Library and Information Science No. 18 1980

Characteristics of Journal Citations in the Social Sciences: Comparison of *SSCI* Data of 1972 and 1977

社会科学雑誌引用文献の特色: *SSCI* 1972年と1977年の比較

Makiko Miwa
三輪真木子
Shuichi Ueda
上田修一
Kazuhiko Nakayama
中山和彦

要旨

Social Sciences Citation Index の1972年，1977年に含まれる経済学，教育学，法学，政治学，心理学，社会学の引用文献をすべて抽出し，(1)論文あたりの引用文献数，(2)引用文献の形態，(3)引用年分布，(4)タイトル分散，(5)主題分散を調査し，各分野毎の比較を行う一方，1972年と1977年の調査結果を比較した。全分野を通じて，(1)原著論文利用の増加，(2)カレントなメディア利用の増大，(3)引用文献半減期の延長が見出された。経済学分野では他分野と比較してより古い文献が利用される一方，引用文献は少数の雑誌に集中している。教育学分野では5年間に引用文献の少数雑誌への集中化がみられ，心理学文献への依存の高さが目立つ。法学分野ではレビュー誌の数が多いため他分野に比べて論文あたりの引用文献数が多く，単行書の利用が多い。又，他分野の雑誌の利用は6分野中で最も少なく孤立した分野となっている。政治学分野は単行書の利用が多く雑誌の利用は少ない。雑誌出版前2～3年の新しい文献がよく利用される一方，より古い文献も多く利用されている。心理学分野の引用文献の構成は6分野中では最も自然科学に近く，雑誌の利用が多い。又，他の社会科学分野の雑誌をほとんど利用しておらず，医学雑誌への依存が大きい。社会学分野の引用文献は他分野と比較して特色に乏しく，他分野の雑誌の利用と他分野からの利用がともに多く，他分野との境界があまり明確でない。以上の点が明らかにされるとともに，用いられた各指標の有効性についても確証が得られた。

Makiko Miwa, Ph. D. Course, Graduate School of Library and Information Science, Keio University.
三輪真木子：慶應義塾大学大学院文学研究科図書館・情報学専攻博士課程
Shuichi Ueda, Lecturer, Science Information Processing Center, University of Tsukuba.
上田修一：筑波大学学術情報処理センター講師
Kazuhiko Nakayama, Director, Science Information Processing Center, University of Tsukuba.
中山和彦：筑波大学学術情報処理センター所長

I. Introduction

The progress in the citation analysis technique has shed light on the dissemination structure of scientific information. Also, through the pattern of information use, the characteristics of each individual scientific field have been estimated. The provision of *SCI* (*Science Citation Index*) and *SSCI* (*Social Sciences Citation Index*) detabases produced by ISI (Institute for Science Information) have facilitated the undertaking of studies on citation analyses of a larger scale.

The citation analysis studies utilizing *SCI* detabases have been widely conducted by Garfield, E.,[1),2)] Narin, F.,[3)] and others. The citation analysis studies in the various fields of the social sciences have been done by Earle and Vickery,[4)] and also by the DISISS (Design of Information Systems in the Social Sciences) project team at Bath University as a part of their own studies.[5)] Studies have also been done in each of the individual social science fields such as psychology,[6)] sociology,[7)] and economics.[8)]

The present study analyses the *SSCI* 1977 and 1972 citations in the fields of economics, education, law, politics, psychology, and sociology. The data analysed include, (1) the number of references per article, (2) forms of references, (3) obsolescence, (4) title dispersion, and (5) subject dispersion. A study of a volume of data using the same analysis technique should bring out the true characteristics of the process of utilizing scientific information as well as the special features of the research methods in each of the individual scientific fields. A comparison of the results of the analysis of 1977 data with those of 1972 should illuminate the changes occuring currently with the information use in the social science fields.

The term "source journal" is used to refer to the journals listed in *SSCI*'s "Source Journal List." The term "source article" is used to refer to the articles contained in the "source journals."

II. Research Methods

A. Fields Analyzed

The fields of economics, education, law, politics, psychology, and sociology were analyzed. The fields chosen included large numbers of source journals. The above six fields chosen were the representative fields in the social sciences.

The selection of source journals was based on the Full Coverage Source Journals Arranged by Category listed in the 1972 printed version of *SSCI*. The *SSCI* source journals consist of selectively-covered journals and of fully-covered journals. In this study, those fully-covered source journals were analyzed.

Table 1. *SSCI*; No. of Source Journals

	1972	1977
Selective coverage	1,212	2,460
Full coverage	970	1,553

B. Research Methods

The *SSCI* magnetic tape files from 1969 to 1977 used in the study were purchased by the University of Tsukuba Science Information Processing Center. The *SSCI* databases of 1977 and 1972 analyzed in the study were managed by IDEAS/77 (Interactive Database Easy Accessing System/77). The *SSCI* databases implemented in IDEAS/77 were retrievable online through the access points of the author, source journal, publication year, words in title, and reference (author).

The references of the articles from the source journals in each field were retrieved through the access point of the source journal.

The 1972 version of the *SSCI* contains 52,927 articles all published in 1972. However, the 1977 version of the *SSCI* contains 126,317 articles, of which 109,437 (82.6% of the total) have their publication year as 1977, 16,745 as 1976, 121 as 1975, and 14 as 1974. In order to avoid any distortion of the results caused by those articles published earlier than 1977, only articles published in 1977 were used for the present study.

III. Results

A. References per Article

Table 2 presents the number of source journals, the source articles, the references, and the average number of references per article used in the study. In the case of 1977, 808 journals were retrieved from the total of source journals. These 808 journals contains 44,679 articles which include a total of 515,596 references. A total of 515,596 references were the objects of analysis in the study. The 1972 version of the *SSCI* database contains a total of 201,058 references.

The average number of references per article was 11.5 in 1977, which was 2.7 larger than that for 1972. The possible reasons for this increase are:

(1) More references have become prerequisites to writing articles.

(2) The number of original articles with references have increased.

Table 2. No. of Source Journals, Source Articles, and References

Source field	No. of source journals (A)	No. of source articles (B)	No. of references (C)	Average no. of references per article (C/B)
		1977		
Economics	142	6,518	65,686	10.1
Education	129	7,166	62,221	8.7
Law	136	4,697	132,890	28.3
Politics	118	9,137	54,619	6.0
Psychology	178	12,133	141,886	11.7
Sociology	105	5,028	57,294	11.4
Total	808	44,679	515,596	11.5
		1972		
Economics	87	4,315	36,918	8.6
Education	97	4,120	27,439	6.7
Law	76	3,772	56,923	15.1
Politics	50	3,395	28,220	8.3
Psychology	151	3,737	26,936	7.2
Sociology	89	3,397	26,738	7.9
Total	550	22,736	201,058	8.8

The reason (1) could be supported by the fact that since the number of previously published articles increases yearly, so does the number of articles to be referred to. There is a variety of reasons for (2) depending on the fields.

With the exception of law and politics, the average number of references per article increased minimum 1.5 (economics) and maximum 4.5 (psychology) between 1972 and 1977. In the four fields (other than politics and law), the number of original articles with references has increased at a greater rate than articles without references such as editorials. In the field of politics, however, the percentage of original articles with references has decreased. Among politics journals, the number of articles without references was increasing. But, the increase in the percentage of the number of references in law was considerably high (1.9). This increase could be caused by the fact that the references in law journals include a large number of review journals published by law schools.

B. Forms of References

The references are analyzed according to their forms. The total number of references from each field were classified into the following five forms:

(1) Periodicals

Table 3. No. of References by Forms of References

	Periodicals	Books	Proceedings	Unpublished	"Others"	Total
			1977			
Economics	20,424 (31.1%)	40,175 (61.2%)	2,785 (4.2%)	1,036 (1.6%)	1,266 (1.9%)	65,686 (100%)
Education	21,386 (34.4%)	35,254 (56.7%)	2,394 (3.9%)	1,194 (1.9%)	1,993 (3.2%)	62,221 (100%)
Law	34,720 (26.1%)	94,703 (71.3%)	1,805 (1.4%)	1,278 (1.0%)	384 (0.3%)	132,890 (100%)
Politics	11,438 (20.9%)	39,404 (72.1%)	1,715 (3.1%)	1,540 (2.8%)	522 (1.0%)	54,619 (100%)
Psychology	86,347 (60.7%)	47,245 (33.9%)	3,457 (2.4%)	2,165 (1.5%)	2,672 (1.8%)	141,886 (100%)
Sociology	18,808 (32.8%)	34,649 (60.5%)	1,960 (3.4%)	929 (1.6%)	948 (1.7%)	57,294 (100%)
Total	193,123 (37.5%)	291,439 (56.6%)	14,116 (2.7%)	8,142 (1.6%)	7,785 (1.5%)	514,596 (100%)
			1972			
Economics	9,201 (24.2%)	25,242 (68.4%)	1,517 (4.1%)	362 (1.0%)	596 (1.6%)	36,918 (100%)
Education	7,841 (28.6%)	17,103 (62.3%)	1,274 (4.6%)	334 (1.2%)	887 (3.2%)	27,439 (100%)
Law	29,018 (51.0%)	24,801 (43.6%)	2,642 (4.6%)	130 (0.2%)	332 (0.6%)	56,923 (100%)
Politics	4,944 (17.5%)	22,131 (78.4%)	730 (2.6%)	118 (0.4%)	297 (1.9%)	28,220 (100%)
Psychology	13,630 (50.6%)	11,499 (42.7%)	766 (2.8%)	462 (1.7%)	579 (1.9%)	26,936 (100%)
Sociology	7,661 (28.7%)	17,513 (65.5%)	843 (3.5%)	218 (1.0%)	503 (2.0%)	26,738 (100%)
Total	72,295 (35.6%)	118,289 (58.2%)	7,772 (3.8%)	1,624 (0.8%)	3,194 (1.6%)	203,174 (100%)

(2) Books
(3) Proceedings
(4) Unpublished materials (including those articles such as communications, unpublished, and in press)
(5) "Others" (including theses and reports)

Table 3 shows the number of references classified by forms of each field in 1972 and 1977. Except for the case of law journals, the number of the references to periodicals substantially increased from 1972 to 1977 whereas the number of the references to books has decreased. The percentage of the references to proceedings and "others" has also decreased and the percentage of the references to unpublished materials has increased from 1.0% to 1.8%. The dependence on the references to periodicals may be considered as current awareness in information media. A steady increase in the percentage of the references to unpublished materials indicates the increasing importance of current information.

Figure 1, drawn from Table 6, shows the forms of references of each field analysed in the present study. The six fields are grouped into the following three categories based on the forms of references:

(1) The fields where the percentage of the references to books was more than 70% are:
Law, and
Politics.

(2) The fields where the percentage of references to books was between 56% and 61%, and to periodicals was between 31% and 37% are:
Economics,
Education, and
Sociology.

(3) The field where the percentage of the references to periodicals was more than 60% is:
Psychology.

The forms of references in earch field can be compared with the results of the DISSISS project. The results of the DISISS project show a similar tendency for the forms of citations in the six fields analysed.[9]

The total references to books in the DISISS project was 44.7% whereas the official publications and legal documents were excluded, but the present authors included them as books, making the percentage of references to books (1972) 58.2%.

In the fields of natural sciences, the references to periodicals were more than 80%.[10] In the fields of social sciences, the percentages of the references to periodicals in economics, education, and sociology were around 35%. If these percentages are considered as averages in the field of social sciences, the composition of the forms of references in the field of psychology was located on a scale between the natural sciences and the social sciences. Among the social sciences, psychology was the most dependent on the references to periodicals. This fact indicates that the research methods used in psychology are similar to those used in the natural sciences.

On the other hand, the percentages of the references to periodicals were the lowest in the fields of law and politics. In these two fields, varieties of references were used. The references other than those to periodicals included proceedings, legal documents, and news articles. In other words, books and proceedings tended to be highly referred to, but the percentage of the references to periodicals was comparatively low.

As mentioned previously, the importance of the references to periodicals was increasing in overall fields analyzed in the study. If this increase as found in the five years continues at the same velocity, the percentage of the references to periodicals would probably become greater than that of the references to books within the following ten years.

C. Obsolescence

Table 4 presents the time dispersion of the total references in each field.

First of all, an increase in the half life of references between 1972 and 1977 was found. The half life of references has increased by more than a year in all of the six fields (2 years in law).

The increase in the half life of references was also presented in the 1977 version of *SSCI*

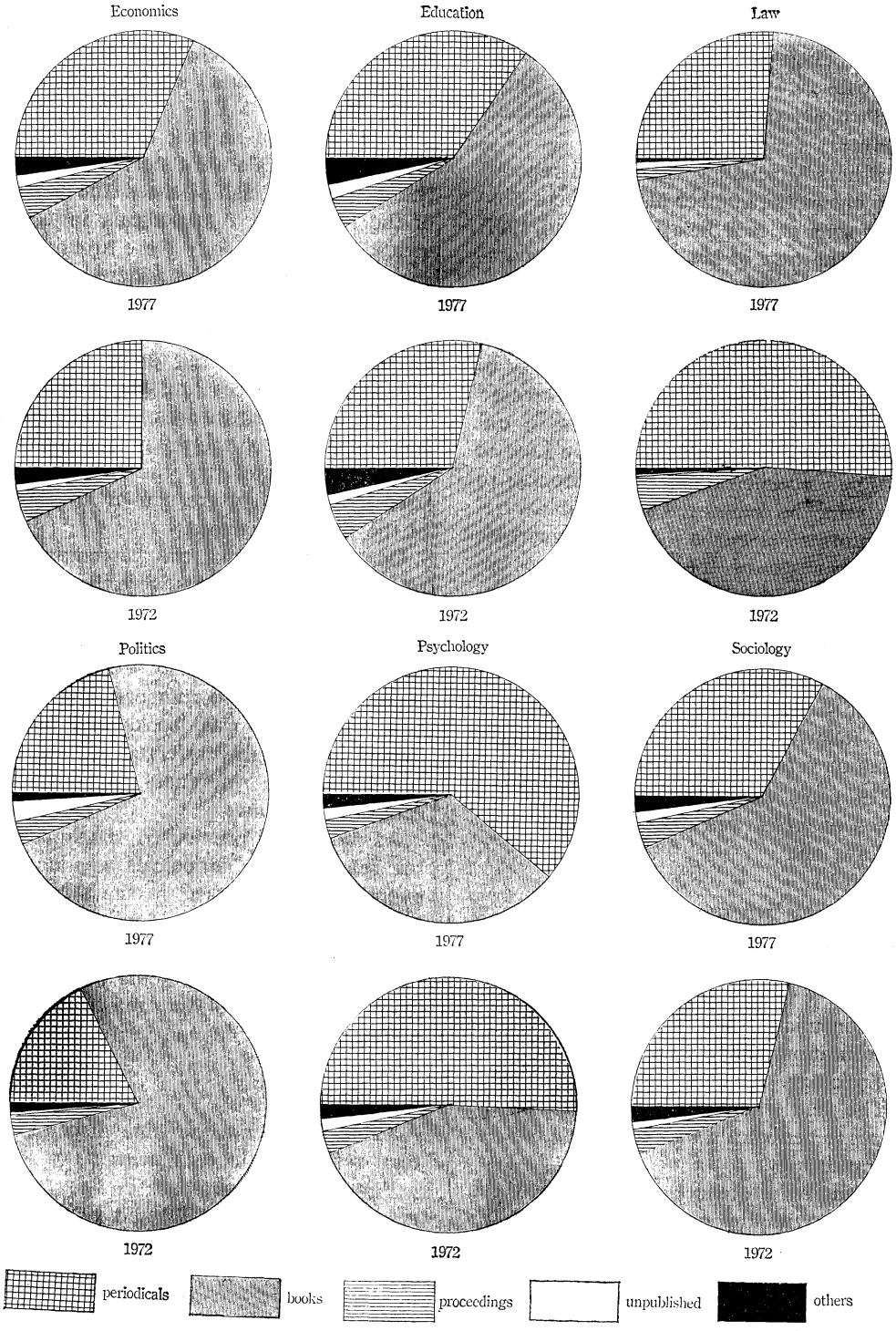


Figure 1. Form of References

Table 4. Time Dispersion

1977						
Cumulative percentage of references	Economics	Education	Law	Politics	Psychology	Sociology
50%	7	7	7	6	8	8
75%	13	12	17	13	13	14
90%	24	22	39	22	22	24
Years	(Cumulative percentage of references)					
1	2.9%	1.8%	2.9%	4.3%	1.5%	1.1%
2	12.8%	10.7%	14.8%	18.3%	8.4%	8.5%
3	23.5%	21.5%	26.0%	29.4%	17.7%	18.5%
4	33.3%	31.1%	34.7%	38.6%	26.8%	27.0%
5	41.7%	39.9%	42.0%	46.1%	35.4%	35.0%
6	48.7%	47.6%	47.9%	52.2%	42.8%	42.1%
7	55.0%	54.6%	52.8%	57.4%	49.4%	48.4%
8	60.3%	60.6%	56.7%	61.9%	55.3%	54.5%
9	64.6%	65.5%	60.1%	65.7%	60.4%	59.5%
10	68.1%	69.8%	63.1%	69.2%	65.1%	63.9%
20	86.9%	88.5%	79.6%	86.2%	88.5%	86.4%
30	92.6%	93.3%	86.4%	91.4%	95.1%	93.1%
40	94.3%	94.9%	90.5%	93.7%	97.1%	97.0%
50	94.7%	96.3%	93.3%	95.6%	98.4%	97.0%
(pre 1900)	1.9%	1.6%	2.9%	2.1%	0.5%	1.4%
1972						
Cumulative percentage of references	Economics	Education	Law	Politics	Psychology	Sociology
50%	6	6	5	5	7	7
75%	13	11	12	11	14	13
90%	31	24	26	23	23	25
Year	(cumulative percentage of references)					
10	67.9%	72.1%	71.2%	74.0%	65.0%	66.2%
20	79.8%	87.9%	86.4%	88.6%	88.0%	87.0%
30	88.6%	91.8%	91.4%	92.0%	94.0%	92.0%
40	91.2%	93.7%	94.6%	94.0%	97.0%	94.3%
50	93.6%	95.1%	96.5%	95.5%	98.0%	95.8%
(pre-1900)	2.9%	3.0%	1.6%	2.8%	0.7%	2.6%

(Table 5) which indicated that the percentage of references in journals published within the preceding five years decreased from 47.8% to 42.0% between 1970 and 1977. The percentage of the references within 10 years also decreased.

If there was no change in the time lag on the publication of *SSCI*, the following three

Table 5. Cumulative Percentage of Total Citations (*SSCI*)[11]

Years	1970	1971	1972	1973	1974	1975	1976	1977
5	47.8%	46.8%	46.0%	46.0%	44.9%	44.2%	42.7%	42.0%
6	53.1	52.6	51.6	51.6	50.9	50.2	48.9	48.1
7	57.8	57.3	58.5	56.8	56.0	55.5	54.1	53.5
8	61.7	61.5	60.7	61.3	60.5	60.0	58.7	58.1
9	65.1	65.5	64.3	65.1	64.4	63.9	62.8	62.2
10	68.1	68.1	67.7	68.4	67.7	67.3	66.3	65.8
20	84.1	84.5	84.3	85.4	85.1	84.7	84.2	84.2

reasons might be considered as explanations for the increase in the half life:

(1) Current research in the social sciences has tended to use older documents,

(2) The gathering of current documents has become increasingly difficult, and

(3) Because of the increase in the number of contributions, the time lag between the writing of papers and the actual publication has increased.

Among the above three reasons, the reason (1) conflicts with the result of III. B (Forms of References); there is an increasing use of current information. The reason (2) is unrealistic. Therefore it is reasonable to accept the hypothesis that the increase in the half life of references was caused by the increase of the contributions to the social science journals and the incapabilities of these journals to cope with the increased.

Next, the time dispersion in each field was compared. With the exception of law journals, 90% of the references to journals in the social science fields analysed in the present study were written in the preceding 24 years. However, it was necessary to refer back 39 years to cover 90% of all the citations in law journals. This is to say that the older documents tend to be used in the field of law. On the other hand, there is a tendency to use newer documents in the field of politics. This is because of the fact that the research objects in the field of politics are of comparatively current issues.

Psychology and sociology, having similar patterns, utilize current documents less frequently than do economics and education. The half life of references in both psychology and sociology is a year longer than that of economics and education. The following reasons may explain these differences:

(1) The time lag between the acceptance of papers and their actual publication is longer in the fields of psychology and sociology.

(2) In the fields of psychology and sociology, the research cycle takes longer than in the other four fields offten due to experimental and/or field works which create the time delay in the use of references.

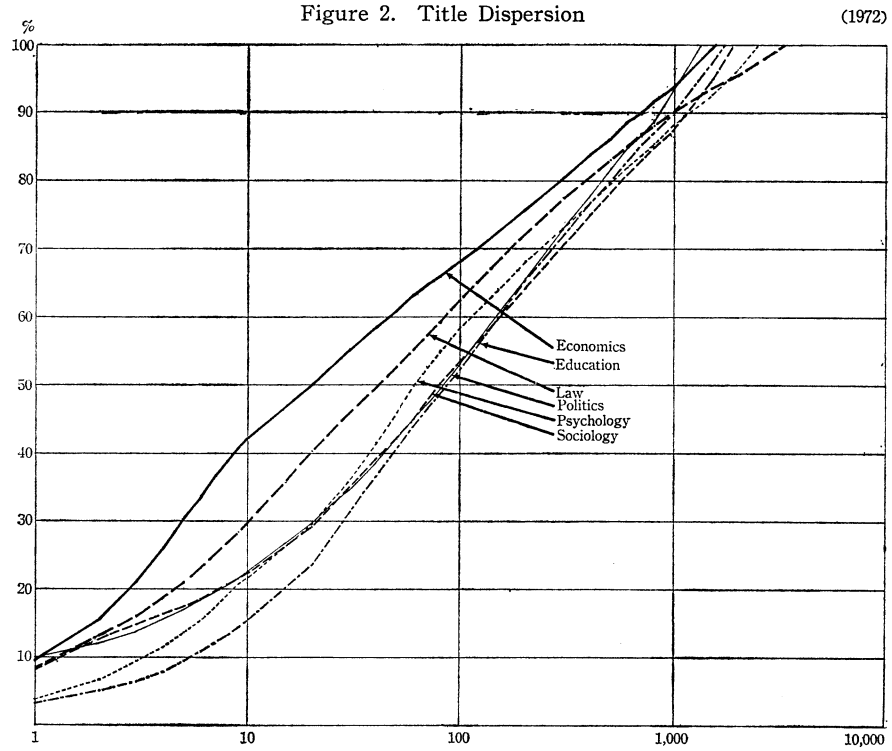
Based on the findings on the half life of the natural sciences, the half life of the basic sciences is longer than that of the applied sciences. Therefore, psychology and sociology might be considered as the basic fields in the social sciences.

D. Title Dispersion

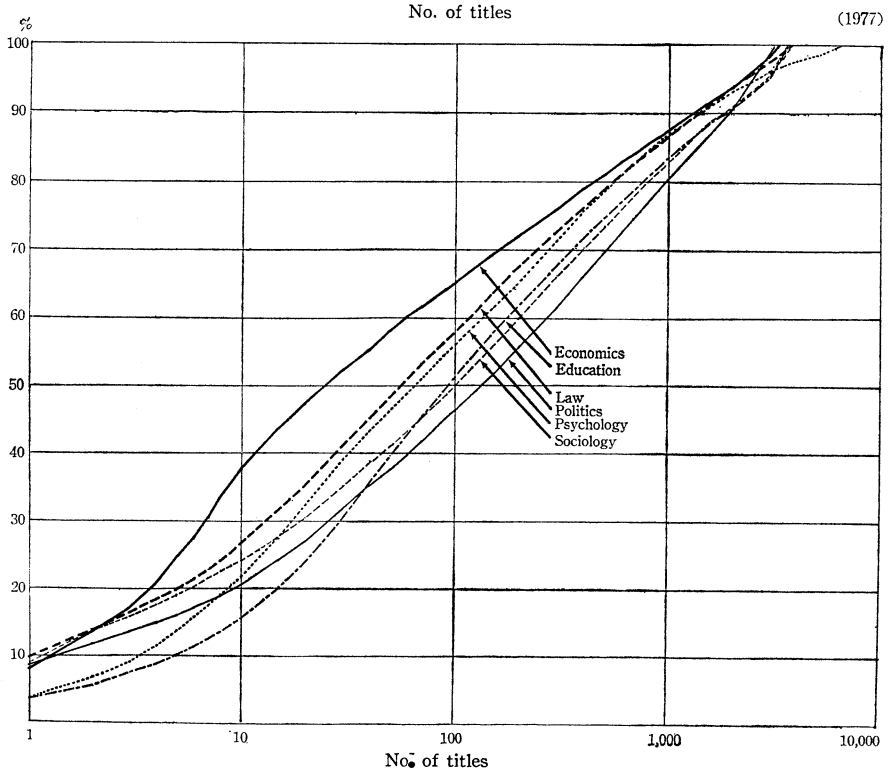
Figure 2 shows the title dispersion of the six fields analyzed. A comparison of the results of 1977 with those of 1972 indicated an increasing concentration of references to the highly cited journals in education. There are no other particular differences between these two years.

Economics shows quite a different pattern from the other five fields. In the field, nearly 40% of the total references are concentrated to the highly cited top 10 journals, and the top 100 journals include two thirds of the total citations. This result leads to the conclusion that economics is the least dispersed subject field in the social sciences.

Figure 2. Title Dispersion (1972)



(1977)



In the field of education, contrary to the field of economics, the concentration of references to the top 10 journals is low. But the other five fields do not show much difference.

The highly cited top 20 journals of each field for both 1972 and 1977 are listed in the Appendix.

E. Subject Dispersion

Table 6 presents the subject dispersion of the highly cited top 100 journals in 1977 arranged by subject fields.

In the field of economics, 16 journals of the top 100 are ones in other fields. However, the total number of references in the 16 journals is only 6.1% of the total number of references in the top 100 journals. It is the lowest percentage among the six fields analyzed. The results indicate that the field of economics is the least dependent on the other five fields and most of references refer to the own field (self-citation). In economics in the present analysis, the references to business journals were dealt as self-citations, and five journals in the others included area studies and geography.

In the field of education, 45 of the top 100 journals or 39.1% of the total number of references refer to the other fields. Most of references to the other fields are to the field of psychology. In other words, approximately, one third of the total references in the field of education refers to the field of psychology.

In the field of politics, 39 of the top 100 journals or 16.3% of the total number of references refer to the other fields. In politics, references to other fields are rather dispersed. The numbers of references to the other fields in a decreasing order are; 321 to economics, 184 to sociology, 94 to law, 72 to psychology and 16 to education.

In the field of psychology, references to the other fields are only 8 in the top 100 journals or 12.5% of the total number of references. Among references to the social sciences, only sociological journals are cited. The others referred to include medical science journals such as *Lancet, Journal of Nervous Mental Diseases, British Medical Journal, Brain Research.* These results indicate that psychology is less dependent on the social sciences, being rather de-

Table 6. Subject Relationship
(by references in top 100 journals)

Fields referred \ Fields analysed	Economics	Education	Law	Politics	Psychology	Sociology	Total
(1) Economics	12,477(84)	0(0)	157(10)	321(10)	0(0)	304(6)	13,256
(2) Education	0(0)	6,831(55)	0(0)	16(1)	0(0)	29(1)	6,876
(3) Law	0(0)	0(0)	19,636(87)	94(4)	0(0)	131(2)	19,861
(4) Politics	76(3)	0(0)	205(2)	4,433(73)	0(0)	239(3)	4,953
(5) Psychology	0(0)	3,518(30)	0(0)	72(2)	41,357(79)	1,360(18)	46,307
(6) Sociology	174(5)	197(3)	0(0)	184(3)	594(3)	6,513(60)	7,661
(7) Statistics/O.R.	347(3)	0(0)	0(0)	0(0)	0(0)	120(2)	467
(8) Others	220(5)	670(12)	132(1)	174(7)	5,294(18)	738(8)	7,228
(a) Total no. of refs. other than the source field	817(16)	4,385(45)	494(13)	861(27)	5,888(21)	2,921(40)	15,366
(b) Total no. of refs.	13,294(100)	11,216(100)	20,130(100)	5,294(100)	47,245(100)	9,434(100)	106,613
(c) Percentage (a/b)	6.1%	39.1%	2.5%	16.3%	12.5%	31.0%	14.4%

Numbers in parenthes: numbers of journals

pendent on the medical sciences.

In the field of sociology, 40 journals of the top 100 or 31.0% of the total number of references refer to journals in the other fields. The numbers of references to the other social science fields in decreasing order are; 1360 to psychology, 304 to economics, 239 to politics, etc. Medical science journals are also cited. The others referred to include *Lancet*, *British Medical Journals*, *New England Journal of Medicine*, and *JAMA*.

Table 7. Self-citation and Self-derivation (%)

	Self-citation	Self-derivation
Economics	93.7	94.1
Education	60.6	99.3
Law	97.5	98.9
Politics	83.7	89.5
Psychology	87.8	89.3
Sociology	69.0	85.0

Table 7 shows the self-citation and self-derivation percentages derived from the Earle and Vickery's calculation.[12)]

Table 7 clearly supports Earle and Vickery's descriptions of the characteristics of information use in education, that is, this field depends heavily on the documents of the other fields although its documents are seldom used by the other fields.

The self-derivation of law literature is also low. In other words, law literature seldom refers to the documents of other fields and are seldom cited by the literature of other fields.

Among references in politics and psychology, between 13% and 16% of the total number of references refer to the other fields. The use of literature by the other fields is comparatively higher than the other four fields studied. The same trend was more visible in the field of sociology.

In the field of sociology, the number of references to the other fields is large and the literature of sociology are frequently referred to by other fields. Therefore, the field of sociology seemes to cooperate more with the other fields, or the boundary between sociology and others is not so apparent.

IV. Conclusion

The total references in the fields of economics, education, law, politics, psychology, and sociology included in the *SSCI* databases of 1972 and 1977 were analyzed from (1) the number of references per article, (2) forms of references, (3) obsolescence, (4) title dispersion, and (5) subject dispersion.

The results of the analysis are as follows:

1. Overall tendencies shown in the six fields are:

(1) An increase in the number of original papers,

(2) An increase in the use of current information media. (In the fields of economics, education, and sociology, the use of books is still greater than the use of periodicals. The use of periodicals, however, should be comparable to the use of books in the near future.)

(3) The half life of the total references in all the fields increases between 1972 and 1977. It is because of the increase in the time lag between the acceptance of papers and the actual publication, and

(4) No remarkable changes are found in the title dispersion between 1972 and 1977.

2. In the field of economics, older references tend to be used. Nearly 40% of the total references of the field are concentrated on the highly cited top 10 journals.

3. In the field of education, an increase in the concentration of references to the highly cited journals is found between 1972 and 1977. The field of education is highly dependent on psychological literature whereas educational litrature are seldom used by the other fields.

4. A number of review journals are published in the field of law. This makes the number of references per article in this field quite large. Also, the percentage of the references to books is of a high ratio, such as 70%. The utilization of journals in the other fields is the lowest among the six fields studied. Both self-citation and self-derivation are very high; this fact indicates that law is comparatively isolated among the six fields.

5. In the field of politics, the references to books are highly used, or references are concentrated to documents.
6. In the field of psychology, the research methods are similar to those in the natural sciences in comparison to the other five fields. Psychological literature contributes heavily to the other social science fields. However, it does not cite documents in the other social sciences, but rather in the medical sciences.
7. Sociology has no remarkable characteristics distinguishing it from the others. In other words, it is a field where the average pattern of the social sciences information use tokes place. Also, this field refers to literature of the other fields, and the literature of this field is frequently cited by other fields. The boundary of this field between the other social science fields is not very clear.

Acknowledgement

The authers wish to express sincere gratitudes towards Mr. Sadaaki Miyamoto of the University of Tsukuba Science Information Processing Center, who so kindly offered them valuable advice.

1) Garfield, E. *Citation indexing: Its theory and application in science, technology, and humanities.* New York, John Wiley, 1979. p. 278.
2) Narin, F., Carpenter, M.P., Berlt, N.C. "Interrelationships of scientific journals," *Journal of the American Society of Information Science*, vol. 23, 1972, p. 323-31.
3) Narin, F., Carpenter, M.P. "National publication and citation comparisons," *Journal of the American Society of Information Science*, vol. 26, 1975, p. 80-93.
4) Earle, P., Vickery, B. "Social science literature use in the UK as indicated by citations," *Journal of documentation*, vol. 25, 1969, p. 123-41.
5) Skelton, Barbara. *Comparison of results of science user studies with 'investigation into information requirements of the social sciences,' working paper #1, Design of information systems in the social sciences.* Bath University, 1971. p. 39.
6) Daniel, Robert S. "Psychology," *Library trends*, vol. 15, p. 670-84.
7) Baughman, James C. "A structural analysis of the literature of sociology," *Library quarterly*, vol. 44, 1974, p. 293-308.
8) Stigler, George J., Freidland, Claire. "Pattern of citation practices in economics," *History of political economy*, vol. 11, 1978, p. 1-20.
9) Nicholas, D., Ritchie, M. *Literature and Bibliometrics.* London, Clive Bingley, 1978. p. 125.
10) Earle, *op. cit.*, p. 131.
11) "Social sciences citation index 1970-1977," *Social science citation index*, vol. 8, no. 1, 1977, p. 20.
12) Earle, *op. cit.*, p. 128.

Appendix: List of Top 20 Journals Cited in the Social Sciences

1977

cited by Economics

1.	American Economic Review	1581
2.	Econometrica	1162
3.	Journal of Political Economy	1105
4.	Quarterly Journal of Economics	707
5.	Review of Economic Studies	701
6.	Betrieb	657
7.	Economic Journal	654
8.	Review of Economics and Statistics	611
9.	Journal of Economic Theory	447
10.	Journal of Finance	267
11.	International Economic Review	255
12.	Economica	240
13.	Journal of the American Statistical Association	228
14.	Bell Journal of Economics and Management Science	220
15.	Southern Economic Journal	203
16.	Journal of Economic Literature	165
17.	Canadian Journal of Economics	151
18.	Brookings Papers on Economic Activity	131
19.	Journal of International Economics	127
20.	BSTBL	124

cited by Education

1.	Journal of Educational Psychology	759
2.	Journal of Counseling Psychology	434
3.	Child Development	423
4.	Journal of Medical Education	293
5.	Psychological Bulletin	285
6.	Review of Educational Research	261
7.	Journal of Applied Behavioral Analysis	261
8.	Journal of Experimental Child Psychology	243
9.	Educational Psychology	224
10.	Developmental Psychology	220
11.	Journal of Educational Research	214
12.	Personnel Guidance Journal	200
13.	Journal of Experimental Psychology	198
14.	American Educational Research	193
15.	Journal of Abnormal Psychology	176
16.	Harvard Educational Review	174
17.	Journal of Personality and Social Psychology	174
18.	American Psychologist	170
19.	American Sociological Review	170
20.	Journal of Consulting and Clinical Psychology	160

1972

cited by Economics

1.	American Economic Review	809
2.	Econometrica	495
3.	Journal of Political Economy	445
4.	Economic Journal	407
5.	Quarterly Journal of Economics	384
6.	Review of Economics and Statistics	286
7.	Review of Economic Studies	258
8.	Journal of Finance	196
9.	Economica	158
10.	Southern Economic Journal	133
11.	Journal of Law Economics	97
12.	International Economic Review	84
13.	Journal of Business	79
14.	Canadian Journal of Economics	73
15.	Journal of American Statistical Association	71
16.	Journal of Economic History	47
17.	Western Economic Journal	47
18.	Economic Development	45
19.	Journal of Farm Economics	44
20.	Review of Social Economy	43

cited by Education

1.	Journal of Educational Psychology	809
2.	Harvard Educational Review	122
3.	American Educational Research Journal	107
4.	American Sociological Review	104
5.	Child Development	98
6.	Science	95
7.	Journal of Educational Research	94
8.	Journal of Abnormal Psychology	84
9.	Educational and Psychological Measurement	82
10.	Personnel and Guidance Journal	81
11.	Psychological Bulletin	77
12.	Exceptional Children	75
13.	British Journal of Educational Psychology	74
14.	Psychological Review	72
15.	American Psychologist	70
16.	Review of Educational Research	66
17.	Personality and Social Psychology	61
18.	Psychometrika	60
19.	English Journal	59
20.	Journal of Counseling Psychology	59

1977

cited by Law

1.	Harvard Law Review	3332
2.	Yale Law Journal	1419
3.	Columbia Law Review	924
4.	Betrieb	648
5.	University of Pennsylvania Law Review	571
6.	University of Chicago Law Review	496
7.	Stanford Law Review	491
8.	California Law Review	483
9.	Varginia Law Review	476
10.	Michigan Law Review	464
11.	American Bar Association Journal	404
12.	Texas Law Review	342
13.	Wall Street Journal	313
14.	Minnesota Law Review	307
15.	Vanderbilt Law Review	304
16.	New York University Law Review	296
17.	UCLA Law Review	294
18.	Business Lawyer	272
19.	American Journal of International Law	254
20.	Louisiana Law Review	226

cited by Politics

1.	American Political Science Review	981
2.	WERKE	359
3.	Journal of Politics	199
4.	World Politics	153
5.	American Journal of Sociology	137
6.	American Sociological Review	121
7.	American Economic Review	108
8.	Public Opinion Quarterly	100
9.	Journal of Conflict Resolution	98
10.	American Journal of Political Science	94
11.	British Journal of Political Science	94
12.	Comparative Politics	83
13.	Western Political Quarterly	81
14.	Public Choice	80
15.	Public Administration	76
16.	Journal of Political Economy	70
17.	Foreign Affairs	69
18.	Economic Journal	62
19.	Canadian Journal of Political Science	59
20.	Journal of Personality and Social Psychology	55

1972

cited by Law

1.	Harvard Law Review	2369
2.	Yale Law Journal	1400
3.	Columbia Law Review	917
4.	University of Pennsylvania Law Review	727
5.	Michigan Law Review	652
6.	Congressional Record	626
7.	University of Chicago Law Review	575
8.	California Law Review	508
9.	Virginia Law Review	446
10.	New York University Law Review	442
11.	Stanford Law Review	368
12.	Texas Law Review	359
13.	American Bar Association Journal	348
14.	Business Lawyer	316
15.	Law and Contemporary Problems	303
16.	Georgetown Law Journal	297
17.	Minesota Law Review	297
18.	Vanderbilt Law Review	262
19.	Wall Street Journal	247
20.	UCLA Law Review	236

cited by Politics

1.	American Political Science Review	473
2.	World Politics	100
3.	Midwest Journal of Political Science (changed to American Journal of Political Science)	82
4.	Journal of Politics	75
5.	American Sociological Review	70
6.	Journal of Conflict Resolution	65
7.	International Organization	49
8.	American Journal of Sociology	48
9.	Problems of Communism	48
10.	Asian Survey	47
11.	Public Opinion Quarterly	43
12.	Foreign Affairs	42
13.	Western Political Quarterly	41
14.	Peking Review	34
15.	Comparative Politics	33
16.	American Economic Review	33
17.	Public Administration	31
18.	Economic Journal	28
19.	Espirt Lois	28
20.	Journal of Social Issues	27

1977

cited by Psychology

1.	Journal of Experimental Psychology	2901
2.	Journal of Personality and Social Psychology	2698
3.	Journal of Abnormal Psychology	2050
4.	Archives of General Psychiatry	1987
5.	Psychological Bulletin	1925
6.	American Journal of Psychiatry	1801
7.	Journal of Consulting and Clinical Psychology	1364
8.	Science	1359
9.	British Journal of Psychiatry	1127
10.	Psychological Review	1106
11.	Child Development	1099
12.	American Psychologist	1026
13.	Psychological Report	998
14.	Perceptual and Motor Skills	962
15.	Journal of Verbal Learning and Verbal Behavior	944
16.	Journal of Nervous and Mental Disease	909
17.	Perception and Psychophysics	818
18.	Journal of Comparative Physiology	797
19.	Journal of Clinical Psychology	756
20.	Journal of Applied Psychology	742

cited by Sociology

1.	American Sociological Review	1665
2.	American Journal of Sociology	950
3.	Social Forces	353
4.	Social Problems	330
5.	Journal of Marriage and Family Counseling	274
6.	Journal of Personality and Social Psychology	239
7.	Science	225
8.	Administrative Science Quarterly	198
9.	Sociometry	163
10.	Journal of Marriage and the Family	128
11.	American Sociologist	124
12.	Human Relations	124
13.	Demography	123
14.	Journal of Abnormal Psychology	122
15.	Journal of Social Issues	122
16.	American Economic Review	121
17.	Psychological Bulletin	119
18.	Population Studies	116
19.	American Political Science Review	108
20.	Population	107

1972

cited by Psychology

1.	Journal of Abnormal Psychology	482
2.	Journal of Experimental Psychology and Monograph	385
3.	Psychological Bulletin	335
4.	Child Development	287
5.	Science	258
6.	Psychological Review	255
7.	Journal of Personality and Social Psychology	241
8.	American Psychologist	228
9.	Journal of Consulting and Clinical Psychology	224
10.	Perceptual and Motor Skills	137
11.	Archives of General Psychiatry	135
12.	Psychological Report	133
13.	Journal of Projective Technique	131
14.	British Journal of Psychology	128
15.	Journal of Counseling Psychology	121
16.	Psychometrika	121
17.	Journal of Applied Psychology	117
18.	Journal of Clinical Psychology	117
19.	Journal of Counseling and Clinical Psychology	108
20.	Nature	106

cited by Sociology

1.	American Sociological Review	599
2.	American Journal of Sociology	327
3.	Social Forces	147
4.	Journal of Personality and Social Psychology	94
5.	Journal of Abnormal Psychology	85
6.	Social Problems	80
7.	Marriage and Family Living	79
8.	American Journal of Public Health	72
9.	British Medical Journal	71
10.	Sociometry	69
11.	American Economic Review	58
12.	Archives of General Psychiatry	58
13.	Lancet	56
14.	Journal of Social Issues	53
15.	Science	53
16.	Public Opinion Quarterly	52
17.	American Anthropoligist	50
18.	Journal of Marriage and Family Counseling	48
19.	Psychiatry	48
20.	Sociology and Social Research	47