BRIEF COMMUNICATION

# Applying the Author Affiliation Index to Library and Information Science Journals

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**The authors use a novel method—the Author Affiliation Index (AAI)—to determine whether faculty at the top-10 North American library and information science (LIS) programs have a disproportionate presence in the premier journals of the field. The study finds that LIS may be both too small and too interdisciplinary a domain for the AAI to provide reliable results.**

## Introduction

The Author Affiliation Index (AAI) of a journal (or set of journals) is defined as the percentage of authors publishing in that journal (or set) who are affiliated with a predetermined group of top-rated universities (or university departments). The AAI has been used to answer the following question: "Do faculty at the most prestigious universities have a disproportionate presence in the premier journals?"

Harless and Reilly (1998) conceived the AAI and described its application in an internal working paper at Virginia Commonwealth University. Gorman and Kanet (2005) subsequently used it to evaluate systematically a set of journals in the field of operations management. Chen and Huang (2007) used the AAI to rank a set of finance journals, and Ferratt, Gorman, Kanet, and Salisbury (2007) used the index to assess information systems journals. Each of these studies concluded that the AAI constitutes a credible and easy-to-use means of rating journals and correlates positively with existing domain-specific rankings such as faculty surveys of journal quality (for additional confirmatory evidence in this regard, see Gorman & Kanet, 2007, p. 53).

The AAI, it is claimed, offers an alternative journal-ranking method to bibliometric indicators (e.g., impact factor) and opinion surveys, one that it is "robust . . . relatively objective, transparent, and stable" (Gorman & Kanet, 2005, p. 17). In addition, the AAI can be applied to any set of journals and any set of institutions. Ferratt et al. (2007, p. 720) describe the logic behind the AAI:

> More of the best researchers tend to be affiliated with the top universities because those universities act to attract such faculty. These faculty "vote" on a journal's quality by submitting their best work to the journals that have the reputation of being the highest quality journals. Faculty at top quality universities seek to publish most in the top journals as these journals tend to have the most favorable impact on tenure and promotion. The highest quality journals have policies and procedures that lead them to publish the best work. While acceptance or rejection decisions are made without regard to author affiliation, the causal chain described here generally results in high quality journals having the highest percentage of articles published by authors affiliated with the top quality universities.

Naturally, there will be exceptions to this general rule or "association tautology" (Gorman & Kanet, 2005, p. 6). Some outstanding researchers may choose to work at an institution of modest rank for any one of a number of reasons (e.g., personal, financial, lifestyle-related, ideological). And we also know that the effects of institutional affiliation can, *pace* Ferrat et al., sometimes influence publication decisions, established norms notwithstanding (see Peters & Ceci, 1982).

Here, for the first time, we apply the AAI to library and information science (LIS) journals to explore its potential utility to the field. We focus on faculty in North American LIS programs accredited by the American Library Association (ALA).

## Calculating the AAI

In general, we followed—as did Ferratt et al. (2007)—Gorman and Kanet's (2005) operationalization of the AAI. Consider an article $i$ from journal $j$. Let $n(i)$ be the total number of authors for article $i$. Let $x(i)$ be the number of authors for article $i$ from the top-set (the top-10 ALA-accredited

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TABLE 1. AAI of the top-10 LIS journals.

| Journal | Sum of numerator | Sum of denominator | AAI | Adjusted ranking *in JCR* 1998–2006* | Adjusted Nisonger & Davis ranking (pp. 350–353)* |
|---|---|---|---|---|---|
| *Information Processing & Management* | 22.7 | 38.9 | 0.58 | 5 | 3 |
| *Information Research*** | 26.2 | 47.2 | 0.56 | 7 | 12 |
| *Journal of the American Society for Information Science and Technology* | 19.3 | 39.4 | 0.49 | 1 | 1 |
| *Library & Information Science Research* | 22.1 | 45.3 | 0.49 | 12 | 4 |
| *Journal of Documentation* | 21.0 | 45.0 | 0.47 | 2 | 5 |
| *Library Quarterly* | 16.8 | 47.0 | 0.36 | 10 | 2 |
| *Scientometrics* | 12.7 | 39.7 | 0.32 | 6 | 7 |
| *Library Trends* | 11.7 | 47.0 | 0.25 | 13 | 8 |
| *Journal of the Medical Library Association* | 6.8 | 40.2 | 0.17 | 8 | 15 |
| *College & Research Libraries* | 15.3 | 38.0 | 0.40 | 4 | 10 |

*Note*. Some journals (e.g., *Journal of Information Science* and the *Journal of Academic Librarianship*) did not appear in our sample because they ranked among the top 15 in one source, but not in the other.

*After removing non-LIS journals (e.g., *MIS Quarterly*, *Journal of the American Medical Informatics Association*, *Information Systems Research*, *Information & Management*, and *Journal of Management Information Systems*). Also excludes the *Annual Review of Information Science and Technology*.

**The *JCR* ranking is based on the years 2004–2006.

schools). Let $y(i)$ be the number of academic authors for article $i$ not from the non-top-set (the other 46 ALA-accredited schools). For any sample set $(m)$ of journal articles, the AAI for journal $j$ is computed as:

$$\mathrm{AAI}_j = \frac{\sum_{i\in m} x_i/n_i}{\sum_{i\in m}(x_i + y)/n_i}$$

The Appendix provides a worked example, which allows one to see how contributions to the numerator and denominator are calculated for a set of nine articles in a notional journal issue. The proportion of each author's contribution to an article is given fractional credit, provided the institution belongs to either the top-set or the non-top-set of ALA-accredited LIS programs. Authors not at one of the 56 programs (e.g., CNI, Harvard) are excluded from $x(i)$ and $y(i)$. By way of illustration, Article 9 has three authors with different institutional affiliations: Library of Congress (LC), National Library of Medicine (NLM), and Simmons. Neither LC nor NLM is an ALA-accredited program and, as a consequence, contributes nothing to either the numerator or the denominator. Simmons is a non-top-set school and thus contributes nothing to the numerator, but fractional credit (0.33) to the denominator. The higher the AAI score (1.00 is the upper bound), the greater the proportion of authors from the top-set publishing in the leading journals.

## Methods

### *Sample Construction*

Our journal sample comprises 10 of the leading LIS journals based on ratings by deans and directors of North American programs accredited by the ALA (see Nisonger & Davis, 2005) as well as on *Journal Citation Reports* (*JCR*) data for the years 1998–2006. We excluded from the rankings non-LIS journals such as *MIS Quarterly*, *Journal of the American Medical Informatics Association*, *Information Systems Research*, *Information & Management*, and *Journal of Management Information Systems*. We also excluded the *Annual Review of Information Science and Technology* because it typically publishes only a dozen or so chapters per year. The full list of journals, along with their adjusted rankings in both Nisonger and Davis (2005) and *JCR*, is shown in Table 1.

Our institutional sample comprises the top-10 ALA-accredited LIS programs (the "top-set") based on the most recent rankings produced by *U.S. News & World Report* in 2006 (see Table 2). The "non-top-set" is made up of the remaining 46 ALA-accredited programs.

### *Data Gathering*

We used Web of Science to identify all research and review articles and notes published in our journal sample. With the exception of articles from three issues of both *Information Research* and the *Journal of Documentation* (*J. Doc.*), Web of Science had complete runs of all volumes used in the study. After downloading the articles and excluding those that were

TABLE 2. Top-10 LIS programs, according to *U.S. News & World Report* (2006).

| School | Ranking |
|---|---|
| University of Illinois at Urbana-Champaign | 1T |
| University of North Carolina at Chapel Hill | 1T |
| Syracuse University | 3 |
| University of Washington | 4 |
| University of Michigan | 5 |
| Rutgers University | 6 |
| Indiana University, Bloomington | 7T |
| University of Pittsburgh | 7T |
| University of Texas at Austin | 7T |
| Florida State University | 10 |


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TABLE 3. Number of items and years examined to reach a denominator of 50.

| Journal | No. of articles and notes | No. of years |
|---|---|---|
| *Information Processing & Management* | 292 | 3.5 |
| *Information Research* | 19 | 6.5 |
| *Journal of the American Society for Information Science and Technology* | 164 | 1.0 |
| *Library & Information Science Research* | 78 | 3.0 |
| *Journal of Documentation* | 365 | 13.0 |
| *College & Research Libraries* | 265 | 9.0 |
| *Library Quarterly* | 81 | 4.0 |
| *Scientometrics* | 1,761 | 20.0 |
| *Library Trends* | 175 | 4.0 |
| *Journal of the Medical Library Association* | 421 | 8.5 |

two pages or less in length, we manually parsed the data to identify the institutional affiliation of all authors of each article; we did so one article at a time, working back from March 2008 until, as recommended by earlier studies, the denominator reached 50 (i.e., until finding the 50th article in a journal that had at least one author from an ALA-accredited program). For some journals, we examined more than a decade's worth of articles to reach a denominator of 50; for others, we needed only 1-year's coverage (see Table 3). For those articles that did not include institutional affiliations or had incomplete affiliation information, we used the Web to fill in the gaps.

Unlike previous studies, which calculated the AAI based on author affiliation at the university level, we calculated the AAI at the departmental level. We did so because a preliminary examination of our data showed that many articles originating from our set of 56 institutions were published by individuals other than LIS faculty (e.g., university librarians, academics in non-LIS departments). In fact, librarians produce much of the LIS journal literature; in almost all universities with a top-10 ALA-accredited program, librarians have faculty status and are required to publish (e.g., Wiberley, Hurd, & Weller, 2006). Library and information science is, moreover, a highly interdisciplinary/multidisciplinary field that trades ideas with other disciplines, thus publishing in its journals many articles written by non-LIS authors (for more on this, see Cronin & Meho, 2008). Had we calculated the AAI at the university level, our results would have been skewed, particularly in the case of those journals that frequently publish articles written by librarians (e.g., *College & Research Libraries* and *Journal of the Medical Library Association* [*JMLA*]).

## Results and Discussion

The AAI scores for the 10 journals are shown in Table 1. The range is 0.17 (*JMLA*) to 0.58 (*Information Processing & Management* [*IP & M*]). Two journals (20%) had an AAI of 0.50 or greater: *IP & M* and *Information Research*. *IP & M* is an established journal with a relatively high impact factor while *Information Research,* an online journal, is a relative newcomer. By way of comparison, the range for the 41 finance journals sampled by Chen and Huang (2007, p. 1017) was broader, 0.028 to 0.803: Six journals (15%) had an AAI of 0.50 or greater. The range in Gorman and Kanet's (2005, p. 13) study of 23 operations management journals was 0.147 to 0.836: Twelve journals (52%) had an AAI of 0.50 or greater. It may be that the highest AAI score in our study is lower than that in the finance and operations management studies because of (a) the smallness of our field/sample and (b) the hybrid and diverse nature of the population of authors publishing in LIS journals. We leave it to others more familiar with finance and operations management to speculate further on the reasons behind these differences.

In contrast to the earlier studies mentioned in the Introduction, we are reluctant to make too much of our findings. As indicated earlier, for some journals (e.g., *J. Doc.*, *Scientometrics*), we examined many years' worth of articles (13 and 20, respectively) whereas in other cases (e.g., *Journal of the American Society for Information Science and Technology)* we examined only 1 year. Such variability is partly a function of differences in publishing frequency, issue size, and journal scope. For example, many of the articles published in *Scientometrics* were authored by Europeans, which made it necessary for us to go back decades to generate a sufficiently robust sample. The variable yield also is related to the fact—already noted—that LIS is an interdisciplinary/multidisciplinary field and, as such, publishes a large number of articles by academics and others from outside the domain. For instance, *JMLA* frequently publishes articles by health science professionals, and *Scientometrics* articles are frequently by researchers from non-LIS programs.

The variation in the number of years covered for each journal creates methodological problems, raising questions regarding the applicability of the AAI to LIS journals. This is because the journals ranked among the top-10, based on Nisonger and Davis' (2005) survey and *JCR* data for 1998–2006, might have been ranked lower in preceding years. Likewise, some schools (e.g., University of Washington) that numbered among the top-10 ALA-accredited programs according to the 2006 *U.S. News & World Report* rankings were not among the top-10 in the 1999 rankings while others (e.g., UCLA) were among the top-10 in 1999, but not in 2006.

If one is going to use the AAI to answer the question raised in the introductory paragraph, viz., "Do faculty at the most prestigious universities have a disproportionate presence in the premier journals?" then our answer is a qualified "yes" in the case of at least some prestigious LIS journals. Also note in this regard that leading LIS programs typically have (a) a larger full-time faculty than do their lower ranked peers, (b) an established doctoral program, and (c) a strong, explicit commitment to research and scholarship—all of which presumably translates into relatively high levels of publication. According to a faculty directory developed by Meho (2007), the top-10 programs account for 255 of all 805 full-time faculty in ALA-accredited programs. Thus, our top-set (10 of 56, or 18% of programs) comprises 32% of all faculty members in the field. This relative numerical advantage should be borne in mind when considering the AAI scores reported here. While the AAI may be "relatively objective," as Gorman and


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Kannet (2005, p. 17) assert (see the Introduction), issues of heterogeneity (of authors and subject coverage) and sampling (variations in timeframes of both journal and institutional rankings) raise questions about the stability and transparency of the method and leave one to wonder whether it could replace established journal-ranking methods. In sum, the AAI may work well in relatively self-contained domains such as economics and finance and operations management which have large, homogeneous periodical literatures, but less well in more loosely structured and less clearly delineated fields such as LIS.

## Conclusion

The incommensurability of the timeframes used in both the journal and institutional rankings gives rise to a number of reliability concerns as far as the present study is concerned; we are not, strictly speaking, comparing like with like. We therefore suggest that our results be viewed with caution. Having said that, it would be interesting to apply the AAI to the journal literature of other professional fields such as social work or education to see whether similar issues arise and similar results are obtained. In addition, it might be instructive to extend the study population to include LIS programs from other countries.


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## Appendix

*Calculating the AAI*

Calculation of the Author Affiliation Index (adapted from Harless & Reilly, 1998, pp. 7–8):

$$\text{Author Affiliation Index} = \frac{\text{Equivalent articles by authors from the top-10 set}}{\text{Equivalent articles by authors in all 56 schools}}$$

In computing the index,

- only research and review articles and notes are included; book reviews, editorial material, letters, corrections, and so on are excluded;
- each of the n authors of an article is given credit for 1/n of the article;
- authors from non-ALA-accredited programs/schools are excluded from both the numerator and denominator;
- where possible, sufficient issues of the journal (beginning with the most recent) are included to ensure a denominator of 50 equivalent articles by authors from ALA-accredited schools/programs.

Example: The most recent issue of a journal contains eight articles. The table below shows the authorship of each article and its effect on the numerator and denominator of the AAI. Top-10 schools are underlined; other ALA-accredited programs are in italics. All other institutions are in regular font.

| | Contribution to numerator | Contribution to denominator |
|---|---|---|
| 1. <u>Syracuse</u> | 1.00 | 1.00 |
| 2. *Drexel*, <u>Indiana</u> | 0.50 | 1.00 |
| 3. <u>Florida State</u>, *Toronto, UCLA* | 0.33 | 1.00 |
| 4. *Maryland*, *McGill*, *South Carolina* | 0.00 | 1.00 |
| 5. CNI, <u>Rutgers</u>, <u>Texas at Austin</u> | 0.67 | 0.67 |
| 6. <u>Pittsburgh</u>, Rice | 0.50 | 0.50 |
| 7. *Alberta*, Virginia | 0.00 | 0.50 |
| 8. Harvard, Princeton, Yale | 0.00 | 0.00 |
| 9. LC, NLM, *Simmons* | 0.00 | 0.33 |
| Total | <u>3.00</u> | <u>6.00</u> |
| AAI | <u>0.50</u> | |


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