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Technology Left Behind — Let's Go Zotero

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The development of bibliographic management services has fundamentally changed the way many researchers keep track of their research resources and create bibliographies. Gone are the days of 3x5 note cards with facts and citation information scribbled on them. Instead, software programs and Websites designed to help users keep track of their research resources have replaced the traditional, and more tedious, processes for citing sources. Products such as **EndNote**, **RefWorks**, **ProCite**, and **Noodletools**, only a few examples of the citation management products available on the market, have become a fixture on the desktops of researchers at academic institutions of all shapes and sizes. While they differ in their approach to the task, these programs, which range from very simple bibliography generators to more high-level research tools, enable users to save citation information and generate bibliographies electronically.

Introducing Zotero

In October 2006, the **Center for History and New Media** at **George Mason University** released the beta version of **Zotero**, an alternative to commercial bibliographic management products like **EndNote** and **RefWorks**. Funded by the **United States Institute of Museum and Library Services**, the **Andrew W. Mellon Foundation**, and the **Alfred P. Sloan Foundation**, **Zotero** is a free, open source research tool designed to help users collect, manage, and cite their research sources. Since its release, **Zotero**, whose name is “loosely based on an Albanian word meaning ‘to acquire, to master’” (<http://gazette.gmu.edu/articles/9088>), has grown into a robust tool for harnessing and organizing research resources.

Zotero is a plug-in for the **Firefox** browser. Users must first have **Firefox** installed on their computer to be able to download, install, and

use **Zotero**. The program cannot be used with **Internet Explorer** or other browsers. Once **Zotero** is installed, the **Zotero** icon appears in the lower right hand corner of the **Firefox** window. Opening the **Zotero** plug-in is as easy as clicking on the icon. While it is necessary to have **Firefox** open to be able access the **Zotero** window and the citation library, it is not necessary to be online to use the application.

One of the key factors that sets **Zotero** apart from other bibliographic management tools is this integration into the **Firefox** browser. (Similar bibliographic management tools are, by design, independent from the browser. **EndNote** must be installed on a user's computer, saving the citation information on the computer's hard drive, while **RefWorks** is a Web-based solution. Users navigate to the **RefWorks** Website to access their saved bibliographic citations.) When open, **Zotero** appears in the lower half of the **Firefox** window, enabling users to pull item(s) from a Website or from a list of search results directly into their citation library without ever leaving their browser. **Zotero** is able to remain open while users browse the Web, and items can be added to the citation library with the click of a mouse.

The Zotero Interface

The **Zotero** window has an easy-to-use iTunes-like interface, divided into three columns. The left column contains the “My Library” folder, which holds the complete library of items that have been saved. The full library can be sub-divided into individual collections. Each collection is represented by a folder, and the folders can be arranged hierarchically. The middle column displays all of the items in whichever collection (folder) is highlighted in the left column. An item could be a book, article, Webpage, or other information source, and a single item can be included

in multiple collections and folders. The right column is divided into five tabs: Info, Notes, Attachments, Tags, and Related. Each tab contains information about the item that is highlighted in the middle column.

The Info tab contains all of the citation information about an item, as well as the URL for the item, if it is available. On the Notes tab users have the ability to make notes about the selected item. These notes are searchable, and multiple notes can be added to a single item.

The Attachments tab enables users to attach files to an item. For example, a PDF image or the HTML version of an article could be attached to the article's record. In addition to capturing PDFs, **Zotero** can be used to archive Web content by capturing screenshots of Webpages. Users can highlight text and add annotated notes to the screenshot of the Webpage. This functionality means that **Zotero** can serve not only as a citation library, but also as a document library. By attaching images of articles and Webpages to the citation information in the **Zotero** library, users can use **Zotero** to keep track of and archive their actual research resources, not just the accompanying citation information.

The Tags tab enables users to categorize their items by inserting tags or subject headings. Tags can be browsed, searched, and edited globally. In some cases, when importing records from library catalogs or databases, **Zotero** will automatically pull the subject headings in with the citation information and pre-populate the Tags tab. The Related tab is used to relate one item in the **Zotero** library to another. For example, if a user has imported records for items on the same topic or by the same author, the items can be related to each other.



Standards Column from page 82

review and approval by the **Business Information Topic Committee**. Along with this core working group, a larger monitoring group will be formed that will allow interested individuals and organizations to be kept abreast of the working group's activities and to have the opportunity to provide input and feedback to the working group. If you or your organization is interested in participating in the monitoring group, please contact the **NISO** office.

The initial interest in this project has been significant and speaks to the complexity of the problems our community face managing the relationships among and between institutions that purchase content. While many important issues remain to be addressed, we have confidence that the developing working group will satisfactorily resolve them. In the end, we hope

there will be some added clarity surrounding much of the key identification data needed to provide information to institutions. 🌱

Endnotes

1. **Dun & Bradstreet Website** — http://www.dnb.com/US/duns_update/
2. **The SAN** — http://www.niso.org/standards/standard_detail.cfm?std_id=528
3. **SAN History** — <http://www.isbn.org/standards/home/isbn/us/san/san-history.asp>
4. **BISAC** — <http://www.bisg.org/bisac/>
5. **ISO 15511 - ISIL** — http://www.iso.org/iso/catalogue_detail?csnumber=27979
6. **Journal Supply Chain Efficiency Improvement Pilot Report** — **Chvatal, D.**, Editor. http://www.journalsupplychain.com/white_papers/JSCEI_Report_Final_Draft_20080111r.pdf

Importing and Exporting

Zotero is unique in its ability to pull citation information from Websites and import it directly into the **Zotero** citation library. Translators are created for various Websites that allow **Zotero** to “sense” or extract citation information and metadata elements on Websites. (A list of **Zotero**-compatible Websites can be found at: <http://www.zotero.org/index.php/translators/>). When **Zotero** detects items such as books or articles on a Webpage, an icon will appear on the far right side of the **Firefox** location bar, where the Web address or URL is displayed. To save the citation information about the item displayed on the Webpage in **Zotero**, it is as simple as clicking on the icon in the location bar. If more than one item is displayed on a Webpage, such as in search results from a library catalog or on a Website like **Amazon**, a list of items will be

continued on page 84

displayed. Users need only check the items they want to save.

If a translator is not available for a particular Website or for whatever reason **Zotero's** automatic sensing function cannot be used, it is possible to add items to the **Zotero** library manually. Users pick one of 34 different source types (i.e., book, journal article, presentation, film, etc.) and then fill in the rest of metadata for the item. In addition, citation libraries that have been saved in other bibliographic management products can be imported into **Zotero**.

Data can be exported from **Zotero** in a number of ways. When first downloaded **Zotero** comes with the ability to generate bibliographies in ten different citation formats, including Chicago, **MLA**, and **APA**, and additional citation formats can be downloaded from the **Zotero** style repository (http://www.zotero.org/documentation/citation_formats).

Similar to **EndNote** and **RefWorks**, **Zotero** will integrate with word processing software. Plug-ins are available for **Microsoft Word** and **Open Office**. The plug-in enables users to access their **Zotero** libraries through their word processing software. Once the plug-in is installed users can insert and edit both citations and bibliographies using a set of icons that appear in the word processing software's toolbar. Users of word processing programs other than **Microsoft Word** and **Open Office** can export citations to a clipboard and paste their bibliographies into their documents. (http://www.zotero.org/documentation/word_processor_integration)

Limitations

One of **Zotero's** significant limitations is portability. Because the tool is integrated with **Firefox**, users cannot access their **Zotero** files without the browser. There is a way around this, though. The Frequently Asked Questions in the Documentation section of the **Zotero** Website recommends installing a portable version of the **Firefox** browser on an external storage device, such as a USB drive or a portable hard drive. The FAQ also provides instructions on how to back up the data in the **Zotero** library to an external device. An external device could also be used to sync-up **Zotero** libraries on different computers. It is worth mentioning that the ability to access a **Zotero** library from anywhere on the Web is a planned feature for future development, as is the ability to back-up and sync-up the citation library remotely.

While **Zotero** is a powerful tool for storing and organizing items, there are some issues to be resolved in the formatting of citations for bibliographies. In an October 2007 review of **Zotero** in *The Charleston Advisor*, **Jane Kessler** details errors made in the formatting of citations for a book and an article in both the **MLA** and **APA** styles. For the purposes of this review, I put the same two items that **Kessler** used into my own **Zotero** library, and exported them in **MLA** and **APA** to see if the errors in citation formatting that **Kessler** pointed out were still present. See the citations

I exported below.

Book citation in MLA Style:

Golden Arches East: McDonald's in East Asia. Stanford, Calif: Stanford University Press, 2006.

Article citation in MLA Style:

Brown, Douglas M. "The Restaurant and Fast Food Race: Who's Winning?." *Southern Economic Journal* 56.4 (1990): 984-995.

Book citation in APA Style:

Golden arches east: mcdonald's in east asia. (2006). (2nd ed), 256. Stanford, Calif: Stanford University Press.

Article citation in APA Style:

Brown, D. M. (1990). The restaurant and fast food race: who's winning?, *Southern Economic Journal*, 56(4), 984-995.

Interestingly, some of the errors **Kessler** noted have been corrected, while others have not. For example, when **Kessler** conducted her review, the book title in the **MLA** style was in italics when it should have been underlined. As can be seen in the example above, that error has been corrected. However, **Kessler** also noted that the editor of the book was not listed in the citation when it should have been. That error is still present in the citation I exported.

Like **Kessler**, I retrieved the article citation from **JSTOR**. When **Kessler** exported the article citation from her library, the citations included a URL and a retrieved date. When I exported the article citation from my **Zotero** library, no online access information is included. It is impossible to tell that I accessed this article electronically at all. While it appears that some work is being done on the citation formatting, neither the **APA** or **MLA** styles are being reproduced accurately at this time.

Getting Started

The easiest way to get started with **Zotero** is to view the **Zotero** screencasts available on the **Zotero** Website. (http://www.zotero.org/documentation/screencast_tutorials). The screencasts walk through the tool's functionalities, demonstrating such features as finding and searching for items, managing a collection of items, tagging items, and archiving and annotating Webpages. In addition to the screencasts, the **Zotero** Website includes extensive documentation on the development of **Zotero**. The Forums area of the **Zotero** site is particularly active, allowing **Zotero** users to connect with each other and exchange ideas, tips, and customization solutions.

Despite the limitations mentioned above, **Zotero** is a powerful research tool, and well worth looking investigating as an alternative to commercial bibliographic management tools. It provides seamless integration with the **Firefox** Web browser, and offers users robust tools for organizing and accessing their research resources.

Sources

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I Hear the Train A Comin' — Stanford in Second Life

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I recently came across an interesting press release put out by the **Stanford University Libraries and Academic Information Resources (SULAIR)**. The university had created a virtual library within **Second Life**. For those not in the know, **Second Life** is a virtual reality platform in which more than eight million people meet, socialize, debate, and interact. A number of higher education institutions have established a presence within **Second Life**, with activities ranging from virtual lectures to reference services on demand to social commons. I recently interviewed two of the founding forces behind **Stanford's** foray into this brave new (cyber)world — **Rachel Gollub**, Manager of Development and Research within the **Digital Library Systems and Services Group**, and **Deni Wicklund**, **SULAIR** Technical Support Manager.

Why did Stanford decide to launch a Second Life presence?

We explored **Second Life** from a number of perspectives, including research and experimentation, platforms for teaching and learning, and community resources and library access. We also visited a number of educational and library sites in **Second Life** to get the feel for what others were doing. We were impressed by the diverse uses and the success of locations like **Info Island** and the **Harvard Law School** lectures, and felt we could add value to our library offerings and raise our profile by opening a site in **Second Life**. It also gives us an opportunity to showcase some of our more obscure collections and resources; we are currently displaying some of our digitized collec-

continued on page 85