"Current Comments"

Journal Citation Studies. XVII. Journal Self-Citation Rates--There's a Difference

December 25, 1974 Number 52

As the year ends, I want to finish something I left hanging in an earlier essay--the matter of self-citation rates.[1] Perhaps at the moment I am overly sensitive to self-citation. A recent article described me as one of the most self-cited or self-citing authors in science.[2] The author in question didn't make clear that he understands the difference between self-cit*ed* and self-cit*ing*. I don't know whether or not I am either, but as in so many other things it's the percentages that count. Incidentally, it has been found that if self-citation is excluded my citation record is respectable enough.[3]

Citation has a double meaning. That's what this piece is all about. *Citation* refers to the act of citing and the instrument of the action, but also to the result of that action, either a state or a thing. When our citation studies began, we spoke merely of *the* self-citation rate. I was aware that sooner or later we'd have to disentwine its double meaning. I noted the need in the editorial cited above. I mentioned without explaining further that there's a difference between the self-cit*ed* and the self-cit*ing* rates. These rates are really different ratios. The difference between them may be significant in characterizing journals as well as people.

At ISI® we're trying to find out what self-citation means in the case of journals. Consider the journal *Nature*. In the last quarter of 1969 *Nature* was cited 15,310 times. Of those citations, 888 were self-citations. Its self-cit*ed* rate is therefore 888/15,310 or 5.8%.

In contrast, in the references of articles published by *Nature* in the same period, there were 6,777 citations. Its self-cit*ing* rate therefore is 888/6,777 or 13.1%.

In Figure 1, Group A shows the self-citation rates (both self-cit*ing* and self-cit*ed*) for the twenty most-cited journals of science.[4] The list shows the number of citations each journal made in one quarter of 1969, the number of times it was cited, the number of self-citations, and the percentages of self-citation in terms of both.

In most cases, leading journals have a smaller self-cit*ed* than self-cit*ing* ratio. This is true for *Science* as well as for *Nature* and *Proceedings of the National Academy of Sciences USA*. In contrast, the *Comptes Rendus etc.* and *Journal of Organic Chemistry* have higher ratios for self-cit*ed*ness than for self-cit*ing*ness.

Perhaps the range of interest in a journal explains low self-citation, as for example in the cases of *Nature*,

	Journal	Times *Cited* (A)	Times *Citing* (B)	Self-Citations (C)	% Self-Cited (C/A)	% Self-Citing (C/B)	B/A	Impact Factor
	Group A							
1.	J. Am. Chem. Soc.	26307	10135	3503	13.3	34.6	0.384	5.859
2.	Phys. Rev.	20666	14496	4452	21.5	30.7	0.700	3.679
3.	J. Biol. Chem.	17103	8659	2052	12.0	23.7	0.506	6.371
4.	Nature	15310	6777	888	5.8	13.1	0.443	2.244
5.	J. Chem. Soc.	13978	12230	2920	20.9	23.9	0.875	3.123
6.	J. Chem. Phys	13687	10710	3599	26.3	33.6	0.783	3.180
7.	Science	9739	5699	528	5.4	9.3	0.581	2.894
8.	Biochim. Biophys. Acta	9500	10269	1347	14.2	13.1	1.084	3.287
9.	P. Nat. Acad. Sci. USA	8206	4257	547	6.7	12.9	0.519	8.828
10.	Biochem. J.	7625	5220	848	11.1	16.3	0.681	3.193
11.	Lancet	7612	4409	884	11.6	20.1	0.577	1.509
12.	Phys. Rev. Letters	6544	3230	608	9.3[2]	18.8[2]	0.500	5.114
13.	Comptes Rendus etc.	5642	8398	1349	23.9	16.1	1.485	0.780
14.	Amer. J. Physiol.	5417	3783	598	11.0	15.8	0.696	3.379
15.	J. Org. Chem.	5394	6848	1045	19.4	15.3[2]	1.268	2.407
16.	J. Appl. Phys.	5274	5811	848	16.1	14.6	1.103	1.936
17.	P. Soc. Exp. Biol. Med.	5011	4901	371	7.4	7.6	0.974	1.964
18.	J. Mol. Biol.	4978	2486	620	12.5	24.9	0.502	9.302
19.	J. Physiology (London)	4960	2576	714	14.4	27.7	0.520	2.608
20.	P. Roy. Soc. London	4789	1746	103	2.2[3]	5.9[2]	0.373	3.484
	Group B							
1.	Corrosion	276	259	43	15.6	16.6	.940	1.473
2.	IEEE T. Microwave Theory	273	697	138	50.6	19.8	2.556	1.242
3.	Internat. J. Cancer	272	301	31	11.4	10.3[2]	1.107	2.553
4.	J. Nucl. Med.	268	309	44	16.4	14.2	1.155	0.505
5.	Immunochemistry	265	417	26	9.8[2]	6.2[5]	1.581	3.639
6.	IEEE T. Circ. Theory	265	381	91	34.3	23.9	1.435	1.344
7.	J. Embryol. Exp. Morphol.	264	593	50	18.9	8.4	2.250	1.237
8.	Mutation Res.	264	935	92	34.9	9.8	3.561	2.607
9.	Rev. Neurologique	264	459	59	22.4	12.9	1.736	0.441
10.	IEEE T. Inform. Theory	263	483	95	36.1	19.7	1.833	0.946
11.	Limnol. Oceanogr.	263	320	54	20.5	16.9	1.213	1.285
12.	T. Brit. Mycol. Soc.	263	549	73	27.8	13.3	2.090	0.830
13.	Psychopharmacologia	260	435	37	14.2	8.5	1.671	2.409
14.	J. Microscopie (Paris)	261	559	31	11.9[2]	5.6[2]	2.125	0.986
15.	Strahlentherapie	259	970	132	51.0	13.6	3.750	0.464
16.	Aerospace Med.	257	1030	101	39.3	9.8	4.010	0.551
17.	Earth Planet. Sci. Lett.	257	892	63	24.5	7.1[3]	3.451	2.262
18.	P. Japanese Acad.	257	430	65	25.3	15.1	1.676	0.517
19.	Amer. Psychologist	254	395	38	15.0	9.6	1.563	0.331
20.	Amer. Zoologist	249	848	29	11.7	3.4	3.441	0.326

Figure 1. Self-cited and self-citing ratios of some highly cited journals.

Journals in Group 1 rank 1-20th among the 1000 most cited journals of science. Journals in Group 2 rank 500-520th on the same list (see reference 4). In most cases a journal is first on the list of the journals that it cites and that cite it most frequently. Exceptions to this general rule are indicated by superscripts in the fifth and sixth columns. For example, *Immunochemistry* cited one other journal more frequently than it cited itself, and was cited by four other journals more often than by itself.

Science, and *Proceedings of the Royal Society* and *Proceedings of the Society for Experimental Biology and Medicine*. The same is true for annual-review type publications, which tend not to cite themselves for understandable reasons. Thus, high self-citedness may be related to self-centeredness, specialization, or monopsony, a kind of reverse monopoly, as may be indicated by the ratios for *Journal of the American Chemical Society*.

In Figure 1, Group B shows similar information for another group of journals. These are the journals that ranked about 500th on the list of the 1000 most-cited journals of science. They are journals that are cited about 1000 times per year. The percentage of self-citedness is in most cases much greater than the percentage of self-citingness. In all cases except one (*Corrosion*) self-citedness is greater than self-citingness. For the most part this was not true of the journals in Group A.

So it is apparent that one must consider not only how much one cites oneself but also to what extent those citations figure in all citations of oneself. I wish to emphasize that I am not suggesting, as my critic implied, that self-citation is either good or bad. But it does say something about your field--its newness, size, isolation, etc. In the case of journals, therefore, it tells us something about the universe in which a particular journal operates.

Perhaps the most important observation about some new journals concerns self-citingness. I'm thinking of certain journals that, in their initial issues, display a remarkable hubris. Somehow there is no earlier literature which can be cited. As issues continue to appear, self-citations increase perceptibly. Along with this hubris there is a tendency towards sloppiness in citation form--omitted pagination or volume numbers, weird journal abbreviations or downright errors. If examination of self-citation rates does nothing else, it will have been useful if some editors are stimulated to review their editorial and refereeing policies and practices.

1. Garfield, E. Journal citation studies. XI. *Journal of Geophysical Research. Current Contents® CC®* No. 33, 14 August 1974, p. 5-8.

2. Wiener, J. Footnote--or perish. *Dissent* 1974(Fall):588-92.

3. Cawkell, A.E. Where the action is and was in information science. *J. Amer. Soc. Inform. Sci.* 25(5):340, 1974.

4. Garfield, E. Citation analysis as a tool in journal evaluation. *Science* 178: 471-79, 1972. Reprinted in *CC* No. 6, 7 February 1973, p. 7-24.