

Citation and Disciplinary Knowledge: A Comparison between Two Fields

Yu-Ying Chang

Yuan Ze University

This paper investigates the differences in citation practices between two academic fields (Applied Linguistics and Computer-Aided Architectural Design) and between the research- and the practitioner-oriented journals in these two fields. The major purpose of this study is to show that citation studies not only can reveal different citation patterns used in different fields, but can also help us better understand the social and knowledge structures of the disciplines under investigation. Overall, the results of this study show that cumulative citation patterns can be sensible indicators of the status (including the social and knowledge structures) of different fields or sub-fields at various points of time, and that evolutionary citation patterns of a given field can very often reveal the traces of the social and intellectual developments within that field. In addition, the results also show that there are differences both in the citation patterns and the knowledge presentation styles between the research- and the practitioner-oriented journals in the two fields examined.

Key words: English for Academic Purposes, citation analysis, discourse analysis, sociology of knowledge, sociology of science

1. Introduction

In his book *Research Genres: Exploration and Application* published in 2004, John Swales discusses several crucial theoretical and methodological issues of current interest in the field of English for Academic Purposes (EAP). Throughout this book, we can see his repeated emphasis on the importance of citation analysis to EAP research. For example, in the discussion of the complex issue of reader role in academic writing, Swales cites Paul, Charney, and Kendall (2001), indicating that focusing only on the pre-publication stage of academic research is insufficient, and that “it is only by following post-publication histories ... that we can begin to see the effects (if any) of writing quality on the judgments of academic readers” (Swales 2004:83). According to Swales (2004) and Paul et al. (2001), citation analysis plays an important role in these post-publication histories. In addition, citation studies can provide EAP researchers with abundant information regarding the various contextual factors involved in academic publication and scholarly communication, which is crucial to the analysis of academic texts (Swales 2004).

Apart from the important (but long neglected) role of citation analysis in EAP studies, another aspect that has also attracted the interest of many EAP scholars is interdisciplinary differences of scholarly discourse. Discoursal differences have been found across different academic disciplines in many genre analysis studies (Hyland

2000 and Hyland and Bondi 2006). Given this awareness, many EAP scholars have stressed the importance of the knowledge of disciplinary culture and practice in the acquisition of academic discourse (e.g. Bhatia 1993, 2007 and Hyland 2007). In order to achieve higher levels of interpretation in their text analyses, many scholars have expanded their research scopes, moving beyond the analysis of surface textual features alone to the exploration of various contextual factors. Researchers such as John Swales and Vijay Bhatia (personal communication) have also taught us that although it is important to study discourse *based on* careful consideration of the various contextual factors involved, it is equally important to increase our understanding of the various contextual factors involved *through* the analysis of discourse.

However, in an extensive literature review of citation studies across different disciplines, Chang (2004:4-38) points out that the great majority of citation-related studies from Applied Linguistics focused only on surface linguistic features of citation, paying little attention to the various contextual factors related to citation practice. Therefore, the major objective of this study is to provide a preliminary exploration of the differences in the development of disciplinary knowledge structures through an analysis of the developmental patterns of citation in two fields—Applied Linguistics and Computer-Aided Architecture Design.

In addition, based on Chang's literature review of citation studies, it was also found that most of the previous citation studies focused solely on research literatures; very few of them distinguished "professional literatures" (i.e. literatures in professional fields) from the "research literatures" of sciences and humanities (Chang 2004:62). In fact, the literatures of most of the professional fields (e.g. Architecture, Social Work, and Nursing) were found to be very different in nature from those of scientific and humanities fields. According to Pierce (1987), the literatures in these professional fields are composed of two dissimilar parts:

One part is the research literature, the knowledge structure of which is assumed to be similar to that of scientific literatures, and the other is the literature produced for practitioners, which has quite different characteristics. (Pierce 1987:163)

In most of the professional fields, practitioner-oriented journals are also important resources (Pierce 1987). However, very few studies have compared the use of citations in the articles collected from these journals with those from research journals. The comparison between these two kinds of journal (not only for the use of citations but also for other textual features) is thus an area deserving further exploration in EAP research. Therefore, the secondary objective of the present study is to provide a

preliminary comparison of the citation patterns in the research-oriented and the practitioner-oriented journals in these two fields, in the hope that a better understanding of the nature of disciplinary knowledge presented in these two different kinds of journal can be obtained.

As many discourse studies in EAP (Samraj 2002a, 2002b, Chang 2004, and Ozturk 2007) and citation studies in the field of Information Science (cf. Whitley 1969) have shown that, due to the different nature of knowledge production, obvious differences of discourse and citation can often be found in different sub-fields within the same matrix discipline. Therefore, the fields selected for examination in this study are two sub-fields under two matrix disciplines: Applied Linguistics (AL) and Computer-Aided Architectural Design (CAAD); the former is a sub-field of Linguistics and the latter Architecture.

This selection of fields for investigation is mainly based on the observation that, despite the recent heavy emphasis in EAP research on interdisciplinary differences among discourses of various academic disciplines, architectural discourse and its associated cultural expectations have remained largely unexplored. In fact, in the literature review stage of this study, only two studies of architectural discourse were located: one was a study of oral discourse in the studio design review process (Swales, Barks, Ostermann and Simpson 2001), and the other an analysis of the role of metaphor in the architectural “building review” (Caballero 2003), i.e. the architectural critical commentary of design projects. Given the large population of international students in architecture master’s programs in the United States, and the fact that English has become the *lingua franca* of international architectural design collaboration, a deeper understanding of architectural discourse is clearly needed in order to facilitate the design of appropriate teaching materials for architecture students. One additional purpose of this study, therefore, is to add more information to this meager knowledge.

2. Related studies

Although, in general, interdisciplinary comparisons have not been one of the major foci in the area of citation studies (cf. Snyder, Cronin and Davenport 1995), research results pertaining to disciplinary differences in citation are easily obtainable. In addition to the cumulative results that can be gathered from a number of citation studies conducted for different individual disciplines, various findings regarding disciplinary differences have been reported (e.g. Small and Crane 1979, Line 1981, Griffith and Small 1983, Cozzens 1985, Hurt 1985, 1987, Bazerman 1988, Hyland 2000, and White 2004).

For example, Hyland (2000) discovered several textual preferences of the citations across different individual disciplines. He concluded that there was a “marked overall disposition” towards non-integral and non-subject citation forms in the science and engineering papers (cf. Section 3.3 in this paper). So far as the “soft fields” in his study are concerned, the authors in these fields were reported to be more likely to use integral citations and to place the cited author in the subject position. Moreover, Thompson and Tribble (2001) incorporated the results of Hyland (2000) with those from Thompson (2000), who studied 16 doctoral theses in Agricultural Botany and Agricultural Economics. They found that while quotation was a relatively common feature in some social science texts and in the humanities texts, it was scarcely used in hard science texts.

Further, Snyder and Bonzi (1989) and Hyland (2003) compared patterns of self-citation across disciplines. Both studies revealed that due to the accumulative nature and linear progression of scientific knowledge, researchers in hard sciences used more self-citations than those in social sciences. In Snyder and Bonzi (1989), the frequency of self-citations in the humanities corpus was found to be even lower than that found in the social sciences.

All the citation studies reviewed above focus solely on research literatures (for a more comprehensive review of citation studies from the fields of Information Science, Sociology of Science, and Applied Linguistics, please see Chang 2004:4-38). Very few of the existing citation studies distinguish professional literatures from the research literatures of sciences and humanities. The few available citation-related results based on the broad distinction between scientific literatures (i.e. literatures of scientific fields) and professional literatures (i.e. literatures of professional fields) can be summarized here. First, materials cited in professional literatures are on average older than those cited in scientific literatures (Hurt 1985 and Line 1979). Second, professional literatures display a markedly low average number of citations per article as compared to scientific literatures (Nour 1985 and Schrader 1985). Third, professional literatures tend to cite more non-journal publications (Garfield 1979) and professional researchers also tend to use only materials published in their native languages (Fitzgibbons 1980). Further, as Bonzi (1982) and Price, Newell and Miller (1982) point out, in professional fields, compared with the practitioner-oriented journals, the research-oriented journals appear to be more similar to the journals in research disciplines in terms of the use of references. Kajberg (1996) further reveals that the practitioner-oriented journals in Library and Information Science contain more “hidden references” (i.e. the citations are given in the main text of the articles, but not listed as notes or in the end list of references) than the research-oriented journals.

3. Methodology

3.1 Fields selected

According to one of the statements regarding its origin, the term “Applied Linguistics” was first introduced in the editorial advertisement for the first volume of *Language Learning* in 1948 (John Swales 2003, personal communication). Charles Fries, the director of the English Language Institute at the University of Michigan at that time, first used this term to refer to the application of linguistic knowledge to the area of language teaching. However, as the field has gradually expanded into a vast, well-established discipline, Applied Linguistics now includes the application of linguistic knowledge to a much wider range of various areas, including analysis of political discourse, applied psycholinguistics, and language therapy, to name just a few. Given this increasing diversity within current AL research as stated above, this study focuses only on English Language Teaching (ELT) at/above college level in AL.

In general, the formal communication and the institution systems of AL are broadly similar to those of most academic (research) fields in social sciences and humanities. Apart from routine teaching, student research supervision and perhaps administrative work, important academic activities for senior members in this field might include presenting papers or giving talks at conferences, publishing research work in books or journals, reviewing papers submitted to journals or conferences, and joining journal editorial boards or conference committees. In addition, similar to certain other social science disciplines, in its well-established academic genre system, journal articles and scholarly books published by reputable academic presses are the two highest-ranked genres (Swales 2004).

Unlike applied linguists who focus on theoretical aspects of language learning, the careers of many well-regarded university ELT researchers also include a professional side. For example, they are practitioners who teach English language courses to non-native English learners (mostly at the university level), or are involved in materials development projects, including the writing of textbooks. However, in contrast to those who operate in a fully professional field (such as Architecture or Law), the practicing location for these ELT scholars is still largely confined to university or college campuses.

While Applied Linguistics might be regarded as a fairly typical academic discipline within the social sciences, Architecture has long been categorized as a professional field. According to the several Architecture professors whom I consulted, due to its heavy emphasis on the practice side, Architecture has long been privileging design practice far more than research per se. Roughly speaking, even today, there are

currently only about ten Ph.D. programs in the 120 or so Architecture departments in the U.S. Further, of all the Architecture Master's students all over the world, only 20% are in Master of Science programs which focus on research, while the other 80% are in Master of Architecture programs, which continue the training of various design skills and serve as terminal degrees for these design-oriented students.

Moreover, compared with the well-established academic genre systems and discursal conventions in AL, the formal communication system in CAAD (which started in the 1960s), or even in Architecture as a whole, seems to be still largely underdeveloped. For example, only relatively few academic journals and conferences can be found in this field, and there is as yet no disciplinary consensus regarding key issues such as the ranking of genres and the methods for evaluating scholarly performance in this field.

As far as professionalism is concerned, the nature of CAAD practice is rather different from that of university ELT. ELT practice at the university level still focuses—understandably enough—on knowledge presented via words (as does its research), and the location for the practice, as already mentioned, is still largely confined to university or college campuses. In contrast, CAAD practice seems more multifaceted: the practice involves “graphics” rather than just “words” and the ultimate goal of the practice is to produce architectural buildings (virtual or physical) rather than papers or books. In addition, active practitioners in this field have a greater chance of becoming known to the general educated public outside of academia; for example, they are more likely to appear on television programs, or to be quoted or discussed in newspapers or popular magazines. Some might even become social “stars” in their countries or worldwide, such as the famous American architect Frank Lloyd Wright and the digital architect Frank Gehry. Further, most CAAD practitioners work in architectural studios, construction and development firms, or computer companies off-campus; relatively few of them also have an opportunity to teach at universities.

In fact, due to the unique nature of its practice and the wide variation of career patterns among its members, the criteria for promotion to full professor in CAAD (and Architecture in general) differ from those in AL and most other academic disciplines. According to an internal document from the School of Architecture and Planning at Massachusetts Institute of Technology (MIT), which has been the leading CAAD institution worldwide, this school has as many as four models or “tracks” for professorship promotion; these options are as follows (William Mitchell¹ 2003, personal communication):

¹ William Mitchell is former Dean of the School of Architecture and Planning at MIT.

1. Humanities Model: The applicant must have published at least two well-recognized and highly-reviewed books.
2. Scientific/Engineering Model: The applicant must have published at least 12 research papers in recognized prestigious journals.
3. Practice Model: For the applicants who design physical buildings in the real world, they should have built at least one excellent architectural building which has been recognized as an important work in the five top architecture magazines and by authoritative critics.
4. Art Exhibition Model: For those who do not design physical buildings but work on creative design—paper architecture or virtual architecture—they should have already had at least one solo exhibition in prestigious museums or art galleries (such as the Museum of Modern Art in New York or one of the Guggenheim Museums).

Although some individuals may cross over from one model to another, the above categorization itself illustrates the great variance among the possible career patterns of CAAD scholars. In addition, based on the list, we may also predict that the academic genre system of CAAD might differ from that of AL.

3.2 Data collection

As stated previously, the major objective of this exploratory study is to examine—through the analysis of the developmental patterns of citation over different periods of time—whether there are differences in the development of disciplinary knowledge structures in AL and CAAD. To address this issue, in each field, 30 research articles published in authoritative journals were collected to be used as the major database of this study: roughly speaking, 10 papers for every ten-year interval between 1981 and 2001 were collected for AL and roughly 10 papers for every ten-year interval between 1980 and 2003 for CAAD.² For papers written by the same author that were published in different journals within the identical ten-year interval, only one of them was used.

For AL, the three journals selected were *Applied Linguistics*, *TESOL Quarterly* and *English for Specific Purposes*. In general, the first paper of each one of the consecutive issues located was collected. For missing issues, the next available issue was used. Due to space limitations, for the detailed description of the papers selected from CAAD, please see Chang (2004:47-49).

² Because relatively far fewer architecture research journals are available, the CAAD papers were collected from journals published over a longer period of time.

Moreover, given the awareness of potential differences between research-oriented journals and practitioner-oriented journals, the secondary objective of this study is to examine whether there are indeed differences, in terms of knowledge structure and presentation style, between these two types of journal. To address this issue through the analysis of citation, another minor database was constructed for this study. However, since the discussion of this issue aimed to focus solely on the general differences between these two types of journal (rather than on any developmental aspects of their knowledge structures and presentation styles), this specially-constructed minor database consisted of 10 practitioner-oriented pieces from each field (in total, 20 papers) published after the year 2000 as well as the same 20 research-oriented journal articles published after the year 2000 that were collected for the major database introduced above.

After consulting authoritative scholars in these two fields, three practitioner-oriented journals were selected for AL: *ELT Journal* and two e-journals—*The Internet TESL Journal* and *English Language Teaching Forum*. For CAAD, the two practitioner-oriented journals selected were *Architecture and Urbanism* and *Architectural Record*. Although *Architecture and Urbanism* and *Architectural Record* are categorized as “journals” under the ISI database, they are called “magazines” by architecture scholars and practitioners. Both of these journals are color-printed and contain many sections in each issue, such as news, exhibitions, building projects, commentaries by critics, essays/articles, and dialogues or interviews with prominent figures. Almost every page contains more than two illustrative pictures. The articles selected as samples for this study were taken solely from the essay/article section.

3.3 Data analysis

3.3.1 Analysis of textual features

For the purpose of clear distinction, the term “reference” will be used hereafter to refer to an item of work cited and put in either the reference list at the end of a paper or other places of the text (such as notes). On the other hand, the term “citation” will be used to refer to the occurrence of the reference in the main text and notes.

The major textual features of citation selected for analysis in this study were generally based on the studies of Valle (1999) and Hyland (2000), including the following categories:

1. Occurrence frequency of a single reference item in the main text (all instances of the textual citations are counted)
 - a. Single mention— A cited work is mentioned only once in the text.

- b. Multiple mentions— A cited work is mentioned 2 to 3 times in the text.
- c. Highly repeated— A cited work is mentioned more than 3 times in the text.
2. Clustering of citation within one sentence
 - a. None— The citation is isolated.
 - b. Small cluster— The citation is one of a small cluster of citations— less than or equal to 3 different references.
 - c. Large cluster— The citation is one of a large cluster of citations— more than 3 different references.
3. Integration status— integral vs. non-integral citations
 - a. Integral citation— Where the name of the cited author or the title of the cited work is textually integrated into the sentence. For example, “As *Swales (2004)* indicates, citation plays an important role in EAP research.”
 - b. Non-integral citation— Where the author’s name occurs either in parentheses or is referred to elsewhere by a superscript number or via some other device (e.g. notes). For example, “Citation plays an important role in EAP research (*Swales, 2004*).”³
4. Textual presentation of the cited work⁴
 - a. Short quote— Original words quoted were less than or equal to 10 words.
 - b. Long quote— Original words quoted exceeded 10 words.
 - c. Block quote— Extensive use of original wording set as indented blocks.

3.3.2 Analysis of other quantitative information of citations

Apart from the textual analysis based on applied linguistic tradition, several other non-textual citation characteristics often examined in bibliometric studies in Information Science (where the majority of previous citation studies were conducted) were also analyzed. These macro-features included: (1) the total number of references cited in the reference list, covering the percentages of the self-references and

³ Other examples:

(i) Integral, non-clustered:

“*Mackay (1975)* described the differences between ...”

(ii) Integral, clustered:

“Further research on cohesion using large corpuses such as *Chiu’s* of lexical verbs (*1973*) or *Ewer and Latorre’s* of EST (*1967*) should be pursued ...”

(iii) Non-integral, non-clustered:

“Some of the most interesting results occur in ...(*Greenbaum, 1969*).”

(iv) Non-integral, clustered:

“Two earlier studies (*Johns, 1985; Sherrard, 1986*) have indicated ...”

⁴ In Hyland (2000) and in Chang, Katunich, Otterbacher, and Swales (2002), it has already been revealed that most of the citations are presented in the forms of either generalizations or summaries. Therefore, in this study, these two textual forms will not be examined again; rather, only textual forms which are considered more marked and salient (such as those listed under this category) will be investigated in this study.

other-references, (2) the total number of occurrences of self- and other- citations in the main text, (3) publication year of the cited work, (4) number of papers cited for each cited author, (5) number of textual mentions (i.e. citations in the main text) per cited author, and (6) genres of the cited work.

4. Results and discussion

4.1 Citations in research-oriented journals: AL vs. CAAD

The most obvious result shown in Tables 1 and 2 is that the AL papers are overall much more likely to include numerous references and citations than are CAAD papers.⁵ If we generally agree that CAAD is by nature more a professional field than AL, this result confirms the conclusion made in previous studies that literatures in professional fields display a markedly lower average number of references and citations per article than literatures in academic fields (Nour 1985 and Schrader 1985). Additionally, the lower numbers of references and citations in CAAD papers might be partly related to the fact that, in general, they contain fewer words per paper than do AL ones. However, it could also be speculated that the much lower number of references across all the three stages in CAAD is partly due to its slower development—both in terms of the intellectual and the social structures—as compared to AL. As pointed out previously, AL research started in the 1940s, while CAAD research in the 1960s.

Table 1. Total numbers of reference items cited

	1980s		1990s		2000s	
	AL	CAAD	AL	CAAD	AL	CAAD
Other	240 (93.0%)	88 (75.9%)	507 (95.8%)	136 (84.0%)	487 (93.1%)	219 (87.3%)
Self	18 (7.0%)	28 (24.1%)	22 (4.2%)	26 (16.0%)	36 (6.9%)	32 (12.7%)
Total	258 (100%)	116 (100%)	529 (100%)	162 (100%)	523 (100%)	241 (100%)

⁵ As mentioned in the previous section, for a better distinction, the term “reference” will be used hereafter to refer to an item of work cited, while the term “citation” will be used to refer to the occurrence of the reference in the main text.

Table 2. Total numbers of citations in the main text

	1980s		1990s		2000s	
	AL	CAAD	AL	CAAD	AL	CAAD
Other	425 (93.8%)	117 (70.5%)	830 (94.0%)	184 (80.0%)	798 (94.2%)	313 (90.0%)
Self	28 (6.2%)	49 (29.5%)	53 (6.0%)	46 (20.0%)	49 (5.8%)	35 (10.0%)
Total	453 (100%)	166 (100%)	883 (100%)	230 (100%)	847 (100%)	348 (100%)

In addition, as also exhibited in Tables 1 and 2, roughly speaking, the total numbers of references and citations to other authors increase over time for both fields. This finding could be interpreted from the dual but intertwined perspectives of the increasing importance of citation in research paper writing and the maturation of the fields.⁶

Table 3. Numbers of papers cited per cited author (AL)

	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
1	187 (90.0%)	6 (60.0%)	347 (83.6%)	3 (33.3%)	316 (83.4%)	4 (28.6%)
2	14 (6.7%)	1 (10.0%)	46 (12.1%)	4 (44.5%)	41 (10.8%)	5 (35.7%)
3	4 (1.9%)	2 (20.0%)	15 (4.0%)	0 (0.0%)	14 (3.7%)	3 (21.4%)
4 or more	3 (1.4%)	1 (10.0%)	8 (0.3%)	2 (22.2%)	8 (2.1%)	2 (14.3%)

Table 4. Numbers of papers cited per cited author (CAAD)

	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
1	73 (92.4%)	3 (21.4%)	101 (86.3%)	6 (50.0%)	184 (92.9%)	7 (41.1%)
2	3 (3.8%)	3 (21.4%)	12 (10.3%)	2 (16.7%)	8 (4.0%)	6 (35.4%)
3	3 (3.8%)	1 (7.2%)	4 (3.4%)	1 (8.3%)	5 (2.5%)	3 (17.6%)
4 or more	0 (0.0%)	7 (50.0%)	0 (0.0%)	3 (25.0%)	1 (0.6%)	1 (5.9%)

As far as self-citations are concerned, AL and CAAD perform similarly with respect to the total number of papers including self-citations: 23 and 24 out of the 30 papers for CAAD (76 %) and AL (80%) respectively. Additionally, in general, across the three stages, both CAAD and AL authors tend to cite more items of their own previous work (see Tables 3 and 4) and to repeat mentions of their own work more often in the text (see Table 5) than works by other authors. Moreover, their self-cited

⁶ Reflective consequences of the maturation of a field include facts such as papers are on average becoming longer and more work has been produced in the field (Chang 2004).

references also tend to include items published more recently than references to other authors (see Figures 1 and 2). These results echo the conclusions made by Tagliacozzo (1977) and should not be surprising. After all, one’s own previous work is the most easily accessible both physically and mentally (White 2001).

Table 5. Frequency of citations in the main text

	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
AL						
Single mention	153 (64.8%)	11 (45.8%)	322 (63.5%)	11 (50.0%)	317 (65.0%)	22 (61.1%)
Multiple mentions	59 (25.0%)	6 (25.0%)	134 (26.4%)	9 (40.9%)	122 (25.0%)	12 (33.3%)
Highly repeated	24 (10.2%)	7 (29.2%)	51 (10.1%)	2 (9.1%)	48 (10.0%)	2 (5.6%)
CAAD						
Single mention	69 (78.4%)	18 (64.3%)	108 (78.8%)	18 (66.7%)	170 (77.6%)	31 (93.9%)
Multiple mentions	15 (17.0%)	8 (28.6%)	24 (17.5%)	6 (22.2%)	37 (16.9%)	2 (6.1%)
Highly repeated	4 (4.6%)	2 (7.1%)	5 (3.7%)	3 (11.1%)	12 (5.5%)	0 (0.0%)

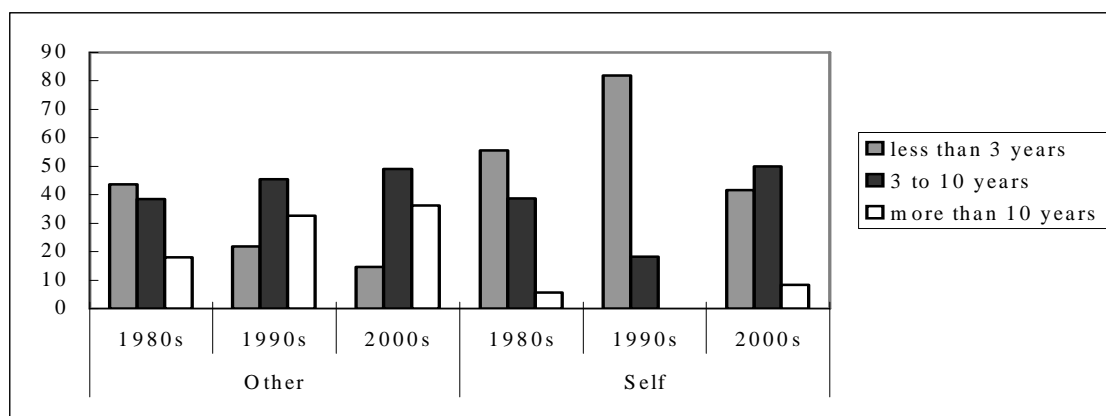


Figure 1. Ages of works cited (%) in AL

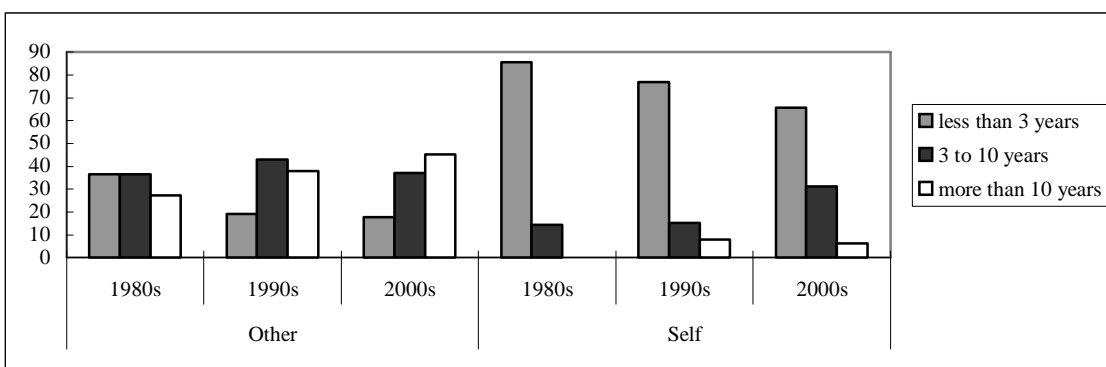


Figure 2. Ages of works cited (%) in CAAD

In spite of these similarities, if we look at Tables 1 and 2, we can find that researchers in these two fields cite themselves rather differently in terms of the developmental patterns: while the percentages of self-references and self-citations remain quite consistently under 7% in AL,⁷ those for CAAD in the 1980s are unusually high (24.1% and 29.5%); and after that there is a gradual decrease to 16% and 20% in the 1990s and finally to 12.7% and 10% in the 2000s (cf. Hyland 2000 and Snyder and Bonzi 1989).⁸

Similarly, as shown in Table 4, while in the 1980s, 50% of the CAAD authors self-cite more than four previous publications in a single citing paper, the percentage drops sharply to 25% in the 1990s, and by the 2000s, only 6% of the authors cite their own previous work more than four items in the citing paper. Moreover, whereas in the 1980s and 1990s, CAAD authors in their research papers tend to make more mention of their own previous work than other researchers' works, in the 2000s, there is a reverse tendency: 36% and 33% of the self-cited references are mentioned in the text more than once in the 1980s and the 1990s respectively, but the percentage drops to only 6% in the 2000s (see Table 5).

Overall, the CAAD self-citation results presented above might be partly due to the fact that in the 1980s, the literature available in CAAD was still quite limited and that CAAD research during that period was conducted by a rather small group of scholars whose research interests differed (William Mitchell and Terry Knight⁹ 2003, personal communication). The accumulative advantage effect (Allison and Stewart 1974)¹⁰ is thus more obvious at this first stage. Later on, as the field itself gradually expands with more literature available and more new blood joining the research force, CAAD researchers no longer base their new research on their previous work as heavily as before. The evolution of self-citation patterns observed here thus seems to reflect the development of the expansion of the social and knowledge structures of CAAD.

Generally speaking, most of the references used in both fields are less than 10 years old at all three stages (see Figures 1 and 2 above). However, one interesting phenomenon which needs to be pointed out is that although, in some sense, CAAD can be considered as a technology-based (i.e. based on Computer Sciences) professional field, the literature used in this field does not appear to be published more

⁷ This is close to Hyland's (2000) finding of a 5% self-citation rate for applied linguistics and Snyder and Bonzi's (1989) finding of a 6% self-citation rate for applied sciences in general.

⁸ Hyland (2003) investigated eight disciplines and found the range of self-citation rates was 12.5% to 5.0%. In Snyder and Bonzi (1989), six disciplines were examined and the range of self-citation rates found was 15% to 3%.

⁹ William Mitchell is the former Dean and Terry Knight is the current Associate Dean of the School of Architecture and Planning at MIT.

¹⁰ Allison and Stewart concluded in their 1974 study that because of feedback through recognition and resources, highly productive scientists maintain or increase their productivity, while scientists who produce very little produce even less later on.

recently than that used in AL. We might thus assume that, although based heavily on Computer Sciences, CAAD exhibits many of the social science and humanities characteristics inherited from its matrix field (i.e. Architecture). This finding illustrates the complex nature of the knowledge structure of CAAD.

Table 6. Genres cited in AL and CAAD

(%)	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
AL						
Books	22.5	0.0	33.3	4.5	31.8	8.3
Book chapters	23.8	11.1	30.2	9.0	21.4	33.3
Journal articles	33.8	33.3	29.8	50	38.6	47.2
Conference papers	5.4	5.6	1.6	13.6	0.6	5.6
Theses/Dissertations	1.3	11.1	1.0	9.0	2.1	2.8
Reports	0.8	27.8	0.4	0.0	0.4	0.0
Others	12.5	11.1	3.7	13.6	5.1	2.8
CAAD						
Books	36.4	3.6	37.5	15.4	41.1	9.4
Book chapters	6.8	7.1	17.6	19.2	15.5	18.8
Journal articles	37.5	57.1	28.7	34.6	24.7	18.8
Conference papers	8.0	10.7	4.4	19.2	5.0	50.0
Theses/Dissertations	2.3	3.6	1.5	0.0	1.8	3.1
Reports	4.5	17.9	1.5	7.7	1.3	0.0
Others	4.5	0.0	8.8	3.8	10.5	3.1

So far as the genres cited are concerned (see Table 6), for citations to other authors, the three most frequently cited genres in both of the CAAD and the AL databases for all three stages are books (including monographs), journal articles and book chapters. However, differences do exist between the two fields. While in CAAD, journal articles and books could both be considered as the most important reference sources in the 1980s, there is a switch to books after the 1990s.¹¹ On the other hand, we do not detect such a switch in AL. In addition, compared with AL, the percentage of conference papers cited are slightly higher in CAAD across the table; this seems to indicate a more important status of this genre in CAAD, which might be associated with the relatively small number of journals in this field.

¹¹ Although in the 1980s, the frequency of books was slightly lower than that of journal articles, the difference was minute. This change might be caused by the various difficulties associated with maintaining the publication of CAAD journals, some of which terminated their publications in the 1990s (William Mitchell, personal communication).

For self-references, journal articles are the genres cited the most often across the three stages in AL and for the first two stages in CAAD. In the 2000s, however, 50% of the self-cited references in CAAD are conference papers. This is again probably due to the expansion of the community and the increasingly important role of conference papers in CAAD.¹² Given that very few journals are available in this field, for the increasing number of junior researchers, conference papers seem to be often the best start of their publication careers.

We now turn to the local textual features of citations. Table 7 shows that when citing other authors' works in AL, while the more salient integral and non-clustered forms (e.g. "*Teufel (1999)* in a recent study also discovered that...") are preferred in the 1980s, there is a switch to the less salient non-integral and clustered ones in the later two stages. The following is an example of such a citation pattern:

- (1) Scientific writing is no longer regarded as purely objective, impersonal and informational. Rather it is considered as rhetorical, persuasive, and socially situated (*Bekenkotter and Huckin, 1995; Candlin and Hyland, 1999, Hyland, 2000; Swales, 1990, 2004*).

This result seems to differ from Hyland's finding (2000) that applied linguists prefer to use integral citations. On the other hand, based on Table 7, generally speaking, CAAD researchers seem to prefer non-integral and non-clustered citation forms over time (except that non-clustered and clustered citations were used equally often in the 1990s).

Table 7. Integration status of citations

	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
AL						
Integral	282 (66.4%)	5 (17.9%)	286 (34.4%)	9 (20.5%)	295 (37.0%)	8 (16.3%)
Non-integral	143 (33.6%)	23 (82.1%)	546 (65.6%)	35 (79.5%)	503 (63.0%)	41 (83.7%)
CAAD						
Integral	58 (49.6%)	18 (36.7%)	71 (38.6%)	12 (26.1%)	136 (43.5%)	2 (5.7%)
Non-integral	59 (50.4%)	31 (63.3%)	113 (61.4%)	34 (73.9%)	177 (56.5%)	33 (94.3%)

¹² The conference papers in the field of CAAD resemble those termed "Conference Presentation Paper (CPP)" in Räsänen's dissertation (1999). As cited and introduced in Swales (2004:14), this kind of paper is "written beforehand, subjected to peer review, and printed before the conference, and then (typically) delivered in a more oral style accompanied by a substantial number of visual aids."

In addition, from Table 8, we can also detect that overall there is an obvious increase in the use of clustered citations in AL (hence a corresponding decrease in the use of non-clustered citations). However, no such clear change can be found in CAAD. This switch to a more compact style of citing in AL, by structuring more citations together within one sentence in various clusters, might be an indicator of the development towards a more complex knowledge structure (cf. Bazerman 1988, for a similar development of integrating research into the existing research in Physics). On the other hand, the absence of this indicator in CAAD seems to reveal either the fact that the knowledge structure of this professional field has not yet reached its maturity or that the knowledge structure of professional fields is rather different from that of research/scholarly fields.

Table 8. Clusters of citations

	1980s		1990s		2000s	
	Other	Self	Other	Self	Other	Self
AL						
Non-cluster	272 (64.0%)	20 (71.4%)	312 (37.5%)	22 (50.0%)	322 (40.4%)	18 (36.7%)
Small cluster	114 (26.8%)	7 (25.0%)	275 (33.1%)	14 (31.8%)	218 (27.3%)	11(22.4%)
Large cluster	39 (9.2%)	1 (3.6%)	245 (29.4%)	8 (18.2%)	258 (32.3%)	20 (40.8%)
CAAD						
Non-cluster	78 (66.7%)	30 (61.2%)	92 (50.0%)	27 (58.7%)	202 (64.5%)	19 (54.3%)
Small cluster	29 (24.8%)	16 (32.7%)	67 (36.4%)	9 (19.6%)	88 (28.1%)	12 (34.3%)
Large cluster	10 (8.5%)	3 (6.1%)	25 (13.6%)	10 (21.7%)	23 (7.3%)	4 (11.4%)

Another result pertaining to the different nature of research in AL and CAAD comes from the use of quotations in general and block quotations in these two fields (see Tables 9 and 10). Overall, although we could discover a tendency towards more use of this persuasive rhetorical strategy in the 2000s in CAAD, in general, AL authors use more quotations,¹³ especially block quotes, in their scholarly writing than do CAAD authors. This result seems to indicate that the nature of AL research is in general more argumentative (cf. Chang 2004). On the other hand, it could also be said that CAAD research tends to be more technical. Nevertheless, the increase in the use of quotations in CAAD in the 2000s, as mentioned above, seems to signal an increasing argumentative tendency in CAAD research.

¹³ This observation is only based on the data found in the current database. Certainly, as discussed in the case studies in Chang (2004), the use of quotations depends highly on the nature of inquiry in a given field. In certain sub-fields within AL, where the research is more analytical and technical, such as Second Language Acquisition and Language Testing, the use of this feature is much less frequent than in fields such as English for Academic Purposes and Applied Discourse Analysis.

Table 9. Numbers of other-quotations per paper in AL

	Quotes in General	Block Quotes
1980s	6	3.1
1990s	12.2	3.1
2000s	9	1.5

Table 10. Numbers of other-quotations per paper in CAAD

	Quotes in General	Block Quotes
1980s	1.4	0.6
1990s	0.5	0.4
2000s	6.3	0.5

As far as self-citations are concerned (see Table 7 above), when citing their own previous work, authors in these two fields try to de-emphasize their work by using non-integral citations, that is, by either putting them within parentheses or hiding them after numbers (in the numerical citation systems). However, while the ratio between integral and non-integral self-citations maintains a rough consistency in AL from the 1980s to the 2000s, we see a steep slope for CAAD: in the 1980s, the frequency of integral self-citations is rather high (36.7%, much higher than the 17.9% in AL), and in the 1990s, it is still higher than that found in AL. In the 2000s, however, the frequency drops to only 5.9%—more than 10% lower than that found in AL.

One might wonder whether this phenomenon is also due to the gradual expansion of the discourse community. In the early days when the community was still very small and when almost everybody knew each other (William Mitchell and Terry Knight 2004, personal communication), CAAD authors might have felt more comfortable about including themselves in the text. As the community has expanded, however, these authors seem to have become more prudent and humble in presenting their own work and establishing their credentials. In addition to the use of non-integral forms in order to downgrade the degree of emphasis on their own earlier work, the results also show that except for one case in AL in the 1980s, AL and CAAD authors almost never quote themselves.

To sum up, in both AL and CAAD, the total numbers of references increase as the fields develop over time; the majority of the references cited are less than ten years old; and the self-cited references tend to be those published more recently than other-references. Compared with other-citations, authors also tend to cite more items of their previous work, to repeat mentions of their own work more often but to de-emphasize their own work by using the less salient non-integral citation forms.

Apart from the similarities summarized above, several discrepancies were also

found between these two fields. While, on average, AL authors cite a greater number of references in their papers, the percentages of their self-references and self-citations are much lower than those of the CAAD authors across all three stages. Further, while CAAD authors structure the cited information more loosely by putting more citations in isolation, AL authors cite in a more compact and complex style by structuring more citations together in terms of various kinds of cluster within one sentence. Finally, although journal articles and books are the most popular resources of previous literature in these two fields, their priorities differ at different stages for each field.

4.2 Practitioner-oriented journals vs. research-oriented journals

4.2.1 Applied Linguistics

We now turn to the comparison between citations in the research- and the practitioner-oriented journals.¹⁴ Roughly speaking, in AL, although articles in the practitioner-oriented journals are indeed shorter in length than those in the research journals (cf. Pierce 1987),¹⁵ in a broader sense, they do not exhibit great differences in style from those in research-oriented ones, in that their information structure (i.e. the textual organization) and the print layout are similar to those in the research journals. Therefore, they could still be subsumed under the broad category of “journal articles”.

As found in previous studies (e.g. Nour 1985 and Schrader 1985), reference items and their occurrences in the main text in the AL practitioner-oriented journals are indeed much fewer than those in the research-oriented journals (see Tables 11 and 12). This lower number of references might be partly due to the fact that papers published in the practitioner-oriented journals are in general much shorter in length than those published in the research-oriented journals (cf. note 14). However, the ratio between self- and other-citations in the practitioner-oriented journals still remains consistent with that in the research journals (6.1% self-citations in the practitioner-oriented journals and 5.8% in the research-oriented journals).

¹⁴ As mentioned previously, the analyses in this and the following sections are based on 10 papers from the practitioner-oriented journals published in the 2000s and the other 10 from research journals also published in the 2000s.

¹⁵ In the current database, except for one, the length of the articles collected from the research-oriented journals ranges between 21 to 35 pages. On the other hand, all of the ten articles collected from the practitioner-oriented journals are less than 10 pages in length.

Table 11. Total numbers of references cited in AL

	Other	Self
Research-Oriented Journals	487 (93.1%)	36 (6.9%)
Practitioner-Oriented Journals	79 (89.8%)	9 (10.2%)

Table 12. Total numbers of textual citations in AL

	Other	Self
Research-Oriented Journals	798 (94.2%)	49 (5.8%)
Practitioner-Oriented Journals	138 (93.9%)	9 (6.1%)

Additionally, authors in the practitioner-oriented journals tend to mention their own previous work less often than those published in the authoritative research-oriented journals. However, contrary to previous studies which showed that references cited in professional literatures are on average older than those cited in research literatures (Hurt 1985 and Line 1979), the results in this study show that the sources cited in the practitioner-oriented journals tend to be those published more recently. For example, only 36.5% of other-citations in the research journals are less than six years old, whereas 54.4% of other-citations in the practitioner-oriented journals belong to this age group (see Table 13). So far as self-citations are concerned, no obvious differences in terms of ages of works cited can be found.

Table 13. Ages of works cited in AL (by years) (%)

	Research-Oriented Journals		Practitioner-Oriented Journals	
	Other	Self	Other	Self
Forthcoming	0.0	2.8	0.0	22.2
0 -- 3	14.6	38.9	29.1	33.3
4 -- 6	21.9	38.9	25.3	33.3
7 -- 10	26.7	11.1	19.0	0.0
11 -- 20	28.1	8.3	22.8	11.2
21 -- 40	7.7	0.0	2.5	0.0
41 --	1.0	0.0	0.0	0.0
No Date	0.0	0.0	1.3	0.0

Furthermore, although previous studies have pointed out that professional literatures tend to cite more non-journal publications (Garfield 1979), the results in this study show that similar to the use of references in the research-oriented journals, in the AL practitioner-oriented journals, journal articles are still used the second most frequently when citing others' works and the most frequently when citing one's own

work (see Table 14). However, while the most often-cited genre in the research-oriented journals is the journal article, the most common one in the practitioner-oriented journals is the book. This phenomenon might be caused by the fact that compared with research journals, access to books might be very often easier for practitioners (cf. Chang 2004).

Table 14. Genres cited in AL (%)

	Research-Oriented Journals		Practitioner-Oriented Journals	
	Other	Self	Other	Self
Books	31.8	8.3	43.0	22.2
Book chapters	21.4	33.3	7.6	22.2
Journal articles	38.6	47.2	36.7	33.3
Conference papers	0.6	5.6	3.8	0.0
Theses/Dissertations	2.1	2.8	0.0	11.1
Reports	0.4	0.0	0.0	0.0
Others ¹⁶	5.1	2.8	8.9	11.1

If we take a closer look at the textual realization of citations, we can see from Figures 3 and 4 that, in contrast to the research-oriented journals, authors in the practitioner-oriented journals generally use integral and non-clustered citations more often. In addition, it seems that authors in the research journals tend to structure their references into a more compact and complex style by citing more than one reference within one sentence and structuring them in terms of various types of cluster (cf. Bazerman 1988). On the other hand, similar to the authors in CAAD research papers shown previously, authors in the AL practitioner-oriented journals also prefer to make their citations stand alone in the sentence; hence they could be said to structure previous knowledge in a looser style. With regard to self-citations, these authors still tend to de-emphasize their own work by using non-integral forms and by avoiding quoting their own previous work.

¹⁶ Other genres cited in practitioner journals include web-sites, language textbooks, teaching handbooks, and dictionaries. In addition to teaching handbooks, dictionaries, and web-sites covered in practitioner-journals, other genres cited in research journals also include poem collections, lecture notes, unpublished manuscripts, workshop materials, encyclopedias, newsletters, dictionaries, and computer software manuals.



Figure 3. Integral vs. non-integral citations (research- vs. practitioner-oriented journals in AL) (%)

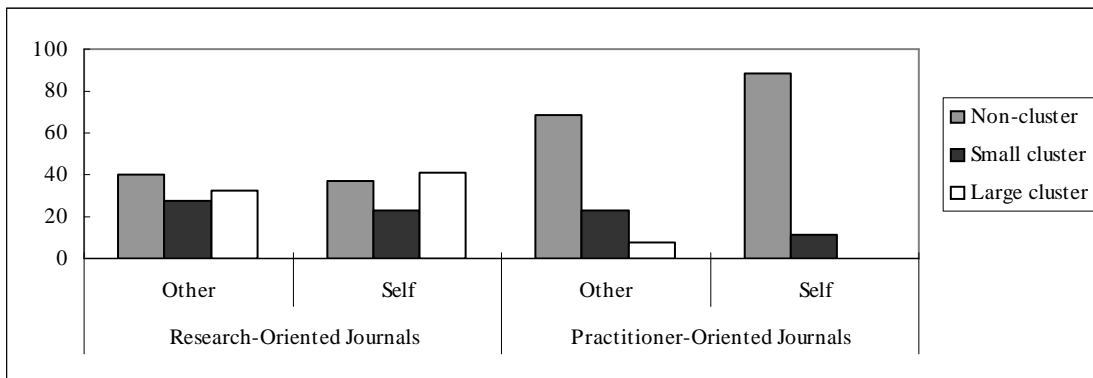


Figure 4. Clusters of citations (research- vs. practitioner-oriented journals in AL) (%)

In short, as the results discussed above show, papers in the AL practitioner-oriented journals tend to be shorter than those published in the research-oriented journals, but they are still based on a similar overall format; hence they could be roughly categorized as under the same broad genre. However, compared with the research-oriented journals, the practitioner-oriented journals, in general, tend to contain far fewer references, cite more recent references and cite books more often; they also exhibit a less compact and complex citation style.

In spite of these differences, however, the ratios of self- and other-citations still remain very similar for the articles in the two groups. This might be regarded as evidence of disciplinary consensus regarding citation practice in AL, and also as a clue pointing out that there exist at least certain textual conventions that help connect the professional and research spheres in this discipline.

4.2.2 Computer-Aided Architectural Design

In contrast to AL, the practitioner-oriented journals in CAAD, although still categorized as “journals” in the ISI database, are called “magazines” and regarded as belonging to a different genre group by the insiders of the CAAD community. Articles in these practitioner-oriented journals are printed in color and are much shorter in length (about 1 to 6 pages) with more illustrative pictures (including photographs) than those in the research journals (normally more than 15 pages). They are written in an essayist style without the conventions normally associated with journal articles including citations and reference lists. Actually, among the ten articles collected, only one contains a very short list of end-notes that includes several references. Moreover, the CAAD research- and practitioner-oriented journals included in this study are collected in different Citation Indexes: the former in Science Citation Index and Engineering Index, while the latter ones in Humanities and Arts Index. These phenomena again reflect the dramatic differences between CAAD professional practice and CAAD research as well as between the professional practice of CAAD and that of ELT in Applied Linguistics.

Table 15. Total numbers of references cited in CAAD

	Other	Self
Research-Oriented Journals	219 (87.3%)	32 (12.7%)
Practitioner-Oriented Journals	8 (100%)	0 (0.0%)

Table 16. Total numbers of textual citations in CAAD

	Other	Self
Research-Oriented Journals	313 (89.9%)	35 (10.1%)
Practitioner-Oriented Journals	9 (100%)	0 (0.0%)

Given the above differences, it is thus not surprising to find dramatic discrepancies between the citation patterns in these two groups of articles. As Tables 15 and 16 show, in total, only eight references to other researchers (all from one single article) were found in the practitioner-oriented journals. In addition, among the nine occurrences of citations in the main text, seven are integral citations. While in research journals, 12.7% of the reference items refer to the authors’ own works, none of the authors in the practitioner-oriented journals cite or mention themselves in their articles. Moreover, in seven of the ten articles in the practitioner-oriented journals, quotations are used not only to cite what a certain person *wrote* but also what he/she *said*. Therefore, although far fewer references were used in articles in practitioner-

oriented journals, compared with the 63 instances of quotations in the research journals, more cases of quotations were found in these rather short articles: 74 long and short quotes. However, probably due to their essayist style, no block quotes were found.

Actually, most of the names mentioned in the practitioner-oriented articles (including those that co-occurred with all of the 74 long and short quotes reported above) could be defined as “hidden references” (Kajberg 1996, see the end of Section 2 in this paper). That is, although these names refer to figures whose design works, opinions or propositions expressed are cited in the main text, they are not included in any list of references at the end of the article. In total, 147 “hidden references” are detected in nine of the ten practitioner-oriented articles—much more than the 18 instances discovered in only three of the ten research articles.

For these “hidden references”, sometimes a portion of the bibliographic information was found attached and hidden in the text. For example:

- (2) “This is not going to be about blobby forms,” *said* Branko Koralevic, associate professor and director of Penn’s Digital Design Research Laboratory, *in his opening remarks at Designing and Manufacturing Architecture in the Digital Age, which took place in late March* [Note: *RECORD*¹⁷ publisher McGraw-Hill was a conference sponsor]...
- (3) “We saw an electronic platform of media as a way to activate and renew [the retail] environment,” says Laurin B. “Monk” Askew, Jr., FAIA, the longtime director of design for Rouse before retiring in 1998...Askew believed the project could be developed as both concept and destination...[*RECORD, October, 1999, page 160.*]...

Given the quotation style and the incomplete reference information described above, we could say that the style of these practitioner-oriented articles is, to some degree, closer to journalism reports than to journal articles. This explains why the CAAD insiders call them “magazines”, even though they are categorized as “journals” in the ISI database (William Mitchell 2003, personal communication).

Further, comparing the “hidden references” used in the research and the practitioner-oriented journals, those in the research journals refer to architects (e.g. Peter Eisenman, Bernard Tschumi and Frank Lloyd Wright), artists (e.g. Leonardo da Vinci), and philosophers (e.g. Aristotle and Plato). About 70% of these “hidden references” refer to certain architects and their design works that are either the subjects under investigation of a current research study or used as illustrative

¹⁷ *RECORD* here refers to the magazine *Architectural Record*.

examples. Probably because most of the architects referred to in these research journals are well-known figures in the field, no specification of their status is provided in the text.

On the other hand, the majority of the “hidden references” in the practitioner-oriented journals refer to individual architects, architecture firms, architectural design teams or city planners/teams. The rest of these “hidden references” include architecture professors, photographers, government officers, senators and various consultants. Different from the style in the research journals, when an architect is mentioned or quoted in the practitioner-oriented journals, the status of this individual architect is often further specified, such as “PCR planner Paulette Wills,” “Craig Hartman, FAIA,¹⁸ partner at Skidmore, Owings & Merrill’s San Francisco office,” and “William Mitchell, Dean of MIT’s School of Architecture.” However, similar to the research journals, when the “hidden reference” refers to a certain renowned architect, no such specification is given. For example, “Mark Burry” and “Antonio Gaudi” in the following sentence make a good contrast:

- (4) *Mark Burry*, who is professor of innovation at RMIT University in Melbourne, Australia, has been involved in completing the construction of *Antonio Gaudi’s* Sagrada Familia Cathedral in Barcelona since the 1970s.

To summarize, in the CAAD practitioner-oriented journals (magazines), although name-mentioning, i.e. “hidden references”, are common, very few citations are used. In addition, in the text, what is associated with these “hidden references” is mostly what these figures cited *said* or *designed* rather than what they *wrote*. In fact, compared with English language teaching in AL, the distance between the professional and the research sides appears to be much greater in CAAD. It seems that not only do CAAD professionals *cite* differently from CAAD researchers, but more fundamentally, it seems that they also *read* different kinds of publications in their daily career lives.

5. Conclusions

In this paper, the differences in citation practices between AL and CAAD and between the research- and the practitioner-oriented journals in these two fields have been discussed. An attempt has been made to show that citation studies not only can reveal the different citation patterns used in different fields, but can also help us better understand the social and knowledge structures of the disciplines under investigation.

¹⁸ FAIA is Fellow of American Institute of Architecture.

Overall, the results of this study reveal that cumulative citation patterns could be sensible indicators of the status (including the social and knowledge structures) of different fields or sub-fields at various points of time, and that evolutionary citation patterns of a given field could very often reveal the traces of the social and intellectual developments over time within that field (cf. Cronin 1981).

In general, based on the analyses shown previously, we could see that while the self-citation rate in AL remains rather low from the 1980s through the 2000s, in CAAD, we see a very high percentage of self-citations in the 1980s but a drop in this rate thereafter. This finding plus results such as the sharp decreases in the number of self-cited references in a given paper across the three stages and the more frequent use of integral self-citations in the earlier stages in CAAD all point in the same direction: the intellectual development and the expansion of the research community in CAAD have progressed more slowly than those of AL. In effect, the cumulative results for CAAD seem to reflect a much smaller amount of accumulative disciplinary knowledge and a much smaller research community still under development in the 1980s. However, based on the evolutionary citation patterns across the three stages in CAAD, we do see a gradual expansion both in terms of the disciplinary knowledge base and the community size.

Moreover, we have seen that while the written expression of the professional practice and that of research do not differ too dramatically in AL, the distance between these two spheres in CAAD is much greater. In general, what AL researchers and practitioners mostly write and read in order to advance their knowledge in their career lives is broadly similar, whereas the two groups in CAAD read and write texts so differently that they can easily be labeled as two different genres.

Further, although a portion of the conclusions made in previous comparative studies of professional and research-oriented literatures are supported in this study, contradictory findings remain. For example, compared with the articles in the research-oriented journals, the numbers of references cited in the practitioner-oriented journals in both AL and CAAD are indeed much smaller, especially in CAAD where most of the references are “hidden references”. In addition, the results also seem to confirm Garfield’s (1979) conclusion that professional literatures tend to cite more non-journal publications. However, while previous studies reported that references cited in professional literatures were on the average older than those cited in research literatures, in this study, it was found that references cited in the AL practitioner-oriented journals tend to be more recent than those cited in the research-oriented journals.

Given the discrepancies summarized above, further studies following this line of inquiry and comparing more various disciplines are needed. Finally, although the

citation analysis of this study offers some interesting results regarding both the citation patterns and the sociology of knowledge in the two fields investigated, given its small sample size, further studies with larger sample sizes should be encouraged.

References

- Allison, Paul D., and John A. Stewart. 1974. Productivity differences among scientists: evidence for accumulative advantage. *American Sociological Review* 39:596-606.
- Bazerman, Charles. 1988. *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*. Madison, Wisconsin: The University of Wisconsin Press.
- Bhatia, Vijay K. 1993. *Analysing Genre: Language Use in Professional Settings*. London: Longman.
- Bhatia, Vijay K. 2007. *Professional Communication, ESP and Genre Analysis*. Lecture at 2007 Yuan Ze LSP Workshop 2: Key Concepts and Theories in ESP Research, Yuan Ze University, Chungli, Taiwan.
- Bonzi, Susan. 1982. Characteristics of a literature as predictors of relatedness between cited and citing works. *Journal of the American Society of Information Science* 33:208-216.
- Caballero, Rosaria. 2003. Metaphor and genre: The presence and role of metaphor in the building review. *Applied Linguistics* 24:145-67.
- Chang, Yu-Ying. 2004. *Citation and Academic Careers: Six Stories from Two Fields*. Doctoral dissertation. Department of Linguistics, University of Michigan. MI: Ann Arbor.
- Chang, Yu-Ying, John Katunich, Jane C. Otterbacher, and John M. Swales. 2002. Citations and career roles. Paper presented at English Language Institute Colloquium, University of Michigan. MI: Ann Arbor.
- Cozzens, Susan. E. 1985. Comparing the sciences: citation context analysis of papers from neuropharmacology and the sociology of science. *Social Studies of Science* 15:127-53.
- Cronin, Blaise. 1981. The need for a theory of citing. *Journal of Documentation* 37:16-24.
- Fitzgibbons, Shirley A. 1980. Citation analysis in the social sciences. *Collection Development in Libraries: A Treatise*, ed. by Robert D. Stuart, and George B. Miller, Jr., 291-344. Greenwich, Conn.: JAI Press.
- Garfield, Eugene. 1979. *Citation Indexing: Its Theory and Application in Science*,

- Technology and Humanities*. New York: Wiley.
- Griffith, Belver C., and Henry G. Small. 1983. The structure of the social and behavioral sciences literature. *Stockholm Papers in Library and Information Science*, ed. by S. Schwartz, 1-53. Sweden: Royal Institute of Technical Libraries.
- Hurt, Charlie D. 1985. Methodological citation differences in science, technology, and social sciences literature. *Library and Information Science Research* 7:345-355.
- Hurt, Charlie D. 1987. Conceptual citation differences in science, technology, and social sciences literature. *Information Processing and Management* 23:1-6.
- Hyland, Ken. 2000. *Disciplinary Discourse: Social Interactions in Academic Writing*. Harlow: Longman.
- Hyland, Ken. 2003. Self-citation and self-reference: credibility and promotion in academic publication. *Journal of the American Society for Information Science* 53:251-259.
- Hyland, Ken. 2007. *Genre analysis: theory and practice*. Lecture at 2007 Yuan Ze LSP Workshop 4, Yuan Ze University, Chungli, Taiwan.
- Hyland, Ken, and Marina Bondi. 2006. *Academic Discourse Across Disciplines*. New York: Peter Lang.
- Kajberg, Leif. 1996. A citation analysis of LIS serial literature published in Denmark 1957-1986. *Journal of Documentation* 52:69-85.
- Line, Maurice B. 1979. The influence of the type of sources used on the results of citation analyses. *Journal of Documentation* 35:265-284.
- Line, Maurice B. 1981. The structure of social science literature as shown by a large-scale citation analysis. *Social Science Information Studies* 1:67-87.
- Nour, Martyvonne M. 1985. A quantitative analysis of the research articles published in core library journals. *Library and Information Science Research* 7: 261-273.
- Ozturk, I. 2007. The textual organisation of research article introductions in applied linguistics: Variability within a single discipline. *English for Specific Purposes* 26:25-38.
- Paul, Danette, David Charney, and Aimee Kendall. 2001. Moving beyond the moment: Reception studies in the rhetoric of science. *Journal of Technical and Business Communication* 15:372-99.
- Pierce, Sydney J. 1987. Characteristics of professional knowledge structures: Some theoretical implications of citation studies. *Library and Information Science Research* 9:143-171.
- Price, James H., Susan Newell, and Patricia Miller. 1982. Most cited authors and publications in health education journals for 1970-79. *Journal of School Health* 52:586-591.

- Räisänen, Christine. 1999. *The Conference Forum as a System of Genres*. Gothenberg, Sweden: Acta Universitatis Gothoburgensis.
- Samraj, B. 2002a. Introductions in research articles: Variations across disciplines. *English for Specific Purposes* 21:1-17.
- Samraj, B. 2002b. Disciplinary variation in abstracts: The case of Wildlife Behaviour and Conservation Biology. *Academic Discourse*, ed. by John Flowerdew, 196-216. London: Longman.
- Schrader, Alvin M. 1985. A bibliometric study of the 'JEL', 1960-1984. *Journal of Education for Library and Information Science* 25:279-300.
- Small, Henry G., and Diana Crane. 1979. Specialties and disciplines in science and social science: an examination of their structure using Citation Indexes. *Scientometrics* 1:445-461.
- Snyder, Herbert W., Blaise Cronin, and Elisabeth Davenport. 1995. What's the use of citation? Citation analysis as a literature topic in selected disciplines of social sciences. *Journal of Information Science* 21:75-85.
- Snyder, Herbert W., and Susan Bonzi. 1989. An enquiry into the behavior of author self citation. *Proceedings of the 52nd Annual Meeting of the American Society for Information Science*, ed. by Jeffrey Katzer and Gregory B. Newby, 147-151. Medford, New Jersey: Learned Information Inc.
- Swales, John M. 2004. *Research Genres: Exploration and Applications*. Cambridge: Cambridge University Press.
- Swales, John M., Debbie Barks, Ana C. Ostermann, and Rita C. Simpson. 2001. Between critique and accommodation: reflections on an EAP course for Masters of Architecture students. *English for Specific Purposes* 20:439-458.
- Tagliacozzo, Renata. 1977. Self-citation in science literature. *Journal of Documentation* 33:251-265.
- Thompson, Paul. 2000. Citation practices in PhD theses. *Rethinking Language Pedagogy from a Corpus Perspective*, ed. by Lou Burnard, and Tony McEnery, 91-101. Frankfurt am Main: Peter Lang.
- Thompson, Paul, and Chris Tribble. 2001. Looking at citations: using corpora in English for Academic Purposes. *Language Learning and Technology* 5:91-105.
- Valle, Ellen. 1999. *A collective Intelligence: the Life Sciences in the Royal Society as a Scientific Discourse Community, 1665-1965*. Turku, Finland: University of Turku.
- White, Howard D. 2001. Authors as citers over time. *Journal of the American Society for Information Science and Technology* 52:87-108.
- White, Howard D. 2004. Citation analysis and discourse analysis revisited. *Applied Linguistics* 25:89-116.

Whitley, Richard D. 1969. Communication nets in science: status and citation patterns in animal physiology. *Sociological Review* 17:219-233.

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Department of Foreign Languages and Applied Linguistics
Yuan Ze University
Taoyuan, TAIWAN
Yu-Ying Chang: yymeichu@yahoo.com.tw

引文與學科知識：一個跨領域的比較

張玉櫻

元智大學

本論文旨在比較應用語言學與電腦輔助建築設計兩個研究領域中，學術期刊論文中引文的使用，同時也附帶比較此二領域中，學術導向期刊與實務應用導向期刊中引文使用的差異。本研究所企圖呈現的是：引文研究不僅可以揭發不同學科中引文使用的差異，更有助於幫助我們了解各學科的社會及知識結構，進而促進我們對其學術語言使用背後的文化、邏輯思維的了解。整體而言，本研究發現在上述二研究領域中，不同時期中領域的集體引文形式偏好，是該領域在不同時期的學術發展狀態（包括社會及知識結構）很靈敏的指標；另外，此二研究領域長期的引文演化形式，也可以顯示該領域長期的社會與知識結構演變的軌跡。最後，本研究也發現在此二研究領域中，學術導向期刊與實務應用導向期刊在引文使用以及知識呈現風格上有所差異，在電腦輔助建築設計中，兩者的差異尤其顯著。

關鍵詞：學術英語、引文分析、言談分析、知識社會學、科學社會學