

Higher Education Literature Revisited: Citation Patterns Examined

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Received: 15 November 2008 / Published online: 7 November 2009
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Abstract The discourse of the field of higher education is complex, as is its analysis. Citation analysis is means of examining communicative processes. This study investigates citations in the papers of three core journals in higher education, *Research in Higher Education*, *Review of Higher Education*, and *Journal of Higher Education*. The results demonstrate that citation practices have remained relatively stable over time with regard to the format of cited items and the people and sources cited. The consistency applies, even with the electronic availability of a greater amount, and greater diversity, of materials. Some differences from past practices are also presented.

Keywords Higher education literature · Citation analysis · Discourse · Authorship · Journals

What constitutes the discourse of a field? This is an enormous question; only a very specific part of it will be answered here. Accepting that disciplinary communication transcends temporal limits, diachronous discourse—discursive practice conducted over time—can provide some indications of communicative practice. That is, the work that researchers and scholars look back upon, and the incorporation into their work provides a snapshot of influences. Citations constitute one indicator of diachronous discourse. Citations present challenges for analysis, though; it may be that some authors choose to avoid citing certain individuals' work for personal and/or professional reasons. Some authors' reading may be directed in particular ways, so the works in some fields are not part of consciousness. Other authors may approach topics from outside a discipline, and thus may demonstrate preference for the literatures of their own fields. While these dynamics may be operational in any field at any given time, it is not possible to inquire into them without exploring the knowledge bases, backgrounds, biases, and preferences of each author. Also, larger forces may help shape the communication landscape, possibly leading to an artificial

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uniformity of content and approach (see Laudel and Glaser 2006). Failing that, the assumption that is made here is that authors tend to adhere to a Habermasian version of communicative active. That version is an ideal, and it depends on participants being willing both to speak and listen with rationality as the principal communicative factor. The assumptions holds that authors seek informative works wherever they may be found, assess each work on its merits within the context of a particular project, and incorporate through citation those works that do inform the author(s) in some substantive way.

Analysis of citation practices can offer insight into the communication within a field, but the analyst must keep in mind that authors have many purposes when they cite literature. Budd (1992) examined the complexity of citation in considerable detail, noting that there is a history of analysis that cannot be ignored. He also observed that there are some questions that emerge as secondary literature becomes more readily available through electronic databases and journals. Among the questions is, with the improved access, will authors tend to draw more from what has been published (will they cite more works)? A number of years ago Robert Merton (1968) applied a biblical passage to the discursive life of published papers. Those that receive citations soon after publication tend to continue receiving citations in a literature; those that are ignored early on tend to continue to be ignored. Merton's dictum is an echo of an empirical finding by Price (1965), who found that only a minority of published papers are ever cited at all. Merton and Price provide valuable insight into the mechanics and the social element of citation; there is a volume of work published in any field or subfield that cannot be assimilated by any one person, and citation can beget citation as ideas (or discursive practice) become part of what is communicated. That is, not only are papers read for what the authors say, but they may be read for who the authors draw from. Citations are, though, "frozen footprints on the landscape of scholarly achievement; footprints which bear witness to the passage of ideas" (Cronin 1984, p. 25).

Citation analysis is not a new way to examine communicative practices; it has been used in a number of fields to gauge many aspects of attribution and intellectual debt, as well as social networks. The importance of citations is recognized by Hyland (2000), who is influenced by Merton: "Citation is central to the social context of persuasion as it can provide justification for arguments and demonstrate the novelty of one's position. By acknowledging a debt of precedent, a writer is also able to display an allegiance to a particular community or orientation, create a rhetorical gap for his or her research, and establish a credible writer ethos" (p. 20). The quantitative element of citation analysis attracts some researchers, but readers of studies should take care not to place too much stock in the numbers as such. More general patterns and tendencies may be more informative than the numbers *qua* numbers. For example, citation analysis can be coupled at times with content analysis with the particular aim of discerning author's uses of the materials they cite (see Budd 1999). Citation analysis is also sometimes seen as including some inherent difficulties, "because [citations] vary in systematic ways by genre, subfield, and institutional location" (Clemens et al. 1995, p. 483). The first two of those difficulties are addressed here by focus on the core journals and the subfield of higher education. The third difficulty cannot be addressed in the present study.

The present study is a follow-up to Budd's (1988, 1990) studies. Inasmuch as it is possible, this examination adopts the database and method of those previous studies. The purpose of this study is very similar to that of the previous ones. The intellectual and social complexities that contribute to the development in disciplines are difficult to examine; citations do provide some tangible evidence of relationships. The ideas of predecessors contribute to the thought of the current time; contemporary ideas draw selectively from

those that have gone before. In other words, the past and the present exhibit a kind of dialectic in which intellectual and practical tensions may be played out. That dialectic may be a mainstay of discourse in general, since social, as well as intellectual, reasons underlie communication practices. As was the case of the previous study, the present one turns an eye towards the potential of interdisciplinarity, the drawing from disciplines other than higher education.

Source Items

Examination of citation patterns requires the determination of a body of source items, publications that serve as the sources of citations for analysis. In keeping with Budd's (1990) original examination, three journals are analyzed: *The Journal of Higher Education*, *Research in Higher Education*, and *Review of Higher Education*. Six recent years (2001–2006) of issues of each of the three constitute the source items for this study. Special issues of any of the three journals were excluded, since they were devoted to specific topics, and may have skewed citation patterns. A total of 420 articles were examined, along with the 19,462 citations in the articles. Each article included, on average, 46.3 citations. That figure compares with 25.17 in Budd's (1990) study and 15.6 in 1986. The content of the articles themselves offer no overt rationale for the increases in the numbers of cited works per article.

Characteristics of Cited Materials

As scholars and researchers consider the discourse that might apply to projects undertaken they may have access to any number and kind of works. Ideally, a researcher will search exhaustively for all potentially relevant materials, and then, after reviewing each item, will incorporate the most useful into her or his own work. Actual practice may fall short of the ideal, but researchers are likely to delve into past works by any of several means (searching databases of literatures, searching citation databases, or reading useful items and consulting the reference lists included therein). The ideal is unachievable because of the vastness of potentially relevant thought; an author could be mired in the process of searching and reading. For example, a search in the ERIC database on the topic of higher education and strategic planning (using those terms as descriptors) yields 224 peer-reviewed journal articles and 495 articles in total (search conducted November 12, 2008). Given the average number of references per source item (mentioned above), authors do consult many resources as a means of locating potentially relevant materials. In examining the cited materials, one question that arises is: What forms (or formats) of materials are used by authors in the field of higher education? Table 1 presents the distribution of citations by format.

As is evident from the table, journal articles form the clear plurality of cited items, with books second, and book chapters third. The rankings are the same as those found by Budd (1990). In fact, the percentage of total citations comprised by journals articles in 1990 and in the present study is close to identical (45.66% in 1990 and 45.5% here). If books and book chapters are combined, there is also similarity between 1990 (40.48%) and this study (37.3%). The dispersion of citations by format here is in keeping with the results of another study that examined several social science disciplines; in that study 46.79% of citations were to journals and 43.62% were to books (Budd and Christensen 2003, p. 646).

Table 1 Forms of cited materials

Form	Number	Percentage
Journal articles	8,856	45.5
Books	5,112	26.3
Book chapters	2,145	11.0
News items	547	2.8
Conference presentations	457	2.3
Web sites	189	0.9
Legal materials	144	0.7
Dissertations	142	0.7
Eric documents	75	0.4
Manuscripts	75	0.4
Other	1,720	8.8
Total	19,462	99.8

The other material types constitute small proportions of the total of resources employed by authors. A Chi-square test can be used to compare the distribution of materials cited in Budd (1990) and in the present study. No statistically significant difference is apparent ($\chi^2 = 5.76$; $p > 0.05$). There are a few characteristics that should be noted, though. In the present study the citation of Web sites is small; a larger number of Web sites might have been anticipated, given the amount of information available. The largest number of citations is to what might be called “traditional” materials (journal articles, books, and book chapters); almost 83% of the citations are to these types of materials. It is very likely that authors are retrieving the full text of many, perhaps most, of the journal articles by means of resources licensed by their institutions’ libraries. That would indicate that there is online accessibility to a considerable amount of the items cited. There are some reasons to expect the phenomenon of online searching for the secondary literature; a study conducted by Rogers (2001) at Ohio State University found that faculty were making greater use of electronically accessible information. Also, Maughan (1999) found that University of California, Berkeley faculty on political science and chemistry were frequent users of databases. It may be possible that some of the citations to books and book chapters are to electronic versions of the materials, but only a relatively small proportion of books are accessible electronically. The inference drawn is that researchers continue to use some materials that are not available online. Again, this is in keeping with results of a study of social science disciplines; a substantial proportion of cited materials in the social science is not available online (Budd and Christensen 2003, p. 648).

Another characteristic of the cited materials that can be examined is age. How old are the materials that higher education researchers cite? The mean age of cited items is 12.25 years. This is a bit higher than the mean calculated by Budd (1990) (10.29 years, p. 88). A total of 28.0% of cited materials are 5 years old or less (compares to 36.30% in Budd 1990). Further, the figure of more than 12 years is comparable to the mean ages of cited materials in other disciplines: 11.68 in management, 12.31 in anthropology, 13.73 in economics, and 15.51 in speech (Budd and Christensen 2003, p. 647). Those figures also are derived from a period when electronic accessibility was quite widespread. Items that are 15 years old or less constitute the clear majority; they account for 73% of the citations. The greater mean age of cited items might appear to be an anomaly, but if the accessibility of materials in electronic databases is taken into account, authors might have more ready access to a number of items than they did several years ago. For example, ERIC provides

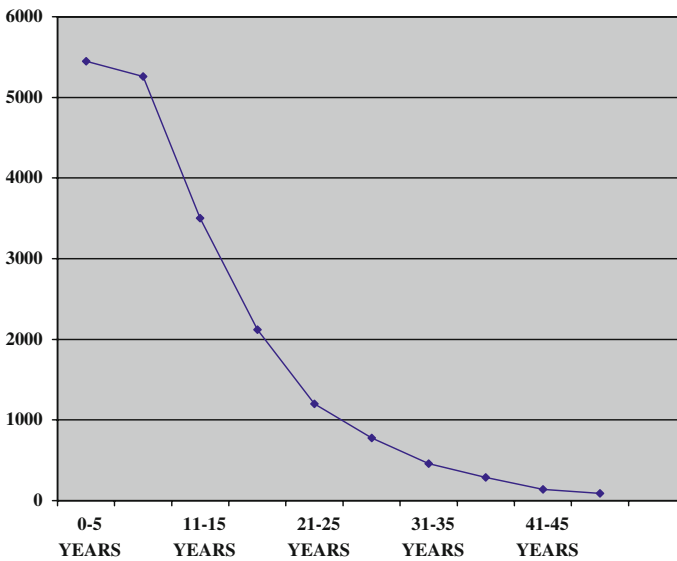


Fig. 1 Age of cited materials

access to the three journals that are used as sources for this study back to 1990. The age distribution of citations in the present study, presented in Fig. 1, indicates use of some older materials than those in Budd (1990).

The median age of cited items (or what might be called the half-life of cited materials) is nine in this study, and was seven in Budd's (p. 90).

Most Frequently Cited Items

As is evident from Table 1, journal articles account for more than 45% of all citations. This type of material is clearly very important in the formal communication process that higher education scholars engage in. A total of 1,073 journals receive at least one citation, and the number of citations to the journals is 8,856. As might be expected from hypothetical models of distribution of journals by frequency of citations received (see, for example, Bradford 1950), many of the journal titles receive very few citations. The 25 most frequently cited titles are listed in Table 2.

These 25 titles account for 4,448 citations, or 50.3% of the total. Extending that bit of data, 1,048 titles account for about half of the citations. Citation frequency may or may not be an indicator of quality, but it does point to prevalent communication patterns among authors in a field. Eighteen of the journals appearing in Table 2 are also listed in Budd (1990). All of the top ten journal titles in 1990 appear in Table 2; in fact, those ten are still among the top 13 journals in the present study. Nine of the top ten journals listed in Table 2 are in the field of education (even if not necessarily in the specific field of higher education). The other fields that are represented in the list include psychology (with three journals), sociology (with two journals), along with economics, management, human resources, and public opinion research (one title each).

Books account for 5112, or 26.3%, of all cited materials. Since these are a substantial portion of the total, examination of specifics is warranted. The number of potential works

Table 2 Most frequently cited journals

Rank	Journal title	Number of citations
1	Research in Higher Education	967
2	Journal of Higher Education	897
3	Review of Higher Education	389
4	Journal of College Student Development	296
5	Change	203
6	Sociology of Education	202
7	Journal of Educational Psychology	155
8	Economics of Education Review	146
9	American Sociological Review	131
10	Review of Educational Research	99
11	American Educational Research Journal	98
12	Administrative Science Quarterly	82
13	Journal of Applied Psychology	77
14	Academe (including AAUP Bulletin)	75
15T	Higher Education	74
15T	Journal of Human Resources	74
17	Journal of College Student Personnel	72
18	Journal of Personality and Social Psychology	70
19	American Journal of Sociology	68
20	Journal of Student Financial Aid	66
21	American Psychologist	63
22	American Economic Review	61
23	Harvard Educational Review	58
24	Public Opinion Quarterly	57
25	Educational Researcher	48

to cite is extremely large, Table 3 presents the 20 titles that are cited most frequently. The frequency distribution of the top 20 titles demonstrates how diverse the citing patterns are; those titles account for only 641 of the 5,112 citations to books. The kind of distribution that Bradford suggested does not describe citation patterns to books. The titles also demonstrate little departure from the field of higher education. One is a general statistics manual (Bryk and Raudenbush) and another (Becker) comes from the field of economics (although with considerable emphasis on economic choices related to education). Only four titles listed in the table also appeared in Budd (1990)—Astin, *Four Critical Years*, the *Classification of Institutions*, Feldman, *The Impact of College on Students*, and Chickering, *Education and Identity*. The content of books can have a tendency to become dated over time, so the change in the titles in the two lists is not surprising. Most of the titles in Table 3 have publication dates that would have negated their inclusion in the earlier list. The question was raised above about the potential of such materials as electronic books (or e-books). To check for online accessibility of the books listed in Table 3, the database Worldcat was searched. Only four of the titles were accessible at all, and none was held by more than 19 libraries worldwide, so the citing authors had to consult the print copies of the books.

Table 3 Most cited books

Rank	Author/title	Number of citations
1	Pascarella, E. T. and Terenzini, P. T. <i>How College Affects Students</i> : San Francisco: Jossey-Bass, varying editions, 1991.	117
2	Astin, A. W. <i>What Matters in College</i> . San Francisco: Jossey-Bass, 1993.	89
3	Tinto, V. <i>Leaving College</i> . Chicago: University of Chicago Press, 1993.	62
4	Bryk, A. S. and Raudenbush, S. W. <i>Hierarchical Linear Models</i> . 1992.	38
5T	Chickering, A. W. <i>Education and Identity</i> . San Francisco: Jossey-Bass, varying editions, 1993.	28
5T	Feldman, K. A. <i>Impact of College on Students</i> . San Francisco: Jossey-Bass, 1969.	28
7	Astin, A. W. <i>Four Critical Years</i> . San Francisco: Jossey-Bass, 1977.	27
8	Bowen, W. G. and Bok, D. G. <i>The Shape of the River</i> . Princeton: Princeton University Press, 1998.	26
9	Holland, J. L. <i>Making Vocational Choices</i> . Englewood Cliff, NJ: Prentice-Hall, 1985.	25
10	Boyer, E. L. <i>Scholarship Reconsidered</i> . Princeton: Carnegie Foundation for the Advancement of Teaching, 1990.	24
11	Birnbaum, R. <i>How Colleges Work</i> . San Francisco: Jossey-Bass, 1988.	22
12T	Bowen, H. R. and Schuster, J. H. <i>American Professors</i> . New York: Oxford University Press, 1986.	19
12T	Carnegie Foundation for the Advancement of Teaching. <i>The Carnegie Classification of Institutions Of Higher Education</i> . Menlo Park: Carnegie Foundation, varying editions, 2003.	19
12T	Smart, J. C. <i>Academic Disciplines</i> . Nashville: Vanderbilt University Press, 2000.	19
15	Manski, C. F. and Wise, D. A. <i>College Choice in America</i> . Cambridge, MA: Harvard University Press, 1983.	18
16T	Astin, A. W. <i>Assessment for Excellence</i> , varying editions, 1991.	17
16T	Blackburn, R. T. <i>Faculty at Work</i> . Baltimore: Johns Hopkins University Press, 1995.	17
18	Becker, G. S. <i>Human Capital</i> . Chicago: University of Chicago Press, varying editions, 1993.	16
19T	Fairweather, J. S. <i>Faculty Work and Public Trust</i> . Boston: Allyn and Bacon, 1996.	15
19T	Fleming, J. <i>Blacks in College</i> . San Francisco: Jossey-Bass, 1984.	15

Most Frequently Cited Individuals

Discourse in disciplines relies upon those who have gone before, those who have written works that at least some who follow find influential. If citation can be seen as a form of intellectual acknowledgment, then examining those individuals whose works are cited most frequently can provide a glimpse of indebtedness. Even if citation is a phenomenon that is separate from the quality (however defined) of cited works, the individuals whose works are cited have some influence on the shape of the field's discursive practice. Table 4 lists the 20 most frequently cited individuals (only sole authorship and first authorship is counted here, in keeping with Budd 1990). Beyond influence and discursive practice, citations have been attached to the prestige of researchers—the more citations, the higher the regard in which an individual may be held. Such social attachments to citations and citation analysis are not new; Cole and Cole (1973) wrote about them more than three decades ago. In physics Hirsch

Table 4 Most cited individuals

Rank	Name	Number of citations
1	Pascarella, E.	298
2	Astin, A. W.	294
3	Kuh, G. D.	195
4	St. John, E. P.	155
5	Tinto, V.	139
6	Cabrara, A. F.	102
7	Hurtado, S.	96
8	Smart, J. C.	95
9	Feldman, K. A.	92
10	Braxton, J. M.	89
11	Pike, G. R.	86
12	Clark, B. R.	82
13T	Marsh, H. W.	81
13T	Tierney, W. G.	81
15	Pace, C. R.	76
16	Terenzini, P. T.	69
17	Hossler, D.	62
18T	Fairweather, J. S.	58
18T	Paulsen, M. B.	58
20	Chickering, A. W.	57

(2005) has formulated an index intended to characterize the research productivity of individuals, based on citations received. Hirsch explicitly equates number of citations with scientific impact. That is a problematic assertion for a number of reasons: citation reception tends to be somewhat self-perpetuating (receiving citations leads to receiving citations, in part because readers can appropriate references from papers they find useful); citation can sometimes be pro forma (many references in a given paper are included to demonstrate awareness of literature thought to be important by referees and editors); and citation has a phenomenological component that cannot be evaluated simply by counting (some works exert a more powerful influence than others on authors). The most profound difficulty with the *h*-factor is that it has nothing at all to do with discourse and the matters that relate most closely to discourse in the sense that Habermas uses it. The meaning of the discursive practice as intended here will be addressed in the “[Discussion](#)” section below.

Another difficulty, noted by Budd (1990), is self citation and the impact it may have on assessment of impact. Self citation can be subjected to at least two types of assumptions—as a phenomenon it is negligible, since the quality of the work is basically independent of the citer, or it is a form of *eigenlob*, or self praise (Falagas and Kavvadia 2006). Accounting for the effect, according to either assumption, depends in part on the magnitude of the effect. Falagas and Kavvadia (2006) reported that “about 17% of reference in papers published in leading clinical journals as well as 20% of references in papers related to biomedical sciences published in leading basic science journals were self-citations” (p. 1041). For the purposes of this study, the definition of self citation used by Budd (1990) obtains: “self-citation is defined as any individual, as an author (sole, primary, or other) of a source item, citing himself or herself as a sole or primary author of a work appearing in a reference list” (p. 92). Table 5 presents a list of the most frequently cited individuals, controlling for self citation. As is

Table 5 Most cited individuals (omitting self-citations)

Rank	Name	Number of citations
1	Astin, A. W.	270
2	Pascarella, E.	253
3	Tinto, V.	139
4	Kuh, G. D.	97
5	Cabrara, A. F.	93
6	Feldman, K. A.	85
7T	Clark, B. R.	82
7T	Smart, J. C.	82
9	Braxton, J. M.	81
10	Hurtado, S.	80
11	St. John, E. P.	78
12	Tierney, W. G.	75
13	Pace, C. R.	72
14	Marsh, H. W.	68
15T	Chickering, A. W.	57
15T	Terenzini, P. T.	57
17	Hossler, D.	55
18	Bean, J. P.	53
19T	Birnbaum, R.	52
19T	Ewell, P. T.	52

evident, there are some differences between the two lists. The most substantial difference is with G.R. Pike. Pike ranks eleventh on the list of most cited individuals; when self citations are controlled for, he falls off the list (actually, he would rank twenty-first on the second list, were it to be extended). The differences between the lists are not great; rank-order correlation calculation results in a coefficient of 0.85, which can be considered a strong positive correlation. Relating to measures of productivity Laudel and Glaser (2006) observe,

The type of citation applicable is not fixed (both “self” (dependent) citations and “real” (independent) citations are used. The *h*-index—as generally used recently—gives authors whose self-citation rate is high an unjustified advantage. Self-citation causes no problem in calculating indicators for greater sets of papers (e.g., those of countries). However, low aggregation levels (publications of teams or persons) may cause great discrepancies. Especially individuals with many cooperating partners may receive many self-citations

The observation might hold for some disciplines; with regard to higher education the control for self citation can lead to some adjustments of evaluation, but the adjustments do not appear to be large.

Discussion

As was mentioned at the outset, discourse in disciplinary fields is complex. One complexity in the subfield of higher education is the possibly disproportionate presence of male

authors. Hart (2006) examined the same three journals examined here (for the period 1990–2002) and found that female authors are in the distinct minority. Taking a different tack, Lagon (1995) urged that the market be the arbiter of the quality of publications. It could be argued that citations act as a market in the sense Lagon intends; there are few external forces that demand certain items receive citation. If citation has something to do with authors' judgments of pertinence, then there may be some market at work. Reducing the discourse to the terms of a market, though, could result in some dissimulation, as will be discussed momentarily.

One way to look at the communicative action would be to expect that discursive practices would be dynamic. One purpose of publishing one's works is practical—to communicate what is proposed to be a contribution to the disciplinary conversation that has been ongoing for some time. Any individual steps into the conversation in mid-stream, as it were. People have been considering ideas, suggesting variations and alterations (as well as different directions), as part of the discourse that identifies a field *as* a field. The discourse also includes disputations, enunciations that address particular components of what has been said directly. The disputations can be friendly, as in additions or emendations to earlier enunciations. They can also be hostile; at times what has been said is attacked as incorrect, or even morally deficient. The disputations can play out via citation (citation here being defined not merely as bibliographic reference, but also as acknowledgement of the content of what was said). As such, citation is an integral element of discourse; it situates the present enunciation within the entirety of the conversation. Defined broadly, citation (or "reference," to make a distinction between the bibliographic notation) is at the heart of discursive practice, of conversation.

The present study addresses only the bibliographic part of referencing. As such, it provides clear indications of the shape of the discourse, of the temporal component as well as the individuals and some particular loci (books and journals) within which the discourse is accomplished. The set of source items (the articles from the three journals) is too small to indicate social networks defined by co-citation, but the most frequently cited individuals do tend to be cited in conjunction to some extent. For example, works by Astin, Kuh, Pascarella, and Tinto are co-cited a number of times. Since the three journals share a common, and quite well defined, focus, networks formed by the frequently cited individuals is neither unexpected nor very informative. The list of individuals noted in Table 5 provides sufficient indication of influence in discursive practice. To gauge the network in full a considerably larger, and broader, set of source items would have to be examined. The network may indeed be limited to the narrow topic of higher education, but it may be more expansive. Within the framework of higher education, though, the table exhibits informative aspects of the discourse of the field.

Since this study is primarily descriptive, it does not address potential norms of discursive practice. That examination would entail different methods, but it could be fruitful. For example, a study of normative discourse would entail investigating precisely how, with context, each contributor—author and referenced individual—speaks about one another, both topically and ethically. The work of Habermas (1990) could offer some direction in examining the latter aspect of practice. According to his framework for discourse ethics, the following requirements could be included:

1. A definition of a universalization principle that functions as a rule of argumentation
2. The identification of pragmatic presuppositions of argumentation that are inescapable and have a normative content
3. The explicit statement of that normative content (e.g., in the form of discourse rules)

4. Proof that a relation of material implication holds between steps (3) and (1) in connection with the idea of the justification of norms (pp. 96–97).

Readers may well apply implicit rules as they examine the literature of a subfield like higher education. The premise of an underlying rationality that governs the choices of what is cited accompanies the assumption that the scholarship itself follows the rules of rationality. That is, the citations included in a work are not intellectually or epistemically exterior to the content of the work. The cited items are selected, presumably, according to the epistemic and rhetorical guidelines that direct authors throughout the entirety of the communicative action. If these presumptions hold, then the idea of a market obtains only if “market” is a rationally bounded space. The present study is intended to provide an update to previous work and to contribute to examination of the discursive structures manifest in the literature of higher education. The professional discourse can be described, and there is a variety of additional work that can lead to a more complete description; what is offered here can move that work forward.

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