic</b>	<i>America: History &amp; Life</i>	<i>Historical Abstracts</i>	<b>Institutional Repository</b>
Creech 2016*	No	No	No	No	No	No
Schrottman 2015-16	No	No	No	No	No	No
Welker 2015*	Yes	No	No	No	No	Yes
Antiglio 2014-15	Yes	No	No	No	No	No
Anbinder 2014*	Yes	Yes	No	No	No	No
Mscichowski 2013-14	No	No	No	No	No	No
Wallin 2013-14	No	No	No	No	No	No
Wemer 2013*	Yes	Yes	No	No	No	Yes
Shah 2012-13	Yes	Yes	Yes	No	No	No
Valone 2012*	No	No	No	No	No	No
Kang 2011-12	Yes	No	No	No	No	No
Williford 2011*	Yes	No	No	No	No	No
Hood 2010-11	No	No	No	No	No	No
Giczy 2010*	Yes	Yes	Yes	No	No	No
Huang 2009-10	No	No	No	No	No	No

\* AHA paper

The experiences of finding the eight full-text papers were highly variable (see Table 2):

- **Welker's (2015 AHA award) full text** was published as an honors essay in the institutional repository; we are unsure of whether it was identical to the journal publication but gave it the benefit of the doubt. The paper was the first result in Google for both title and keyword searches, and for the keyword search was listed as results 1, 2, 3, 4, and 5. When searching the institutional repository by keyword (Welker Black Power Student Activism North Carolina), it was third-ranked. We were able to find the paper by title in the institutional repository if we modified the title's date range to 1967-1973 instead of 1967-73.
- **Antiglio's (2014-2015 WHA award) full text** was published on Issuu and on the website for Undergraduate Awards, a non-profit organization that recognizes and shares undergraduate work. Initially, the paper was found only on the Issuu platform with a Google search on the full title; for one co-author the result ranked 7; for the other co-author, 9. A month later, the paper was found on the "Undergraduate Awards" website as the top-ranked result for a Google keyword search, linking to an embedded PDF.
- **Anbinder's (2014 AHA award) full text** was published on the school's journal website (not in the institutional repository). Its ranking varied in Google's top 5, but ranked consistently first in Google Scholar for both title and keyword. In both search engines, the first link led to the CiteSeerX repository's metadata page, which linked to the journal website. Only in Google were links found direct to the PDF on the journal website (as the second link).

- **Wemer's (2013 AHA award) full text** was published in the institutional repository (within a journal) and also on semanticscholar.org. The paper ranked first in both Google and Google Scholar for both title and keyword search and also ranked twice more in Google's top five for a keyword search. For the title search in Google, the full-text link went directly to the PDF in the institutional repository. The keyword search in Google first retrieved a record with a link to the institutional repository's PDF; a second link went to the institutional repository PDF directly; and a third link went to a metadata record with a link to the PDF on Semantic Scholar, a search tool for finding academic work. The paper was found in the institutional repository only when using a keyword search; the result link went to the record page of the journal website in the institutional repository, from which full text could be accessed.
- **Shah's (2012-2013 WHA award) full text** was published on the school's journal website (not in the institutional repository), and was ranked first, second, and third in Google results. It was also ranked first by Google Scholar and Microsoft Academic. The first Google and Google Scholar links led to the abstracts page of the journal site (OJS); in Google, the title search's second link led to an OJS page where a preview of the PDF was available. Google's third link led to the PDF file for the title search and HTML full text for the keyword search. On Google Scholar, a link in Google's right-hand column led to HTML full text. In Microsoft Academic, the first link went to the PDF preview and the second went direct to PDF.
- **Kang's (2011-2012 WHA award) full text** was published on the journal website inside a 143-page PDF file. It was ranked fourth when using a Google search on the title. One author was also able to find the full text with a Google keyword search.

- **Williford's (2011 AHA award) full text** was published on the school's journal website (not in the institutional repository). Only Google found the paper (title and keyword). Google ranked it as the first result and the link went directly to the PDF on the journal website.
- **Giczy's (2010 AHA award) full text** was published on the school's journal website (not in the institutional repository). It was top-ranked by Google, Google Scholar, and Microsoft Academic for both title and keyword searches. The top-ranked Google results led to the full text (HTML) on the journal website, while Google's second-ranked result led to the record, where HTML or PDF links could be found. Google Scholar led to the same metadata record page. Microsoft Academic's result offered links first to the PDF, then to the record page. The results with Microsoft Academic were inconsistent; the first author who searched, found it; the second author did not (and the first author verified); but on a later occasion the result re-appeared



**Table 2. Links from search tools to full text of student papers**

Search tool	First link	Second link	Third link
Google title	Welker - PDF		
	Antiglio - PDF		
	Anbinder - metadata	Anbinder - PDF	
	Wemer - PDF		
	Shah - metadata	Shah - PDF embed	Shah - PDF
	Kang - PDF		
	Williford - PDF		
Google keyword	Giczy - HTML	Giczy - metadata	
	Welker - PDF	Welker – metadata	Welker - search results page
	Antiglio - PDF embed		
	Anbinder - metadata	Anbinder – PDF	
	Wemer - metadata	Wemer - PDF	Wemer - metadata
	Shah - metadata	Shah - PDF embed	Shah – HTML
	Kang - PDF		
Google Scholar (title and keyword)	Williford - PDF		
	Giczy – HTML	Giczy – metadata	
	Anbinder - metadata	Anbinder - metadata	
	Wemer - metadata	Wemer - metadata	Wemer - PDF
Institutional Repository (keyword only)	Shah - metadata	Shah - HTML	
	Giczy - metadata		
	Welker - metadata*		
	Wemer - metadata		
Microsoft Academic (title and keyword)	Shah - PDF embed	Shah - PDF	
	Giczy- PDF	Giczy - metadata	

\* A result linking to Welker's metadata record also appeared in the institutional repository if doing a title search when we modified the date range in the title.

### Scholars' Visibility

None of the authors or the faculty advisors of the AHA papers had ORCID's or Google Scholar profiles.

### Journals

Fourteen of the 20 institutions in the study had an undergraduate history journal (see Table 3). Initially, 16 undergraduate student history journals were identified, but two of the CUR list's journals returned a 404 error and were removed from the sample. Of these, 13 institutions had repositories, but only three of the journals were substantively included in their institution's repository. For a fourth (*Columbia Undergraduate Journal of History*), a few articles were

found. Five of the 14 journals had ISSN numbers, and four were found in *Ulrich's*; all four in *Ulrich's* had ISSNs. Five of the six journals in which AHA and WHA award-winners appeared were entirely absent from these scholarly databases and the ISSN list (see Table 3). Only one journal, *History Matters: An Undergraduate Journal of Historical Research*, was found in both *America: History and Life* and *Historical Abstracts*.

**Table 3. The scholarly presence of undergraduate history journals**

Source	Journal Title	ISSN	Ulrich's	Institutional Repository	<i>America: History &amp; Life</i>	<i>Historical Abstracts</i>	Google Scholar
CUR	<i>History Matters: An Undergraduate Journal of Historical Research</i>	1934-4651	Yes	Not Found	Yes (32 articles)	Yes (25 articles)	2 articles
AHA	<i>Gettysburg Historical Journal</i>	2327-3917 (online) 2327-3909 (print)	Yes	Yes	Not Found	Not Found	Not Found
CUR	<i>Armstrong Undergraduate Journal of History</i>	2163-8551	Yes	NA	Not Found	Not Found	2 citations
CUR	<i>Grand Valley Journal of History</i>	2381-4411	Not Found	Yes	Not Found	Not Found	30 articles
CUR	<i>Tufts Historical Review</i>	1945-8681	Yes	Not Found	Not Found	Not Found	Not Found
Google	<i>Perspectives in History</i>		Not Found	Not Found	Not Found	Not Found	24 articles; 1 citation
CUR	<i>Vanderbilt Historical Review</i>		Not Found	Yes	Not Found	Not Found	1 article
AHA	<i>Yale Historical Review</i>		Not Found	Not Found	Not Found	Not Found	20 articles; 1 citation
CUR	<i>Columbia Undergraduate Journal of History</i>		Not Found	A few articles	Not Found	Not Found	1 citation
CUR	<i>Clio's Scroll, the Berkeley Undergraduate History Journal</i>		Not Found	Not Found	Not Found	Not Found	Not Found
WHA	<i>Emory Endeavors in World History</i>		Not Found	Not Found	Not Found	Not Found	2 articles, 1 citation
AHA	<i>Rhodes Historical Review</i>		Not Found	Not Found	Not Found	Not Found	Not Found
AHA	<i>Traces: The UNC-Chapel Hill Journal of History</i>		Not Found	Not Found	Not Found	Not Found	Not Found
AHA	<i>Voces Novae: Chapman University Historical Review</i>		Not Found	Not Found	Not Found	Not Found	Not Found

If these journals weren't generally included in institutional repositories or found using scholarly databases, where were they published and found? Ten of the journals seemed to be hosted on non-institutional repository websites, including the department's web server, a system like OJS, or a WordPress site. A few journals were mirrored across multiple sites; for example *Vanderbilt Historical Review* appears to be published on WordPress in addition to the institutional repository.

As for finding the journals, Google, Google Scholar, and Facebook were better options than traditional scholarly tools. Twelve of the 14 journals were found as the first result in a Google search on the title. Regarding the first outlier, Google found individual issues from the *Rhodes Historical Review*, but we did not discover the journal home page. For the final journal, *Traces: The UNC-Chapel Hill Journal of History*, we found pages about the journal, but no online version of the journal, its issues, or articles. (Just before submission we found *Traces* has now been restored to online status.) Using Google Scholar's "Return articles published in" feature, results were found for eight of the 14 journals (see Table 4). None of the journals were found in Microsoft Academic using a search on the journal title.

Five of the 14 journals had a Facebook page and these were all updated within the past year; three in April 2017, and two in Fall 2016. Several other journals were mentioned in Facebook posts from a related entity, such as Phi Alpha Theta or the history department (see Table 5).

**Table 4. Undergraduate student history journal visibility in Google Scholar**

Source	Journal Title	Articles	Citation	
			Only	Notes
CUR	<i>Grand Valley Journal of History</i>	30	0	Pub dates ranged from 2012-2017; all from institutional repository
AHA	<i>Yale Historical Review</i>	20	1 (no date)	Articles ranged from 1955-2016; found via journal website and academia.edu.
WHA	<i>Emory Endeavors in World History</i>	2	1	Pub dates 2007 for articles, 2013 for citation. Articles on history.emory.edu
CUR	<i>History Matters: An Undergraduate Journal of Historical Research</i>	2	0	Pub dates 2007, 2011; both from journal website
CUR	<i>Vanderbilt Historical Review</i>	1	0	Pub date 2017 on Humanities Commons
CUR	<i>Armstrong Undergraduate Journal of History</i>	0	2	Pub dates 2011, 2013
CUR	<i>Columbia Undergraduate Journal of History</i>	0	1	Pub date 2009
Google	<i>Perspectives in History</i> *	34	1	Pub dates 1988-2008

\* We found out about this journal because a paper from its institution won an award from the institution, but the paper itself wasn't in the journal.

**Table 5. Undergraduate student history journal presences on Facebook**

<b>Source</b>	<b>Journal Title</b>	<b>Facebook Page</b>	<b>Facebook posts by a related entity</b>
CUR	<i>Clio's Scroll, the Berkeley Undergraduate History Journal</i>	Yes; last updated 10/31/16	
CUR	<i>Columbia Undergraduate Journal of History</i>	Yes; Groups page; last updated 8/5/2014	
CUR	<i>Grand Valley Journal of History</i>	Yes; last updated 12/4/2016	
CUR	<i>Tufts Historical Review</i>	Yes; last updated 4/3/17	
CUR	<i>Vanderbilt Historical Review</i>	Yes; last updated 4/25/17	
AHA	<i>Yale Historical Review</i>	Yes; last updated 4/19/17	
AHA	<i>Rhodes Historical Review</i>	Not Found	History department posted a call for papers 4/28/17
AHA	<i>Traces: The UNC-Chapel Hill Journal of History</i>	Not Found	History department posted a call for papers 5/19/17
AHA	<i>Voces Novae: Chapman University Historical Review</i>	Not Found	Phi Alpha Theta announced the journal's new issue 7/5/17
CUR	<i>Armstrong Undergraduate Journal of History</i>	Not Found	
WHA	<i>Emory Endeavors in World History</i>	Not Found	
AHA; CUR	<i>Gettysburg Historical Journal</i>	Not Found	
CUR	<i>History Matters: An Undergraduate Journal of Historical Research</i>	Not found	
Google	<i>Perspectives in History</i>	Not Found	

## Repositories

Our initial method of searching for the journal title in the repository search box turned out to be insufficient for determining if a repository contained a journal. After marking the *Grand Valley History Journal* as Not Found in its repository, we noticed the repository's self-description mentioned the journal. Upon further investigation, we found that while articles in the journal could be found in the repository, neither the main search box nor the advanced search were useful for searching for the journal title. A bePress representative confirmed this situation: "In Digital Commons, the title of a work's structure (the journal, series, etc) is not included in the fields that are searched in a simple search. A simple search for the structure's title may still return works within the structure for works that include the structure's title elsewhere in the metadata or in the document's full text" (Benedek Nyikos, email communication to author, September 11, 2017). To verify whether the repository contained the journal, we therefore also browsed the repository's collections and series, looking for collections such as "History Department" and "Student Works."

As mentioned earlier, only two of the 15 award-winning papers appeared in their repositories, and three of the 14 journals appeared in their institution's repositories. In several cases, the repository featured other student publications and journals, just not the history journal.

## Discussion

Overall, our study suggests the discoverability of undergraduate history research is limited and that it is more discoverable on the public web than within the scholarly network. This finding is upheld across our samples of papers, journals, scholars, and repositories. We see opportunities for libraries to expand their communication, educational, and promotional efforts

on campus to foster the wider dissemination of undergraduate research and the place of undergraduate scholars as part of the larger scholarly network.

The undergraduate research papers in our sample were most often retrieved by Google. Fagan's (2017) literature review found that Google can often retrieve scholarly work that Google Scholar fails to find. Our study supports this: four of the 15 papers in the sample were found using Google but not Google Scholar, including one published in an institutional repository. Only two of the papers were contained in their institution's repository. There were several cases where our search experience varied over time. For Antiglio (2014-2015 WHA award), the paper rose in ranking from 9 to 7 to 1 from July 9<sup>th</sup> to August 9<sup>th</sup>. This could be due to the paper's visibility on the Undergraduate Awards website. We experienced other fluctuations in results ranking even within this small sample. Giczy (2010 AHA award) was initially found in Microsoft Academic in early June, then disappeared (verified by both authors) only to re-appear a month later.

The discoverability of undergraduate research is further limited by the lack of student presence in academic databases and scholarly profiles, which may be influenced by the faculty they work with: none of the students or faculty mentors had an ORCID or Google Scholar profile. None of the papers appeared in the two library databases.

Undergraduate student journals had a greater presence on Facebook than in the traditional scholarly network. Only four of the fourteen journals in our study had entries in *Ulrich's Periodical Directory*; four were present in their institution's repository; three were meaningfully included in Google Scholar, and just one was included in *America: History and Life* and *Historical Abstracts*. We reached out to EBSCO's editorial team and Beverly Pager, Academic Product Manager for EBSCO Information Services, explained their general editorial policy was



to continue with ABC-Clio's practice of indexing primarily peer-reviewed journal titles, "thus, it hasn't been our policy overall to add titles with solely student-researched content" (Email communication to author, September 14, 2017). She was interested in learning more about librarians' perspectives about the research value of including student publications, but noted some of the issues included the level of scholarship (peer review process; general oversight and quality); irregularity in publishing and who to contact; multidisciplinary (thus not suitable for subject-specific databases); difficulty in locating titles; value to the academic market; and the format of content (online, pdf, print, etc.). Furthermore, Pager noted that many of their customers have purchasing guidelines concerning the percentage of open access in any given database. "While we don't charge extra for this content, it does factor into our title list counts" (Email communication to author, September 18, 2017). Despite these challenges, she welcomed librarians to submit titles for the EBSCO team to consider for inclusion.

The irregularity of undergraduate journals may also be an issue. Of the journals found because they had award-winning student papers, only the *Gettysburg Historical Journal* was included on CUR's journals list

([http://www.cur.org/resources/students/undergraduate\\_journals/](http://www.cur.org/resources/students/undergraduate_journals/)), while two history journals on that list could no longer be retrieved (*Foundations* and *Women's Web Work*).

Only two papers were found in their institution's repository in our sample. Of those institutions lacking their students' award-winning work, many did contain other student publication series and student journals, suggesting their missions do include publicizing undergraduate research. For example, Chapman University's Economic Science Institute publishes *e-Research: A Journal of Undergraduate Work* in the repository, but the History department only offers history faculty publications. Ursinus College's repository includes

student research from the history department (“History Honors Papers” and “History Summer Fellows” collections), just not the student journal. Perhaps the issue is just lack of knowledge and proactive communication across the institution: In response to a query from one of the authors, the editor of *Traces* expressed interest in being included in the Carolina Digital Repository, but wasn’t sure how to proceed (Garrett Wright, email message to author, September 10, 2017). In response to a query about the fate of *Foundations*, an erstwhile history journal at Johns Hopkins University, the faculty advisor mentioned the need for technical support, and another faculty member chimed in to suggest he contact the librarian liaison to history (Jeffrey Brooks and Michael Kwass, email messages to author, September 10, 2017).

Gettysburg College could serve as a model for making undergraduate research visible. Their repository’s “Student Publications” collection includes papers from 2010-2017, and the “Journals” collection contains four student journals (two for history) and one literary magazine ([http://cupola.gettysburg.edu/peer\\_review\\_list.html](http://cupola.gettysburg.edu/peer_review_list.html)). As of July 29, 2017, the 122 student papers from the *Gettysburg Historical Journal* had collectively been downloaded 23,142 times in the past year. (There is ongoing discussion about the validity of download counts using different methods; see Arlitsch and Mixter 2017; O'Brien et al. 2016.) Searching for the top ten most-downloaded journal articles found that each was only cited a few times in Google Scholar, if at all, but the papers had proved useful: “The Tavern in Colonial America” had been cited by another student paper and a historical association newsletter that focused on a family’s taverns across Pennsylvania. The student paper “Voices of Moderation: Southern Whites Respond to *Brown v. Board of Education*” was cited by a thesis and a dissertation. We also searched for these ten papers in Google Books: One paper was cited by the *Yearbook of the Research Centre for German and Austrian Exile Studies* (Atkins 2005).

Janelle Wertzberger, Assistant Dean and Director of Scholarly Communications at Gettysburg, said the library took the initiative to put *The Gettysburg Historical Journal* into the repository, which was launched in 2012. Both the library and history department were eager to share the students' scholarship more broadly, and uploaded the entire backfile (Email communication to author, September 15, 2017). She described the effort as "easy to sustain" since there is only one issue per year. The library works closely with the student editors as well as the faculty advisor. No specific effort is required to ensure articles are indexed in Google; the SEO of the bePress Digital Commons platform takes care of that.

Academic digital libraries and search engines like CiteSeerX can play a role in discovery. For example, the most prominent links to Anbinder (2014 AHA award) went to CiteSeerX, which then linked to the full text. Although direct links to full text were found in Google, they were lower-ranked, and there would have been no pathway to the Anbinder paper in Google Scholar were it not for CiteSeerX. Platforms like ResearchGate, Academia.edu, and Semantic Scholar also seem to play a role even when it's not clear why they do. For one of the student papers, Wemer (2013 award), Google found the full text on Semantic Scholar as well as in the institution's repository. The description of Semantic Scholar provides no clue about why a student history paper would be included; it is said to include content from arXiv, the dblp computer science bibliography, CiteSeerX, OdySci Academic, and AMiner.

Our study found few patterns in whether search tools ranked PDFs or metadata records more highly. Google ranked PDF more highly six out of eight times for title searches, and five out of eight times for keyword searches. Google Scholar linked to metadata records for all four of the full-text articles it found; when it linked to PDF or HTML, these links were ranked lower in the results list. The results link for both articles found in the institutional repository went to the

metadata record, while in Microsoft Academic, results links went to PDF for both articles. An obvious advantage to linking direct to PDF is expediency, but PDFs can lack information necessary for full citation, and don't provide navigation pathways to the journals or sites which contain them.

### **Recommendations**

As discussed in the literature review, libraries are already involved in supporting undergraduate research. To further improve dissemination, we see growth opportunities for librarians and libraries in communication, outreach, and education related to the dissemination and discoverability of undergraduate papers, journals, academic identities, and repositories. Undergraduates are becoming recognized as emergent authors (Caprio 2014) and academic libraries are often well-positioned to facilitate undergraduate publication through their expertise, services, infrastructures, and partnerships (Weiner and Watkinson 2014).

Institutional repositories could play a stronger role in making undergraduate research more consistently discoverable. First, system administrators and software developers need to prioritize structuring repositories for discovery by web search engines. Our study's findings support Yang's (2016a) research showing search engines are still struggling to discover PDFs and sometimes metadata in institutional repositories. The Carolina Digital Repository noted their current platform is not optimized for Google Scholar because it does not contain the necessary tags. They are planning to migrate to a new system that will better support Google and Google Scholar (Julie Rudder, email communication to author, September 11, 2017).

There are examples of librarians serving as managers or collaborative managers of undergraduate research journals (Farney and Byerley 2010; Weiner and Watkinson 2014; Johnson, Mears, and Drescher 2017), but even where involvement is more limited, scholarly

communication librarians and subject librarians can serve as informal advisors on campus to student journals, summer fellowship programs, and award programs, building bridges for undergraduate research to travel from academic departments to institutional repositories.

Libraries and librarians can also help with the process of getting student journals included in the local institutional repository and *Ulrich's Periodical Directory* and acquiring ISSNs and DOIs.

The details of becoming indexed by Google Scholar are publicly available (Google 2017) and librarians could suggest their local journals' websites present content using standard SEO techniques (Onaifo and Rasmussen 2013). When working with a student journal that has a proven track record, librarians can also encourage abstract and index vendors, such as EBSCO, to include specific undergraduate journals, perhaps suggesting policies based on quality and consistency of publication.

An undergraduate research training program at the University of Tennessee, Knoxville teaches students about outlets for sharing their work, including academic publications and institutional repositories (Douglass and Mack 2015). Librarians and teaching faculty could include information about publishing opportunities in relevant library instruction classes. More libraries could include students in their vision for and programming related to scholarly communication. Social media has been shown to increase the visibility of scholars and their works (Bik and Goldstein 2013), as have scholarly profiles (Bar-Ilan et al. 2012; Mas-Bleda et al. 2014) and scholarly identifiers (Swiontkowski 2016). Plenty of libraries engage in communication efforts to promote Google Scholar profiles, scholarly identifiers, or both (Ebrahim 2016; Schubert and Holloway 2014; Swiontkowski 2016; Vàllez 2017). Akers et al. (2016) have enumerated many examples of library outreach efforts related to promoting ORCIDs (see also Rosenzweig 2017). Such efforts could be expanded to include undergraduates, perhaps

reaching out to editors of undergraduate journals as a target audience. Structures such as capstone courses, summer fellowships, and prizes also offer the means of identifying students who have the interest and ability to take their research beyond the classroom into published scholarship.

### **Future Research**

This study revealed several opportunities for further research in this area. We specifically examined the web visibility of award-winning articles by undergraduates in the field of history. Similar studies of other disciplines could be carried out, allowing librarians to create more customized support for students pursuing different majors. A broader study of the web visibility of undergraduate work in a variety of formats would also further inform efforts of academic libraries to support students as participants in creative and scholarly communities. We focused on student papers, but undergraduate research is increasingly presented in other formats, such as digital projects (e.g., Stephens and Thumma 2005; Johnson and Harreld 2012). Curating digital projects in a way that supports dissemination and promotion of student research is new territory for academia. To what extent are these projects discoverable, and what strategies (e.g. SEO, linked data, social media) are most successful?

This study's sample of student scholars and their advisors was small, but pointed to a dearth of history scholars in academic identity databases such as ORCID and scholarly profile databases such as Google Scholar. Research could be conducted to more rigorously measure the presence of humanities scholars in scholarly profile and identifier databases. A locally-focused effort to do so before and after a major campus educational effort concerning scholarly communication could help measure the effectiveness of the initiative.

Finally, this study took the approach of searching for student papers, scholars, and journals by brute force. However, we are confident the stories behind the scenes would add valuable qualitative information for further diagnosing communication gaps and identifying solutions. Case study or survey research with academic departments, student journal editors, faculty advisors, and the like by academic librarians could add richness to our professional understanding of undergraduate student publications.

## **Conclusion**

With the increase in institutional interest concerning undergraduate research as a high-impact practice, librarians and libraries have a golden opportunity to further develop their roles as strategic partners. Humanists, and particularly historians, may need a little extra encouragement or education regarding how to move undergraduate research into the scholarly network. As more faculty come to recognize student research as part of the institution's scholarly output, librarians can be ready to show how student research can be included in local scholarly spaces like institutional repositories and in abstracts and indexes. Librarians also have direct channels to students, who can benefit from information about the potential for their research to be more discoverable on the web. Developing a holistic approach to making undergraduate research more visible involves continued attention to institutional structures as well as individual education and support.

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## Appendix: Bibliography of Award-Winning Student Papers

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