# IS INFORMATION RETRIEVAL IN THE ARTS AND HUMANITIES INHERENTLY DIFFERENT FROM THAT IN SCIENCE? THE EFFECT THAT ISI®'S CITATION INDEX FOR THE ARTS AND HUMANITIES IS EXPECTED TO HAVE ON FUTURE SCHOLARSHIP

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Information retrieval in the arts and humanities differs from that in the sciences because the documents required differ in ·many respects. Nevertheless, the Institute for Scientific Information® has successfully adapted its basic citation indexing system, first used in the *Science Citation Index®*, to its new *Arts & Humanities Citation Index®*. Special adaptations of the system to meet the information needs of humanities scholars are discussed. The potential effects of the new index (and resulting data base) are seen as the promotion of interdisciplinary research, accessibility of bibliographic data for sociological and historical studies of humanities scholarship, and more objective methods for evaluating humanities journals.

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It is just fifteen years since I was asked by the editor of the *American Behavioral Scientist* to write an article on the application of citation indexing to the social sciences [1]. This is significant because the *Science Citation Index®* (*SCI®*) was only about two years old at the time. So I have long been concerned with the differences between information retrieval in the natural sciences and the social sciences. But my original interest in citation indexing was in its application to the humanities literature—if we can agree that the history of science is a division of the humanities. The first paper I ever presented on the subject of citation indexing was on citation indexes to the Bible. It was given in 1955 at a meeting of the American Documentation Institute in Philadelphia [2]. The paper demonstrated the potential value of a citation index to biblical references found in monographs on the history of science. Although I have generally been concerned as an information scientist with the scientific literature for nearly three decades, I have also had an abiding interest in citation indexing for the humanities.

One of the exciting things to me about citation indexing is that it is effective in radically different areas of scholarship. For, in general, we may say that information retrieval in the sciences and in the humanities is different because the fundamental nature of scientific research is different from that of the humanities. This is not to say that scholars in the arts and sciences do not share a common heritage in the search for truth. Scientific research is preoccupied, however, with the study of the impersonal processes of the universe. Scientists, including social scientists, look for new facts which are revealed through reproducible experiments. Once a fact or datum is confirmed, science moves on to new discoveries based on its expanded store of knowledge. In the most simplistic terms, then, science may be considered evolutionary, with new developments unfolding from previous research.

Citation Practices in the Sciences

A large part of scientific research is done to fill in the paradigms laid out by the occasional revolutionary thinker, as Thomas Kuhn [3] explained in his classic work on scientific revolutions.[1] And, both a giant step forward, like Einstein's work on relativity and also smaller steps which fill out the paradigms. such as experiments to prove theories, are communicated in the relatively short space of a journal article. For example, the report by Watson and Crick on the double helix structure of DNA was only 1 or 2 pages in *Nature*. Refutations of theories, incidentally, may occupy more space! Scientists, therefore, are primarily interested in writing and citing journal articles and in retrieving information from the journal literature. And generally scientists are what might be called reductionists when it comes to information retrieval. They are trying to locate theories and methods in the literature that in any way affect their own immediate research. They are also concerned with priority. They want to assure themselves that no one else has already published the research on which they are working.

Since scientists build on their own and others' previous work, they have developed a tradition of referencing earlier research that influenced them. Most reputable scientific journals have set up refereeing procedures in the last fifteen years to help assure good citation practices. These references give formal recognition to earlier works; they also are valuable to information retrieval. They permit the reader to locate the sources used to support the argument.

1. It is worth mentioning that Kuhn's work has recently been rewarded by his election to the National Academy of Sciences.

Another characteristic of information retrieval in the sciences is the interest in relatively recent work. An examination of the Institute for Scientific Information's (ISI) *Journal Citation Reports*® for any journal in fields such as physics and chemistry shows that over 60 percent of the citations are to work published within the last five years. This is also true in biochemistry, although our recent studies with biochemistry journals show that the percentage of references to articles from the last.five years has decreased substantially [4]. Even the most fundamental discoveries may cease to be explicitly cited just a few years after publication. But for a journal such as *History*, only 38 percent of the citations it received in a year are to articles published in the last five years.

Citation Practices in the Humanities

In contrast to scientists' study of the physical universe, humanists are concerned with those *human* achievements which make up our cultural heritage. The works of art, religion, and philosophy which comprise this legacy are not superseded as scientific works are. Librarian D. W. Langridge characterizes the humanities as "cumulative: Plato exists today alongside Kant, Whitehead and A. J. Ayer . . ." [5, p. 30].

Our recent citation studies give a dramatic indication of the difference in the works consulted by scientists and humanists [6]. Although the studies did not cover the same time periods, the results, I believe, will generally hold. Last year I published a list of the 300 science authors most cited between 1961 and 1976 [7–11]. The oldest person on the list was born in 1899. We have just done a similar study based on 1977–78 data for the 100 authors most cited in the arts and humanities journals. Homer, the oldest author, lived, it is believed, around the ninth century B.C. Fifteen of the authors lived before A.D. 1400; sixty-eight were born before 1900. If we extend this list to the top 300 authors, we find a slight increase in the proportion of modern artists and scholars who appear. But of the top 300, approximately 10 percent lived before A.D. 1400. Nearly 60 percent were born before 1900.

This is not to say that the arts and humanities are static. An inheritance may always be reevaluated. Some works and historical periods may seem uninteresting to scholars for a time. Then someone will come along with a new perspective or fact and the subject or period will be resurrected. These shifts of interest in the humanities are one of the scholarship's most characteristic features. Historian Eric Weil sees this phenomenon as a result of the humanists' basic concern with the human situation as it appears to them: "The surprising changes in the preference given at different times to different historical periods . . . are

sufficient proof of a basic fact: we are always trying to understand ourselves. We project *our* problems onto the men and situations of the past and choose from the past so that the dialogue with its actors may help us in our own predicament. . . . In each resurrection everything is changed because the eyes looking at the past are not the same" [12].

Weil also notes that scholarly work in the humanities does not develop out of previous work. He states: "The new in the humanities very often, not to say regularly, comes as a shock and a scandal, an effect no revolutionary deed in the sciences seems to have provoked since science became 'modern'; and even the revolution which introduced this modernity was not a scandal to the scientists of the time, but only for those who looked at its consequences for religion and for the place of man in the universe—that is, the humanists" [12]. So the humanities change, sometimes by "preference" or perceived relevance and sometimes by thesis and antithesis, as scholars react against the perspectives, attitudes, and theories of the earlier generation. There are also "breakthroughs" in the humanities which may revolutionize thinking on a subject. The Dead Sea scrolls are an example of this kind of discovery.

These characteristics affect information retrieval in the humanities. For one thing, humanities scholars are less compulsive about the literature than scientists are. This difference in attitude is a direct outgrowth of the difference in scientific research and humanistic scholarship. If you were a scientist trying to discover the structure of DNA when Watson and Crick published their article on the double helix, there was nothing you could do but pick up your marbles and go home. The structure had been discovered; nothing more need be said; and scientists moved on from there. But if you are a music scholar preparing a monograph on Bach and a book on the composer comes out, you are of course interested, but you do not burn your manuscript. You know that no one (including yourself) will ever be able to say the last word about Bach and his music.

Another characteristic of information retrieval in the humanities is the preeminence of books over journals as information sources. Also, these sources do not become obsolete. Great scholarship and criticism endure. For example, Dr. Johnson's lives of the English poets is still rewarding reading. But even bad scholarship does not disappear entirely from humanists' interest. As Northrop Frye put it, "In a sense, you can't lose in the humanities: if your book is any good, it's a contribution to scholarship; if it's no good, it's a document in the history of taste" [13]. While a physics library, pressed for space, might manage by keeping only journals under five years old or by having a core collection of most-cited works [14], this would be a ridiculous idea to the humanities librarian.

Besides the scholarly literature, humanities scholars also wish to re-

trieve works of art themselves (poems, photographs of paintings, musical scores). These works may never have been published in books. Or they may appear in books which are not readily available. Searches for these documents can be laborious and fruitless.

Finally, the citation tradition in the humanities is not as strong as it is in the sciences. An art historian may not formally cite such works as *Guernica* or the *Mona Lisa*. A literary critic would not cite Shakespeare everytime he mentions *Hamlet*. (Even so, Shakespeare's works are still among the most cited.) In some disciplines, such as philosophy, religion, classics, and history, scholars are generally careful about citing their sources. Yet many of these journals use archaic or arcane styles of citation. For example, some classics journals abbreviate authors' names. Does Ar. stand for Aristotle or Aristophanes? To the classicist, I am sure the reference is clear. But not to our data entry staff. To clarify citations, our editors scan the articles and add the missing information. This significantly increases the cost of processing the humanities literature.

The differences in the information requirements of humanists and scientists would seem rather large. How is it, then, that an indexing system presumably designed for scientists, and exemplified by the *Science Citation Index*, was accepted by scholars in the arts and humanities? Frankly, we were not sure at first that it would be. But a survey of librarians and scholars in North America and Europe encouraged us to at least try an *Arts & Humanities Citation Index*®.


*Arts & Humanities Citation Index*® *(A&HCI)*

A citation index answers a fundamental question not answered by other systems, or by other query languages—as they say in the online business. That question is simply: Where has this book or article been cited or discussed? The only traditional index that does this is a book review index. And considering the vagaries of language worldwide, I had to conclude, inevitably, that a citation index for the humanities would bridge the linguistic barriers of traditional indexing schemes just as it had in the sciences and the social sciences.

So, in 1978 we brought out the first *A&HCI* as well as our first back year covering 1977. Like our other citation indexes, they are composed of several sections which index the same literature in different ways. These first *A&HCI*'s cover over 950 journals from the fields of literature, art, architecture, archeology, music, religion, classics, philosophy, history, dance, folklore, film, TV, radio, linguistics and philology, and theater. The span of disciplines is greater than any previous index

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devoted to the arts and humanities. In 1979 we are covering over 1,000 journals. This coverage will undoubtedly increase in future years.

Although the arts and humanities support many journals, books are still prime sources of information. So in 1979 we have begun to cover books, especially multi-authored ones. Approximately 250 will be covered this year with steady increases planned for the years ahead. Most of these books will be collections of original scholarly papers. They will be indexed at the chapter level so that users can retrieve information about a single chapter relevant to their interests. Some single-authored works, such as collections of essays and bibliographies, will also be indexed.

All substantive material from the publications covered is indexed in *A&HCI*. We index not just scholarly articles, but also reviews of books, theater, opera, music and dance performances, recordings, and art shows. We also index editorials, interviews, discussions, notes, letters, bibliographies, chronologies, notes, corrections, errata, original poetry, short stories, essays, plays, and book excerpts.

Book reviews are extremely numerous in the humanities journal literature. In 1978, of the 85,000 source items covered by *A&HCI*, 38,000 were book reviews. We follow the same convention in handling book reviews in *A&HCI* that we use in our *Social Sciences Citation Index®*. The "title" of the review is, of course, the title of the book itself—including the author's name. A "pseudo" citation for the book is also created for the citation index so that the review will be located whether one searches by the reviewer or by the author. Furthermore the words of the title of the book are indexed.

Of special help to literary scholars is our policy of indexing poems, short stories, and other literary works which appear in the journals we cover. Locating recent or uncollected work has been time-consuming in the past. With *A&HCI* it should be noticeably easier.

Since the Source Index (or author index) of *A&HCI* gives complete bibliographical information about each item indexed, we ran into a unique problem in indexing the humanities literature which we had not encountered in the sciences or social sciences. As in our science and social sciences indexes, we translate all article titles into English. However, many article titles contain the titles of works in another language; for example, Mann's *Mario und der Zauberer*. We could have changed this title to *Mario and the Magician*, a literal translation which in fact is the title conventionally used in English. But many works are known by vastly different names in different languages. I suppose the most famous example is Proust's *A Remembrance of Things Past*, not exactly the literal translation of *A la recherche du temps perdu*. If all such "free" translations were so well-known, there would be no problem. But many works are

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| (FR) SOMETHING ELSE (MATISSE, HENRI) | | | | |
|---|---|---|---|---|
| ART INT | 21(5):18 - 25 | | 77 | 12R |
| CHAMPAIGNE PD | LOUIS XIV RECOIT CHE | | | |
| GREENBERG C | 81 | ART CULTURE | | 45 |
| JEDLICKA G | 56 | MATISSE KAPELLE VENC | | 87 |
| MATISSE H | | VERVE | 18 | 152 |
| " | 41 | NATURE MORTE AU COQU | ILL | |
| " | 46 | POLYNESIE LA MER | ILL | |
| " | 47 | COMPOSITION NOIR ET | ILL | |
| " | 48 | DANSEUSE | ILL | |
| " | 50 | MASQUE JAPONAIS | ILL | |
| " | 52 | PERRUCHE ET LA SIREN | ILL | |
| " | 52 | VENUS | ILL | |
| " | 53 | GRANDE DECORATION AU | ILL | |

FIG. 1.—*A&HCI* Source Index entry

not so famous; some have never been translated into English. Instead of translating them, we leave titles of works of art that appear in article titles in the language of the original article.

The Source Index entry, shown in figure 1, points to another unique problem in indexing the arts and humanities literature. In this example, after the title "Something Else" is the name, "Matisse, Henri," in parentheses. This added entry for the name of the artist is a title enrichment made by an ISI subject specialist. In the *Science Citation Index*, no title enrichments are used. Titles of most scientific articles are highly descriptive of the contents. In the social sciences, there are a larger number of nondescriptive titles but not enough to warrant an effort to enrich titles. However, the arts and humanities literature contains a significant number of nondescriptive titles. Hence, we have specialists who read such articles and add the names of the persons, places, things, concepts, theories, etc., which are the subjects of the articles. In 1978, they enriched nearly 5,000 titles. When you subtract the book reviews, which are treated under the standard policy I mentioned, from the total of 85,000 items processed, you realize that fully 10 percent of these other items were title enriched. Title enrichment is a time-consuming and expensive operation, but it greatly increases the usefulness of *A&HCI*.

The references of the article in figure 1 illustrate another unique aspect of our indexing. Several of the references are to Matisse paintings followed by the abbreviation ILL. This indicates that the paintings are reproduced (illustrated) in the article. The code was created to meet the special needs of art historians. They often need to find photographic reproductions of art works not available in their own libraries. Thus, in this example, you know that a photograph of *La Danseuse* by Matisse is included in the article by Fourcade. We also found that music scholars have similar problems hunting down music scores. For this reason,

whenever a complete score is reproduced in an article, we indicate its appearance with the code "MUS."

Now I am sure that there is some concern as to how a painting could appear in the references of an article. Scholars do not usually cite paintings in footnotes or bibliographies in the way they might cite scholarly books and articles. The arrow beside each painting title indicates what we call an "implicit" citation. When a work is mentioned in an article but not explicitly cited, this is an implicit citation. By extension, in addition to articles or books, "implicit" citations can include paintings, musical compositions, novels, dance performances, etc., which are discussed in an article but are not formally, that is, explicitly cited. ISI editors read articles and add these "implicit" citations to the references. This is no small job. In 1978, 536,000 citations were included in the *A&HCI;* 81,000 of them are implicit or pseudo citations. More than half of these pseudo citations were of books, performances, and recordings which were the subjects of reviews. Nearly 18,000 were for illustrations of art works. Only 100 were for reproductions of musical scores. The rest were to a variety of works, discussed but not formally cited. The implicit citations are included in the lists of references which follow each main article entry in the Source Index. However, their main function is to make possible highly specific searches through the *A&HCI* Citation Index. If there is a long list of works which have discussed Matisse, it is useful to refine the search and limit retrieval to those articles that discuss the specific work in question.

The Citation Index permits scholars to make highly specific searches. Another example is relevant. Suppose papers which discuss Picasso's painting, *The Acrobat,* were needed. Furthermore, the researcher prefers to find an article containing a reproduction of the painting. He would turn to the entry for Picasso in the Citation Index, shown in figure 2. Under his name is a list of his cited works, and below them brief descriptions of the newer articles which cited them. The first cited work is *The Acrobat,* painted in 1923. The arrow indicates this to be an implicit citation and ILL indicates that a reproduction of the painting is included in an article in *Artnews* by J. Gruen. To get complete information about this article, the researcher would look up Gruen's entry in the Source Index.

All of this discussion does not deal with the primary function of the *A&HCI*. The literature of the humanities includes its own articles and books apart from the classics themselves. For example, consider E. H. Gombrich's book on art, *Art and Illusion: A Study in the Psychology of Pictorial Presentation.* By locating this work in the Citation Index one can find newer articles which cite it. These citing works provide criticism or

PICASSO P . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
ACROBAT  ‡ILL  1923
    GRUEN J      ARTNEWS     D                    79      198      77
BATHER   ‡ILL  1908
    MARRINAN M  BURLINGTON                       119      785      77
BLIND BEGGAR  ‡ILL  1903
BOOKPLATE APOLLINAIR   ILL  1906
    JOHNSON R    ART MAG                          61       90      77
BOTTLE GLASS FORK  ‡ILL  1912
    HENNING EB   APOLLO                          102       63      77
    SILVER KE    ARTFORUM                         16       96      77
BOY LEADING HORSE
    CARPENTE K   ART INT                          21       19      77
BULLS HEAD  ‡ILL  1943
    HENNING EB   B CLEV MUS                       64      342      77
BUST OF WOMAN  ‡ILL  1962                                   •
    CHAPPELL WB  ART INT                          21       61      77

FIG. 2.—*A&HCI* Citation Index entry

expansions of Gombrich's work. Thus, the Citation Index lets the researcher start with an older work and move forward in time to see how more recent scholars have used and reacted to it.

That we have to provide implicit citations for certain types of works should not give the impression that citation indexing cannot be as successful for the arts and humanities as it is for the sciences. A large majority of the articles covered do provide explicit references. Implicit citations were a headache we faced in adapting the citation indexing method to the humanities literature. We can hope that, in the future, authors and editors in these journals will improve their citation consciousness just as they have in the sciences.

Certain elements of the format of the Citation Index had to be redesigned for *A&HCI*. In our *Science* and *Social Sciences Citation Indexes*, the cited works appear in chronological order beneath each cited author. Most cited works are journal articles which, by and large, are published once. To enter the Citation Index all you need to know is the author's name and the year the article was published.

But in the arts and humanities, books are the most frequently cited works. Books may appear in many editions. If we used the chronological format, the entries for a single work would be separated. This problem was solved by arranging cited works in alphabetical order under the cited author's name. This may seem like a simple change, but it required extensive reprogramming.

The treatment of certain types of material also presented problems. For example, who should be the "cited author" for a film, theatrical performance, or a TV program? We consider the director the cited author. In this way it is possible to find reviews and articles about George Lucas's movies in one place in the Citation Index. In the case of phonograph records and live musical performances, the performer or per-

forming group is the cited author. For orchestral and operatic record-
ings and live performances, the conductor is the cited author. For dance
performances, the choreographer and the dance company each appear
as cited authors.

The literature of religion also caused special cited-author problems.
Scholars of religion need information about the specific book, chapter,
and verse in the Bible. So we placed the term Bible, Koran, Mishnah,
etc., in the cited-author category. Each of the books, chapters, verses, or
other subdivisions are listed as separate cited works.

Another cited-author problem was the citing of both the pen names
and the real names of authors. This problem is, of course, not new to
catalogers. In order to avoid scatter, we standardize references to au-
thors like Samuel Clemens (Mark Twain), Mary Anne Evans (George
Eliot), and C. L. Dodgson (Lewis Carroll). Other variants we must
standardize include citations to Virgil such as Vergil, P. Vergilius Maro,
and Virgilio. To standardize these names we follow *Webster's Biographical
Dictionary*. This process takes place both in pre- and postediting of the
indexes. Editors standardize all names before keyboarding, but we also
do a manual edit after printouts of the preliminary indexes are obtained.
Titles of cited works are also standardized manually. Cited titles remain
in the language in which they were cited. But even in English a work may
be cited two or more ways. For example, some scholars cite *The Adven-
tures of Huckleberry Finn*; others use just *Huckleberry Finn*. We unify
variants under the best known version.

The third section of the *A&HCI* is the Permuterm⦁ Subject Index
(PSI). This is a title word index to the source literature covered. Title
enhancement terms appear here, too, making articles with nondescrip-
tive titles retrievable through this index. The PSI will be especially useful
to students and others who are embarking upon an entirely new area of
research and know of no older publications or works of art with which
they may enter the Citation Index. To use the PSI, the researcher need
only know a word or words likely to appear in the title of an article or
book relevant to his interests. For instance, suppose he was interested in
Marxism in France. He could look up Marxism in the PSI (or for that
matter, France or French). Beneath the entry would be every significant
word and enrichment term from titles which include Marxism. They are
identified by the name of the first author. For complete information
about these items, you would turn to the Source Index.

The *A&HCI* also includes an Organizational Index. This section per-
mits you to look up an organization—the Art Institute of Chicago, for
example—and locate all items by authors affiliated with that museum.

*A&HCI* is so new that its impact on arts and humanities scholarship is
not yet apparent. But we believe the index will have several good effects.

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The first benefit of *A&HCI*, mundane as it may be, will be greater ease in searching the literature. By simply indexing so many journals and books from such a broad range of disciplines, we have created an index which can certainly be the single tool needed for many searches. The extraordinary amount of information the index gives the user will also cut search time. Language codes, identification of book reviews, editorials, etc.; codes for reproductions of paintings and scores; the list of references with each article in the Source Index—all these things help users decide if it is worthwhile to obtain copies of the articles retrieved. This will certainly alleviate many frustrations and disappointments. In fact, with *A&HCI*, some students may lose their dread of the reference section of the library.

Second, we think that *A&HCI* will foster broader perspectives in the humanities. The insularity of arts and humanities departments is well known. E. H. Gombrich, the eminent art historian, has stated, "The alert reader of any text must inevitably ask questions which will take him into linguistics today [and] into history tomorrow. . . . [Yet] a student of any syllabus would probably be discouraged from doing 'research' on any topic that falls outside of it" [15, p. 7]. There seems to be a fear of unknown disciplines in the humanities, perhaps simply because they are unknown. As Gombrich says, "An alert and industrious scholar can acquire the skills to investigate nearly any question which arouses his curiosity" [15, p. 7]. Yet many seem afraid to cross disciplinary lines. I like to think that a literature scholar, for example, searching the *A&HCI*, will note that a literary work is also cited by religion, history, philosophy, and art journals. Looking up those articles may illuminate the work in question—and also make the scholar less timid about pursuing an interest into other disciplines. *A&HCI* will thus give access to new realms of knowledge.


Most Cited Authors in the Humanities

Third, *A&HCI* will give historians, sociologists, and other scholars insights into their concerns through our studies of most-cited authors and works, which I mentioned earlier. Table 1 gives a list of the 100 most-cited authors from the 1977–78 *A&HCI*. The authors are arranged in chronological order. Their inclusion on the list was determined by the number of articles which cited works by them. (Please note that this is somewhat different from ranking them by the number of citations they received. One article may cite an author several times.) The most-cited author (Karl Marx) had 704 articles cite his work; the least-cited was cited in 122 articles. The average number of citing articles was 210. The

TABLE 1

*A&HCI* MOST-CITED AUTHORS, 1977–78

| | No. of Citing Articles | Total Citations |
|---|---|---|
| Homer (ca. 9th cent. B.C.), poet | 228 | 497 |
| Euripides (ca. 484–406 B.C.), playwright | 173 | 309 |
| Plato (427–347 B.C.), philosopher | 500 | 1,233 |
| Aristotle (384–322 B.C.), philosopher | 624 | 1,361 |
| Cicero, Marcus Tullius (106–43 B.C.), politician, philosopher, and rhetorician | 288 | 774 |
| Vergil (Publius Vergilius Maro) (70–19 B.C.), poet | 209 | 346 |
| Horace (Quintus Horace Flaccus) (65–8 B.C.), poet | 133 | 320 |
| Ovid (Publius Ovidius Nasso) (43 B.C.–A.D. 17), poet | 216 | 431 |
| Seneca (Lucius Annaeus Seneca the Younger) (4 B.C.–A.D. 65), politician, philosopher, and playwright | 134 | 273 |
| Pliny the Elder (Gaius Plinius Secundus) (ca. 23–79), naturalist | 129 | 204 |
| Plutarch (ca. 46–120), biographer and philosopher | 228 | 534 |
| Augustine of Hippo (354–430), theologian and philosopher | 293 | 599 |
| Aquinas, Thomas (ca. 1225–74), theologian and philosopher | 209 | 457 |
| Dante Alighieri (1265–1321), poet | 220 | 594 |
| Chaucer, Geoffrey (ca. 1340–1400), poet | 160 | 316 |
| Shakespeare, William (1564–1616), playwright and poet | 594 | 1,431 |
| Descartes, René (1596–1650), mathematician and philosopher | 165 | 387 |
| Milton, John (1608–74), poet | 232 | 450 |
| Locke, John (1632–1704), philosopher | 148 | 209 |
| Johnson, Samuel (1709–84), lexicographer, poet, and critic | 133 | 195 |
| Hume, David (1711–76), philosopher and historian | 207 | 314 |
| Rousseau, Jean Jacques (1712–78), philosopher and novelist | 215 | 439 |
| Kant, Immanuel (1724–1804), philosopher | 346 | 667 |
| Goethe, Johann Wolfgang Von (1749–1832), poet | 217 | 441 |
| Blake, William (1757–1827), poet and artist | 164 | 879 |
| Hegel, Georg Wilhelm Friedrich (1770–1831), philosopher | 322 | 696 |
| Wordsworth, William (1770–1850), poet | 178 | 343 |
| Coleridge, Samuel Taylor (1772–1834), poet and critic | 159 | 305 |
| Balzac, Honoré de (1799–1850), novelist | 130 | 258 |
| Mill, John Stuart (1806–73), philosopher | 127 | 168 |
| Dickens, Charles (1812–70), novelist | 202 | 394 |
| Curtius, Ernst R. (1814–96), archeologist and historian | 140 | 168 |
| Marx, Karl (1818–83), philosopher | 704 | 1,644 |
| Melville, Herman (1819–91), novelist | 124 | 230 |
| Engels, Friedrich (1820–95), philosopher | 242 | 412 |
| Baudelaire, Charles P. (1821–67), poet and critic | 171 | 369 |
| Flaubert, Gustave (1821–80), novelist | 138 | 282 |
| James, William (1842–1910), philosopher and psychologist | 148 | 221 |
| James, Henry (1843–1916), novelist and critic | 225 | 511 |
| Nietzsche, Friedrich W. (1844–1900), philosopher | 229 | 410 |
| Freud, Sigmund (1856–1939), psychoanalyst | 462 | 966 |
| Shaw, George Bernard (1856–1950), playwright, essayist, and critic | 142 | 385 |

TABLE 1 *(Continued)*

| | No. of Citing Articles | Total Citations |
|---|---|---|
| Conrad, Joseph (Teodor Jósef Konrad Korzeniowski) (1857–1924), novelist | 127 | 456 |
| Husserl, Edmund (1859–1938), philosopher | 142 | 379 |
| Weber, Max (1864–1920), sociologist | 200 | 294 |
| Yeats, William Butler (1865–1939), poet | 171 | 555 |
| Lenin, Vladimir Ilyich (1870–1924), political writer | 545 | 1,737 |
| Russell, Bertrand Arthur William (1872–1970), mathematician and philosopher | 213 | 335 |
| Cassirer, Ernst (1874–1945), philosopher | 152 | 215 |
| Jung, Carl Gustav (1875–1961), psychiatrist | 182 | 338 |
| Mann, Thomas (1875–1955), novelist | 188 | 316 |
| Joyce, James (1882–1941), novelist | 261 | 488 |
| Woolf, Virginia (1882–1941), novelist | 148 | 451 |
| Bultmann, Rudolf (Karl) (1884–1976), theologian | 123 | 251 |
| Lawrence, David Herbert (1885–1930), poet and novelist | 188 | 604 |
| Lukács, György (1885–1971), critic and philosopher | 199 | 315 |
| Eliot, Thomas Stearns (1888–1965), poet and critic | 287 | 539 |
| Heidegger, Martin (1889–1976), philosopher | 254 | 587 |
| Wittgenstein, Ludwig (1889–1951), linguistic philosopher | 271 | 432 |
| Auerbach, Erich (1892–1957), linguist and literary critic | 135 | 139 |
| Benjamin, Walter (1892–1940), art and literary critic | 133 | 242 |
| Panofsky, Erwin (1892–1968), art historian | 199 | 265 |
| Jakobson, Roman (1896–), linguist, critic, and historian | 244 | 376 |
| Piaget, Jean (1896–), psychologist | 125 | 211 |
| Brecht, Bertolt (1898–1956), playwright | 122 | 230 |
| Lewis, Clive Staples (1898–1963), essayist, critic, and novelist | 144 | 198 |
| Yates, Frances Amelia (1899–), literary critic | 135 | 172 |
| Borges, Jorge Luis (1899–), short-story writer and poet | 151 | 555 |
| Lacan, Jacques (1901–), psychiatrist | 145 | 210 |
| Benveniste, Émile (1902–), linguist | 122 | 147 |
| Popper, Karl Raimund (1902–), philosopher | 215 | 370 |
| Adorno, Theodore Weisengrund (1903–), philosopher and critic | 170 | 316 |
| Wellek, René (1903–), literary critic | 135 | 192 |
| Sartre, Jean-Paul (1905–), novelist, playwright, critic, and philosopher | 319 | 519 |
| Beckett, Samuel (1906–), novelist, playwright, and poet | 127 | 332 |
| Goodman, Nelson (1906–), philosopher and aesthetician | 122 | 158 |
| Eliade, Mircea (1907–), religious historian | 244 | 379 |
| Lévi-Strauss, Claude (1908–), anthropologist | 257 | 406 |
| Merleau-Ponty, Maurice (1908–1961), philosopher | 135 | 246 |
| Quine, Willard Van Orman (1908–), linguistic philosopher and mathematical logician | 227 | 446 |
| Gombrich, Ernst Hans Josef (1909–), art historian | 142 | 198 |
| Abrams, Meyer Howard (1912–), literary critic | 135 | 151 |
| Frye, Northrop (1912–), literary critic | 386 | 509 |

TABLE 1 *(Continued)*

| | No. of Citing Articles | Total Citations |
|---|---|---|
| Ricoeur, Paul (1913–), philosopher | 168 | 306 |
| Barthes, Roland (1915–), linguistic philosopher and critic | 420 | 678 |
| Chisholm, Roderick Milton (1916–), philosopher | 128 | 226 |
| Davidson, Donald (1917–), philosopher and poet | 144 | 253 |
| Ellman, Richard (1918–), literary critic | 125 | 165 |
| Kermode, (John) Frank (1919–), literary critic | 124 | 144 |
| Strawson, Peter Frederick (1919–), philosopher and logician | 133 | 171 |
| Rawls, John (1921–), philosopher | 127 | 164 |
| Kuhn, Thomas Samuel (1922–), historian of science | 196 | 255 |
| Foucault, Michel (1926–), philosopher and critic | 239 | 350 |
| Chomsky, Noam (Avram) (1928–), linguistic philosopher | 239 | 433 |
| Habermas, Jürgen (1929–), sociologist and philosopher | 151 | 301 |
| Bloom, Harold (1930–), literary critic | 177 | 235 |
| Genette, Gérard (1930–), literary critic | 143 | 184 |
| Derrida, Jacques (1933–), philosopher and critic | 230 | 384 |
| Todorov, Tsvetan (1939–), literary critic | 186 | 260 |
| Kristeva, Julia (1941–), linguistic philosopher | 126 | 186 |

NOTE.—Arranged in chronological order.

average number of citations was 414, or nearly 2 citations per citing article.

This list is highly thought-provoking. It can tell us some interesting things about arts and humanities scholarship, circa 1977–78. Certainly, it shows the perennial interest in the "classic" authors: Shakespeare, Aristotle, Plato, Augustine, Milton, and Homer, for example. The appearance of Marx, Lenin, and Engels on the list may be surprising. It reflects our definition of the humanities and the resulting composition of our data base. Half of the citations to Marx come from philosophy journals, with nearly two-thirds of these from one journal—*Deutsche Zeitschrift fuer Philosophie*. A quarter of the citations to Marx are from history journals and the rest from journals in a variety of disciplines. Approximately 60 percent of the citations to Lenin are from history journals with two Russian history journals, *Voprosy Istorii* and *Istoriya S.S.S.R.*, accounting for most of them with one-third of the citations from philosophy journals.

Most interesting are the modern authors on the list. The presence of people like Barthes, Wittgenstein, Jakobson, Chomsky, and Derrida indicates a special concern with language itself, not only in linguistics but also in literature and philosophy. Will these authors remain on the list

over the next twenty years or more? Or will some of them drop off as their work or theories become less popular? I know I would like to see a most-cited list from 1952–53. It would be instructive to see the differences. Perhaps if we do enough back years of *A&HCI*, such "historical" lists will be available for comparison and contrast with current ones. It is certainly my desire to prepare back year volumes provided we can obtain subscriber support. More back year citation indexes would be valuable for the arts and humanities and also in the social and natural sciences. Certainly the field of the history of science would be enormously aided by a citation index going back to the beginning of the twentieth century.

Although *A&HCI* was ISI's first service for the arts and humanities, it is by no means the last. This year, we have begun to publish a new edition of *Current Contents*® (*CC*) for the arts and humanities. This weekly publication reproduces the contents pages of the most recent issues of nearly 1,000 journals to keep scholars up to date on the literature. Article titles are enriched when necessary as is done in *A&HCI*. Each issue also includes a section of tables of contents from books, plus indexes to journals, author addresses, and title words. Scholars will undoubtedly find this edition of *CC* a remarkable convenience, telling them what has been just published. And like *A&HCI*, *Current Contents/Arts & Humanities* will promote cross-pollination between disciplines.

We are also contemplating several other services in the arts and humanities. One would be to make the *A&HCI* database available online so that it could be searched by computer. Online searches would further decrease search time primarily by eliminating the chore of copying out retrieved source citations. Another possibility is expanding our *ASCA*® (*Automatic Subject Citation Alert*) service to cover the humanities literature. *ASCA* is a personalized Selective Dissemination of Information (SDI) service. The subscriber prepares an interest profile of title words, authors, cited works, and so on. We run the profile against information on all new articles which have entered our database each week. The subscriber gets a printout of all new articles which have matched one or more terms on the profile. For the scholar preparing a manuscript for submission or the student working on a dissertation, this service could be invaluable. It would not only provide titles of all new articles on the subject from a multitude of disciplines, it would also alert the user to just those articles that are relevant and eliminate searching in the library through dozens of journals. It would also increase the use of library journal collections significantly.

*A&HCI* and *Current Contents/Arts & Humanities* give access to a wealth of journals, more journals than many hard-pressed libraries can afford to subscribe to immediately. We recognize these realities and therefore

FIG. 3.—Typical entries from four sections of *Journal Citation Reports*

back up these services with *OATS*®, our *Original Article Tear Sheet* service. For a fee, we will tear the desired article from an extra copy of the journal and mail it within forty-eight hours of receipt of the request. When extra issues run out, we make photocopies. We pay publishers royalties for articles sent by *OATS*.

The librarian with a tight journal budget can log requests for articles and thus justify acquisition of the most-requested publications. Thus, librarians on low budgets can build their journal collections, slowly perhaps, but with the knowledge that they are adding *truly* needed publications.

ISI is also planning a *Journal Citation Reports*® (*JCR*®) for the arts and humanities. This tool, like the *JCR*s for the science and social sciences literature, will help librarians build or prune collections. The *JCR* will present a variety of citation data. Figure 3, based on entries from the 1977 *JCR* for the *Social Sciences Citation Index*, gives an indication of the information to be found in the forthcoming *A&HCI JCR*. The Journal Ranking Package presents the total number of citations received by

journals during the year covered, the number of citations to journals' articles published in the two preceding years, and other citation data. The Source Data Listing shows the average number of references in articles published by each journal during the year. The Citing Journal Package and Cited Journal Package show, respectively, which journals a given journal most frequently cites and which journals most frequently cite it.

As you know, there is considerable controversy over the application of citation counting as a means of measuring the impact or influence of individual scientists and scholars. Ironically, there is less resistance to this idea among humanistic scholars than among scientists. In any event, one of the major methodological changes in my studies in the near future will be to shift from counting citations to counting "authors influenced by." Thus, in the study mentioned earlier, having determined how many *articles* had cited a particular author, we can move on to the even more interesting question of how many *authors* had cited that person. In science, at least, this will produce very different results because team research produces large numbers of multi-authored papers. By contrast, the basic work in the humanities is still done by one author working alone, usually over a longer period of time.

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