Publication Speed in Analytical Chemistry Journals

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Variations of the time elapsing between submission or acceptance and publication ("lapse time") of papers have been studied for 10 major analytical chemistry journals, for the 1985−1999 period. The time from receipt of all manuscripts up to their publication and the period between their acceptance and their publication were analyzed in four selected years: 1985, 1990, 1995, and 1999. The majority of the investigated journals showed good average performance with sometimes disturbing fluctuations. *Talanta* has not been able to catch up with the rest, while the *Analyst* has recently become clear leader in publication speed.

1. INTRODUCTION

It is a natural goal of any editorial board to have their journal be recognized as a "good" journal in their science field. The concept "good" is complex, and it is partly based on subjective judgment. Quality matters for scientific journals because (1) journals represent a working tool for research and an important channel for regular, accurate, and up-do-date flow of scientific information and (2) high quality manuscripts are usually sent only to journals recognized for their quality.

There are several ways to quantitate journal quality. One of these is the publication lapse of journal articles, i.e., the lapse of time between receipt of the manuscript by the journal and the date of publication. This can be divided into two parts.

1. The time from the receipt of an article up to acceptance. This time is mainly spent for peer review, which is sometimes slow when several revisions may be needed. Authors may be slow in returning the corrected version. A professional discussion between the reviewers and the author(s) may take a long time. Mailing time may sometimes be important.

2. The time between acceptance and publishing includes typesetting, correction, printing, binding, etc. This time depends on the manufacturing technology, on the time needed to perform proofreading by the author, and on the level of organization at the publisher. Proofreading time may be shortened by "Letters" type journals where each submitted manuscript is considered to be final and the proofreading is carried out carefully by the editorial staff itself.[1−2] Many journals prepublish their articles via Internet or e-mail, so that articles can be accessed earlier than the printed version is published.

The publication lapse of articles in a journal is not uniform, and statistical figures are needed to characterize it. Median publishing time is the period during which 50% of manuscripts passes through, from receipt to publishing, in a specified volume of a journal. The duration and position of the period during which 25−75% of the manuscripts pass through (interquartile range) is another useful measure.

2. METHODOLOGY

The aim of this study was to determine how the publication lapse for major analytical chemical journals changed during recent years. Ten well-known "core" analytical chemical journals were selected. Selection was limited to journals available in libraries in Hungary during the period under study (1985−1999). For the 1985, 1990, 1995, and 1999 volumes of these journals the following were checked: (1) the date when the article was submitted, (2) the date when the article was accepted, and (3) the date when the article was published.

For each year and each journal we determined for all articles the period from submission (receipt) and acceptance, respectively, to the date of their publishing.

Collection of the data presented in this paper is a tedious manual work. The dates of receipt and acceptance of the papers respectively, are not available in public electronic databases, they have to be collected from the printed journals paper by paper. This explains why we restrained ourselves to analyzing only every fifth year's date. The editors of the journals, on the other hand, are very likely in possession of the relevant data in electronic form. We believe that quality-minded editors should regularly publish these data of their journal(s) or at least statistical summaries of the data like those presented in our paper.

From the above data, we obtained the median publishing time by journal and year i.e., the period during which 50% of manuscripts passed through. The duration and position of the period during which 25−75% of manuscripts have passed through was also determined and referred to as interquartile range. We have also determined the shortest and longest time needed to publish a paper by a journal in a given year (volume), and have called the difference between these limits the range. In some cases (e.g.: *Fresenius Journal of Analytical Chemistry*, *Analytical Letters*), we could not

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Table 1. Publication Lapse of Papers (from Date of Submission to Date of Publication in Print)

	publication lapse of papers [days]					
	1985			1990		
journal	median	interquartile range	range	median	interquartile range	range
Analyst	218	188−258	47−1166	239	202−289	89−650
Anal. Chem.	192	167−224	93−754	194	169−225	79−434
Anal Chem. Acta	205	175−244	102−571	249	217−290	39−1012
Anal. Letters				135	96−181	48−642
Chromatographia	157	109−221	68−444	106	80−139	22−594
Fresenius J. Anal. Chem.	234	172−279	37−1040	196	149−267	74−476
J. Chromatogr. A	129	114−162	69−663	232	199−271	105−783
J. Chromatogr. B	232	216−253	101−793	229	206−271	120−1188
J. Chromatogr. Sci.	178	122−249	32−405	316	255−381	52−617
Talanta	276	232−362	84−1016	380	290−535	82−1149
median	205	172−249	69−754	231	201−271	77−646

	publication lapse of papers [days]					
	1995			1999		
journal	median	interquartile range	range	median	interquartile range	range
Analyst	206	174−235	95−1170	114	95−141	48−309
Anal. Chem.	184	158−223	75−696	193	166−231	73−681
Anal. Chem. Acta	278	236−326	79−678	257	219−301	67−606
Anal. Letters	161	133−199	59−632	180	147−228	69−719
Chromatographia	143	118−172	26−411	218	191−254	128−596
Fresenius J. Anal. Chem.	247	211−285	67−975	242	208−303	46−585
J. Chromatogr. A	255	189−277	99−761	185	157−236	84−787
J. Chromatogr. B	234	210−271	128−714	208	173−252	62−861
J. Chromatogr. Sci.	239	205−287	36−613			
Talanta	298	256−351	126−1753	310	272−366	143−718
median	237	189−271	79−696	208	173−252	69−681

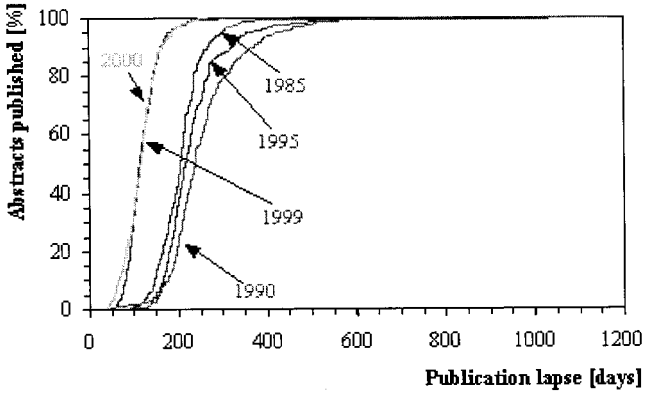

Figure 1. Total publication lapse of papers in *Analyst.*

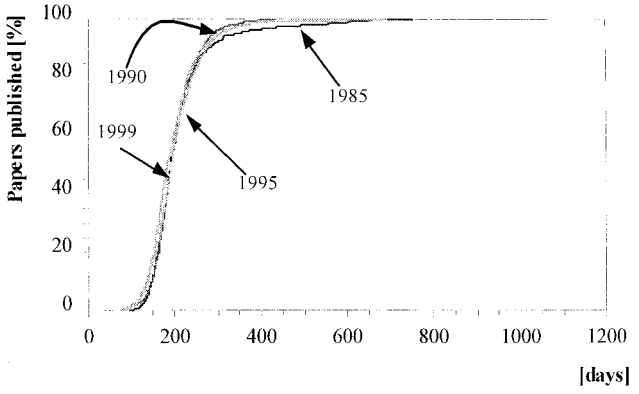

Figure 2. Total publication lapse of papers in *Analytical Chemistry.*

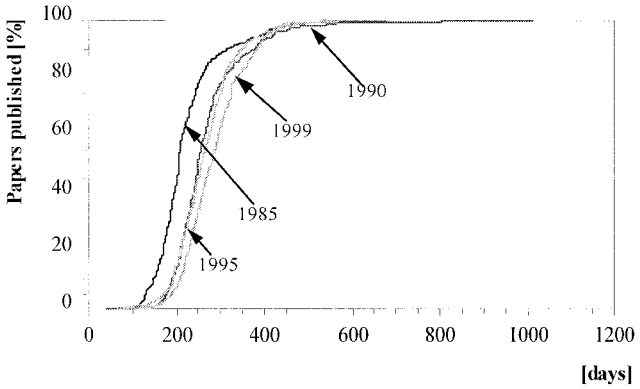

Figure 3. Total publication lapse of papers in *Analytica Chimica Acta.*

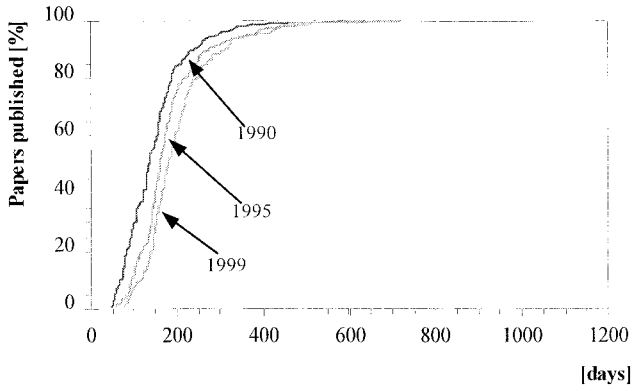

Figure 4. Total publication lapse of papers in *Analytical Letters.*

determine the publication lapse in each year, for lack of data. Publication lapse of analytical journals was studied earlier by Braun et al.[1] This work is a continuation of that earlier study.

3. RESULTS AND DISCUSSION−TOTAL PUBLICATION LAPSE

The titles of the 10 analytical chemistry journals selected, their median publishing time, interquartile range, and range

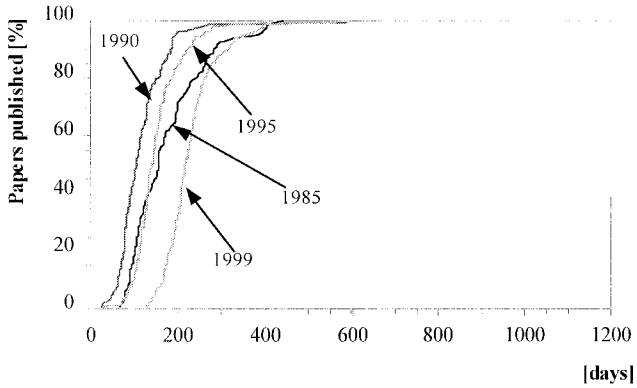

Figure 5. Total publication lapse of papers in *Chromatographia*.

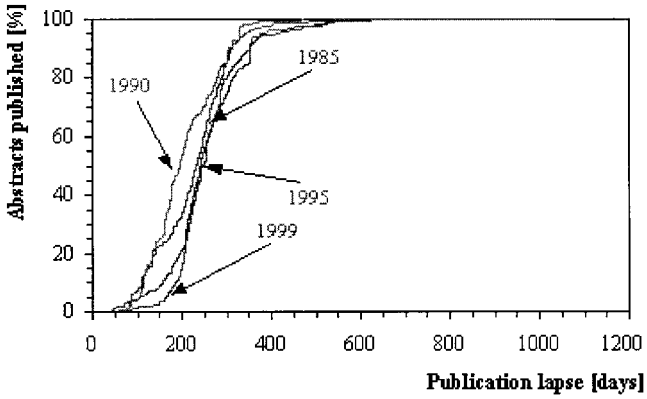

Figure 6. Total publication lapse of papers in *Fresenius Journal of Analytical Chemistry.*

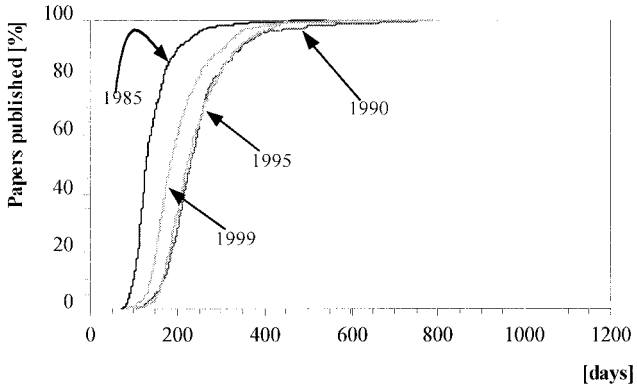

Figure 7. Total publication lapse of papers in *Journal of Chromatography A.*

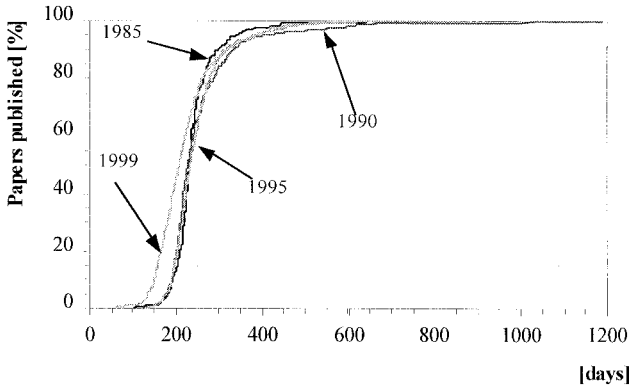

Figure 8. Total publication lapse of papers in *Journal of Chromatography B.*

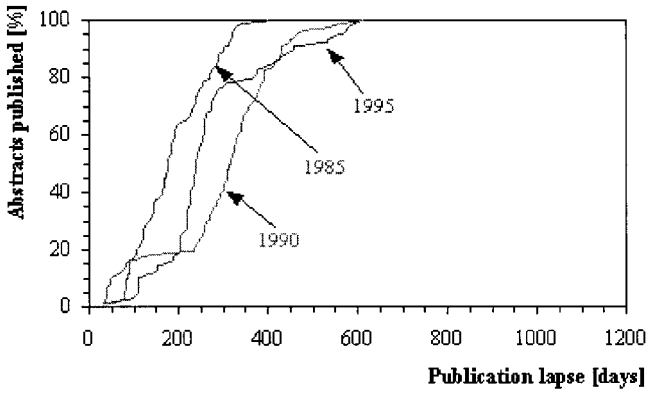

Figure 9. Total publication lapse of papers in *Journal of Chromatographic Science.*

Table 2. Proportion of Articles Published within 1 Year

	proportion of articles published within 1 year			
journal	1985	1990	1995	2000
Analyst	95.2	89.5	98.7	100.0
Anal. Chem.	95.7	99.2	98.3	98.0
Anal. Chem. Acta	93.2	88.7	86.4	92.7
Anal. Letters		98.5	94.5	94.7
Chromatographia	94.7	99.5	99.5	99.5
Fresenius J. Anal. Chem.	96.5	98.7	92.6	93.8
J. Chromatogr. A.	99.0	92.6	93.6	97.1
J. Chromatogr. B	96.7	93.2	93.3	93.6
J. Chromatogr. Sci.	99.0	70.6	79.5	
Tatanta	99.7	98.8	99.0	99.6

are shown in Table 1. In Figures 1−10 the cumulative percentile values of articles published in the given year are shown as a function of publication lapse.

The figures have all been drawn to the same scale for better comparability. Finer details need to be taken from the tables. It should be noted that Figures 1−10 and Table 1 refer to the total publication lapse, i.e., the time from receipt of the manuscript until the publication date in printed form (as shown on the respective printed volume). Table 2 shows a further interesting feature: the percentage of articles published within 1 year after submission.

A first glimpse at the figures convinces that the 10 journals show a considerable spread with respect to their behavior in the same year and to their development through the last 15 years. *Analytical Chemistry* is the prime example of stability and reasonably good performance. Its median publishing time was 192, 194, 184, and 193 days, respectively, in the 4 years studied. The longest publishing time in *Analytical Chemistry* was 434 days in 1990 and about 700 days in the 3 other years. This latter value is fairly typical for the majority of the journals studied. In other words, even in good journals a few papers may be 2 years old when they come out in print.

Journal of Chromatography B is another stable player, although its performance lags somewhat behind *Analytical Chemistry*. *Talanta*'s lapse time curves are also fairly uniform (except for 1990), but this journal has been consistently slower than any other. Its median lapse time has been around 300 days, and the maximum lapse exceeded 1000 days in three cases out of four.

Analytical Letters shows a slowly increasing median value. It has been always somewhat faster than *Analytical Chemistry* but perhaps not as fast as one would expect from a letters type "fast publication" journal.

Table 3. Publication Lapse of Papers (from Date of Acceptance up to the Date of Publication)

	publication lapse of papers [days]					
	1985			1990		
journal	median	interquartile range	range	median	interquartile range	range
Analyst	148	134−163	51−273	142	121−161	91−281
Anal. Chem.	109	96−120	62−242	95	88−104	68−163
Anal Chem. Acta						
Anal. Letters				62	51−68	36−414
Chromatographia	102	83−137	31−371	67	52−88	7−181
Fresenius J. Anal. Chem.						
J. Chromatogr. A						
J. Chromatogr. B						
J. Chromatogr. Sci.						
Talanta	140	128−152	55−482	173	156−211	78−426
median	125	112−154	53−322	95	88−104	68−281

	publication lapse of papers [days]					
	1995			1999		
journal	median	interquartile range	range	median	interquartile range	range
Analyst	123	104−147	42−1081	47	40−56	24−90
Anal. Chem.	80	73−87	47−215	83	75−93	44−277
Anal. Chem. Acta	150	138−165	69−334	133	115−164	58−463
Anal. Letters	87	77−101	37−173	99	87−109	16−156
Chromatographia	67	55−80	21−147	129	113−146	58−411
Fresenius J. Anal. Chem.	166	122−211	48−643	151	130−175	56−324
J. Chromatogr. A	127	114−147	72−501	87	79−96	58−425
J. Chromatogr. B	133	126−148	106−168	91	79−102	48−167
J. Chromatogr. Sci.	227	203−255	36−548	33	31−43	19−62
Talanta	178	163−195	127−657	187	158−203	110−594
median	130	118−148	48−418	95	87−109	56−324

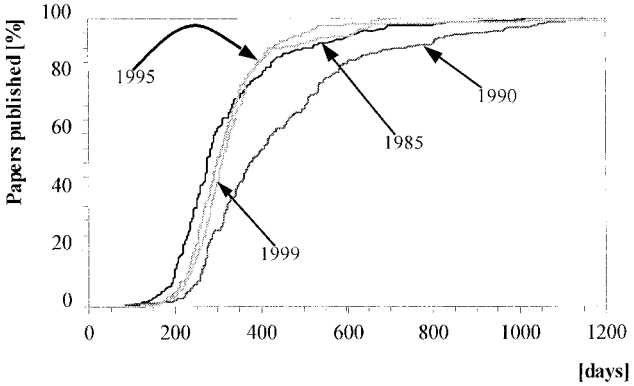

Figure 10. Total publication lapse of papers in *Talanta.*

Analytica Chimica Acta stays stable somewhere in the middle of the row. The only surprising observation is that it performed significantly better in 1985 than in any later year. The latter observation is also valid for the *Journal of Chromatography A.*

Chromatographia and *Journal of Chromatographic Science* have been quite variable over the years. Yet 1999 was the worst year for *Chromatographia*.

Analyst seems to have started a revolution recently. They pushed down their median lapse times in 1999 to 114 days and in 2000 to 116 days, respectively, and the maximum lapse time to 309 days (1999) and 270 days (2000). These changes seem to reflect the determination of the editors to use all possible means (new technologies of communication included) to be the forerunners of the field. It will be interesting to see if this super fast speed can be maintained in the coming years and if quality can be kept stable despite the increased speed.[3−5]

PUBLICATION LAPSE AFTER ACCEPTANCE

As stated in the Introduction, it is sensible to divide the publication lapse into the period before acceptance (the peer review phase) and the one after that (the technical phase). One may claim that the review phase cannot be extremely short if a thorough peer review process is maintained and if the number of reviewers used (and thus the spread in their diligence) is large. The technical phase, on the other hand, is a matter of management, industrial organization, and discipline. Table 3 shows the performance of the 10 journals in this respect. There are many missing data in 1985 and 1990, because the data needed were not shown in some journals.

The results show that much of the larger effects observed above in total lapse time can be explained by the slowness of the technical phase. *Analyst* reduced its total lapse (median) by 92 days between 1995 and 1999, the decrease of the technical lapse being responsible for 76 days. In the same period the total lapse for *Chromatographia* increased by 75 days and its technical lapse by 62 days. In *Journal of Chromatography A* and *B* the total lapse decreased by 70 and 26 days, respectively, while the technical lapse decreased by 40 and 42 days. Thus while *Journal of Chromatography A* was efficient in decreasing both lapses, *Journal of Chromatography B* lost part of the technical gain to the slower peer review process. *Journal of Chromatographic Science* decreased its technical lapse by a factor of 7 between 1995 and 1999. This result which was also maintained in 2000 is difficult to interpret, however, because this journal does not show anymore the "date received". Thus the total lapse time cannot be determined (Table 1) and compared.

4. CONCLUSIONS

Most of the important analytical chemistry journals publish the printed version of their papers within a time lapse that is close to a common industrial standard. Some journals maintain such a standard very reliably over many years, while others produce sometimes quite unpredictable variations. Vast changes in publication technology and electronic mail did not result yet in a general speedup of publication. The first signs of considerable improvement appeared in 1999 when *Analyst* made a quantum leap in publication speed. It seems that improvements can mainly be achieved in the "technical" phase of publication that follows the more "humanly steered" peer review process.

In this paper we have not yet studied the effects of electronic publication. Several journals have adopted the practice to publish papers on the Web very shortly after the paper has been proofread. It is likely that the possibility of selfpublication on the Web or other forms of competition through extremely fast publication will push some journals toward more speedy and more disciplined publication.

REFERENCES AND NOTES

(1) Braun, T.; Nagy, J. I. A comparative evaluation of some Hungarian and other national biology, chemistry, mathematics and physics journals. *Scientometrics* **1982**, *4*(*6*), 439−455.

(2) Braun, T.; Nagydiósi-Kocsis, Gy. The publication lapse of papers in Radiochemical and Radioanalytical Letters. *Radiochem. Radioanal. Lett.* **1982**, *52*(*6*), 327−334.

(3) Dean, J.; Kybett, A. RSC primary journals − publication times. *Analyst* **1999**, 124, i.

(4) Williams, S. Editorial. *Analyst* **1999**, *124*, 1N.

(5) Miller, R. Editorial. *Analyst* **2000**, 125, i.

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