A Revisited Auditing of the Analytical Abstracts Database

Ildikó Diószpatonyi,† György Horvai,† and Tibor Braun*,‡

Division of Chemical Information Technology, Budapest University of Technology and Economics, 1111 Budapest Gellért tér 4, Hungary, Institute of Inorganic and Analytical Chemistry, L. Eötvös University, POB 123, 1443 Budapest, Hungary, and Information Science and Scientiometric Research Unit (ISSRU), Budapest, Hungary

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This paper is a follow-up of a previous one dealing with the "Image of Analytical Chemistry as Reflected in the Analytical Abstracts Database: Journal Coverage, Concentration and Dispersion of the Analytical Literature" (*J. Chem. Inf. Comput. Sci*. **1993**, *33*, 164−173). It deals with revisiting these topics. The results have shown that the database has substantially improved its coverage by editorial reorganizations in 1994. The only open problem which has been revealed is a somewhat excessive emphasis given to the coverage of the journals on the lower tail of the journal distribution. The suggestion is made to reduce this emphasis in favor of an even more complete coverage of some "titled" analytical journals.

1. INTRODUCTION

One of the most critical components of R&D activities nowadays is the gathering and dissemination of information. Efficient information and communication procedures and systems may not only prevent duplication of the efforts but may also speed up the time between R&D and their applications.[1]

A vital role in this process is played by computerized databases with their collecting and storing bibliographic information on magnetic tapes and/or CD-ROM disks and by making it available for computer-stored information retrieval. In the broad field of analytical chemistry, the **Analytical Abstracts (AA) database** published by the Royal Society of Chemistry in London, is still the only specialized abstract journal/database worldwide.

Taken into account the unique position of that database and the fact that its quality could have a decisive influence on the research activities of scientists working worldwide in the field of analytical chemistry, a study on the coverage, concentration, and dispersion of the analytical journal literature as reflected in the **Analytical Abstracts database** during the 1980−1989 decade was published in 1993.[2] It was concluded from that study that the **Analytical Abstracts database** is in general terms a correct reflection of the field of analytical chemistry as far as topical coverage and covered journal comprehensiveness is concerned. Some slight distortions have been, however, also revealed. The main distortion found in that study was the only partial coverage of the contents of "titled" analytical chemistry journals. [By "titled" analytical chemistry journals we understand journals having the terms "analytical" or "analysis" or the name of an analytical technique in their title.] It is our conviction that there is no better group of people to decide what does belong to analytical chemistry and what does not than the gatekeepers of "titled" analytical journals. That is why we considered that a substantial improvement of the **AA database** could be achieved by covering the scientific content of those journals (i.e. the articles, notes, short communications, letters to the editor, and reviews they publish) comprehensively, i.e., without selection.

Table 1: Section Structure of the AA Database Before and After 1991

topical subfields	section label before 1991	section label after 1991
1. general analytical chemistry	A	A
2. inorganic and organic chemistry, analysis	B, C	D
3. pharmaceutical chemistry, analysis	E	G
4. environment, agriculture and food	F, G, H	H
5. clinical and biochemical analysis	D	F

As a follow-up of our paper, the Editor of Analytical Abstracts reacted in a circular letter diffused to the members of the editorial board of **AA** on April 13, 1993 as follows:

"After criticism of **AA**'s journal coverage in a recent paper,[2] and similar comments from AAEC and some academic researchers, the source list for **AA** has been comprehensively reviewed. The chemical literature is growing. With the resources available we cannot hope to cover absolutely everything in the field of analytical chemistry. However, we can improve upon our coverage of core analytical journals. It was decided to act upon the suggestions in Professor Braun's paper that

1. The scientific content of so-called "titled" analytical journals should be covered comprehensively (i.e. without selection).

2. **AA** should concentrate on "core analytical journals".[3]

In a Press Release[4] diffused in 1994 celebrating **AA**'s 40th birthday the abovementioned were given broader publicity as follows: "Coverage will be enhanced by abstracting more journals cover-to-cover; 19 titles are already covered fully (including *Analytical Chemistry*, *The Analyst*, *Analytica Chimica Acta*, and *Journal of Chromatography*), and another

* Corresponding author phone/fax: 36-1-311-5433; e-mail: h1533bra@ella.hu.

† Budapest University of Technology and Economics.

‡ L. Eötvös University and ISSRU.

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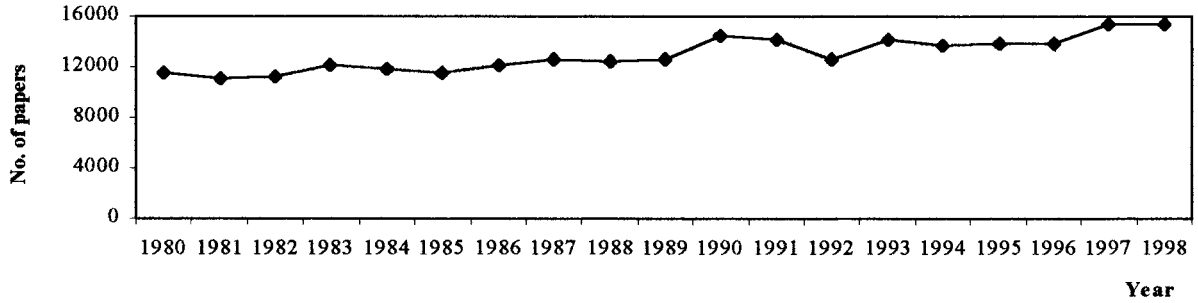

Figure 1. Time series of the number of papers covered by the **AA** database.

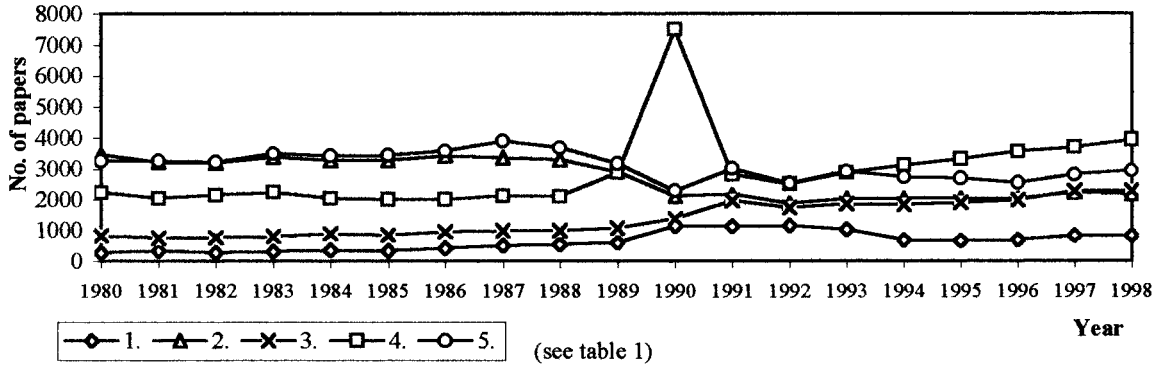

Figure 2. Yearly number of papers covered in the sections of the **AA database**, 1980−1998.

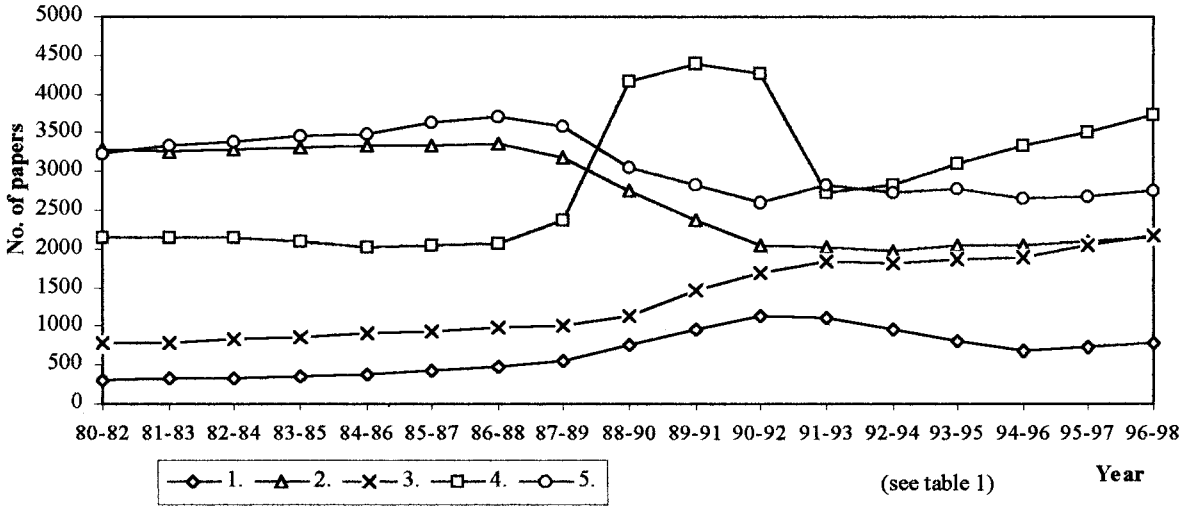

Figure 3. Moving averages of the number of papers covered in the sections of the **AA database**, 1980−1998.

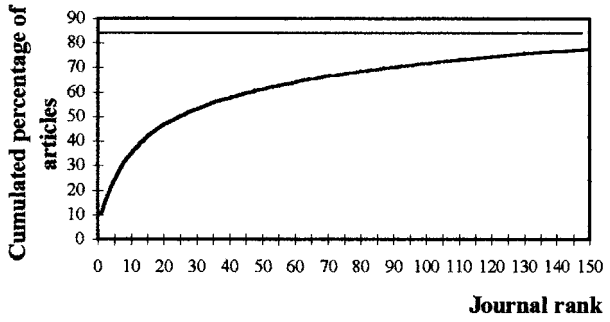

Figure 4. Rank-productivity distribution of journals in the **AA database**, 1980−1989.

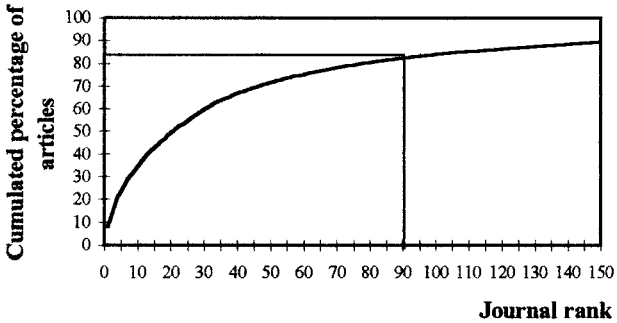

Figure 5. Rank-productivity distribution of journals in the **AA database**, 1990−1998.

8 important journals will follow in 1994. Over 200 other journals are abstracted selectively, together with standards, technical reports, conference proceedings and books."

As more than 6 years have passed since our previous study[2] and the abovementioned reactions, we have considered that a new audit of the **AA database** would be timely. This by considering that the information overload on scientists has increased considerably during these years with the necessity of its control acquiring an even more stringent actuality.

Table 2. Different Rankings of Core Analytical Chemistry Journals (1990−1998)

rank by **AA** productivity	journal	no. of papers in **AA database**	total no. of papers in JCR	% of articles in **AA**	rank by: impact factor (1990−1998)	rank by: impact factor 1998	rank by: total citations (1990−1998)	rank by: total citation/ no. of articles
1	J-Chromatogr + **J-Chromatogr,-A**	9927	10453	95.0	10	11	3	9
2	**Anal-Chem**	6159	6396	96.3	1	1	2	2
3	**Anal-Chim-Acta**	5577	5825	95.7	21	25	6	15
4	**J-Chromatogr,-B:-Biomed-Appl**	4649	4798	96.9	35	37	17	45
5	**Fresenius'−J-Anal-Chem**	3907	3861	101.2	39	33	15	38
6	**Fenxi-Huaxue**	3365	0					
7	**Analyst (London-Cambridge, UK)**	3253	3340	97.4	27	19	14	17
8	Clin-Chem (Washington, DC)	2754	3208	85.8	5	6	5	3
9	Anal-Biochem	2378	4653	51.1	12	15	1	1
10	**Talanta**	2365	2467	95.9	37	40	21	25
11	J-Radioanal-Nucl-Chem	2269	3733	60.8	71	69	41	70
12	**Zh-Anal-Khim + J-Anal-Chem (Transl-of-Zh-Anal-Khim)**	2154	1706	126.3	69	63	34	48
13	J-Liq-Chromatogr + **J-Liq-Chromatogr-Relat-Technol**	2119	2223	95.3	38	46	27	36
14	Sens-Actuators,-B	2077	2345	88.6	34	42	35	61
15	**J-Pharm-Biomed-Anal**	1824	1706	106.9	56	52	46	58
16	**Chromatographia**	1752	1937	90.4	26	18	24	23
17	**Anal-Lett**	1725	1737	99.3	52	51	33	47
18	Nucl-Instrum-Methods-Phys-Res,-Sect-B	1656	9940	16.7	41	44	10	50
19	Lihua-Jianyan,-Huaxue-Fence	1581	0					
20	**J-Anal-At−Spectrom**	1579	1201	131.5	4	3	25	12
21	J-Assoc-Off-Anal-Chem + **J-AOAC−Int**	1542	1696	90.9	49	49	31	35
22	**Bunseki-Kagaku**	1411	1514	93.2	67	68	52	62
23	Appl-Spectrosc	1329	2560	51.9	22	16	19	18
24	**Sepu**	1325	0					
25	Anal-Sci	1300	1371	94.8	44	55	44	51
26	**Electroanalysis (NY)**	1278	1496	85.4	30	28	48	55
27	Fenxi-Shiyanshi	1268	0					
28	**Analusis**	1255	1386	90.5	63	64	58	69
29	Yaowu-Fenxi-Zazhi	1245	0					
30	**J-High-Resolut-Chromatogr**	1205	1299	92.8	18	30	30	20
31	J-Agric-Food-Chem	1201	5524	21.7	29	35	9	19
32	**Spectrochim-Acta,-Part-B**	1174	1269	92.5	6	9	23	11
33	Electrophoresis	967	2267	42.7	8	7	22	26
34	**Mikrochim-Acta**	917	1342	68.3	54	59	43	46
35	Anal-Proc (London) + **Anal-Commun**	914	286	319.6	32	29	71	73
36	Zavod-Lab + Zavod-Lab,-Diagn-Mater	888	801	110.9	24	20	37	22
37	**J-Anal-Toxicol**	840	0					
38	Guangpuxue-Yu-Guangpu-Fenxi	783	0					
39	**J-Planar-Chromatogr-Mod-TLC**	761	363	209.6	46	38	66	49
40	**Chem-Anal.(Warsaw)**	719	653	110.1	70	65	60	54
41	**J-Chromatogr-Sci**	666	790	84.3	19	39	29	8
42	LaborPraxis	658	0					
43	**Microchem-J**	636	875	72.7	58	50	57	56
44	Chemosphere	620	3668	16.9	40	47	16	37
45	Rapid-Commun-Mass-Spectrom	613	1390	44.1	7	10	32	33
46	**Int-J-Environ-Anal-Chem**	585	648	90.3	48	56	49	27
47	Biosens-Bioelectron	582	804	72.4	14	22	51	39
48	TrAC,-Trends-Anal-Chem (Pers-Ed) + **Trends-Anal-Chem**	561	614	91.4	20	12	54	34
49	Biomed-Chromatogr	557	583	95.5	51	48	65	63
50	J-Immunol-Methods	552	2518	21.9	16	17	8	4
51	Nucl-Instrum-Methods-Phys-Res,-Sect-A	545	11291	4.8	47	53	11	53
52	Ann-Clin-Biochem	532	899	59.2	42	34	40	32
53	Clin-Chim-Acta	519	1741	29.8	45	43	13	5
54	**Chemom-Intell-Lab-Syst**	518	648	79.9	33	24	55	43
55	Biomed-Environ-Mass-Spectrom + Biol-Mass-Spectrom + J-Mass-Spectrom	501	1001	50.0	11	8	45	40
56	Indian-Drugs	453	0					
57	LC-GC	452	433	104.4	9	2	56	21
58	Surf-Interface-Anal	442	1482	29.8	25	31	28	24
59	GIT-Fachz-Lab	436	0					
60	Appl-Radiat-Isot	417	2152	19.4	62	62	50	67
61	**X-Ray-Spectrom**	397	426	93.2	36	13	61	44
62	Eur-J-Clin-Chem-Clin-Biochem	394	898	43.9	53	45	62	66
63	J-Microcolumn-Sep	382	299	127.8	13	14	63	28
64	**Spectroscopy (Eugene,-Oreg)**	375	43	872.1	57	58	72	52
65	Environ-Sci-Technol	374	3796	9.9	3	4	7	7
66	Ther-Drug-Monit	374	929	40.3	28	32	36	30

Table 2 (Continued)

rank by **AA** productivity	journal	no. of papers in **AA database**	total no. of papers in JCR	% of articles in **AA**	rank by: impact factor (1990−1998)	rank by: impact factor 1998	rank by: total citations (1990−1998)	rank by: total citation/ no. of articles
67	Food-Chem	368	1703	21.6	60	54	47	59
68	J-Electroanal-Chem + J-Electroanal-Chem-Interfacial-Electrochem	368	4441	8.3	17	23	4	6
69	J-Am−Oil-Chem-Soc	351	2228	15.8	43	27	18	16
70	Commun-Soil-Sci-Plant-Anal	338	1840	18.4	64	70	42	60
71	**At−Spectrosc**	312	294	106.1	31	21	64	29
72	**Quim-Anal.(Barcelona)**	295	22	1340.9	59	61	74	41
73	Bunseki	292	0					
74	Shokuhin-Eiseigaku-Zasshi = J. Food Hyg. Soc. Jpn.	291	643	45.3	74	72	70	72
75	Int-J-Mass-Spectrom-Ion-Processes	285	1665	17.1	15	26	20	13
76	Chem-Listy	284	1267	22.4	72	74	67	71
77	Bull-Environ-Contam-Toxicol	279	2479	11.3	61	60	26	42
78	**LC-GC−Int**	278	0					
79	Fenxi-Ceshi-Xuebao	274	0					
80	Forensic-Sci-Int	267	1220	21.9	55	57	53	57
81	Yankuang-Ceshi	262	0					
82	Fenxi-Kexue-Xuebao	245	0					
83	Pharmazie	241	2482	9.7	68	71	38	64
84	J-Am−Soc-Mass-Spectrom	229	888	25.8	2	5	39	31
85	Dtsch-Lebensm-Rundsch	228	491	46.4	65	67	69	65
86	Spectrosc-Lett	228	1116	20.4	66	66	59	68
87	Zhongguo-Yaoxue-Zazhi	226	0					
88	Eisei-Kagaku = Jpn-J-Toxicol-Environ-Health	225	474	47.5	73	73	73	74
89	**J-Chemom**	225	139	161.9	23	36	68	14
90	J-Food-Sci	225	2984	7.5	50	41	12	10

[a] Journals printed in boldface have been covered cover-to-cover by **AA** since 1994. When several journal names appear in the same entry, this means that the name of the journal has changed in the period considered.

2. METHODOLOGY

For the purpose of this analysis three main data sources were used:

− the Analytical Abstracts database (on CD-ROM disks) for the period 1980−1998

− the Science Citation Index (ISI, Philadelphia), database (on CD-ROM disks) for the period 1980−1998

− the Journal Citation Reports (JCR) database of the ISI (Philadelphia) on microfilm for the period 1980−1993 and on CD-ROM for the period 1994−1998.

The impact factor as defined by the Institute for Scientific Information and published yearly[5] is an indicator of the average citation rate of papers in a certain journal. The impact factor of e.g. *Analytical Chemistry* (AC) for 1998 is calculated as follows:

$$IF_{1998} = \frac{\text{no. of citations in 1998 to AC papers published in 1996 and 1997}}{\text{no. of papers published in AC in 1996 and 1997}}$$

For all our investigations only journal papers were considered. For the 1990−1998 period 127 749 such papers were processed. This represented 98.1% of all items included into the **AA database**. The remaining 1.9% were books, reports, etc. These figures can be compared to the 119 125 journal papers representing 94% of the total items in the **AA database** processed during the 1980−1989 period and discussed in our previous study.[2]

3. RESULT AND DISCUSSION

As visible in Figure 1 the yearly coverage of the analytical literature in the **AA database** did not change notably during the 1980−1998 period despite the general and continual growth of the worldwide analytical literature.

As in the previous study we have considered that being given the difficulties of quantifying the total growth of the worldwide analytical literature, growth and/or decay trends may be more readily analyzed in the **AA** by quantifying the percentage shares of journal articles related to particular topical subfields. This approach has been even further motivated by the fact that beginning in 1991 the topical subfield sections of **AA** were reorganized and the comparison of the time series of articles processed before 1991 and after that date could shed more light on the rationale of sections reorganization. Table 1 illustrates the section structure of the **AA** before and after 1991. Figures 2 and 3 present the trendlines of the yearly number of papers and their 3 years moving averages in the new subsections during the 1980−1998 period.

As visible in Table 1, for the first four sections there were practically only changes in the naming of the sections. One section (D) did increase in coverage with clinical chemistry being added to biochemistry, although the trendline in Figure 3 shows an approximately 20% decrease in the number of processed papers after the reorganization. While during the 1980−1989 period the number of processed papers in the different sections showed a relative stability, with fluctuations around 10%, the reorganization has brought a certain turmoil in the trendlines, with the sections on inorganic and organic analysis and clinical and biochemical analysis showing considerable, the section on pharmaceutical chemistry a remarkable decline, and the one on general analytical chemistry a slight growth in the number of articles processed. However the most peculiar shape is shown by the trendline

Table 3. Different Rankings of Core Analytical Chemistry Journals (1994−1998)

					rank by			
rank by **AA** productivity	journal	no. of papers in **AA** database	total no. of papers in JCR	% of articles in **AA**	impact factor (1994−1998)	impact factor 1998	total citations (1994−1998)	total citation/ no. of articles
1	J-Chromatogr + **J-Chromatogr,-A**	6150	6076	101.22	8	11	3	10
2	**Anal-Chem**	3937	3949	99.70	1	1	2	2
3	**Anal-Chim-Acta**	3332	3322	100.30	21	25	7	13
4	**J-Chromatogr,-B:-Biomed-Appl**	2835	2821	100.50	32	38	14	43
5	**Fresenius'−J-Anal-Chem**	2485	2474	100.44	38	33	16	41
6	**Analyst (London-Cambridge, UK)**	2132	2128	100.19	23	19	12	20
7	**Fenxi-Huaxue**	2022	0					
8	**Talanta**	1551	1518	102.17	37	41	20	30
9	Clin-Chem (Washington, DC)	1306	1574	82.97	4	6	5	3
10	J-Radioanal-Nucl-Chem	1296	2032	63.78	73	71	38	72
11	Sens-Actuators,-B	1252	1523	82.21	44	42	31	51
12	**J-Pharm-Biomed-Anal**	1240	1230	100.81	55	52	39	64
13	J-Liq-Chromatogr + **J-Liq-Chromatogr-Relat-Technol**	1238	1251	98.96	39	46	26	33
14	Anal-Biochem	1229	2612	47.05	14	15	1	1
15	**Chromatographia**	1098	1093	100.46	19	18	22	21
16	**Zh-Anal-Khim + J-Anal-Chem (Transl-of-Zh-Anal-Khim)**	1096	1123	97.60	70	67	37	57
17	**Anal-Lett**	1059	1059	100.00	52	51	34	46
18	**J-Anal-At−Spectrom**	1012	637	158.87	5	3	21	6
19	J-Assoc-Off-Anal-Chem + **J-AOAC−Int**	954	1071	89.08	50	49	51	66
20	Lihua-Jianyan,-Huaxue-Fence	897	0					
21	**Electroanalysis (NY)**	888	985	90.15	29	27	36	50
22	**Analusis**	837	680	123.09	66	68	62	68
23	Sepu	833	0					
24	**Bunseki-Kagaku**	824	833	98.92	72	70	56	67
25	J-Agric-Food-Chem	822	3606	22.80	30	36	8	24
26	Nucl-Instrum-Methods-Phys-Res,-Sect-B	811	5652	14.35	43	44	11	45
27	**Spectrochim-Acta,-Part-B**	779	740	105.27	11	9	24	12
28	Anal-Sci	757	842	89.90	58	56	44	47
29	Yaowu-Fenxi-Zazhi	730	0					
30	Appl-Spectrosc	728	1311	55.53	25	16	18	17
31	Fenxi-Shiyanshi	728	0					
32	Electrophoresis	717	1623	44.18	7	7	19	29
33	**J-High-Resolut-Chromatogr**	649	689	94.19	17	30	29	14
34	**Mikrochim-Acta**	583	915	63.72	57	61	45	53
35	**J-Anal-Toxicol**	532	460	115.65	24	20	41	22
36	Anal-Proc (London) + **Anal-Commun**	497	286	173.78	33	28	73	74
37	Rapid-Commun-Mass-Spectrom	485	1390	34.89	9	10	25	36
38	LaborPraxis	467	0					
39	Guangpuxue-Yu-Guangpu-Fenxi	451	0					
40	**Chem-Anal.(Warsaw)**	423	462	91.56	68	69	64	65
41	**J-Planar-Chromatogr-Mod-TLC**	423	363	116.53	47	39	63	48
42	**Microchem-J**	413	532	77.63	62	50	61	62
43	Biosens-Bioelectron	409	565	72.39	15	22	46	35
44	Zavod-Lab + Zavod-Lab,-Diagn-Mater	400	0					
45	**Chemom-Intell-Lab-Syst**	365	438	83.33	28	24	54	37
46	J-Electroanal-Chem + J-Electroanal-Chem-Interfacial-Electrochem	357	2825	12.64	20	23	4	7
47	TrAC,-Trends-Anal-Chem (Pers-Ed) + **Trends-Anal-Chem**	356	351	101.42	12	12	53	27
48	**Biomed-Chromatogr**	355	339	104.72	45	48	68	59
49	Chemosphere	348	2196	15.85	41	47	15	34
50	**J-Chromatogr-Sci**	347	432	80.32	18	40	30	9
51	J-Microcolumn-Sep	305	299	102.01	13	14	58	31
52	Biomed-Environ-Mass-Spectrom + Biol-Mass-Spectrom + J-Mass-Spectrom	293	719	40.75	10	8	48	49
53	**Int-J-Environ-Anal-Chem**	291	312	93.27	49	57	50	16
54	Ann-Clin-Biochem	287	468	61.32	42	35	43	25
55	**LC-GC**	279	169	165.09	6	2	57	11
56	GIT-Fachz-Lab	274	0					
57	Food-Chem	260	1066	24.39	60	55	40	56
58	Nucl-Instrum-Methods-Phys-Res,-Sect-A	259	6985	3.71	48	54	10	54
59	J-Am−Oil-Chem-Soc	258	1331	19.38	34	26	17	15
60	**Spectroscopy (Eugene,-Oreg)**	257	43	597.67	61	60	74	55
61	Indian-Drugs	255	0					
62	Fenxi-Kexue-Xuebao	245	0					
63	Environ-Sci-Technol	243	2544	9.55	3	4	6	8
64	**X-Ray-Spectrom**	237	231	102.60	35	13	65	40
65	Surf-Interface-Anal	233	760	30.66	31	31	28	18

Table 3 (Continued)

rank by **AA** productivity	journal	no. of papers in **AA** database	total no. of papers in JCR	% of articles in **AA**	rank by: impact factor (1994−1998)	rank by: impact factor 1998	rank by: total citations (1994−1998)	rank by: total citation/ no. of articles
66	Fenxi-Ceshi-Xuebao	227	0					
67	Ther-Drug-Monit	218	563	38.72	26	32	35	28
68	Eur-J-Clin-Chem-Clin-Biochem	217	549	39.53	56	45	59	61
69	Quim-Anal.(Barcelona)	215	22	977.27	63	64	75	42
70	Commun-Soil-Sci-Plant-Anal	206	1122	18.36	71	72	42	63
71	Pharmazie	206	1337	15.41	69	73	47	70
72	Bunseki	201	0					
73	Shokuhin-Eiseigaku-Zasshi	193	375	51.47	75	74	72	73
74	Appl-Radiat-Isot	190	1290	14.73	67	65	49	71
75	LC-GC−Int	189	0					
76	**At−Spectrosc**	181	179	101.12	36	21	69	32
77	Bull-Environ-Contam-Toxicol	172	1373	12.53	65	63	27	38
78	J-Forensic-Sci	171	963	17.76	51	59	33	44
79	J-Chemom	166	139	119.42	22	37	67	19
80	J-Immunol-Methods	165	1248	13.22	16	17	9	4
81	Forensic-Sci-Int	157	766	20.50	54	58	52	58
82	Clin-Chim-Acta	153	915	16.72	46	43	13	5
83	Phytochem-Anal	149	226	65.93	40	53	70	60
84	Accred-Qual-Assur	148	0					
85	Am−Lab (Shelton,-Conn)	147	502	29.28	64	66	66	69
86	Chirality	143	424	33.73	27	34	55	39
87	J-Am−Soc-Mass-Spectrom	143	603	23.71	2	5	32	23
88	Food-Addit-Contam	141	469	30.06	53	29	60	52
89	Spectrochim-Acta,-Part-A	139	1168	11.90	59	62	23	26
90	Chem-Listy	136	837	16.25	74	75	71	75

of the environment, agriculture, and food section, as visible in Figure 3. It shows a substantial temporary growth during the 1988−1992 period which stabilized to a slight continual growth during the 1993−1998 period.

It is quite difficult to decide on whether these trends are reflecting the real worldwide state of health of the topical subfields in question or they are the consequence of paper allocation decisions in the editing of the **AA**. The serious perturbation on the curve reflecting the environment, agriculture, and food section is very likely a result of this later motive.

The journal coverage of the **AA database** has in some respect followed the tendencies formulated in the circular letter of the Editor[3] as mentioned in the Introduction to this paper. As visible in the rank-productivity curves of journals processed in the 1980−1989 period, 85% of the processed papers came from more than 150 journals (Figure 4). As visible in Figure 5. this number has decreased to about 90 journals for the 1990−1998 period in accordance with the Editor's statement,[3] i.e., that "**AA** should concentrate on core journals". There were 3568 journals processed during the 1980−1989 period. This can be compared to the number of 1920 journals processed during 1990−1998.

Table 2 presents the list of those 90 journals (according to Figure 5) which could be considered the larger core journals of analytical chemistry for the 1990−1998 period. The table shows their rankings according to total productivity (as taken from the JCR database), ISI impact factor (average of 1990−98), impact factor for 1998, total citation (1990−1998) average citations per paper, and the total number of papers included in the **AA database**.

Table 3 presents the journal list for the 1994−1998 period in the same form. Journals scanned from cover to cover are shown in bold. It is visible in the tables that at the beginning of the 1990−1998 period some "titled" analytical journals were not yet selected cover to cover (e.g. *J. Chromatogr. A*: 95.0%; *Anal. Chem.*: 96.3%; *Chromatographia*: 90.4% etc.). This has been corrected in 1994−1998 when most of the "titled" journals were in fact scanned from cover to cover.

Table 4 shows the list of 48 "titled" journals for the 1994−1998 period which have been considered by the **AA database** to be the inner core journals list of analytical chemistry (scanned cover to cover). It is matching with the different rankings in Table 3 as shown by crosses in the columns of Table 4. As visible in the table the productivity ranking of the list of "titled" journals has an overlapping of approximately 50% with the rankings based on citations.

The rank of titles based on the productivity of journals scanned by the **AA database** was tested for correlation with the rank based on total citations (1990−1998) of those journals. The results are presented in Figure 6. As shown by the Spearman's $r_s = 0.4710$ at a $p < 0.00002$ level there is no significant correlation between these rankings.

By comparing Tables 2−4 it becomes clear that the **AA database** has complied step by step with its aims for improving its coverage and the new improved strategy was in full operation beginning 1994. It is also somewhat understandable that for some "titled" analytical journals missing in Table 4 (see e.g. *Anal. Biochem.*; *Electrophoresis; Quimica Analytica; Spectrochimica Acta A*) there can be found logical motivations for not being scanned from cover to cover (too many papers; special character of the technique; language, etc.). A more comprehensive coverage of these above mentioned "titled" journals would be still fully justified. It is also worthwhile to have a glance also to the tail of the distribution curve in Figure 5.

Table 5 presents some results in this respect giving the number of journals processed by the **AA database** from

Table 4. Productivity (Total No. of Papers Processed in **AA**) Ranking of the Inner Core ("Titled") Journal List Overlapping with Other Rankings in Table 3 and 4[a]

		overlapping with ranking based on			
productivity rank	journal	impact factor (1994−1998)	impact factor 1998	total citations (1994−1998)	total citations/ no. of articles
1	J-Chromatogr + **J-Chromatogr,-A**	x	x	x	x
2	**Anal-Chem**	x	x	x	x
3	**Anal-Chim-Acta**	x	x	x	x
4	**J-Chromatogr,-B:-Biomed-Appl**	x	x	x	x
5	**Fresenius'−J-Anal-Chem**	x	x	x	x
6	**Analyst (London-Cambridge, UK)**	x	x	x	x
7	**Fenxi-Huaxue**				
8	**Talanta**	x	x	x	x
9	**J-Pharm-Biomed-Anal**			x	
10	J-Liq-Chromatogr + **J-Liq-Chromatogr-Relat-Technol**	x	x	x	x
11	**Chromatographia**	x	x	x	x
12	**Zh-Anal-Khim + J-Anal-Chem (Transl-of-Zh-Anal-Khim)**			x	
13	**Anal-Lett**			x	x
14	**J-Anal-At−Spectrom**	x	x	x	x
15	J-Assoc-Off-Anal-Chem + **J-AOAC−Int**				
16	**Electroanalysis (NY)**	x	x	x	
17	**Analusis**				
18	**Sepu**				
19	**Bunseki-Kagaku**				
20	**Spectrochim-Acta,-Part-B**	x	x	x	x
21	**J-High-Resolut-Chromatogr**	x	x	x	x
22	**Mikrochim-Acta**			x	
23	**J-Anal-Toxicol**	x	x	x	x
24	Anal-Proc (London) + **Anal-Commun**	x	x		
25	**Chem-Anal.(Warsaw)**				
26	**J-Planar-Chromatogr-Mod-TLC = JPC J. Planar Chromat.**	x	x		x
27	**Microchem-J**				
28	**Chemom-Intell-Lab-Syst**	x	x		x
29	TrAC,-Trends-Anal-Chem (Pers-Ed) + **Trends-Anal-Chem**	x	x		x
30	**Biomed-Chromatogr**	x	x		
31	**J-Chromatogr-Sci**	x	x	x	x
32	**J-Microcolumn-Sep**	x	x		x
33	**Int-J-Environ-Anal-Chem**				x
34	**LC-GC**	x	x		x
35	**Spectroscopy (Eugene,-Oreg)**				
36	**X-ray-Spectrom**	x	x		x
37	**Quim-Anal.(Barcelona)**				x
38	**LC-GC−Int**				
39	**At−Spectrosc**	x	x		x
40	**J-Chemom**	x	x		x
41	**J-Capillary-Electrophor**				
42	**Spectrosc-Eur**				
43	**Spectra-Anal**				
44	Can-J-Appl-Spectrosc + **Can-J-Anal-Sci-Spectrosc**				
45	**J-Flow-Injection-Anal**				
46	**Crit-Rev-Anal-Chem**				
47	**Appl-Spectrosc-Rev**				
48	**Rev-Anal-Chem**				

[a] x: journals also present in Table 3, i.e., journals ranked from 1 to 48 in the category of the respective column of this table.

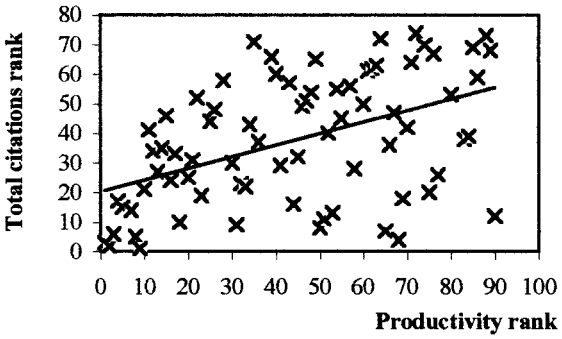

Figure 6. Scatterogram of journal productivity and total citations (1990−1998) ranks.

Table 5. Journals for Which the **AA** Database Did Process Only 1−10 Papers during the 1990−1993 and 1994−1998 Periods

	no. of journals	
	1990−1993	1994−1998
1	743	13
2	285	8
3	150	6
4	93	2
5	81	4
6	53	7
7	29	4
8	28	2
9	20	0
10<	392	239
sum	**1874**	**285**

which only 1−10 papers were scanned during the 1990−1993 and 1994−1998 period.

As visible, there were still 743 journals in 1990−1993 from which only one paper was selected for inclusion, 285 journals from which only two were selected, and so on. The number of scarcely scanned journals has been, as visible, radically reduced in the 1994−1998 period.

Table 6. Citation Impact of a Random Selection of Papers from Journals in the Tail of the Distribution (See Figure 5)

no. of papers process	author	journal	citations								
			1990	1991	1992	1993	1994	1995	1996	1997	1998
1	Martiska,-G	Adhes-Age. Aug 1990; 33(9): 60−61	0	0	0	0	0	0	0	0	0
	Lopez,-FJ et al.	Brain-Res-Bull. 1990; 24(3): 395−399	0	8	7	7	5	1	1	4	0
	Thumel,-H	Fleisch. 1991; 45(12): 887−889		0	0	0	0	0	0	0	0
	Mourey,-TH et al.	J-Chromatogr.-Libr. 1992; 51B (Chromatography (5th Ed.), Pt. B): B475−B512			0	0	1	0	0	0	1
	Schifter,-S	Peptides (Fayetteville,-NY). 1991; 12(2): 365−369		1	4	2	6	5	1	1	0
3	Leino,-L et al.	Agents-Actions. 1990; 31 (3−4): 178−182	0	0	0	0	0	1	0	0	1
	Morel,-A et al.	Agents-Actions. 1990; 30 (1−2): 291−293	0	0	0	0	0	0	1	0	0
	Schmidt,-SS	Aqua (London) 1990; 39(1): 6−15	0	1	0	0	0	0	0	0	0
	Chau,-FT; el-al	Lab-Microcomput. 1990; 9(3): 88−93	0	0	1	1	0	0	0	0	0
	Halligan,-S et al.	Toxicol-Lett. 1990; 53(1−2): 183−185	0	0	0	1	1	0	0	0	0
5	Gasparic,-J	Adv-Chromatogr. (NY). 1992; 311			0	1	2	3	0	0	0
	Katti,-AM	Adv-Chromatogr. (NY). 1992; 311			0	1	1	1	4	2	0
	Booth,-BP et al.	Biopharm-Drug-Dispos. Nov 1990; 11(8): 663−677	0	2	2	1	1	1	2	0	0
	Bruvold,-WH et al.	J-Am−Water-Works-Assoc. 1990; 82(2): 59−65	0	1	1	0	0	0	0	0	0
	Courel,-P et al.	Vacuum. 1991; 42(13): 819−820		0	0	2	0	1	0	0	0
7	Dong,-S et al.	Chim-Chem-Lett. 1991; 2(5): 411−414		0	0	0	0	0	0	0	0
	Mutlu,-M et al.	J-Mater-Chem. May 1991; 1(3): 447−450		0	0	0	1	0	1	0	0
	Degner,-R et al.	Lebensm-Biotechnol. 1991; 8(5): 232−233		0	0	0	0	0	0	0	0
	Nubbe,-ME et al.	Water-Environ-Res. 1992; 64(4): 303−333			0	0	0	1	0	0	0
	Morales,-A et al.	Water-Environ-Res. 1992; 64(5): 669−681			0	0	3	7	3	0	1
9	Danielsson,-B	Curr-Opin-Biotechnol. 1991; 2(1): 17−22		0	0	3	1	2	1	1	1
	Kleine,-TO	Laboratoriumsmedizin. 1991; 15(2): 114−116		1	0	0	1	0	0	0	0
	Bieglmayer,-C	Laboratoriumsmedizin. 1991; 15(4): 218−222		0	0	0	0	0	0	0	0
	Iqbal,-N et al.	Sci-Int (Lahore). 1991; 3(3): 221−222		0	0	0	0	0	0	0	0
	Hanif,-M et al.	Sci-Int (Lahore). Apr 1990; 2(2): 131−132	0	0	0	0	0	0	0	0	0

For finding out whether this selection and radical reduction was justified we have made a random choice of papers from journals from which only 1, 3, 5, 7, and 9 papers were selected during the 1990−1998 period and have searched for their citation impact in the "Science Citation Index" database. The results are presented in Table 6. As visible, most of these papers were cited only quite modestly, or they were not cited at all.

This can raise the argument of whether the processing of some journals at the end of the tail of the distribution (see Figure 5) is worthwhile or some of these journals could be dropped at all in favor of some journals, still only partially scanned which are on the list of core analytical journals (Table 4). We fully realize that it is no easy decision, but all arguments seem to indicate that this would be advantageous for the worldwide analytical chemistry community.

4. CONCLUSIONS

Our auditing has shown that the **AA database** is in general terms still a correct and useful tool of information gathering and retrieval in analytical chemistry, as topical coverage and covered journal comprehensiveness is concerned.

A small drawback we have found is still the only partial coverage of the contents of a few specialized "titled" analytical chemistry journals. It is still our conviction that there is no better group of people to decide what does belong to analytical chemistry and what does not than the gatekeepers of "titled" analytical journals. That is why we consider that a further improvement of the **AA database** could be achieved by an even more extensive coverage of the scientific content of those few specialized "titled" journals. The other important observation relates to the tail of the distribution of journals processed by the **AA database**.

Of course, the coverage of analytical chemistry extends by far farther than that of the "titled" journals as nicely stated by Bradford's law, i.e., articles of interest to analytical chemists will occur not only in periodicals specializing in their subject but also, from time to time, in other periodicals which grow in number as the relation of their field to that of analytical chemistry lessens and the number of articles on that subject diminishes. But most of the contents of "titled" analytical journals belongs without doubt to the inner circle of basic analytical knowledge and would have to be included into the **AA database** even at the detriment of some papers only remotely belonging to analytical sciences.

Additionally, a wise shortening of the tail of the distribution would perhaps be useful professionally and lucrative economically.

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