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A Dead Link, or a Final Resting Place

Link rot in legal citations

By Nick Szydowski

A webpage's URL is often referred to as its address, but frequently it is more like a short-term sublet than a permanent home. The Internet Archive estimates that "the average life of a Web page is only 77 days if no effort is made to preserve it." But the impermanence of web resources has not stopped their citation in law review articles and judicial opinions. A recent study published in the *Yale Journal of Law and Technology*, "Something Rotten in the State of Legal Citation: The Life Span of a United States Supreme Court Citation Containing an Internet Link (1996-2010)," by Raizel Liebler and June Liebert, found that from 2010 to 2010, 14 percent of Supreme Court opinions contained a URL citation and that 29 percent of those URLs were now dead. A Harvard study, "Perma: Scoping and Addressing the Problem of Link and Reference Rot in Legal Citations," by Jonathan Zittrain et al., reported that as many as 70 percent of law review citations that use URLs do not link to the cited material.

This problem is not unique to the law, but legal scholarship has lagged behind other types of scholarly communication in taking measures to address the issue of link rot. There are now a number of options, both established and emerging, that the legal community should adopt in order to create sustainable citations to internet resources.

Document Object Identifier (DOI)

Providing persistent access to digital information is a complex undertaking. The first step must be to curate and preserve the content itself—easy enough, right? However, even the most stable digital repositories may, over time, require changes that affect the URLs of the items they contain. For this reason, we also need systems to ensure that even when archived content moves, there is a permanent URL that always points to its current location.

For scholarly journals other than law reviews, the Document Object Identifier (DOI) system serves this purpose. A DOI is a unique identifier for a digital object such as a journal article. The DOI is stored in a registry along with metadata about the item it refers to, including that item's current address. Since June of 2000, more than

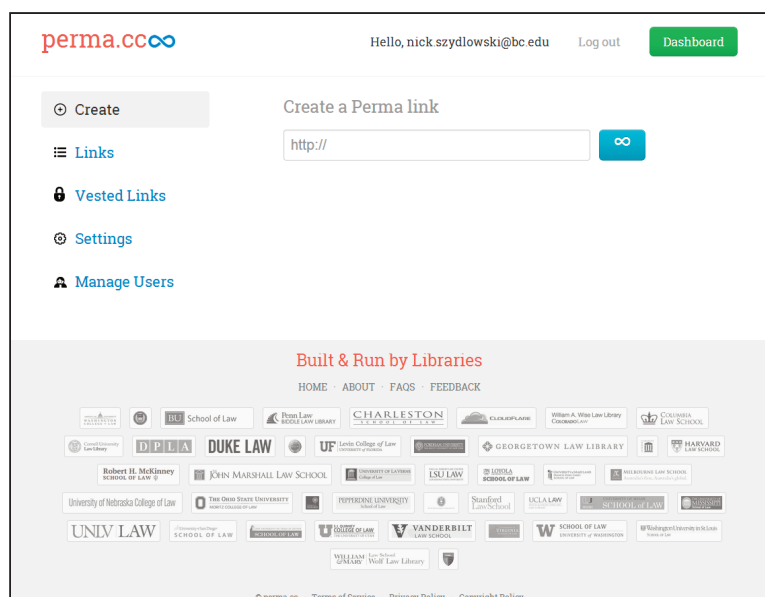


45 million journal articles have been added to the CrossRef DOI registry.

A DOI provides a persistent URL for use in citations. For example, one recent article by Boston College Law School faculty member Dean M. Hashimoto has the DOI of 10.1002/ajim.22120. Entering the URL dx.doi.org/10.1002/ajim.22120 into a web browser will automatically redirect you to the publisher's current webpage for that article. If Wiley, the publisher, redesigns

registry for publication metadata. Failing to use DOIs reduces the visibility of legal scholarship and limits the ability of legal scholars and law schools to take advantage of emerging digital services.

At the Boston College Law Library, we are investigating the possibility of assigning DOIs to the law review articles that are published electronically through our institutional repository. In the past, the primary obstacle to assigning DOIs has been CrossRef's requirement that in



its website and changes the URL for the article, or if Wiley stops providing access to the article and access is only available through CLOCKSS and Portico, where the journal (*American Journal of Industrial Medicine*) is archived, the URL or temporary address will be changed in the registry to reflect the item's current location. As long as the registry is kept up to date, a citation that uses a DOI URL will always point to the cited document, even if that document moves to a new URL.

DOIs are used in nearly every field of scholarship, and many citation standards require citation by DOI whenever one is available. Indeed, the DOI is accepted as the standard unique identifier for scholarly articles, and new international infrastructure, such as the Orcid system for providing unique identifiers for individual researchers, has been built to rely on CrossRef's DOI

order to publish with a DOI, journals must cite by DOI whenever one is available. Because the Bluebook standard does not recommend or require citing by DOI, it has not been feasible for us to implement publishing by DOI. Citing by DOI begins a virtuous cycle, which will enable law reviews to assign DOIs to their articles, providing a permanent URL for each article.

Perma

Although DOIs provide a proven solution to the problem of persistent URLs for actively archived and managed digital content, providing a permanent URL for more ephemeral web content presents a different challenge. This is where Perma (perma.cc), a new web-based service developed by Harvard Law School Library, offers a promising alternative.

The goal of Perma is to archive a stable copy of an existing webpage at

a permanent URL. When a law review editor or other user enters a URL into the Perma interface, Perma visits the URL and, using web archiving software developed by the Internet Archive, creates an archived copy of the page. That page is then assigned a new permanent URL, referred to as a Perma Link, which can be used in a citation. A user visiting a Perma Link is presented first with a frame containing the current site, along with links to several views of the archived version of the page, which can be used if the site no longer exists at the cited URL or if the site has changed since it was cited and the user wishes to see the cited version.

More than 40 law libraries have partnered with Harvard to make Perma available to their law review editors. At Boston College, our law reviews started using Perma this past fall, and the editors have generally found the service easy to use and intuitive. We have, however, found it necessary to devote time to educating the editors about how, when, and why to use Perma. One area we focused on in our outreach was making sure that student editors understand and account for the limitations of the service. Web archiving is a complex process, but Perma makes it look and feel easy; editors must be instructed to inspect the archived copy of each site in order to ensure that the content they wish to preserve has been successfully collected. Certain types of content, such as streaming media or articles where text is distributed over more than one webpage, are not as easy for Perma to harvest. In those cases, Perma allows users to directly upload a file to be archived so that a Perma Link can be

assigned to content that Perma was not able to collect automatically. This option has been particularly useful in archiving articles cited from SSRN. SSRN's PDFs are not available at a public URL, but the direct upload option allows these files to be archived in Perma.

Benefits Beyond Citation

Used in concert, DOIs and Perma have the potential to greatly reduce the incidence of link rot in legal citations. Citing by DOI and assigning DOIs to law review articles and other digital objects for which we accept responsibility would ensure that legal scholarship meets the standards of permanence that have been set by the larger scholarly publishing community. For items that do not already have a permanent URL, Perma offers a complete solution, archiving a copy of the original item and providing a Perma Link for use in citations.

Solutions to the problem of link rot exist, and it is time for the legal community to adopt them. In this area, the Bluebook and the *ALWD Guide to Legal Citation* must lead the way by recognizing the permanence of both DOI URLs and Perma Links, by requiring citation by a permanent URL, and by allowing citation to a permanent URL even when a print version is available.

Citing by permanent URL would improve the usefulness of legal citations by reducing, if not completely eliminating, link rot. Citing by permanent URL would also enable law reviews to meet CrossRef's citation requirements and, with the help of their

libraries, to begin assigning DOIs to their own articles, creating a single persistent URL for each law review article.

Allowing citation by permanent URL even when a print copy exists unlocks further benefits. The current print-preferred citation standard has extended the life of print law reviews. Since 2009, 75 law library directors and law librarians have signed the Durham Statement, calling for law reviews to move toward electronic-only, open-access publishing. Allowing citation by permanent URL, even when print is available, would facilitate the move to electronic-only publication at a significant cost savings for law schools over the current environment, where both print and electronic versions must be produced, purchased, and maintained over time.

Link rot not only impacts the individual researcher who struggles to locate cited sources; it impacts the entire legal scholarship infrastructure. The lack of effective systems for providing permanent access to digital sources has artificially sustained print publication. Using a combination of Perma and DOIs, law reviews are now in a position to create reliable, permanent citations to online sources. Law reviews and law libraries should work together to begin citing by permanent URLs and to move toward publishing their own articles with permanent URLs provided by DOIs. ■

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