

JOURNAL SELECTION POLICY AND THE CONTRIBUTION OF IRANIAN RESEARCHERS IN INTERNATIONAL JOURNALS AS SPECIFIED IN ISI

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Abstract – The first part of this article deals with ISI's journal selection policy. Describing the importance of evaluation process as well as determining the status of Iran in knowledge production in the areas of Arts, Humanities, Social Sciences, Sciences, etc. and comparing it with the articles published throughout the world between 1993-2000 are the next two parts of this article. The results indicate that during the aforementioned period, 5971 articles were written by Iranian researchers. Among different countries of the world, Iran's contribution in article production was 0.03% in 1993. This number raised to 0.12% in the year 2000. The names and addresses of the Iranian researchers who have written 10 or more articles between 1993 and 2000 constitutes an important and interesting part of this article. Finally, some recommendations are made on how to increase knowledge production in Iran.

Keywords – ISI, Journal Selection Policy, Iranian Researchers, Knowledge Production, Evaluation Process, E-Journals.

INTRODUCTION

The main objective of ISI is to cover and reflect the most important research endeavors carried out throughout the globe. It, in fact, represents more than 16000 international journal titles, books and conference proceedings related to subject areas like Science, Social Sciences and Arts & Humanities.

The fact that ISI holding embodies 8600 international journals reveals the importance and priority given by ISI to this form of information over others. For each record, ISI provides complete bibliographical information including an English abstract, the name of the author, the publisher and so on and so forth [1].

WHY SELECTION?

Scientific journal indexes endeavor to cover all published scientific journals for the sake of completeness. Not only is this objective impossible to attain but, as the analysis of scientific writings indicates, it is also unnecessary. A random overview of the literature indicates that the majority of articles and research results are put to print in a limited number of journals. This is usually termed as the Bradford Law [2]. In his studies, Bradford

found out that in any subject area, the majority of articles, in general, and almost all highly valued articles, in particular, were published in a small group of journals, best called 'core' journals.

The main objectives of the ISI database are two-fold: (1) to include, after evaluation, new journals thought to be useful to the end users, and (2) to rule out journals of little scientific value.

EVALUATION PROCESS

The process of evaluation and selection of journals is an unseparable part of ISI, since at any given point in time, some new journals come in and some old ones go out of the database. This evaluation process is carried out every other week. Each year, more than 2000 journal titles are evaluated with the objective of including them in the database, but only 10 to 20 percent of them are eventually included.

In order for a journal to be included in ISI, it must observe a number of criteria as follows:

- 1- Be up-to-date
- 2- Have an international Editorial Board
- 3- Provide the keywords, abstracts and titles of the articles in English
- 4- Consider the feed backs received from the experts

E-JOURNALS

As was stated before, one of the main objectives of ISI is to provide easy access to important journals published throughout the world. Many E-Journals are evaluated as important, which is a good justification for their inclusion in ISI.

The selection criteria valid for E-Journals are somewhat different from those mentioned above. It was no sooner that 1994 that the first E-Journal found its way into ISI, but since then a large number of them have attained the criteria needed for such inclusion.

DISCUSSION AND FINDINGS

Publication of articles, resulting from research endeavors, in valid journals and periodicals, constitutes an important aspect of information production.

Based on Ulrich, the International Journals' Guide (1998), about 156000 journals are being published, at the moment, throughout the world. This journal holding covers 869 subject areas. From amongst these 156000 journals, 8800 journal titles are indexed under ISI: they cover three areas of Sciences (5800 journals, 66%), Social Sciences (1800 journals, 20%) and Arts and Humanities (1200 journals, 14%).

Of course, as was mentioned before, ISI, other than journals, includes 16000 books and conference proceedings as well. Almost 85% of the most important articles are published in just 2000 journals, to which 95% of the references are made [3].

Until the first half of 2001, 168 scientific journals have been approved in Iran by the

Ministry of Science, Research and Technology and the Ministry of Health, Treatment and Medical Education. From amongst these, 116 titles, 70 %, have been ranked as 'research-scientific', having the best quality, and 52 titles, 30%, as 'scientific', ranked after research-scientific journals. From amongst 116 research-scientific journals, 36 titles, 30%, are related to specific areas. Also, three of these journal titles are included in ISI index.

To carry out this study, first numerical data were collected concerning all the articles published worldwide in three major areas as classified by ISI between 1993 and 2000 (Table 1).

As shown in Table 1, in 1993, 955447 articles were written throughout the world. This number raised to 1164627 in the year 2000, which shows an increase of 1.2% (Figure 1).

Figure 2 shows that in 1993, 323 articles were written by Iranian researchers and that this number increased to 1393 articles, 4.3 times more, in the year 2000.

In the area of Sciences, 755800 articles were written by researchers would-wide in 1993. This number raised to 956395 in the year 2000. In Iran, of course, this number raised from 299 articles in 1993 to 1369 articles in the year 2000, which shows an increase of 4.6 times [4].

Table 1: The total number of articles written by researchers within Iran and throughout the world between 1993 and 2000 as indicated by ISI.

Year	Iran A&H	Iran SS	Iran Sci	Iran total articles	The World A&H	The World SS	The World Sci.	Percent of Sci.	The total articles	Total Percent
1993	10	14	299	323	177510	129369	755800	0.0396	955447	0.0381
1994	12	10	368	390	191624	127910	798220	0.0461	1008393	0.0387
1995	11	13	463	487	199252	144394	853469	0.0542	1069840	0.0455
1996	26	23	582	631	211673	147194	901981	0.0645	1127374	0.0559
1997	29	17	667	713	19319	141518	923333	0.0722	1144074	0.0623
1998	1	17	1023	1041	114767	141609	957717	0.01068	1166692	0.0892
1999	2	28	963	993	110990	140073	945961	0.01018	1144432	0.0868
2000	0	39	1369	1408	115951	145125	956395	0.01431	1164627	0.01196
Total	91	161	5734	5986	1141086	1117192	7092876		8780879	

A = Arts, H= Humanities, SS = Social Sciences, Sci. = Sciences

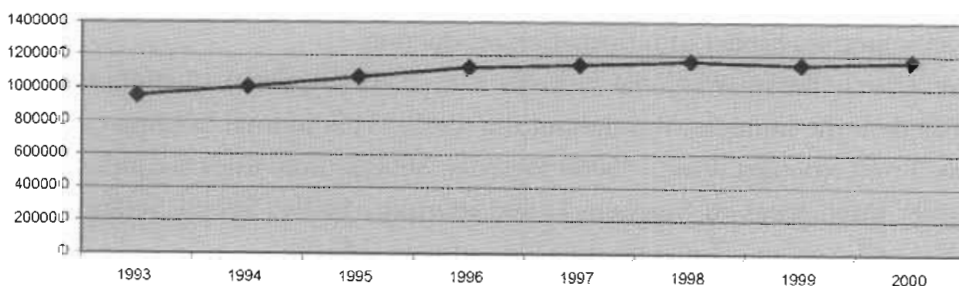


Figure 1: Articles published by the researchers of the world between 1993 and 2000 as shown by ISI

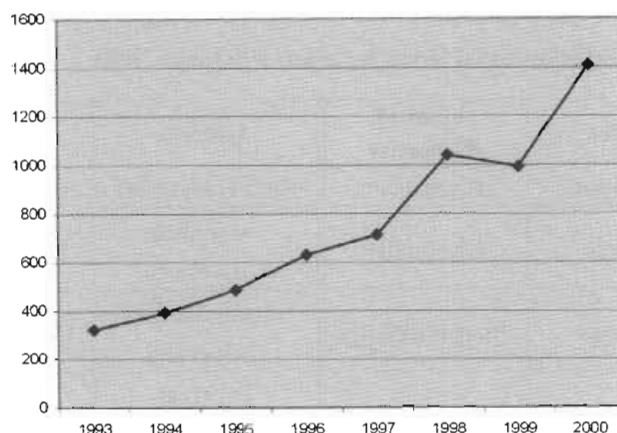


Figure 2: Articles published by Iranian researchers between 1993 and 2000 as indicated by ISI

In the Science Citation Index, which evaluated about 3300 journals, the contribution of the Iranian and Iraqi researchers was estimated to be 0.03% [5]. But, in the year 2000 a great improvement occurred. In fact, in this year, Iran's total contribution raised to 0.12%. This contribution increased to 0.14% in the area of Sciences, which shows an increase equal to 460%.

According to the above source, the Science Citation Index, America had the highest contribution, 30%, in the production of articles. Other countries like Australia, 21.152%, Taiwan, 0.80% and Iran & Iraq, 0.03%, ranked 10th, 20th and 55th respectively. In deserves mentioning that the above statistics is related to the year 1994, and since then the contribution of the Islamic Republic of Iran has remarkably increased.

In fact, in the year 2000 Iran ranked as the 41st country, compared to the previous 55th status, in the production of articles among countries of the world. One important point to be taken into account, here, is the proportion of articles written to the total population of each country. If this proportion is considered, American's rank as the first contributing country can no longer be preserved.

It is notable that all 5971 articles written by Iranian authors between 1993 and 2000, are retrievable using the keyword 'Iran'. During the same period and using the same keyword 114 researchers are marked as having published 10 or more articles. Table 2 provides information concerning these researchers and their contribution. In all, they published 2512 articles. (The fact that some articles have co-authors have not been reflected in the statistics given in Table 2). The point that is important here is that each researcher contributed with more than 10 articles. The total number of articles written by these researchers is actually higher, since the list doesn't include the articles published by keywords other than the one given in Table 2.

The highest number of articles written by an Iranian researcher during 1993-2000 was 137. (This means something like an article each three weeks). The lowest contribution was ten articles, 1.25 articles each year.

Table 2: Fields of endeavor and addresses of the Iranian researchers who contributed with at least ten articles with the keyword 'Iran' between 1993 and 2000.

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
1	1	Shamsipour	Chemistry	Razi University	Shamsipour, M.	137
2	2	Heravi	Chemistry	Al-Zahra University	Heravi, M. M.	83
3	3	Dehpour	Pharmacology	Tehran Medical University	Dehpour, A. R.	70
4	3	Yavari	Chemistry	Tarbiyat Modarres University	Yavari, I.	70
5	4	Zarrindast	Pharmacology	Tehran Medical University	Zarrindast, M. R.	67
6	5	Iranpour	Chemistry	Shiraz University	Iranpour, N.	54
7	6	Ensafi	Chemistry	Isfahan Industrial University	Ensafi, A. A.	53
8	7	Safavi	Chemistry	Shiraz University	Safavi, A.	52
9	8	Sohrabi	Chemical Engineering	Amir Kabir University	Sohrabi, M.	51
10	9	Firouzabadi	Chemistry	Shiraz University	Firouzabadi, H.	47
11	10	Hajipour	Chemistry	Isfahan Industrial University	Hajipour, A. R.	44
12	11	Mallakpour	Chemistry	Isfahan Industrial University	Mallakpour, S. E.	43
13	12	Shafi'i	Chemistry	Tehran Medical University	Shafi'i, A.	38
14	13	Sabouri	Biochemistry	Tehran University	Sabouri, A. A.	37
15	13	Sharghi	Chemistry	Shiraz University	Sharghi, H.	37
16	14	Kumar	Medicine	Shiraz Medical University	Kumar, P. V.	35
17	15	Khorrami	Physics	Center for Studies of Mathematics and Theoretical Physics	Khorrami, M.	34

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
18	16	Mousavi-Movahedi	Biochemistry	Tehran University	Mousavi-Movahedi, A. A.	31
19	17	Boushehri	Chemistry	Shiraz University	Boushehri, A.	30
20	18	Moshfeghiyan	Chemical Engineering	Shiraz University	Moshfeghiyan, M.	28
21	18	Sarrafadegan	Medicine	Isfahan's Center for Heart Surgery	Sarrafadegan, N.	28
22	19	Abdolahi	Medicine	Iran Medical University	Abdolahi, M.	26
23	19	Sa'idi	Chemistry	Sharif Industrial University	Sa'idi, M. R.	26
24	20	Mohammadpour Baltork,	Chemistry	Isfahan University	Mohammadpour Baltork, I.	25
25	20	Zolfigol	Chemistry	Abu-Ali Sina University	Zolfigol, M. A.	24
26	21	Aghamohammadi.	Physics	Center for Studies of Mathematics and Theoretical Physics	Aghamohammadi, A.	24
27	21	Feiz	Electronics	Tehran University	Feiz, J.	24
28	21	Ja'farizadeh	Physics	Tabriz University	Ja'farizadeh, M. A.	24
29	21	Karimipour	Physics	Sharif Industrial University	Karimipour, V.	24
30	21	Roustaiyan	Chemistry	Shahid Beheshti University	Roustaiyan, A.	24
31	22	Taher	Chemistry	Shahid Bahonar University	Taher, M. A.	23
32	20	Tamami	Chemistry	Shiraz University	Tamami, B.	2
33	23	Alimohammadi	Physics	Tehran University	Alimohammadi, M.	22
34	23	Ganjali	Chemistry	Tehran University	Ganjali, M. R.	22
35	23	Golabi	Chemistry	Tabriz University	Golabi, S. M.	22

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
36	23	Tangestaninejad	Chemistry	Isfahan University	Tangestaninejad, S.	22
37	24	Ghasemzadch	Chemistry	Iran's Center for Research on Chemistry and Chemical Engineering	Ghasemzadeh, M.	21
38	24	Mojtahedi	Chemistry	Iran's Center for Research on Chemistry and Chemical Engineering	Mojtahedi, M. M.	21
39	24	Ghavamzadeh	Cancer Therapy	Tehran Medical University	Ghavamzadeh, A.	20
40	25	Kaveh	Civil Engineering	Iran's University of Science and Industry	Kaveh, A.	20
41	25	Sha'bani	Chemistry	Shahid Beheshti University	Sha'bani, A.	20
42	26	Afkhami	Chemistry	Abu-Ali Sina University	Afkhami, A.	19
43	26	Ajami	Chemistry	Iran's Center for Research on Chemistry and Chemical Engineering	Ajami, D.	19
44	26	Karimi	Physics	Zanjan Center for Research on Sciences	Karimi, B.	19
45	26	Masarrat	Medicine	Tehran Medical University	Masarrat, S.	19
46	26	Mo'tamedi	Medicine	Baghiyyat-Allah Medical University	Mo'tamedi, M.	19
47	27	Bolourchian	Chemistry	Iran's Center for Research on Chemistry and Chemical Engineering	Bolourchian, M.	18

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
48	27	Boshtam	Medicine	Isfahan Medical University	Boshtam, M.	18
49	27	Jahani	Hematology	Tehran Medical University	Jahani, M.	18
50	28	Alizadeh	Chemistry	Tarbiyat Modarres University	Alizadeh, N.	17
51	28	Fath Allahi	Physiology	Tarbiyat Modarres University	Fath Allahi, Y.	17
52	28	Ghahramani	Medicine	Shiraz Medical University	Ghahramani, N.	17
53	28	Mousavi	Chemistry	Tarbiyat Modarres University	Mousavi, M. F.	17
54	28	Nazifi	Medicine	Shiraz Medical University	Nazifi, S.	17
55	28	Oryan	Pathobiology	Shiraz University	Oryan, A.	17
56	28	Taheri	Chemical Engineering	Shiraz University	Taheri	17
57	28	Yamini	Chemistry	Tarbiyat Modarres University	Yamini, Y.	17
58	28	Margussian	Mathematics	Iran's University of Science and Industry	Margussian, V. K.	17
59	28	Malekzadeh	Medicine	Tehran Medical University	Malekzadeh, R.	17
60	29	Mahmoudian	Medicine	Iran's Medical University	Mahmoudian, M.	16
61	29	Maraghechi	Physics	Center for Studies of Mathematics and Theoretical Physics	Maraghechi, B.	16
62	29	Modarress	Chemical Engineering	Amir Kabir Industrial University	Modarress, H.	16

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
63	29	Semnanian	Physiology	Tarbiyat Modarres University	Semnanian, S.	16
64	30	Aghapour	Chemistry	Iran's Center for Research on Chemistry and Chemical Engineering	Aghapour, K.	15
65	30	Asghary	Medicine	Isfahan's Center for Heart Surgery	Asghary, S.	15
66	30	Gharib	Medicine	Shahid Beheshti University	Gharib, F.	15
67	30	Ghazi	Medicine	Shiraz University	Ghazi, S. R.	15
68	30	Salehi	Physics	Shahid Beheshti University	Salehi, H.	15
69	30	Samini	Pharmacology	Tehran Medical University	Samini, M.	15
70	30	Salahi	Medicine	Shiraz Medical University	Salahi, H.	15
71	31	Golnabi	Water and Energy	Sharif Industrial University	Golnabi, H.	14
72	31	Mo'tamedi	Physiology	Shahid Beheshti University	Mo'tamedi, F.	14
73	31	Nezakatgoo	Medicine	Shiraz Medical University	Nezakatgoo, N.	14
74	31	Tajbakhsh	Chemistry	Abu-Ali Sina University	Tajbakhsh, M.	14
75	32	Dabir	Chemical Engineering	Amir Kabir Industrial University	Dabir, B.	13
76	32	Maleki	Chemistry	Shiraz University	Maleki, N.	13
77	32	Mansouri	Chemical Engineering	Amir Kabir Industrial University	Mansouri, G. A.	13
78	32	Rafi'i	Medicine	Isfahan's Center for Heart Surgery	Rafi'i, M.	13

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
79	32	Rezayat	Pharmacology	Tehran Medical University	Rezayat, M.	13
80	32	Tabar	Physics	Center for Studies of Theoretical Physics and Mathematics	Tabar, M. R. R.	13
81	32	Tajalli	Medicine	Shiraz Medical University	Tajalli, M.	13
82	33	Azizi	Medicine	Shahid Beheshti University	Azizi, F	12
83	33	Farsam	Pharmacology	Tehran Medical University	Farsam, H.	12
84	33	Ghezelbash	Physics	Al-Zahra University	Ghezelbash, A. M.	12
85	33	Khosroshahi	Mathematics	Center for Studies of Theoretical Physics and Mathematics	Khosroshahi, G. B.	12
86	33	Mahmoudiyan	Mathematics	Sharif Industrial University	Mahmoudiyan, E. S.	12
87	33	Manzouri	Chemistry	Tabriz University	Manzouri	12
88	33	Mirzadeh	Polymer	Iran's Institute of Polymer	Mirzadeh, H.	12
89	33	Moghaddam	Chemistry	Sharif Industrial University	Moghaddam, F. M.	12
90	33	Peyvandi	Hematology	Tehran Medical University	Peyvandi, F.	12
91	33	Seddighi	Mathematics	Shiraz University	Seddighi, K.	12
92	34	Arfa'i	Physics	Center for Studies of Theoretical Physics and Mathematics	Arfa'i, H.	11
93	34	Gharibi	Chemistry	Tarbiyat Modarres University	Gharibi, H.	11

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
94	34	Ghasemi	Parasitology	Tehran Medical University	Ghasemi, J.	11
95	34	Gholami	Medicine	Shiraz Medical University	Gholami	11
96	34	Khajavi	Chemistry	Shahid Beheshti University	Khajavi, M. S.	11
97	34	Mohajer	Chemistry	Shiraz University	Mohajer, D.	11
98	34	Pourgholami	Pharmacology	Shahid Beheshti University	Pourgholami, M. H.	11
99	34	Pournaghi Azar	Chemistry	Tabriz University	Pournaghi Azar, M. H.	11
100	34	Salajegheh	Civil Engineering	Kerman University	Salajegheh, E.	11
101	34	Sarbolouki	Biophysics	Tehran University	Sarbolouki, M. N	11
102	34	Shafaghi	Pharmacology	Tehran Medical University	Shafaghi, B.	11
103	35	Parsafar	Chemistry	Isfahan's Industrial University	Parsafar, G. H.	10
104	35	Brumand	Medicine	Iran's Medical University	Brumand, B.	10
105	35	Eshghi	Chemistry	Sistan and Balouchestan University	Eshghi, H.	10
106	35	Ghods	Pharmacology	Iran's Medical University	Ghods, A. J.	10
107	35	Hashemi	Chemistry	Isfahan's Industrial University	Hashemi, M. M.	10
108	35	Meda'eni	Chemical Engineering	Razi University	Meda'eni, S. S	10
109	35	Mehrabzadeh	Polymer	Iran's Institute of Polymer	Mehrabzadeh, M.	10
110	35	Montazeri	Medicine	Jahad-e Daneshgahi	Montazeri, A.	10
111	35	Reza'ian	Internal Medicine	Shiraz Medical University	Reza'ian, G. R.	10

	Rank	Author	Field of Expertise	Address	Keyword	No. of Articles
112	35	Rezakhani	Internal Medicine	Shiraz Medical University	Rezakhani, A.	10
113	35	Salehi	Chemistry	Razi University	Salehi, P.	10
114	35	Zeynizadeh	Chemistry	Shiraz University	Zeynizadeh, B.	10

From among these 114 researchers, 44 researchers, 38%, are Chemists. This shows the priority and importance given to this field of study in Iran. Studies show that towards the end of the period 1986-1997, Clinical Medicine, 28.7%, Physics, 15.1%, Biochemical Research, 14.9%, and Chemistry, 12.5%, have ranked first to fourth among different fields throughout the world, respectively. After Chemistry the field of Medicine ranked second with 360 (14.3%) published articles. There were 20 researchers in this field. And, finally, the field of Pharmacology ranked third with 199 articles, 8%, written by seven researchers.

Now, there is the question of how many articles should be published in order for our country to be taken as one of the top-ten contributors of information? The answer is 21000 articles. If we publish 9000 articles each year, we'll be one of the top-twenty contributors.

Now, let's look at the information production potentials of Iran based on the statistics issued by the Ministry of Science, Research and Technology [6].

1-Faculty Members of the Ministry of Science, Research and Technology and Ministry of Health, Treatment and Medical Education:

The number of faculty members in the academic year 1999-2000: 25000

2- Graduate Students of governmental institutes in the academic year 1999-2000:

1- Ph. D.: 10547 students

2- M. A. and M. S.: 30093 students

3- M. D. and D. V. M.: 36906 students

3- Graduates of governmental institutes in the academic year 1998-99:

1- Ph. D.: 1318 students

2- M. A. and M. S.: 6700 students

3- M. D. and D. V. M.: 5394 students

If each faculty member writes just a single article each year, in all, 25000 articles will be published. But, at the moment, just 5000 articles are published by Iranians in home and foreign journals. It seems that only 2000 (8%), faculty members are active in information production and more than 90% of them are not involved in this endeavor at all. In fact, although some faculty members publish even more than 30 articles each year, the majority of them don't publish even a single article during the same period.

Following the change occurred in the title of the Ministry, from 'Higher Education' to 'Science, Research and Technology', it is expected that a priority be given to information production rather than information use.

Nowadays in Iran, M. A. and M. S. students work some 6-12 months on their theses. Now, if writing an article or solving an important problem is made a prerequisite for holding the thesis defense session, this will result in 6700 solved problems, or better,

hundreds of articles. Forcing Ph. D. students to write two articles, or write one article and solve an important problem, will result in 2600 articles and solved problems in Iran. Similarly, 5394 articles will be produced if students of M. D. and D. V. M. are forced to write an article or solve a problem before they graduate from the university. It is necessary to note that there might be an overlap between the statistics given for faculty members and those given for the students, since in many cases authors from both groups are involved in writing an article. What is important, here, is that we have based our discussion on the minimum contribution of each group.

As was mentioned earlier in this article, some Iranian researchers are very active in information production. Some active students may publish up to ten articles in international journals. It can be concluded that Iranian governmental universities can potentially produce 40000 articles each year. This number doesn't include the numerous works carried out in non-governmental universities and research institutes.

The availability of experts is an important prerequisite to get to this objective. Fortunately, in Iran there are lots of experts. Supporting them in their research endeavors will increase the country's information production rate considerably.

In this study, we concentrated on the quantity of the articles produced, but including discussions concerning the quality of the articles will make our discussions even more comprehensive. A brief study carried out on Chemistry revealed that, just lately, some great improvement has been made. Articles published in journals like J. Phys. Chem, Anual Chem. and Org. Chem. could be mentioned as some examples. This is indicative of the fact that the quality of the articles has also increased considerably. This is in part due to the expansion and establishment of M. A. and M. S. levels and also Ph. D. levels in more and more universities within the country.

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