The Author Affiliation Index (AAI) as an Assessment of 25 Entrepreneurship Journals, 2007-2011

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Although the purpose of research is to create knowledge, a conundrum academics face is that our growing specialization makes us less comfortable evaluating the quality of research produced by others, especially beyond our own areas of expertise. In a parallel sense scholars are also less comfortable having others outside our area of expertise evaluate the quality of our research. As our domains increase in specialization, these two problems worsen. As research plays an important (though not exclusive role) in building legitimacy for scholars, it is not only the quantity of articles which matters, but also their quality. Over time, the impact of an article is readily identifiable; Fisher Black and Myron Scholes (1973) seminal paper "*The pricing of options and corporate liabilities*" has 24,019 citations (Google Scholar, as on January 14, 2014). At the time of publication, however, the impact of an article is nowhere as readily apparent. In addition, many academic decisions (e.g. promotion, tenure, pay raises) are made at the time the article is published, before its influence can be readily observed[1]. The most common metric for assessing the quality of a given article is the quality of the journal where it has been published.

Using journal quality as a proxy for article quality, however, has known limitations (Garfield, 1998) and merely "kicks the can down the road" for all but a few very well-known journals. Nonetheless, the question commonly shifts from "how do we assess the quality of this article" to "how do we assess journal quality." What then, is the best method to evaluate journal quality? It is not an easy question, especially in emerging

[1] Ironically, Fisher Black and Myron Scholes had trouble publishing their seminal work in more prestigious journals at the time, having it rejected multiple times. It was finally published in *Journal of Political Economy*, and remains its' most cited work.

areas such as entrepreneurship. While widely known journals have a "taken for granted" status (Carroll and Hannan, 1989) as being prestigious and high quality; newer and more specialized journals, however, must fight through a "liability of newness" (Stinchombe, 1965) before they attain a legitimized status as a quality source of academic research. Thus the challenge of evaluating journal quality is not in assessing *Academy of Management Review* (which grades out well regardless of the method employed), but in assessing more narrowly focused journals, as well as journals in emerging fields.

In this paper we examine a newer, yet rapidly growing metric for assessing journal quality: affiliation approaches, particularly an author affiliation index (AAI), and compare AAI rankings of journals with other established approaches. The AAI assesses the quality of journals through an analysis of the academic institutions which employ the scholars who publish in a given journal. Inherent to its construction is the foundational belief that academic labor markets are reasonably efficient, and that prestigious research institutions are more likely to hire scholars who publish in high quality journals, relative to less well-known programs (e.g., Allison & Long, 1990; Cable & Murray, 1999; Park & Gordon, 1996). We argue that a primary benefit of the AAI, ironically, lies in its newness: parameters can be easily changed based on increased understanding to better capture nuances not found in other methods. Accordingly, we believe it is beneficial in assessing the growth of emerging fields and their discipline-based journals. In addition, given that Journal Citation Reports (JCR) assesses a relatively small number of available outlets[2], the ease in calculating an AAI makes it possible for departments to assess emerging journals (which have yet to be assessed by the JCR).

[2] Jerry Katz (2011) publishes an annual list of entrepreneurship outlets; in 2011 the list contained over 122 journals; of those, less than one fourth have been assessed via JCR.

Our roadmap for this paper is as follows: in the following section we shall briefly examine the history of the academic field of Entrepreneurship, which is a relatively younger domain within the academy, as well as journals that have emerged for entrepreneurship. We then discuss briefly some commonly employed metrics for evaluating journal quality. In the fourth section we explain how the AAI is constructed, and assess several well-known journals, and compare them to 8 entrepreneurship journals which also feature a JCR report. We conclude with a discussion on the extant parameters for AAI, some related concerns with the AAI, and discuss some means for addressing those concerns.

A Brief History of Entrepreneurship as a Field of Study

Entrepreneurship itself is not a new phenomenon, but as its own academic discipline is still relatively new. Like most new academic domains, it evolved from other disciplines, eventually growing large enough to justify its own domain. Much of the initial work on entrepreneurship emerged from the field of Economics (e.g. Hawley, 1893, Edgeworth, 1904), centering primarily on the role of risk and uncertainty within the economic transaction. Such work itself harkens back to Cantillon (1755), who argued that entrepreneurs were those who bought at a certain price, and sold at an uncertain (and hopefully higher) one. The concept of entrepreneurship can be traced further back, past Defoe and Shakespeare, and to the works of Marco Polo. Entrepreneurship as an academic sub-discipline emerged in the early 1970s (Murphy, Liao, & Welsch, 2006), about the same time as the first entrepreneurship interest group formed (its first president was Karl Vespers). Entrepreneurship grew into an Academy of Management division in 1986, making it the 4th youngest of the 22 divisions. By 2014 it had grown to 2,728

members, the fifth largest of the divisions, and its members are roughly 14% of the academy's members. Within the Academy, where a scholar's dues entitle them to membership in 2 divisions, the largest 2nd affiliation for entrepreneurship scholars has been the Business Policy and Strategy division. Interestingly, the "migrant" evolving nature of the entrepreneurship scholar remains; there are only a handful of Ph.D. programs that explicitly emphasize entrepreneurship (e.g. University of Louisville). Thus overall, it appears that entrepreneurship remains a youthful field.

The first entrepreneurship articles appeared mostly in Economics journals, and generally migrated to "general interest" (Fried, 2003) journals in management, finance, and marketing. Using EBSCOHOST as a guide, it took roughly 65 years for the first 100 journal articles to appear that discussed entrepreneurship; after 100 years, only 1,078 had appeared. To put that into perspective, through 2010 11,710 entrepreneurship articles appear in the EBSCOHOST online database, 1,346 appeared in 2010 alone.

Journal spaced devoted specifically to entrepreneurship has likewise expanded in recent years. The *Journal of Small Business Management* appeared in 1962, followed by the *American Journal of Small Business* (now *Entrepreneurship, Theory & Practice*) in 1976, *Journal of Business Venturing* (1985), and *Small Business Economics* (1989). In 2003 these four were the only dedicated entrepreneurship journals covered in the Social Sciences Citation Index. Today others have been added, including *Entrepreneurship Regional Development*, *Family Business Review*, *International Small Business Journal*, *Technovation*, *Journal of Technology Transfer*, and *Strategic Entrepreneurship Journal.* Coverage by SSCI provides one marker of journal influence and perhaps quality, but many entrepreneurship journals continue to remain outside the scope of SSCI coverage.

Common approaches to assessing journal quality.

The proliferation of scholarship in an emerging area creates problems of how to evaluate its' quality. Many different methods have emerged to address this problem, many focused on assessing journal quality. One approach surveys prominent members of a domain, asking what the top journals are in the domain. This is the approach that both MacMillan (1993), and Fried (2003) took to assess Entrepreneurship research. Not surprisingly, the better known and older journals are at the top of the list. In 2003 Fried's survey rated *Journal of Business Venturing* as an outstanding journal; *Entrepreneurship Theory and Practice* rated significant, and *Journal of Small Business Management* rated acceptable. In addition, Fried rated 8 other entrepreneurship journals as acceptable—a cursory look (e.g. *Journal of Private Equity*, *Venture Capital)* shows that the other journals typically are niche journals within entrepreneurship. Such an approach is logical, and easy to use, relying on a "taken for granted" (Carroll and Hannan, 1989) status. From an institutional theory perspective, however, it tends to give more weight to older journals, and more general journals; hence niche and emerging journals tend to score more poorly than do established journals. As Fried (2003) notes, *Journal Business Venturing* and *Entrepreneurship Theory & Practice*, both improved over time in terms of establishing legitimacy.

The major downside, however, to such an approach is that it is, by definition, subjective, prone to numerous biases. We suggest these biases are not as much a concern for established journals as they are for newer, and more targeted niche journals. Relying on surveys of scholars to rate the quality of journals (which in turn is used as a proxy for article quality) seems to "kick the can" further down the road. Because there isn't an

established performance metric for selecting scholars, the selection process is subjective (the problem may not be so much the inclusion of less qualified candidates, but rather, the exclusion of otherwise qualified ones). In addition, even if selection is made on clearly established (and agreed upon) performance criteria, there are other, inherent biases to take into account. Scholars who publish in a given journal, for example, are more likely to rate it higher than other journals (Russ-Eft, 2008). Similarly, sitting on an editorial board of a journal could increase the journal's valence (in the eyes of the scholar), hence raising perceptions of its quality. Finally, we suspect that newer journals, because they take a while to become legitimized, are not followed closely by as many scholars of the field, who may rank them without having read many (if any) articles from them. A scholar who reads a journal regularly may be able to comment upon it accurately, but much less so for a journal they do not follow. Given that time constraints limit how many journals a given scholar can reasonably follow, the process tends to reinforce preferences for existing journals. Such a result is consistent with Ackerlof's (1970) "Market for Lemons", where unknown work is perceived to be lower quality. As a result of these biases, we suspect there is a bias towards established journals, journals rated highly in the past, and in journals attached to a larger domain. As a result, while surveys are relatively easy and validate established choices, newer journals and emerging topical areas (such as entrepreneurship) tend to be underweighted.

This is not a casual concern, nor a new one. Weber (1918) nearly 100 years ago expressed concern that the growing specialization of knowledge could lead to information silos. As important research is published, it sparks interest from existing scholars, who explore it in greater depth; eventually that depth produces a breadth that

leads to reasonable boundaries for a new domain, and within it new journals emerge which support the domain. This leads to an effect where a sub-domain of an area is initially perceived as "pre-legitimate", and only over time does it achieve a legitimized status. It has only been in the past 30-40 years that Entrepreneurship has evolved into a legitimized academic domain. But scholars who do not migrate to the new domain may be at a loss to discern the quality of its work.

While we have focused on surveys emerging from the perceptions of scholars, other rankings also exist (Katz, 2011). For example, the Financial Times publishes an annual list of 45 high quality journals across multiple disciplines. Two Entrepreneurship Journals (*Journal of Business Venturing* & *Entrepreneurship Theory & Practice*) both are included on this most recent list. *Strategic Entrepreneurship Journal*, by virtue of its affiliation with the *Strategic Management Journal* and the Strategic Management Society has appeared in previous years. Several schools solicit input from other schools as to how they rank a particular journal; the results are then re-transmitted back to the schools, permitting them to compare their ranking to a larger aggregate. Jerry Katz and Kim Boal have published an informal ranking of Entrepreneurship outlets as well (2002). Other measures examine which journals libraries subscribe to each journal, and the total number of subscribers and print run. These last two methods, however, will need to be re-assessed as journals go on-line, and schools share library resources. These methods do very well identifying the more prominent journals of a field, but are less effective for emerging journals.

Inherent in this assumption, however, is a tension between exploring for new knowledge and maintaining a reputation for high quality. New ideas, because they lack

legitimacy, are more risky for journals to publish; yet if the articles prove successful, the journal benefits from pioneering the idea. So editors face a conundrum, balancing a search for new ideas against a desire to protect the journal's academic reputation. Such a dilemma is captured by March's classic "exploration vs. exploitation" concept (1991).

Journal editors face a balancing act: their job is to identify not only high quality research, but also "leading research" which advances the field, and which creates fruitful avenues for future research. But this is done under conditions of uncertainty, where it is unclear at the time of publication whether or not a new article will prove influential or not. Over time, as an article becomes influential, its attains a taken for granted status, and other authors find much more receptive responses to related work, due to the legitimacy of the original work. The growing number of articles into that research stream reinforces the validity of the research stream, endowing legitimacy onto more and more related articles. Because existing journal space is limited, the growing popularity of a research stream highlights the need for more journal space; a condition often met through the creation of a newer, more specialized journal. Several well-known entrepreneurship journals are considered niche journals outside the domain of entrepreneurship, but are considered quite general within the domain. The new journals will attain traction among those members of the domain/sub-domain, but only over time does that traction catch on beyond the domain. We argue that the process of journal ranking is prone to preferences for older, more established journals, at the expense of emerging and niche focused journals. Consider the *Strategic Entrepreneurship Journal*; while a "newbie", its influence is already significant within the field, and is recognized by many universities as a leading journal. Its rise, however, is the exception, and not the norm.

Citation-based assessment of journal quality

Among the non-survey-based metrics, several methods rely on citation based metrics. Inherent to all of these methods is the foundational belief that the more often a particular article is cited, the more influential is that article. Accordingly, journals which publish highly cited works should be perceived as higher quality journals. Although it is time consuming to calculate various measures for a given journal, several services are available to speed this process, including the Social Sciences Citation Index, Harzing's "Publish or Perish", etc.

A benefit of citation based assessments is that they appear more objective, relative to survey-based measures. Counts can be captured quickly, and the data can be sliced and diced to capture nuanced effects. For example, the rate of change in how often an article is cited (it's "half-life") can be constructed as well. Within the SSCI, there are numerous factors already calculated, to aid in the decision-making process. Journals can also be assessed over time, comparing changes in citation rates. For emerging journals, this is crucial to their attaining legitimacy, as they are more widely cited the perception of their quality increases. The influence factor takes the number of citations within the journal for a set period of time, and divides it by the number of articles published in that same time frame.

Citation counts have their criticisms as well. Primarily these concerns can be addressed as inherent to the data process. This doesn't mean that the concerns are not valid, but rather, the very nature of what is collected creates the concern. A primary example of this lies in the expected number of average citations to a journal. Althouse, et. al. (2009) examined citation patterns across 50 different disciplines, and found wide

variance in the average amount of citations per domain, gradually increasing over time. Similarly, the more outlets in a given domain should decrease the average citation score for a given journal in that field. While scholars within a given domain may accurately make adjustments for these differences, scholars outside the domain may discount the citation findings or rationalize variances in scores among journals (Russ-Eft, 2008).

Many criticisms of citation counts struggle with the issue of "self-citing", where an author cites their own previous work. While it may be appropriate to do so, agency concerns (e.g. Jensen & Meckling, 1976) suggest that self-serving interest may also explain this as well. In a related manner, a journal seeking to improve its citation score would possess the incentive (and the means) to encourage scholars to cite more work from that particular journal (Russ-Eft, 2008). Doctoral students may find subtle pressure to cite work from scholars on their dissertation committee. Journal editors may seek to identify articles which accumulate higher citation counts (e.g. literature reviews, definition pieces, etc.) (Chen & Huang, 2007). Finally, there is the issue of determining what constitutes an appropriate citation impact. These may differ across fields. Taken together, citation measurements may contain different, but real biases in assessing journal quality. These biases may not be avoidable, but it proves prudent to remember them when assessing journal quality.

Affiliation-based metrics

Affiliation-based metrics involve correlations between the journal and either its authors or its editorial board members. The correlation presumes that high quality authors and institutions will congregate together. For editorial board measures, since this involves additional, unpaid work, scholars have an incentive not to accept too many board

memberships, and will select to join the highest quality ones. For scholars their goal is to be published in the highest quality journal they can attain, in hopes of bolstering their own academic reputations. In this paper we'll focus on author-based affiliation metrics.

The Author Affiliation Index (AAI) originated in the economics department at Virginia Commonwealth University (Harless & Reilly, 1998). Since then, within the business-related academic disciplines, AAI indices have been constructed for Finance, Marketing, MIS, and Operations management. Library and Information Sciences have also constructed an Author Affiliation Index. Harless & Reilly looked at 60 top tier US-Business schools, and calculated a score based the percentage of articles published by authors from those schools, relative to the total number of authors. A score of 80% for example, suggests that given journal has 80% of its authors from the top 60 research institutions.

Formally, the formula developed by Harless & Reilly (1998) for calculating the AAI is given as:

$$AAI_j = \frac{\sum_{i \in m} \frac{x_i}{n_i}}{\sum_{i \in m} \frac{x_i + y_i}{n_i}}$$

For any given journal j, x_i is the set of authors from the selected set (e.g. the "top tier" schools") of universities (x) in article i, y_i is the number of authors from schools other y) than those listed as top tier in article i, n is the total number of authors in a given article i, where i is drawn from a set of m articles. Gorman and Kanet (2005) argue that as m reaches 50 articles, the overall index remains relatively consistent. We agree, although we'll recommend using a year's worth of articles, for the purpose of consistency with other measures.

The AAI approach provides many benefits, especially in emerging fields and sub-disciplines. First, it is relatively easy to calculate, so at academic institutions where a faculty must provide the justification for categorizing a journal's quality, it is not terribly onerous. Second, like citation counts, it provides a relatively consistent numeric output that can be compared to that of other journals, particularly those beyond the scholar's immediate field. A score of 80% in one domain is likely to be viewed similarly as an 80% in another domain. For emerging domains and emerging fields, this provides evidence for legitimacy that the scholars in the emerging field will find compelling. We do not pretend that disagreements over context will be extinguished by the use of the AAI, but rather, good documentation on the parameters that are used can useful in minimizing disagreements.

The richness of the parameters permits many variations on the AAI index, useful for capturing nuances. This also raises the main concerns with the AAI: Central to the use of the AAI is a valid list of top research institutions, particularly the scope of the field in terms of the number of institutions to be included, the inclusion or exclusion of international institutions, and sub-discipline specific knowledge centers.

Some domains consist largely of U.S.-based scholarship. As such, the exclusion of foreign scholars and institutions doesn't impact perceptions of journal quality. The AAI allows for comparing journals across domains, and allows for such permutations. We shall argue later in this paper that foreign scholars are an influential element of entrepreneurship scholarship, and should be included in the construction of the index for assessing Entrepreneurship journals.

Once constructed, an AAI can provide outputs based on both inclusion and exclusion, allowing scholars to discern the relative impact of foreign scholars over time. AAI can be construed from any period in time as well, permitting analysis that shows a growth/(decrease) in quality over time. Thus, while legitimacy suggests older journals will grow in stature over time, the AAI can provide evidence of this occurring.

Similarly, the extant literature indicates that for any given domain, there are two sets of "top tier" schools; those which are relatively common across domains, and those which have recognizable expertise within a given domain. Within Entrepreneurship, for example, Babson College is (rightfully) perceived as a "top tier" research institution, while its overall record for other domains is not as robust. Babson has chosen to specialize, and poured significant resources into its entrepreneurship scholarship. Two immediate benefits emerge. First, the dual nature list generates more robust findings that take into account differences in school expertise; many schools emphasize a given domain as their area of expertise, and this measure is captured by the AAI. Second, given a similar number of schools in the specialist top tier list, comparisons between domains can still be made with a reasonable expectation of consistency.

The flexibility of the measure allows an individual scholar/institution to modify the list of schools within the list, in order to measure other objectives. For example, an institution may want to include on peer or aspirant schools; while the effect will serve to reduce the size of the AAI score, it permits schools to look at journals in terms of peers, etc. For an emergent sub-domain (e.g. corporate venturing), a typically-constructed AAI will likely prove to be too low; a modified set of schools might permit for stronger articles about the emerging strength of the sub-domain.

AAI features one additional benefit of interest. As entrepreneurship scholars are well aware, the biggest fear of a venture capitalist is not losing money on a given venture, but rather passing on the "next next one". Most every Venture Capitalist has heard about the $6 million investment in eBay that returned over $1.6 billion. Journal editors are not dissimilar in their regards to accepting manuscripts. Editors want to publish work that will be highly influential in the future; missing on the next Black-Scholes (1973) is probably more painful than publishing a boring, bland paper. As a result, manipulating rankings by author affiliation is less likely to occur than, say, encouraging authors to add citations from the journal planning to publish that given article (Russ-Eft, 2008).

The Results of AAI for Entrepreneurship-based journals.

We calculated the AAI score for 25 well-known entrepreneurship journals (listed in alphabetical order): *Academy of Entrepreneurship Journal, Creativity & Innovation Management, Economics of Innovation & New Technology, Entrepreneurial Executive, Entrepreneurship & Regional Development, Entrepreneurship: Theory & Practice, Family Business Review, International Journal of Entrepreneurship & Innovation, International Journal of Entrepreneurship & Innovation Management, International Journal of Technology Transfer & Commercialisation, International Small Business Journal, Journal of Business Strategies, Journal of Business Strategies (1993-5765), Journal of Business Venturing, Journal of Developmental Entrepreneurship, Journal of Enterprising Culture, Journal of Entrepreneurship Education, Journal of Evolutionary Economics, Journal of Private Equity, Journal of Small Business & Entrepreneurship, Journal of Small Business Management, Quarterly Journal of Austrian Economics, Small Business Economics, Small Enterprise Research, and Strategic Entrepreneurship*

Journal. These 25 were all available through business source complete/EBSCOHOST, and we hesitated to score the remaining 90+ journals using different record sources.

We began by using the same methods as others authors, in terms of scoring each article (see Pan & Chen, 2009 for an excellent review**).** While Gorman and Kanet (2005) found that 50 articles would produce sufficiently robust results, we employed a slightly higher amount, permitting us to capture a full year's worth of articles from each journal, in 2011. We do so for reasons of comparability for future studies, allowing scholars to observe changes over time, using an annual timeline.

To construct an Author Affiliation Index, one begins by creating a set of schools that are identified as being top tier. We began by first employing the Harless and Reilly's (1998) list of top 60 US Business schools. We do this for reasons of comparability across studies; as the Harless and Reilly set is commonly (but not always) used. We then sorted each of the 25 journals by school affiliation, and identified the top 63 schools (there was a tie at 60). Our 63 includes 14 Non-United States journals. We raise this point because some AAI calculations exclude international affiliations; we believe that excluding the significant contributions from non-US schools diminishes the value of the rankings. By calculating the AAI indices with both the Harless and Reilly as well as the top 63 entrepreneurship affiliations, allows us to compare several AAI rankings using various school "lists" and compare results to established measures of journal quality.

Our rankings are based on journals and author affiliations in the years 2007-2011. For the each entrepreneurship journal we coded each article appearing in each journal every year. For each author, we apportioned 1 point per article (so if the article had two authors, each was half a point, 3 authors a 1/3 point, etc.), according to the author

affiliation given in the article. If an author was not at a school on the list, the associated point was placed in one of two counts: one for "other US schools", and one for "Other Foreign Schools." If an author had a dual appointment, each school was given credit for the article.

Table one provides a list of all Universities in the sample. In Table two we provide the AAI scores for all 25 journals, with three scores: a Harless Reilly only score, a top 60 ENT score, a score of those affiliations on both lists, and finally, a subset of the top 60 ENT featuring only international schools.

Insert tables one and two about here)

We begin our discussion with the AAI scores. For 2010, the highest scoring journal, interestingly enough, was *Strategic Entrepreneurship Journal* (*SEJ*). *SEJ* scored an 80.1% on the AAI index. *SEJ* is the newest of the journals in our sample; it was launched by the Strategic Management Society, which publishes the *Strategic Management Journal (SMJ)*, itself considered a top tier journal at research institutions. *SEJ* was launched to devote more space to entrepreneurship, which had been appearing in *SMJ*. This is consistent with our understanding of the evolution of domains: Strategy appeared as a domain prior to entrepreneurship and many scholars of entrepreneurship have been academically trained in strategy. As scholars begin migrating to entrepreneurship, they continued to publish in *SMJ*, until there reached a tipping point where a 2nd journal could be justified. *SEJ* is not yet yanked in the *Financial Times (FT)* top 45 journals, but has an excellent citation score, higher than most journals in the *FT* 45

set. *SEJ*'s AAI also suggests that the journal's impact factor, which ranks fourth, currently underrepresents the influence of the articles. Slightly below *SEJ* come four journals with virtually identical scores (listed here in alphabetical order): *Entrepreneurship & Regional Development(ERD)*, *Entrepreneurship Theory & Practice (ETP)*, *Family Business Review (FBR),* and *Journal of Business Venturing (JBV)*. All four journals are older; having been established mostly in the 1970s and 1980s. Thus, sufficient time has passed for each journal to attain some level of legitimacy. Both *ETP* and *JBV* are included in the *Financial Times* top 45 journals, further bolstering their reputations for being high quality. We contend that two of the four, *ETP* and *JBV* may be considered "general entrepreneurship journals", where the other two are probably better described as niche journals. Whether *SEJ*'s score is sufficiently higher than the other four to merit its own category is a separate discussion; we lean towards grouping all of them at a high level.

Because SEJ was not in existence during the entire five year time period, we dropped it from the sample and re-calculated the AAI for the five years 2007 through 2011. Consistent with other studies, we also calculated the AAI score for each journal using the Harless Reilly set of top 60 US schools. We find that there is tremendous non-overlap between the Harless Reilly and the top entrepreneurship programs. Only 24 of the Harless Reilly schools are also on the top set of Entrepreneurship programs.

One area where entrepreneurship journals differ from those of other domains is in the extensive use of non-academically affiliated authors. How one treats these can greatly influence scores, and can shift scores much higher by simply excluding them. We find that excluding them can shift the scores in given years upwards by 40%. We have

left non-academically affiliated authors in this study, but caution readers to compare these scores to scores in other fields that have made similar adjustments or not. Excluding Indiana University and Syracuse University, the top entrepreneurship schools are not Harless Reilly schools.

We note one other tremendous difference between the two groups of schools: entrepreneurship is much more global in the schools that publish in Harless Reilly. Because of the way the AAI index has been calculated, by excluding international schools the indices drop drastically. As an example, of the 50 most recent publications in *ERD*, 43 were to foreign universities. We note that *FBR* had the largest variance in AAI index, based on using the Harless Reilly, the Top ENT programs, or including international colleges and universities. This suggests *FBR* is more of an international journal, and care should be taken in comparing its AAI score to the AAI scores of US-only journals.

In examining the different AAI scores (based on the different University sets), it becomes clear that six of the eight rank favorably close together: *ETP*, *JBV*, *FBR*, *JSBM*, *AEJ*, *SBE*, *JDE*, and *ERD*. A visual inspection of JCR rankings are relatively consistent with the AAI index: what constitutes a top tier journal appears to be captured by both metrics. Since a majority of entrepreneurship journals are not rated via JCR, this provides a means to assess their quality, with scores consistent to the JCR methods. We note the greatest correspondence between AAI and JCR scores is achieved with the broadest measure of entrepreneurship scholarship, research institutions, international schools, and entrepreneurship-specific institutions). Within this, *SEJ* is rated much higher using the AAI index, suggesting perhaps impact factor will rise in the future, while *FBR* ranks

lower using the AAI measure. This latter finding may suggest family business research may be a unique specialization, conducted by scholars at institutions more dispersed and perhaps more specialized than entrepreneurship scholarship in general.

Because it is the oldest of the journals we examined the scores for the *Journal of Small Business Management (JSBM)*. Historically it scores very well on the Entrepreneurship AAI, but began to decline in the 1990s, as more entrepreneurship journals were created. But in the past five years, it has begun to reassert itself as a top tier entrepreneurship journal.

Finally, we looked at the number of articles published by each school in the sample. Not surprisingly, many schools failed to publish any articles at all. Across all the journals in our sample, 20 schools published no articles in the eight journals, another 15 had only a single article. Over 20% of the schools had no research output in Entrepreneurship. Nor was this a case that the Harless and Reilly's (1998) schools published and the others did not. All 20 were from Harless and Reilly's set, and five were from the top Entrepreneurship schools set. We suggest the lower AAI scores (using Harless and Reilly's set) are heavily influenced by the fact that many of these research institutions have not developed strong programs of entrepreneurship research. Their strengths lie elsewhere. We offer this as a caveat about using Harless and Reilly's (1998) set of schools in comparing journals across domains: if a large number have no published research that will tend to skew downward the AAI scores of those journals.

Insert table three about here

We summed the number of blank scores for each journal, to see the degree of concentration for each journal in who it publishes. That is, do the faculties at certain schools specialize? The answer appears to be yes. The journal with the broadest range of represented schools was *SEJ*; 42% of the schools in the overall University set published in *SEJ*. Coming in very closely to *SEJ* were *JBV* (40%) and *ETP* (37%). Stated differently, these three journals had the broadest range of authors according to university affiliation publishing in their journals. Similarly, universities who have faculty publishing in these three journals are likely to also publish in the other journals listed. Lower AAI scores appear to follow a similar trend: *SBE* had the lowest number of schools publishing in its journal; their largest contributor was Erasmus (Netherlands). Similarly, *FBR* was dominated by one school, Mississippi State University.

Finally, using AAI allows us to assess research productivity in Entrepreneurship from the various schools. Erasmus was the most productive, followed Indiana University, Nottingham, Syracuse, and Bocconi. We note that 3 of the top five and 4 of the top 7 most productive entrepreneurship research schools are from outside the U.S.A. This finding supports our contention to include international schools in constructing an AAI for assessing Entrepreneurship research.

Challenges to the AAI

Like any measure, how it is constructed in large part determines the usefulness of the measure. The primary limitation of using the AAI is determining how to identify the top research schools for inclusion on this list. Specifically this includes three concerns; a) for non-academically affiliated authors, b) for the inclusion of non-US based schools, and c) for how the list of "top schools is generated". We have criticized other methods

for "kicking the can down the road", and the AAI is no different in this respect. This is especially problematic when the top schools are determined by journal quality, which, in the AAI, is determined by the top schools publishing in a given journal. This introduces some circularity into the logic. Some papers have not addressed this, or have simply accepted it as a non-problematic correlation (see. Gorman and Kanet, 2005). Others (i.e. Pan & Chen, 2009), attempt to construct a reputation list based on citation data (but also on journal quality). Cronin & Meho (2008) rely on rankings from the *US News and World Report*. Indeed, the original Harless & Reilly list featured a collection of 58 US-based business schools which had multiple nationally ranked disciplines within the school (to which they added 2 additional schools). Each of these measures, in large part, relies on existing reputations. To counter this, Agrawal, Agrawal, & Rungtusanatham (2011) have proposed using the UT-Dallas ranking of 100 top business schools globally (which would add 19 non-US Based programs), and is based on a reasonable well-known, measure of research productivity. We think this is promising, except that what constitutes the top 100 schools is a function on the frequency in which their faculty publish in specific journals, which again kicks the can down the road.

We believe it is best to construct multiple AAIs; one which contains a common set of schools across common business domains and one which adds a subset of top research productivity schools within the specific domain. This addresses Chena and Huang's (2007) concern about the appropriate university set for calculating AAI. We note that the inclusion of a given domain specific school should be based on a comparable research productivity to the programs in the main research set. For Entrepreneurship, Babson clearly meets this norm, as do Mississippi State, Texas Tech,

Brigham Young, and others. We also express bewilderment about what to do with schools where an exodus of highly productive research faculty occurs (e.g. Case Western Reserve, or Ball State, both in the past decade). We believe documenting and articulating changes may be the prudent thing to do, and in return to accept a slightly diminished assurance of consistency.

Having constructed three AAIs per journal, a sense of the extent to which it can be positively viewed as a niche journal can be better illustrated. If a journal's overall score is 80%, and its base school score is 60% suggests that the research specific domain add 20% of the overall score. In this hypothetical journal, then, $1/4^{th}$ of the index comes from schools which emphasize entrepreneurship. A school seeking to burnish its reputation may find it useful to specialize—not trying to best other schools across the board, but choosing where to compete, in a strategic manner. Reputation-based rankings may penalize these schools, until the domain has engendered greater legitimacy.

Agrawal, et. al. (2011) expressed concern with *m*, the number of journals used in ranking a journal. We do not dispute Gorman and Kanet's (2005) assertion that 50 articles provides a stable sample size; we assert that AAIs will change over time. To maintain consistency over time a similar set ought to be included each time it is calculated. We suggest that an annual AAI for each journal be constructed. For those which published fewer than 50 articles annually a rolling, multi-year method would suffice. That is, if a journal published 30 articles annually, a two year rolling average would provide consistency and a sample large enough to be sufficiently robust. We do not fault Gorman and Kanet's (2005) measure, rather, we believe if AAI is going to be

used across domains, than a standard measure of counting articles would prove beneficial.

We note that there does not exist any consensus on the importance of foreign schools as being included/(excluded); yet the increasing globalization of the academy cannot be ignored, even with very large blinders attached. We note that one of our journals *ERD*, had 43 of 50 articles with authors outside the United States.

One other concern we find is in establishing the cutoff points when using the AAI to rank journals as premiere ("A"), leading ("B"), quality ("C"), or other/lower level. Like citation impact factors, this score may be skewed by unique elements within a given domain, or the decision on what constitutes the minimum score for an "A," which may incorporate subjective judgments. Numerous statistical techniques will likely provide a greater sense of how to establish cutoff scores, such as cluster analysis, a decile rank order, or standard deviation-based ranking.

We note one final concern: Agrawal et. al. express concern about relying solely on the AAI to judge journal quality. They are critical of Gorman and Kanet (2011) for giving the pretense that AAI is all that is needed for assessing whether a journal is high quality or not. Our reading of that work is that they do not explicitly make such an assertion; rather they assert the AAI is a useful measure, and for many schools, sufficiently robust. That is, some institutions may accept at face value the AAI, while others will desire corroborating evidence. We do not read their work as to make the argument that a single measure is superior to multi-method measures; we too agree that multi-method assessments provide greater face validity. A combination of survey, citation, and affiliation methods which produce similar scores ought to reassure scholars

from other fields that a given journal is of high quality. At the end of the day, *Academy of Management Review* will grade out favorably against nearly any measure. Encouragingly, some entrepreneurship journals also appear to grade out consistently, suggesting they have attained a legitimized status. Over time, we may see the field of entrepreneurship itself split into multiple domains, pre-legitimate at first, but eventually attaining a status of legitimacy. The use of an AAI method can help to identify these types of trends in research without the lag of other measures.

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Table 1: The Colleges and Universities included to calculate the AAI

University (alphabetical order)	Harless Reiil	ENT Rank	Int'l	
Alabama, University of		18		
Alberta, University of		15		1
Arizona State University	1	21		
Babson College		4		
Ball State University		21		
Baruch College--CUNY	1	40		
Baylor University		13		
Berkeley, University of California	1	52		
Bocconi University		12		1
Boston University	1	49		
Brigham Young University		25		
Calgary, University of		6		1
Case Western Reserve University	1	22		
Central Florida, University of		60		
Clemson University		43		
Colorado State University		52		
Colorado, University of		11		
Columbia University	1	43		
Erasmus University (Netherlands)		1		1
Georgia Institute of Technology	1	47		
Georgia, University of	1	49		
Harvard University	1	43		
Houston, University of		29		
Illinois at Chicago		29		
Illinois at Urbana-Champaign	1	60		
Imperial College (UK)		60		1
Indiana University	1	2		
Iowa State University	1	5		
Louisiana State University	1	33		
Louisville, University of		47		
Maryland, University of	1	38		
Miami of Ohio, University of		49		
Michigan, University of	1	60		
Minnesota, University of (Twin Cities)	1	13		
Mississippi State University		8		
National University of Singapore		23		1
North Carolina at Chapel Hill, University of	1	33		
Northeastern University		33		
Nottingham, University of		3		1
Ohio State University, The	1	20		
Oklahoma State University		19		
Oklahoma, University of		43		
Oregon State University		32		
Pennsylvania State University	1	33		
Pennsylvania, University of	1	40		
Purdue University	1	33		
Queensland University of Technology		28		1
Rensselaer Polytechnic Institute		10		
South Carolina, University of	1	15		
Southern California, University of	1	55		
St. Thomas, University of		55		
Strathclyde, University of		7		1
Syracuse University		8		
Temple University		52		
Tennessee, University		38		
Texas A & M University		26		
Texas Christian University		40		
Texas Tech University		15		
Toronto, University of		26		1
Virgina, University of	1	29		
Washington Seattle, University of		55		
Western Ontario, University of		58		
York University		23		1
Total Schools	24	63		11

Table 2: Comparison of journal rankings AAI Top ENT vs Harless Reilly

ENT AAI Rank	Journals from 2007-2011 (excludes Strategic Entrepreneurship Journal since it began later than 2006) Order is by the ENT Rank	AAI Scores: Both ENT and Harless Reilly	AAI Scores: ENT	AAI Scores: Harless Reilly	AAI Scores: International Only	AAI Rank: Both ENT and Harless Reilly	AAI Rank: Harless Reilly	AAI Rank: International Only
1	Entrepreneurship: Theory & Practice	7%	36%	9%	8%	4	5	4
2	Journal of Business Venturing	13%	36%	15%	10%	1	1	1
3	Family Business Review	4%	28%	5%	9%	9	9	3
4	Journal of Small Business Management	5%	21%	7%	5%	6	7	8
5	Academy of Entrepreneurship Journal	12%	19%	12%	1%	2	2	15
6	Small Business Economics	4%	17%	5%	9%	10	10	2
7	Journal of Developmental Entrepreneurship	11%	15%	12%	0%	3	3	18
8	Journal of Business Strategies	3%	14%	8%	0%	13	6	19
9	Entrepreneurship & Regional Development	3%	12%	4%	7%	11	12	6
10	Economics of Innovation & New Technology	6%	12%	9%	5%	5	4	9
11	Journal of Evolutionary Economics	5%	11%	5%	7%	7	8	7
12	International Small Business Journal	1%	10%	1%	8%	20	21	5
13	Journal of Private Equity	2%	8%	3%	3%	14	15	12
14	International Journal of Entrepreneurship & Innovation Management	2%	8%	2%	4%	16	18	10
15	Entrepreneurial Executive	1%	7%	3%	0%	17	16	20
16	International Journal of Technology Transfer & Commercialisation	4%	7%	4%	3%	8	13	11
17	Journal of Small Business & Entrepreneurship	3%	7%	3%	1%	12	14	17
18	Journal of Enterprising Culture	2%	6%	2%	2%	15	17	13
19	Creativity & Innovation Management	1%	5%	2%	1%	19	19	16
20	Journal of Entrepreneurship Education	1%	4%	4%	0%	18	11	21
21	Quarterly Journal of Austrian Economics	1%	2%	1%	0%	21	20	22
22	Small Enterprise Research	0%	1%	0%	1%	24	24	14
23	International Journal of Entrepreneurship & Innovation	0%	0%	0%	0%	22	22	23
24	Journal of Business Strategies (1993-5765)	0%	0%	0%	0%	23	23	24

Panel 2: Yearly AAI averages for 24 journals

Sorted by Journal Alphabetical Order	2007	2008	2009	2010	2011
Academy of Entrepreneurship Journal	18%	17%	9%	35%	27%
Creativity & Innovation Management	2%	8%	5%	9%	3%
Economics of Innovation & New Technology	30%	16%	14%	15%	3%
Entrepreneurial Executive	10%	8%	7%	0%	20%
Entrepreneurship & Regional Development	11%	9%	18%	17%	19%
Entrepreneurship: Theory & Practice	30%	19%	48%	38%	54%
Family Business Review	3%	27%	49%	17%	38%
International Journal of Entrepreneurship & Innovation	0%	0%	0%	0%	0%
International Journal of Entrepreneurship & Innovation Management	8%	3%	14%	14%	7%
International Journal of Technology Transfer & Commercialisation	4%	5%	4%	17%	11%
International Small Business Journal	5%	12%	16%	11%	10%
Journal of Business Strategies	19%	24%	19%	7%	38%
Journal of Business Strategies (1993-5765)	0%	0%	0%	0%	0%
Journal of Business Venturing	37%	44%	49%	37%	46%
Journal of Developmental Entrepreneurship	20%	20%	19%	14%	17%
Journal of Enterprising Culture	0%	16%	9%	6%	0%
Journal of Entrepreneurship Education	15%	5%	8%	0%	17%
Journal of Evolutionary Economics	16%	13%	13%	10%	13%
Journal of Private Equity	1%	3%	16%	16%	12%
Journal of Small Business & Entrepreneurship	11%	4%	18%	4%	9%
Journal of Small Business Management	21%	27%	36%	24%	23%
Quarterly Journal of Austrian Economics	4%	4%	4%	7%	0%
Small Business Economics	27%	18%	18%	15%	17%
Small Enterprise Research	0%	0%	4%	0%	0%

Table 3: Research productivity in 24 journals, for years 2007-2011 (excludes Strategic Entrepreneurship Journal)

Rank	University	Publications
1	Erasmus University (Netherlands)	63
2	Indiana University	50
3	Nottingham, University of	43
4	Syracuse University	37
5	Bocconi University	31
5	Mississippi State University	31
5	Strathclyde, University of	31
8	Babson College	28
9	Texas Tech University	25
10	Alberta, University of	24
11	Minnesota, University of (Twin Cities)	23
12	York University	22
13	Calgary, University of	21
13	Iowa State University	21
15	Oklahoma State University	19
16	National University of Singapore	18
17	Queensland University of Technology	17
18	Miami of Ohio, University of	16
18	Rensselaer Polytechnic Institute	16
18	Texas A & M University	16
21	Alabama, University of	15
21	Colorado, University of	15
21	Columbia University	15
21	St. Thomas, University of	15
21	Virgina, University of	15
26	Northeastern University	14
26	Purdue University	14
28	Baruch College--CUNY	13
28	Colorado State University	13
28	Harvard University	13
28	Pennsylvania State University	13
32	Oklahoma, University of	12
33	Baylor University	11
33	Clemson University	11
33	Imperial College (UK)	11
33	Toronto, University of	11

Rank	University	Publications
37	Berkeley, University of California	10
37	Illinois at Chicago	10
37	Illinois at Urbana-Champaign	10
37	Ohio State University, The	10
37	Oregon State University	10
37	Stanford University	10
37	Texas Christian University	10
44	Case Western Reserve University	9
44	Houston, University of	9
44	Jonkoping International Business School	9
44	Louisiana State University	9
44	Louisville, University of	9
44	Simon Fraser University	9
50	Michigan, University of	8
50	North Carolina at Chapel Hill, University of	8
50	St. Louis University	8
50	Temple University	8
54	Southern California, University of	7
54	Tennessee, University	7
54	Western Ontario, University of	7
57	Brigham Young University	6
57	Dayton, University of	6
57	Depaul University	6
57	New York University	6
57	Pennsylvania, University of	6
62	Arizona State University	5
62	Ball State University	5
62	Drexel University	5
62	Michigan State University	5
62	Northwestern University	5
62	South Carolina, University of	5
62	State University of New York at Buffalo	5
62	Xavier University	5