

Because You're You: Factors Influencing Item Selection in a Digital Sheet Music Collection

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Abstract:

Purpose:

The purpose of this study was to examine factors influencing user selection of individual works in a collection of digitized sheet music.

Design/methodology/approach:

Google Analytics page view data were grouped by source (directing link) and correlated with five factors: (1) inclusion in a collaborative indexing project (Sheet Music Consortium); (2) browse list order; (3) cover appearance; (4) inclusion in mini-collections; and (5) presence of links to audio versions.

Findings:

Four of the five factors examined showed some influence on user selection:

- (1) Works listed in the Sheet Music Consortium had more views/work than those not listed.
- (2) Works at the top of the Sheet Music Consortium browse list had more views by Consortium users than those lower down.
- (3) Works with cover graphics had more views/work than those with covers containing words alone.
- (4) Works included in mini-collections received more views/work from users with access to those mini-collections.
- (5) Works with links to audio versions did not have more views/work than works without links.

Practical implications:

The most important finding of this study is that the best way to increase the use of individual collection items may be to participate in a large and well-known collaborative index such as the Sheet Music Consortium.

Originality/value:

This is the first study using Google Analytics to examine factors influencing user selection of individual digital collection items.

Because You're You:

Factors Influencing Item Selection in a Digital Sheet Music Collection

Introduction

One of the primary motivations for librarians everywhere is the desire to put materials into the hands of people who need them. This study was undertaken in the hope that knowledge about user behavior could be used to create better digital collections and lead to higher use. The study examined the influence of five factors on user selection of individual works in the Piano Bench Collection (PBC) (<http://diglib.auburn.edu/collections/pianobench>), a collection of digitized sheet music. These five factors were:

- 1) Inclusion in a collaborative indexing project, the Sheet Music Consortium (SMC)
- 2) Browse list order
- 3) Cover appearance
- 4) Inclusion in mini-collections featured on the PBC home page
- 5) Presence of links to audio versions in individual item metadata

It can be difficult to determine if digital collections are actually being used. Sasser's survey of organizations with online music collections found that these organizations believed their collections were being used for performance, research, and teaching purposes (Sasser, 2009). At the time of the survey, however, only 35% of respondents were using statistical tools to track the use of their collections. The rest were relying on feedback via surveys, email, and in-person reference questions. A survey of librarians and patrons of music libraries in Israel found that 86% of responders used digital scores to some extent (ranging from "sometimes" to "several

times a week”) for performance, research, and learning/teaching (Kulik, 2010). Reasons given for the use of digital vs. paper were related to convenience, economics, and content.

Inskip, Butterworth, and MacFarlane conducted interviews with in-person users of a physical library of folk music materials (Inskip, *et al.*, 2007). They found that most users wanted access to a wide array of materials and the ability to take information home with them. Based on these interviews, their checklist of desired characteristics for a digital collection included: browse capability, links between related materials, access to sound files, access to background information about the works, and links to other information sources.

Wheeler and Venetis compared six online sheet music collections to a similar list of desirable characteristics (Wheeler and Venetis, 2005). All six collections allowed browsing and keyword searching and had basic descriptive metadata. Not all included lyrics or allowed image enlargement, however. Cover art descriptions were not usually present, and only one collection provided audio files so that users could hear the works.

Ideally, users of any digital collection will find their way to the collection, find what they need, remain there to browse/search for other items, and return to the collection later. An easy-to-use interface for both searching and browsing is as important for music collections as it is for other types of digital collections (Wheeler and Venetis, 2005; Riley and Dalmau, 2007; Dougan, 2004; Kulik, 2010; Inskip, *et al.*, 2008; Dubnjakovic, 2009). Metadata for music collections should include alternative titles and text versions of lyrics, as users are frequently unfamiliar with the “official” title of a work and often use a portion of the lyrics when doing a title search (Riley and Dalmau, 2007). Researchers interested in cover art can be helped by the addition of searchable cover art descriptions (Wheeler and Venetis, 2005; Riley and Dalmau, 2007) and browseable thumbnails (Pisciotta, *et al.*, 2005; Matusiak, 2006).

Web site statistics are quickly becoming a popular way to analyze use patterns for library Web sites (Arendt and Wagner, 2010; Plaza, 2009; Schell, 2009) and for digital collections (Herold, 2010; Khoo, *et al.*, 2008; Wang, *et al.*, 2011). Riley and Dalmau used log analyses to investigate search behavior of patrons using Indiana University's online sheet music collection and a beta version of the Sheet Music Consortium (Riley and Dalmau, 2007). They found that keyword searches were predominantly for names and titles (known item searching). They also performed task analysis studies and found that that "title" searches frequently used terms other than the official title of a work (such as lyric fragments) and that cover art was important to users.

The PBC was created by Auburn University Libraries (AUL) (<http://lib.auburn.edu>) from digital copies of sheet music in the AUL collection. Because paper scores for individual works are housed in Special Collections and Archives, works whose copyright dates are 1922 and earlier are digitized for more convenient access. The PBC was created using CONTENTdm, the digital content management software from OCLC (OCLC, 2012). CONTENTdm is used by more than 2,000 heritage organizations to create and make available online digital collections (Wikipedia, 2012). One of its advantages is the ability to share collection metadata via the Open Archives Initiative—Protocol for Metadata Harvesting (OAI-PMH) (Open Archives Initiative, 2008).

Many PBC works have been listed in the Sheet Music Consortium (SMC) (<http://digital2.library.ucla.edu/sheetmusic/>), a collaborative index of online sheet music collections created by Indiana University and the University of California Los Angeles and hosted by the UCLA Digital Library Program (UCLA Digital Library Program, 2011). Metadata from collections of academic and national libraries and statewide collections have been harvested

via OAI-PMH and used to create a searchable database of over 100,000 records. Many of the works indexed by the SMC have been digitized, though some works are represented solely by catalog records and cover images. AUL has participated in the SMC since the current version was launched in June 2011. The PBC is the smallest collection indexed by the SMC, yet over a third of the traffic to the PBC Web site comes from SMC users.

Methodology

Creating the Digital Collection

For each work in the PBC, digital page images were combined into a PDF file. The PDF format was chosen so these works could be easily printed out for offline use. Item metadata was based on information from the catalog record for the paper score: title, composer, Library of Congress subject headings, notes, etc. These were supplemented to enhance user access: additional subject terms from the Thesaurus of Graphic Materials (Library of Congress, 2007); full text of lyrics; links to online audio versions (where available); and “clusters”.

“Clusters” were terms assigned to a work that placed it in one or more pre-sorted mini-collections. Prefabricated searches for these terms were used to create mini-collections featured on the PBC home page. Clicking on a mini-collection link took users to a search results page displaying all works assigned to that cluster.

Google Analytics

Since 2005, Google has offered its Google Analytics Web tracking service (Wikipedia, 2013a). To implement this service, a Web site owner adds a JavaScript tracking code to all pages of the Web site. When one of these pages is accessed by a user’s browser, visitor data is sent to

Google, provided that JavaScript, caching, and cookies are enabled by the browser. (If any of these conditions is not met, the visit will not be counted by Google Analytics.) Visitor data collected by Google Analytics include URLs of the pages viewed, time and date of the visit, the site which referred the visitor to the owner's site, and the visitor's browser, operating system, Internet service provider, and location (down to city level).

Google offers two versions of its Analytics service (Google, 2013). The Standard version allows the use of up to 5 custom variables, processes up to 10,000,000 hits per month, and is free for registered users. The Premium version allows up to 50 custom variables, processes up to 1,000,000,000 hits per month, and costs a flat fee of \$150,000 per year. AUL uses the Standard (free) version, which is sufficient for its present Web tracking needs.

Google Analytics tracking code has been added to the Web page template for all AUL CONTENTdm collections. For this study, Google Analytics data for a period of six months (October 15, 2011–May 14, 2012) were collected and analyzed. Page views for the PBC home page, for mini-collection browse pages, and for individual PBC works were grouped by source (referring link) and, in some cases, by user location.

Google Analytics identifies individual Web pages solely by their URLs. To correlate these URLs with the sheet music scores corresponding to them, a master spreadsheet was created for the project and the titles of the works were added manually. Information from other sources was also manually added to the master spreadsheet: whether or not a work was listed in the SMC, whether it was included in local mini-collections (and, if so, which ones), whether or not a work's cover featured a graphic illustration, and whether or not an audio link was available. Works which had been added to the PBC after the beginning of the study period were excluded from the study and were removed from the master spreadsheet.

Results and Discussion

This study examined the effect of five factors on user selection of individual PBC works. For each factor, Google Analytics page views data were correlated with relevant information from the master spreadsheet. The five factors examined were:

- 1) Inclusion in the SMC collaborative indexing project
- 2) Browse list order
- 3) Cover appearance
- 4) Inclusion in mini-collections featured on the PBC home page
- 5) Presence of links to audio versions in individual item metadata

Experience Using Google Analytics

Google Analytics is a sophisticated program oriented toward commercial Web sites. Nevertheless, AUL's experience shows that nonprofit organizations can make effective use of its capabilities. Google Analytics tracking code was present in the Web page template used for all AUL's CONTENTdm collections. Since every CONTENTdm collection item had its own URL, collection use could be tracked down to the item level by using data filters and custom reports as appropriate. The small size of the PBC made it possible to combine Google Analytics data with information from other sources manually. (Larger collections might require the assistance of a programmer to perform this task automatically.)

One major caveat: Google Analytics does not track 100% of traffic for any Web site regardless of whether the site owner is using the free or paid service (Wikipedia, 2013). If the volume of users is too great, Google Analytics will use sampling instead of counting every user.

In addition, users whose browsers do not support JavaScript and/or do not allow cookies are not counted at all, while users who allow cookies but clear them frequently are not counted accurately. Some programs used to block Web-based advertising may also block Google Analytics data collection. An additional complication for European Union (EU) Web sites is a recently enacted EU law which requires that Web sites get the user's permission before leaving non-essential cookies.

Overview of Collection Users

Google Analytics data showed that users came to the PBC from a variety of sources. Some came directly to the collection home page or to an individual collection item via the AUL Digital Library (DigLib) Web page or the AUL catalog (catalog records for the paper scores include links to the digitized versions), while others came from an external search engine such as Google or an indexing site such as the SMC. A few found their way to the PBC after visiting another AUL digital collection.

Google Analytics allowed users' page views to be parsed into groups by originating locality (city, state or region, country) and by originating Web site (Google, Wikipedia, etc.). These groups could then be cross-correlated to determine how local and non-local users were finding the collection. Table 1 shows that most local (Auburn, Alabama) users came to the PBC home page from the DigLib Web site, while most non-local users came from other sources such as the SMC and Google.

Table 2 shows the same phenomenon for views of individual item pages. It is not surprising that most users in the Auburn University community would find the collection via the DigLib page nor that most users outside that community would find the collection by other

Table 1. Geographical Distribution of PBC Users: Home Page Views (10/15/2011–5/14/2012)

	Auburn	Alabama (outside Auburn)	USA (outside Alabama)	North and South Americas (outside USA)	European Countries	African, Asian, and Pacific Rim Countries	Total
Direct Users	13	4	21	0	3	0	41
DigLib Users ¹	281	22	27	1	2	2	336 ¹
SMC Users	0	0	28	4	2	2	36
Google Users	9	2	21	1	7	1	41
Facebook Users	4	0	1	0	0	0	5
Wikipedia Users	0	0	0	0	0	0	0
Other Users	18	5	58	1	5	4	91

1. This group includes 1 user whose origin was listed as “not set”.

Table 2. Geographical Distribution of PBC Users: Individual Item Page Views (10/15/2011–5/14/2012)

	Auburn	Alabama (outside Auburn)	USA (outside Alabama)	North and South Americas (outside USA)	European Countries	African, Asian, and Pacific Rim Countries	Total
Direct Users	26	0	4	2	186	0	218
DigLib Users	264	11	33	6	1	0	315
SMC Users ²	7	0	197	24	222	29	508 ²
Google Users	1	0	9	3	0	1	14
Facebook Users	0	0	2	0	0	0	2
Wikipedia Users	6	0	2	0	0	0	8
Other Users	36	0	7	2	3	1	49

2. This group includes 29 users whose origins were listed as “not set”.

means. These results point out the importance of providing multiple pathways to a digital collection as a means of increasing viewership.

Google Analytics listed some users' originating Web sites as "Direct", meaning that the users arrived at the collection via a bookmark or by typing the URL into their browsers, rather than being referred to it by an intermediary such as Google or the SMC. Prior to data analysis, it was assumed that Direct users would be members of the University community. Examination of the locality data showed that was frequently not the case. Presumably, these non-local Direct users had found the collection initially by some other means and then bookmarked it for future use.

Factor 1: Influence of SMC Listing

PBC metadata was harvested for the SMC project in the fall of 2010. Works have been added to the collection since that time, but these additional works had not been indexed by the SMC as of the study period (10/15/2011–5/14/2012). Ideally, we would wish all PBC works to be SMC-indexed. However, it was instructive to compare the two sets of works ("Listed" and "Not Listed") to see the effect on item page views. At the beginning of the study period, there were 219 PBC works listed in the SMC index and 64 works not listed. Works added to the collection after the study period began have been omitted from this analysis.

Table 3 shows the item page views for works listed and not listed in the SMC. As might be expected, SMC users viewed Listed works much more frequently than Not Listed works. In fact, it was a surprise to find that SMC users viewed *any* works in the Not Listed group, as they could not have found these works in the SMC index. These users must have come to the PBC to

Table 3. Influence of SMC Listings: Item Page Views for Works Listed and Not Listed in SMC (10/15/2011–5/14/2012)

	Page Views	Works	Views/Work	Number of Works Viewed	Works Viewed as % of Group
SMC Users					
Works Listed in SMC	499	219	2.3	150	68%
Works Not Listed in SMC	8	64	0.1	4	6%
Non-SMC Users					
Works Listed in SMC	466	219	2.1	187	85%
Works Not Listed in SMC	103	64	1.6	41	64%
All Users					
Works Listed in SMC	965	219	4.4	202	92%
Works Not Listed in SMC	111	64	1.7	41	64%

view one of the Listed works and, once there, spent some time browsing the collection and/or searching it directly for other works.

Non-SMC users viewed both Listed and Not Listed works. This was expected as non-SMC users would have equal access to both sets of works. Adding together the numbers for all users, SMC and non-SMC, increased the views/work for the Listed works.

Factor 2: Influence of Browse List Order

Analysis of item page views by SMC users revealed that a handful of works had been viewed many times, while other works with similar cover appearance and similar style of music had been viewed rarely, if at all. This was difficult to explain until the “browse list” was examined. The SMC Web site has a “Browse” page which lists all the collections indexed by the project. Clicking on a collection’s icon takes the user to a browse list for that collection.

Examination of the SMC browse list for AUL showed that works were not being displayed in alphabetical order as had been expected. Instead, the browse list order seemed to derive from the works’ native CONTENTdm identification numbers. Once this browse list order information had been added to the master spreadsheet, it became obvious that works listed at or near the top of the browse list had many more page views from SMC users than works listed further down.

Table 4 shows the influence of browse list position on item page views by SMC users and DigLib users. The first ten works in the table held positions 1–10 in the SMC browse list. The majority of the page views for nine of these came from SMC users. The first work (*I’m Forever Blowing Bubbles*) had the most page views for any PBC work during the study period (59 total, 52 from SMC users). A similar work (*I’m Always Chasing Rainbows*) whose position was 91 in

Table 4. Influence of Browse List Position: Item Page Views for the First Ten Items Listed in the SMC and the First Ten Items Listed in the Native CONTENTdm Collection (10/15/2011–5/14/2012)

Work Title	SMC Browse List Position	SMC Page Views	DigLib Browse List Position	DigLib Page Views
I'm Forever Blowing Bubbles	#1	52	#104	1
In the Land Where My Dreams Unfold	#2	28	#109	2
I See Thee in My Dreams	#3	8	#98	1
A May Morning	#4	4	#150	0
Sleepy Town	#5	7	#214	1
The Slumber Boat	#6	4	#215	0
Prince Imperial	#7	1	#192	2
Over the Way	#8	7	#180	1
My Lovin' Melody Man	#9	7	#159	0
The Mill Stream Fair	#10	4	#154	1
Absent	#169	2	#1	5
Ah! Sweet Mystery of Life (vers. 1)	#123	15	#2	0
Ah! Sweet Mystery of Life (vers. 2) ³	Not Listed	5 ³	#3	2
Air de Louise	#11	6	#4	1
All for You	#131	0	#5	2
Aloha Oe (vers. 1)	#129	1	#6	1
Aloha Oe (vers. 2)	#77	1	#7	0
America, I Love You	#81	0	#8	6
American Beauty March	#192	2	#9	6
Are You Dreaming of Me	#218	1	#10	1

3. This work was not listed in the SMC, but some SMC users found it anyway.

the SMC browse list had only 5 page views during this time (4 from SMC users). Both works were popular show tunes, both had eye-catching cover graphics (see Figure 1), and both had similar subject matter. A likely explanation for the difference in page views was the difference in their positions on the SMC browse list.

DigLib users see a different browse list—that of the native CONTENTdm collection—which has been configured to list items alphabetically by title. The second set of ten works listed in Table 4 held positions 1–10 in the CONTENTdm browse list during the study period. There was no noticeable effect of CONTENTdm browse list position on page views for these works. This may be related to the way the CONTENTdm browse list was structured (4 x 5 matrix vs. linear list), or it may reflect a difference in the way that DigLib users and SMC users interacted with the collection.

Factor 3: Influence of Cover Appearance

Cover appearance probably doesn't influence users performing known item searches. However, it might influence users making selections from a browse list. Both the SMC index (seen by SMC users) and the native CONTENTdm collection list (seen by DigLib and Direct users) provide thumbnail images of the works in the PBC. If there was an influence of cover appearance on user selection, therefore, it should appear in all three user groups. Since a user group comparison could not be expected to show the presence or absence of such an effect, another approach was necessary.

For the purposes of this comparison, PBC works were assigned to one of two groups: Group 1—works with cover graphics such as photographs, paintings, or drawings (see Figure 2); Group 2—works with mostly words on the cover or having no covers or blank covers (see Figure



Figure 2. Examples of cover illustrations for works from Group 1 (left) and Group 2 (right): Group 1 consists of works with cover illustrations featuring colorful graphics, while Group 2 consists of works with covers containing mostly words, works with blank covers, and works with no covers at all. (Images from Auburn University Digital Library.)

2). As there seemed to be no reason to differentiate between DigLib users, SMC users, and Direct users, page views from all three groups were combined. Users from search engines such as Google were excluded, however, as these users would not see the item thumbnail prior to selection. Only works listed in the SMC index were included in this analysis.

Table 5 shows the item page views for works in these groups. Works in Group 1 had significantly higher views/work than those in Group 2. However, no influence could be seen with respect to the percentage of works viewed at least once. This could be a result of the influence of browsing being offset by known item searches and/or other influences.

Factor 4: Influence of Mini-Collections

A mini-collection is a selection of works that fit a particular theme. Mini-collections call users' attention to works that might be overlooked in casual browsing. Themes for PBC mini-collections were selected on the basis of expected user interest and the availability of relevant works. During the six-month period in this study, the PBC had six mini-collections featured on the collection home page: Music with an Alabama Connection; Patriotic Songs; Songs from World War I; Blues Music; Music with Southern Themes; and Works with Audio Links. The last named will be discussed in the next section and is not included here.

During the study period, mini-collections were only accessible from the PBC home page, which, in turn, was usually accessed from the DigLib page. Users from external sites such as the SMC would not see these mini-collections unless they clicked on the link taking them to the collection home page. To examine whether a work's inclusion in a mini-collection influenced user selection, item page views by DigLib users were compared to views by SMC users. To make the comparison a fair one, it was restricted to the 219 works listed in the SMC index. Of

Table 5. Influence of Cover Appearance: Item Page Views for Two Categories of Cover Art (10/15/2011–5/14/2012)

	Page Views	Works	Views/Work	Number of Works Viewed	Works Viewed as % of Group
Group 1: Cover graphics	544	106	5.1	98	92%
Group 2: Mostly words, blank cover, or no cover	363	113	3.2	104	92%

these, 38 were included in one or more mini-collections, while 181 were not included in any mini-collection.

Table 6 shows the item page views for SMC and DigLib users for the five mini-collection browse pages and for the 219 SMC-listed works. As expected, SMC users viewed the mini-collection browse pages only 11 times during the study period. Also as expected, Included and Not Included works were viewed with similar frequencies by SMC users. In contrast, DigLib users viewed the mini-collection browse pages 150 times during the study period. Included works were viewed about twice as much as Not Included works by DigLib users. These results show that inclusion of a work in a mini-collection had a strongly positive influence on views by users who had access to the mini-collection browse pages.

Factor 5: Influence of Audio Links

The sixth mini-collection featured on the PBC home page during the study period was Works with Audio Links. Links to audio versions were provided where possible so that users could hear a work prior to printing or downloading its PDF. User research has suggested that audio versions are a desirable addition to a digital music collection (Inskip, *et al.*, 2008; Wheeler and Venetis, 2005; Lutz, 2004). This would be especially true for users who cannot sight-read from musical notation (Wikipedia, 2013b).

However, the presence of an audio link can only influence a user to view a work if the user knows that such a link exists. Audio links were added to a subset of PBC works in April and May 2011. At that time, the designation “[with audio link]” was appended to these works’ titles. DigLib and Direct users accessing the native CONTENTdm collection via browse pages and/or search results pages would be able to see these designations. SMC users would not see these

Table 6. Influence of Mini-Collections: Item Page Views for Works Included and Not Included in Mini-Collections (10/15/2011–5/14/2012)

	Page Views	Works	Views/Work	Number of Works Viewed	Works Viewed as % of Group
SMC Users					
Mini-Collection Browse Pages	11	---	---	---	---
Works Included in One or More Mini-Collections	75	38	2.0	28	74%
Works Not Included in Any Mini-Collection	424	181	2.3	122	67%
DigLib Users					
Mini-Collection Browse Pages	150	---	---	---	---
Works Included in One or More Mini-Collections	73	38	1.9	33	87%
Works Not Included in Any Mini-Collection	130	181	0.7	83	46%

designations in the SMC index, however, because SMC metadata harvesting had occurred in the fall of 2010, several months prior to the addition of these links.

In an attempt to determine whether the presence of an audio link influences a user to view a work, a comparison was made of item page views by SMC, DigLib, and Direct users. Only works listed in the SMC index were included in this analysis. In addition, 14 works whose audio links had been added after the study period began were omitted. Of the remaining 205 works, 134 had links to audio versions, while 71 did not.

Table 7 shows the item page views for SMC users, DigLib users, and Direct users for works with and without audio links. As expected, SMC users, who couldn't distinguish between the two sets based on the SMC index records, showed little difference with regard to the total number of works viewed. The Without Audio Links set had a somewhat higher value for views/work than the With Audio Links set, which was unexpected.

Even less expected were the DigLib user results, which *seemed* to show a negative correlation between item page views and the presence of audio links. This appeared both in the total number of works viewed and in the views/work. It is difficult to envision a scenario in which users might choose *not* to view a work simply because they know that an audio link is available for that piece.

It is more probable that some other factor or group of factors was influencing selection by DigLib users and that the presence of audio links had little or no influence. This hypothesis is supported by the results for Direct users, which show a slight negative correlation (comparable to that observed for the SMC users) between item page views and the presence of audio links. This held for both the total number of works viewed and the views/work.

Table 7. Influence of Audio Links: Item Page Views for Works With and Without Links to Audio Versions (10/15/2011–5/14/2012)

	Page Views	Works	Views/Work	Number of Works Viewed	Works Viewed as % of Group
SMC Users					
Works with Audio Links	287	134	2.1	92	69%
Works without Audio Links	179	71	2.5	47	66%
DigLib Users					
Works with Audio Links	89	134	0.7	43	32%
Works without Audio Links	96	71	1.4	62	87%
Direct Users					
Works with Audio Links	122	134	0.9	95	71%
Works without Audio Links	73	71	1.0	53	75%

Conclusions and Next Steps

This study showed a positive influence on user selection from four of the five factors examined. Factor 1—participation in the SMC collaborative index—resulted in increased views for listed works and more traffic to the PBC Web site. An obvious next step for this collection, therefore, would be to have the SMC index the 104 remaining PBC works. As our experience shows that even small collections can benefit from participating in the SMC, we would also recommend that other institutions with collections of digitized sheet music (large or small) consider joining.

Factor 2—the ordering of browse lists—had an effect on the selection of individual works by users of the SMC index. It is probably best to stick with logical sorting criteria for listings of browse and search results—alphabetical by title or composer, chronological by publication date, etc.— and to indicate to users which criterion is being used. Although AUL does not have the ability to unilaterally change its SMC browse list order, we can and do recommend that the SMC alphabetize all institutions' browse lists by title.

Factor 3—cover appearance—showed that works with cover graphics had more views/work than works whose cover art consisted of words. One cannot (or should not) change the appearance of a work in an attempt to increase its viewership. However, since most content management systems allow thumbnails to be displayed in the browse list, this should be done where possible. For collections of non-visual works such as letters, diaries, and oral histories, the creation of suitable thumbnails from related images might increase item use.

Factor 4—creating mini-collections and linking them to the PBC home page—resulted in more views/work for the featured works from users with access to these mini-collections. An obvious next step, therefore, would be to increase the number of mini-collections. This technique

for increasing the use of overlooked items is probably most helpful for larger collections (100+ objects) of non-text-based materials such as photographs, posters, and maps. It can also be used to advantage with collections of personal papers, where the clusters can be chronological as well as topical.

Factor 5—the presence of links to audio versions—did not have a positive influence on item selection at all. Research has shown that most users of music collections, physical or digital, are doing known item searches (Riley and Dalmau, 2007; Dougan, 2004). This may explain why the addition of audio links did not increase page views for those items. Moreover, although some users may find audio links helpful (Wheeler and Venetis, 2005; Inskip, *et al.*, 2008), users who can sight-read from musical notation don't need them (Wikipedia, 2013b).

The most important finding of this study is that participation in a large and well-known collaborative index such as the SMC may be the best way to increase the use of items in a digital collection. Unsurprisingly, well-known collections are more heavily used than obscure ones (Warwick, *et al.*, 2008). The opportunity to disseminate information about a collection and expose its individual items to a worldwide audience is what makes participation in a collaborative project such as the SMC so valuable. The results of this study encourage us to seek out appropriate indexing opportunities for our other digital collections, including the creation of collaborative indexes where none currently exist. Future research may involve comparing the relative impacts of various external indexes on collection use.

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