

## UC Irvine

### UC Irvine Previously Published Works

**Title**

A NOTE ON SELF-CITATION RATES IN ASTRONOMICAL PAPERS

**Permalink**

<https://escholarship.org/uc/item/5w9004mh>

**Journal**

Publications of the Astronomical Society of the Pacific, 98(610)

**ISSN**

1538-3873

**Author**

Trimble, V

**Publication Date**

1986-12-01

**DOI**

10.1086/131942

**Copyright Information**

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

## A NOTE ON SELF-CITATION RATES IN ASTRONOMICAL PAPERS

VIRGINIA TRIMBLE

Astronomy Program, University of Maryland, College Park, Maryland 20742  
and

Department of Physics, University of California, Irvine, California 92717

*Received 1986 July 18, revised 1986 September 18*

## ABSTRACT

About 15% of all citations in astronomical papers published during January 1983 were self-citations, in the sense that the cited and citing papers had at least one author in common. The self-citation rate varies surprisingly little among journals, countries, subdisciplines, and epochs, and is rather higher than has generally been thought. These data do not tell us whether the current rate of self-citations in astronomical papers is too high, too low, or just right for an active, growing science; they merely tell us what it actually is.

*Key words:* astronomical literature—citations

Examination of the 10,910 references contained in 496 astronomical papers published during January 1983 indicates that 1645 of them ( $15.1\% \pm 0.5\%$ ) were self-citations, in the sense that citing and cited papers had at least one author in common. This is rather higher than has generally been adopted in analyses where the self-citation rate is needed as an input (Rao and Vahia 1986). The discrepancy arose largely because the 6.4% self-citation rate (Abt 1980) most often referred to actually counted only pairs of papers with the same senior or sole author (Abt 1986).

Table I lists the publications examined, numbers of papers and citations, and percentages of self-citations. Where more than one issue of a journal carried a January 1983 date, all were used. Where the January/February/March issue covered two or three months, every-other or every-third article, beginning with the first, was used. Various regional averages are shown. Since the International Astronomical Union now publishes about 12 volumes of colloquia, symposia, and proceedings each year, the volume received in January 1983 (Symposium No. 99) was also included.

Variations among journals and regions are surprisingly small. The investigation was originally intended to test the hypothesis that self-citations are significantly less common in the *Astrophysical Journal* than in other publications. This seems not to be the case. Another rather constant number is the average number of self-citations per article. This falls between 2.0 and 3.4 for nearly all journals and regions represented by more than a few papers, except for the *Astrophysical Journal Supplement* (at 10.2). Several of the more extreme values derive from quite small numbers of papers and should not be regarded as terribly significant.

It is, obviously, impossible to say what these data mean in isolation, or whether the current rate of self-citations in astronomy is a signature of a healthy, growing science or of an overly inbred one. Comparisons with other sciences and other eras might aid interpretation. The astronomical rate, at least, has apparently been quite stable. The first volume of the *Astrophysical Journal* in which references are tabulated at the end of papers rather than in footnotes (Vol. 121, 1955) contains 84 papers with 1119 citations and 166 self-citations ( $14.8\% \pm 1.5\%$ ). This stability perhaps reflects the compensating influences of increase both in the average number of authors per paper and in the size of the author pool that could, in principle, be cited. Comparable data on other sciences could readily be collected, but not by the present author, who finds picking a few names out of a long list fairly easy when most of them are familiar, but quite impossible when they are not.

In the absence of other information, there is no a priori reason to conclude that the 15% self-citation rate in astronomy is too high (or too low) or indicative of anything in particular about the psychology of authors. Even anomalously low or high rates need have no profound implications. Zero percent is typical and reasonable for a new Ph.D. publishing the results of his thesis, while 30% or even more is not unreasonable for a more senior author who has done pioneering work in one or more areas (H. L. Johnson and O. Struve are examples from the 1955 sample). Table I reports a measurement and not a judgment. Unfortunately, however, citation-rate studies are a clear example of the measurement process itself being likely to affect the phenomenon. As studies of citation rates and their use to evaluate journals, institutions, scientists, and telescopes proliferate, authors cannot help but become conscious of the citation process and be tempted to mod-

TABLE I

Numbers of Citations and Self-Citations in Astronomical Papers Published in January 1983

JOURNAL Volume, Number	No. of PAPERS	No. of CITATIONS	No. of SELF- CITATIONS	PERCENTAGE OF SELF-CITATIONS
Astrofiz 19, 1	6	84	15	17.9
Sov AJ 27, 1	15	229	33	14.4
Sov AJ Lett 9, 1	11	156	37	23.7
Soviet Total	32	469	85	18.1
AN 304,1	5	82	8	9.8
* Acta Astr 33, 3-4	2	84	17	20.2
BAC 34, 1	4	74	26	35.1
East. Eur. Total	11	240	51	21.3
PASJ 35, 1	5	112	17	15.2
J Ap Astr 4, 1	3	51	4	7.8
Chinese Ast	6	57	5	8.8
Proc ASA	2	76	6	7.9
BAS India 11,1	3	44	4	9.1
Asia-Pacific Total	19	340	36	10.6
AAp 117	54	1511	180	11.9
AAp Sup 51,1	19	325	55	16.9
ASS 89	41	618	89	14.4
** Sol Phys 83 (Feb)	14	265	47	17.7
Moon & Plan 28, 1	6	102	15	14.7
West. Eur. Total	134	2821	386	13.7
Nature 301, 1-4	9	120	23	19.2
MNRAS 202, 1	32	928	120	12.9
Obs. No. 1053	2	31	2	6.5
Plan Sp Sci 31, 1	12	315	59	18.7
UK Total	55	1394	204	14.6
Journals Total	251	5264	762	14.5
IAU Symp 99	82	1157	223	21.0
Total except North Amer.	333	6421	985	15.3
JRAS Can 77, 1	2	39	3	7.7
** Rev Mex A&A 8, 1	2	38	6	15.7
Science No. 4080-83	3	19	9	47.4
Meteoritics 18,1	3	41	4	9.8
Ap Lett 23, 2	3	91	8	8.8
Icarus 53, 1	15	363	60	16.5
PASP 95, 1	19	303	56	18.5
AJ 88, 1	18	456	60	13.2
ApJ Sup 51, 1	6	329	61	18.5
ApJ Lett 264	13	269	42	15.8
No. Amer. except ApJ	84	1948	309	15.9
ApJ 264	79	2541	351	13.8
Total North America	163	4489	660	14.7
GRAND TOTAL	496	10,910	1645	15.1

\* January 1983 issue never received. \*\* January 1983 issue contains conference abstracts.

ify their usual practices.

I am indebted to Dr. Helmut Abt for his usual thoughtful review of the initial version of this note.

## REFERENCES

- Abt, H. A. 1980. *Pub. A.S.P.*, **92**, 249.  
 ———. 1986, personal communication.  
 Rao, A. R., and Vahia, M. N. 1986, *Pub. A.S.P.*, **98**, 511.