XERXES REDESIGN

by

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Abstract

This paper examines the process of redesigning Xerxes, a web-based federated article database search tool that allows patrons of Robert E. Kennedy Library to search several related article databases at one time. It provides an overview of the user-research I conducted, which includes a student survey and a library staff meeting from which feedback was gathered from library staff with a stake in the redesigned Xerxes. It also discusses the procedures I used to arrive at the completed design and includes a full printing of all redesigned Xerxes pages with explanations as to their function. This paper concludes with a brief summary of my Senior Project’s success and offers some recommendations based on my experience as a Graphic Design major.
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Chapter 1
Introduction

Xerxes is a web-based federated article database search tool that allows patrons of Robert E. Kennedy Library to search several related article databases at one time. For instance, a search in the “Art and Design” subject grouping would aggregate search results from several databases that contain articles relevant to the fields of art and graphic design. Robert E. Kennedy library also hosts Datagenie, a web application that lists databases that the library subscribes to in an alphabetical format. Datagenie provides authenticated links to the databases it links to, allowing off-campus users to login to the databases. While Xerxes is a relatively new addition to the library’s web offerings, Datagenie has long been a part of the library’s web site and is still the preferred method for article database access for 39% of users versus 23% of users for Xerxes (as of February 2009). Xerxes will eventually replace Datagenie.

Although Xerxes is initially fairly well-designed, it had some rough edges that I sought to smooth over in the course of this redesign project. My primary design and implementation goals were as follows:

- Integrate existing Datagenie functionality into Xerxes so that Datagenie can be decommissioned without alienating users who prefer using an alphabetical list of article databases.
- Reevaluate the information architecture and design of all aspects of Xerxes with the goal of improving the user experience of the most common tasks.
- Encourage the use of the “My Saved Records” feature.
• Reduce the time and number of steps it takes for users to find the articles they want.
• Develop new user interface elements that can be reused in the library’s various web applications in the future.

For the purposes of my Senior Project, the scope of the redesign was limited, owing to the time limitations implicit in completing a Senior Project in a single quarter. The following items were not completed as part of the Senior Project (but will be implemented in Xerxes post-Senior Project completion):

• Allow the mass-deletion of saved records so that users don’t have to delete and confirm the deletion of each record manually.
• Allow users to tag their saved records so that they can browse their saved records by tag. This will allow users to easily browse and export several different groups of records without having to do so manually.
• Fix rendering differences of the site in Internet Explorer versions 6, 7, and 8.

**Terms**

*XML*  Stands for “eXtensible Markup Language.” XML is a widely-used and extremely flexible format for structuring and transmitting data.

*XSLT*  Stands for “XML Transformations.” XSLT is an XML-based language used for transforming XML documents into other formats such as, in the case of Xerxes, HTML.
**HTML** The standard markup language for web page content. In general, HTML is XML-like, although in some cases, HTML can be written as valid XML (also known as XHTML).

**CSS** Stands for “Cascading Style Sheets.” CSS defines the display of an HTML document—how it looks. In some cases, it can even define how an HTML page behaves (mouse roll-overs, for instance).
Chapter 2
Review of Research

I used two primary sources of input in the Discovery phase of the redesign: an online survey of library patrons and a library staff meeting. Both sources of input provided a great number of insights into how patrons and library staff use the library's article database search tools and what kinds of things they consider important. The results and my conclusions are summarized below.

**Patron Survey Results Summary**

*When searching for articles, do you prefer using "By Subject" or "Alphabetical" listings?*

- **By Subject:** 75%
- **Alphabetically:** 25%

*What do you like most about your preferred method of searching for articles?*

- **By Subject:** “most relevant answers,” “usually not looking for anything specific, just something on a topic for some class thing or another,” “Browse by topic or subject.”
- **Alphabetically:** “I know which database I want to use for different information.”

*What do you not like about the method you don't prefer using?*

- **By Subject:** “All the databases I use are not listed under my major.”
- **Alphabetically:** “It isn't organized by what you need the most,” “I couldn't just type in some stuff to search for and really, just browse.”
(Alphabetical) When using the Alphabetical listings, do you ever use the links in the right column?

- **Overall consensus:** Rarely/never

(Alphabetical) If so, what in the right-hand column is useful to you? For instance, is there a particular category or link that you find useful?

- One responded said: “All except government documents,” but more information is needed about what makes the other categories useful and why government documents isn’t.

(By Subject) Have you used the "My Saved Records" feature?

- **Yes:** 75%
- **No:** 25%

(By Subject) If so, what about it is most useful to you?

- “when I’m looking for articles for a paper, or something, I just look up articles, save the ones I think might have relevant information, and then continue searching. I don’t actually go through the articles I’ve found until I feel I’ve found a good amount of information. Then I go through my saved articles eliminating ones that don’t help me and keeping the ones that do. This way, I’ll end up with a my saved records full of sources for my work. They’ll all be there for when I need to go through them.”
- “Sometimes when I don’t have much time to finish my work. I would like to come to my research work already accomplished instead of repeating.”
- “being able to email it to myself”
If you have any other comments or suggestions about our article database tools, please let us know below!

- “... when I perform a quick search I would like to be able to eliminate everything but peer reviewed sources. ... I would like there to be an advanced quick search ... I remember performing searches and wishing there was something like that because the quick search was not enough, but I didn’t want to narrow my search down so far as to pick a topic.”

**Patron Survey Conclusions**

- The right-column of current Alphabetical listings in Datagenie (inconsistent category-grouped listings of databases) can probably be done away with.
- Power-users use Datagenie because they know what databases they want—they don’t need to be told what’s relevant to them.
- The “My Saved Records” feature of Xerxes is extremely important.
- I should look into adding the ability to narrow searches further with an Advanced Search page.

**Library Staff Meeting Responses**

- In Datagenine (the alphabetical listing of databases), the database titles link to an informational page before linking to the actual database. In Xerxes, database titles link to the database itself, by default. Now that the alphabetical and subject listings are being integrated, what should be the default?
• Breaking subjects down by college presents us with some unforeseen problems. What about subjects that aren’t a part of a college at Cal Poly (eg. Law)? Those subjects shouldn’t be shoved into some “Misc.” category, either.

• The library’s site-wide “Quick Search” bar searches different article databases than the Xerxes-based “Quick Search” page.

• Some people might still want a page with only an alphabetical list of databases, Datagenie-style, instead of only having a page with both subject and alphabetical orderings.

**Library Staff Meeting Conclusions**

• In Xerxes, each row in the alphabetical list should link by default to the database itself. However, on mouse hover, database links should be supplemented with a visually distinct “more info” link that links to the informational page.

• In regards to breaking down subjects by college, a more flexible system will need to be implemented in the future, such as simply using an arbitrary system of overarching subjects.

• The Alphabetical listing will get its own page before campus-wide rollout. The link to this page will appear when the mouse hovers over the Alphabetical listing column’s heading on the front page.
Chapter 3
Procedures and Results

Due to the tight schedule, I began the Design and Implementation phases of the Xerxes redesign before I had completed the Discovery phase. I therefore had to be flexible during the Design and Implementation phases and implement changes if new/different needs were identified in Discovery. Most pages, however, followed this general Design and Implementation process:

- I worked on one page at a time, where I began by sketching wireframes and interface element ideas on paper, looking for general solutions that appeared to work best for a given page. I tried new ways of doing things—dynamic alphabetical lists instead of static vertical listings, for example—as well as old ways. I purposely avoided using too much detail in the sketches because what looks nice on paper often doesn’t work well in actual use. Sketches are only a starting point, which I use to dictate the overall direction of a page or function.

- I did much of the actual design work while writing each page’s underlying code, going back to Photoshop only when I needed to generate graphics for an element. Doing so is a big advantage over working from pre-made Photoshop comps because I can continually make changes as needed instead of needing to go back to my sketch pad and Photoshop over and over again if a particular user interaction doesn’t feel right. When designing while writing the code, I can actually use each design iteration—I can click buttons and navigate forward and backward rather than stare at a Photoshop file and try to guess how it would feel in use. For each page in Xerxes,
I worked from my sketches for a particular page or element to update the existing XSL file for a page, writing new XSLT where needed. After I was satisfied with the HTML of a page, I wrote the required CSS for the page and its elements to achieve the layout and look I wanted.

- After the initial implementation of a page, I thoroughly tested it in a web browser. Did the overall design of the page make sense? Were elements placed where an user would expect to find them? Was the layout a logical continuation from the previous page? Would it provide a logical springboard for the next page, if there was one? Any problems I found I either fixed directly in the HTML and CSS or, in the case of more significant layout or design problems, re-sketch and re-implemented from scratch.
A general overview of Xerxes’ workflow in the typical use cases.
The first sketches I did were actually of the existing design and workflow of Xerxes. These simple versions of the existing design helped me look at everything from a high-level point of view and identify places that could be improved.
One of the first front page sketches used a tabbed interface that was later scrapped because it still required an extra click for users who preferred the alphabetical list.
Later sketches included more detail about link locations and other interactive elements, as well as overall layout of the pages.

**Results**

Final page designs are shown below.
Fig. 1—Index Page

The main page of Xerxes contains both a listing of subjects and an alphabetical list of all databases (replacing functionality from Datagenie). Links under the “Databases by Subject” heading link to their respective subject search pages (Fig. 5).

The blue “Article Databases” is a new element that can be modified and used in any other library web application. Existing library web applications typically do not have their
own headers, which can make it difficult for users to determine if they are using the web application or if they’re looking at another library page. This header solves the problem by giving Xerxes its own distinctive header that exists across all Xerxes pages. The user’s current location in the library web site is no longer ambiguous. Other library web applications can take advantage of this header but with modifications to the background color and the typography of the web application name.
The alphabetical list of databases is a compact drawer-style listing of all databases that the library subscribes to. The blue box of letters allows the user to select the first letter of the database that they are looking for. When the user clicks on a letter, the drawer displaying the current letter slides up and the list of databases with names that start with the selected letter slides down (Fig. 3).

The database titles themselves link directly to the database, which is consistent with how database title links work throughout Xerxes. If the user is off-campus, they will be routed through the My CalPoly portal first before being sent to the database so that they can be authenticated as a Cal Poly student or employee. When the user hovers over a row, a blue “i” icon will appear next to the row (Fig. 2). This icon links to the database information page (Fig. 4).
function hideAlphaList() {
  $$('p#alpha-index a').each(function(link) {
    $(link.getAttribute('href').split('#')[1]).hide();
  });
}

function alphaSelected(anchor) {
  var contentBody = $(anchor.getAttribute('href').split('#')[1]);

  /* Hide active body */
  anchor.removeClassName('active');
  $$('#alpha-index a.active').each(function(link) {
    link.removeClassName('active');
  });

  $$('#alpha-body div.active').each(function(div) {
    Effect.SlideUp(div, {duration:0.5,queue:'end'});
  });
}

The drawer animation is powered by the following JavaScript, which relies on the Prototype and Scriptalicious JavaScript libraries:
The Alphabetical list is setup on page load with the following JavaScript in the Body tag’s “onload” attribute, which is fired when the page is loaded:

```html
<body id="l2‐splash" onload="hideAlphaList(); alphaSelected($('a‐link'));">
```

The “hideAlphaList()” function hides the alphabetical list. The entire alphabetical list is visible by default as one tall column to allow users with JavaScript turned off the ability to use the alphabetical listing of databases. This is also an accessible default for screen-readers. With JavaScript enabled, however, the list is collapsed. The Body tag’s “onload” event also calls the “alphaSelected()” function on page load. This opens the drawer of “A” databases, providing a quick hint to users on how the Alphabetical listing works.
All database titles in Xerxes link to a database information page (Fig. 4). This page contains information about a particular database, including a direct link to the database itself as well as information about what kinds of articles the database contains and what its coverage of articles is (whether it is restricted by date or format, for instance).
Subjects, as listed on the main page, link to a subject page which contains a search box and a list of databases. Each database has a checkbox, which determines if that database will be included in the search.
The search box contains a “More options” link which, when clicked, displays another row of search options, allowing users to use a boolean operator to include more search terms or exclude results from their search.
Because Xerxes aggregates search results from several different sources, it can take a while for all the article databases to compile their list of search results and return them to Xerxes. It is therefore necessary for Xerxes to have a search progress page. The search progress page displays information about what databases are being searched, whether the search is still in-progress or has completed, and how many results that database has returned. Once all databases have returned their search results, the user is sent directly to the search results page (Fig. 8).
The search results page initially displays a listing of “Top Results” from the databases it searched. This list contains what Xerxes thinks are the most relevant search results are. The search results header allows the user to sort their search results by
relevance, publication date, article title, and article author. The sidebar (Fig. 8) allows the user to view the search results from each database individually.

Search result rows contain a brief summary of the article and various details about the article itself including format, author, year of publication, and publishing journal. The bottom row of each search results contains two elements: The first is an availability link. If the article is available in full-text online, the link will take the user directly to that article. Otherwise, the link will take the user to Robert E. Kennedy Library’s “Find It” service, which determines if any of the library’s services can provide the full text of the article, whether its another database or from the library’s print journal collection. The second link in this row is the “Save this record” link which allows the user to save the search result for later retrieval (Fig. 11).
Clicking on the “Save this record” link saves the record without reloading the page—it does it in-place. After saving, the icon and text of the link is changed to reflect its status as saved. Clicking on it again will remove the record from the user’s list of saved records.
Fig. 11—My Saved Records

Temporary Saved Records

if you want to save and retrieve your records on other computers, please log-in.

Saved Records (1-13 of 13) Sort by: title | author | date | most recently added

Between Text and Image in Kandinsky’s Oeuvre: A Consideration of the Album “Sounds”
Format: Article By: Short, Christopher Year: 2006 Published in: Text Papers
Covers the topics: Kandinsky, Wassily 1866-1944 Russian painter.; Poetry and art.; Art and sound.; Graphic design.; Synthesis (Aesthetics)

Artists of the 20th Century: Wassily Kandinsky
Format: Article By: Herboltz, Barbara Year: 2007 Published in: Arts & Activities

Kandinsky: The Path to Abstraction
Format: Book Review By: Smith, Douglas F Year: 2007 Published in: Library Journal
Covers the topics: Fischer, Hartwig; Reinhold, Sean; Kandinsky: The Path to Abstraction (Book); Book reviews; Books Book reviews

Kandinsky: L’invention De L’abstraction
Format: Article By: Merrel, Guillaume Year: 2006 Published in: L’Oeil
Covers the topics: Kandinsky, Wassily 1866-1944 Russian painter.; Criticism--Comment (Exhibition); Abstraction; Exhibitions.

Composition VI
Format: Article By: Hess, James C Year: 2007 Published in: Archives of General Psychiatry
Covers the topics: Kandinsky, Wassily; Works; Kandinsky, Wassily; Appreciation; Composition VI (Painting); Evaluation

Kandinsky Retrospective
Format: Article Year: 2009 Published in: Moscow News
Covers the topics: Kandinsky, Wassily; Exhibitions; Artists Exhibitions; Art, Abstract Exhibitions; Germany

Export Records
Email
Text
Networks
Endnote / Zotero
Limit
Article 12
Book Review 1
The My Saved Records page contains a list of the users saved records. If the user is not logged-in (via the My CalPoly portal), their saved records will only be saved until they close their browser window—they will not be saved across sessions. The most important feature of the My Saved Records page is the sidebar (Fig. 12).

*Fig. 12—My Saved Records sidebar*

<table>
<thead>
<tr>
<th>Export Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
</tr>
<tr>
<td>Text</td>
</tr>
<tr>
<td>Refworks</td>
</tr>
<tr>
<td>Endnote / Zotero</td>
</tr>
<tr>
<td><strong>Limit</strong></td>
</tr>
<tr>
<td>Article</td>
</tr>
<tr>
<td>Book Review</td>
</tr>
</tbody>
</table>

The My Saved Records sidebar allows the user to do two important things: 1) Export their records (Fig. 13) and, 2) view their saved records by format.
Each Export Records page allows the user to specify some export options and select which of their saved records they would like to export. Although this page is functional, it needs some usability improvements in regards to selecting which records to export. Currently, the user selects one of two radio buttons: “Send ( ) all of my saved records” or “Send ( ) only the records I have selected”. Regardless of which option the user has selected, the list of records on the right displays checkboxes next to every row. This process is,
essentially, a two step process. A better method would be to make the selection of records a one step, explicit process, with all records selected by default (Fig. 14).

![Fig. 14—Revised Export Records Page](image)

If the user wants to export all records, no action is needed. If they want to select a lot of records, they can un-select the few they don’t want. If they want to select only a few,
they can click “Select: None” and select the few they want. All three scenarios requires the least number of steps.
Chapter 4
Summary and Recommendations

In general terms, my Senior Project was a success. I fulfilled all of the objectives I set for myself and was able to make progress on tasks that I originally defined as outside the scope of the Senior Project. I will also be able to use the project as a significant portfolio piece that demonstrates my skills as a web developer above and beyond the typical Graphic Design graduate. I met each project deadline on time—some of them ahead of time—and was never truly pressed for time to do so, despite the tight deadlines I worked under. I worked roughly 18 to 20 hours a week on the redesign, which I think was an appropriate amount for the scope of the project and the timeframe I was working under.

In terms of design, redesigning Xerxes was an interesting study of restraint. After all, I am a Graphic Design major and the natural inclination of the Graphic Design student is to, well, design. Preferably with as many colors and fonts as possible, it often seems. Instead, Xerxes required the absolute minimum design possible. When designing web applications, anything that isn’t absolutely required for the user to accomplish what they want is visual noise and only serves to get in the way of the user and what they want to accomplish. Many of the most popular sites on the internet—Google, Wikipedia, Craigslist, Amazon, Flickr, and so on—use a minimal amount of design in their sites because their sites are designed to be used, not looked at. Consequently, the focus of my redesign was the user experience in using the web application, something that isn’t taught in any class in the Art department of Cal Poly. Print design rarely requires interaction from its audience, particularly when excepting things like bound books and other pieces that must be
physically manipulated to be used. Web design, however, is defined almost entirely as an interactive experience between a real human being and a web site.

I would like to see the Art department of Cal Poly implement a robust web design curriculum in the future. As it stands, the Art department offers few opportunities for Graphic Design students who wish to pursue careers in web design, a significant field and a major employer of graphic design graduates from universities across the U.S. Current Cal Poly web design classes are limited to the instruction on the use of basic web design tools—like an Architecture class teaching the use of pencils and erasers on paper but not how buildings should actually be designed. However, web design is a vast field that requires a designer to do more than just “make pretty pictures.” The web designer must consider how the websites are structured, how users will interact with the site, how users will skim the content of a site, how the site will work or not work in various browsers of various age, how search engines (primarily, Google) will index the site, and how the site will need to be maintained and updated in the future, among a wide array of other things.

Despite the lack of a rigorous web design curriculum and thanks in large part to the willingness of Robert E. Kennedy Library, my employer, to give me the freedom to tackle increasingly large web design and development projects, however, I was well equipped to handle the redesign of Xerxes with the aim of using it to showcase my web development skills in my portfolio, which I am using to help me find a job as a web developer.