On-Line Self-Archiving of Articles: Are We Ready?

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As I have written in an earlier editorial, scientific articles are stored and accessed by people, readers, and researchers in several ways.[1] The most popular article repositories in the United States are the Websites of individual scientific journals (eg, www.ajnr.org) or the government-sponsored PubMed. Universities such as Harvard are creating repositories of their own, too. Investigators strive to maximize access to their work because funding and salaries are dependent on its impact. Recently, a different way to archive one's work has become available (and encouraged by some institutions): self-archiving.[2]

Self-archiving Websites are open access (OA), self-administered, and may contain any type of publications: from prepublished to peer-reviewed articles with URLs (uniform resource locators) and DOIs (digital object identifiers). The idea of these self-archives is that they supplement the expensive access offered by commercial publishers. Self-archives are not intended to take the place of peer-reviewed repositories, though there is evidence that OA articles are quoted anywhere from 25% to 250% more than non-OA publications.[2] The Registry of Open Access Registries (ROAR; www.roar.eprints.org) lists 228 sites in the United States; 110 in the United Kingdom; and lesser numbers in Germany, Brazil, Japan, Canada, and France. The ROAR Website allows searches by countries, content type, system software, and name. To build an independent electronic self-archive, a software program is needed and one can be found, free, on the Web (www.eprints.org). This program allows for incorporation of literature, scientific data, and multimedia into individual Websites and contains other powerful features such as the ability to interface with reference managers, Google Scholar, Web 2.0, and RSS (Really Simple Syndication) feeds. Two universities (Cornell and Southampton) contributed with the International Digital Libraries Research Program to fund OpCit (the Open Citation Project; http://opcit.eprints/org). Together, they developed Citebase search, a utility that searches OA sources and is thought to be better than Google Scholar. OpCit also developed other tools including user interfaces of archives (GNU Eprints), a cited papers locator (Paracite), and user-based evaluations of OA sites.

Are individual article repositories of equal quality to those offered by peer-reviewed publications? The answer is no. Less than 60% of authors replace prepublished articles with their peer-reviewed equivalents.[3] Some prepublished articles are only updated by accepted abstracts on these Websites, leaving the rest of the articles without formal support. What is true is that as time goes by, incremental and cumulative numbers of prepublished papers have their journal reference entries added, and that approximately 34% of articles initially loaded into OA sites have been peer reviewed.[4] The number of hits a paper receives (ie, the number of times someone looks at it) is proportional to the number of deposits, meaning that papers found in more than 1 repository will be accessed and cited more often.[5] The number of citations an OA paper receives is maximal during the first 3 years that follow its appearance, and most citations are received by papers that have been published in prestigious journals, stressing the importance of peer review.[6] Regardless of authors' impact factors, all authors prefer to cite articles with a high, rather than a low, impact factor.[7] ArXiv is an OA on-line repository that contains nearly a half million e-prints in physics, mathematics, computer science, quantitative biology, and statistics (http://arxiv.org). Most authors who use this service deposit their prepublished papers there as long as they believe that these are of high quality. The effects of limiting OA for 6 to 12 months (as the *American Journal of Neuroradiology* [*AJNR*] does) have not been determined. If one looks at the papers deposited in arXiv, it is true that once the authors are permitted to post them there, the number of citations they receive increases.

Despite all of these apparent advantages, only 15% of researchers self-archive in Web-based OA initiatives.[8] The major US institutions to offer OA include Case Western Reserve University, Cornell University, the University of California, the University of Kansas, the National Institutes of Science, Howard Hughes Medical Institute, and Harvard University. As we migrate into OA systems, university and promotion committees will grow less dependent on the impact factor and will have to learn to use other metrics including download counts, citation growth, and decay rates, which are more difficult to understand and compare. Citebase search, which I have mentioned earlier, is an upcoming device that may provide useful information regarding these metrics (http://citebase.eprints.org).

I do not know of any neuroradiologists who have their own article repository. With our busy clinical practices and administrative responsibilities, I am not sure that many of us are in a position to create and maintain such an endeavor. I believe that *AJNR* on-line is an excellent repository of articles as its statistics for 2007 show: nearly 400,000 hits to our Website homepage, nearly a half million searches, and 3.5 million articles viewed! As a journal and a scientific society, we will be obligated to look at innovative financial models that will allow us to become better aligned with the OA movement. Meanwhile, our contributing authors can be assured that their articles are getting a wide audience, and our readers can be assured that they are reading high-quality, peer-reviewed literature.

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