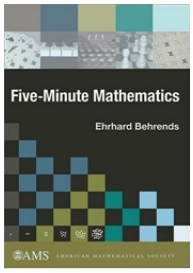
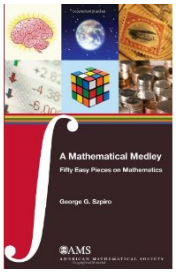
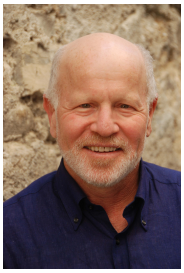
Five-Minute Mathematics *Ehrhard Behrends*, AMS, 2008 (xxvi+380 p.), soft cover, ISBN 978-0-8218-4348-2.
A Mathematics Medley, Fifty easy pieces of mathematics *George G. Szpiro*, AMS, 2010 (x+236 p.), soft cover, ISBN 978-0-8218-4928-6.

E. Behrends  



 G.G. Szpiro

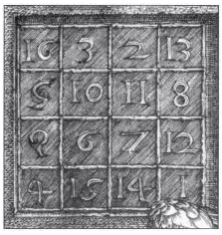
In this era of blogging, where things should be presented in flashy short bite-size chunks, not taking longer than 5 minutes to consume, the two books of this review fit perfectly well. As a surfing mathematician you will probably have discovered some of the many mathematical blogs around on the web. These books are like "frozen and printed" blogs. They also fit into the current boom of popularizing science books dealing in one way or another with mathematics. These deal essentially with mathematics as such or how mathematics is omnipresent in our society. There are also a lot of novels that have this mathematical flavor be it as a central theme or as a side effect. These can be historical with a flavour of fiction, about the fascinating life of some mathematical genius (e.g. The Indian Clerk), but they may also be psychological (e.g. The solitude of prime numbers), or thrillers where some mathematician (not the mathematics) plays a central role (e.g. 1q84, Murakami's recent trilogy), etc.

It seems that creative people like novelists, playwrights, film directors, (and they need not be mathematicians themselves) and thus our society is realizing that mathematicians are indeed part of the same society that they live in. That they are not creature from an other world, operating in some isolated universe. Perhaps the message that mathematics have been preaching for so long is finally getting through: mathematics is everywhere and everything is mathematics,... well, almost everything. And yet, most teaching mathematicians complain about a change of attitude of students towards mathematics and the fading interest in studying mathematics. Perhaps we need some die-hard mathematicians who do live in another world, but we also need some spin-doctors interpreting mathematics for a broad public. This is exactly what the authors of these two books do.

Ehrhard Behrends achieved something that is, as far as I know, unprecedented. He proposed to write a weekly column in *Die Welt*, a regular newspaper distributed worldwide. We all know such columns in journals, magazines, of newsletters intended for a mathematical audience, but here we are dealing with a worldwide distributed ordinary newspaper. His proposal was accepted and the *Five-Minute Mathematics* book is a collection of the columns that appeared in 2003–2004. It is in fact a edited translation of the German original that has appeared in 2006. Translator David Kramer did an excellent job in enhancing and completing the text and make even tiny corrections at some places. Also several glossy pictures were added to the newspaper texts for the purpose of the book.


Shalosh B. Ekhad

For a mathematician, the 100 columns that are collected here may be not that interesting since most of the content is more or less general knowledge among mathematicians. It contains the most diverse topics of general interest, such as statistical items: the chance to win the lottery, the chance of people having the same birthday, etc. Of course there is are several items about number theory, which is usually an easy problem to formulate for a general public: primes, pi, Fermat, zero and infinity and the likes. Others are related to computation: $P = NP$, simulated annealing, quantum computing,... And there are many topics of interest to a general public that can be covered in 100 chapters: Hilbert's hotel, Escher, Ramanujan, cryptography, games, puzzles, magicians's tricks, music, options, arbitrage, chess, bar codes,... All nice things to know and to keep up your sleeve when there is an annoying silence in your company just after you identified yourself as a mathematician.


On the other hand, Szpiro's book *A Mathematical Medley* will probably be more to the likings of mathematicians, although it is again written for a general public. Surprising as it is, the previous book does contain some formulas, while there isn't a single one here. It has almost no illustrations, but it does have a list of references, but no index as the first one does. Perhaps it is judged that dealing with only 50 chapters, instead of 100, is still something one can go through to retrieve an item. Moreover the chapters are somehow gathered around nine different themes plus an introductory chapter out of competition. The latter deals with the question when and how we came to our decimal system and why besides 10, also 12 is such an omnipresent number in human culture. Since 50 topics is still to many to cover them individually in this review, let me make a selection by taking one from each theme. The chapters in a theme have very loose ties and the theme refers to the environment in which the mathematics are applied like "mathematics in the air" or "mathematics and money" but this does not mean that they deal with a specific branch of mathematics.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Baden-Württemberg	1,103	1,364	1,672	1,907	2,292	2,517	2,847	3,232	3,509	3,738	3,955	3,974	4,296	
Bavaria	1,436	1,751	2,222	2,808	3,830	4,305	5,342	6,088	7,437	8,014	8,930	9,591	10,416	
Hesse	6,784	7,019	7,986	8,453	8,607	8,922	9,194	9,255	9,167	9,145	9,179	9,102	9,032	
Lower Saxony	5,158	5,569	6,251	6,574	6,877	7,228	7,815	8,141	8,695	8,985	9,242	9,493	9,839	
North Rhine-Westphalia	751	1,034	1,235	1,329	1,439	1,603	1,850	2,000	2,269	2,346	2,417	2,575	2,663	
Rhineland Palatinate	1,040	1,263	1,630	1,741	1,929	2,148	2,388	2,557	2,845	2,985	2,974	3,041	3,006	
Saarland	390	428	456	475	482	487	538	551	621	697	709	721	705	
Schleswig-Holstein	710	812	951	1,022	1,062	1,211	1,380	1,664	1,818	1,899	2,009	2,110	2,170	
Brandenburg	217	512	1,043	1,497	1,497	2,156	2,933	3,683	4,143	4,669	4,654	4,713	4,174	
Mecklenburg-Upper Pomerania	128	398	588	931	1,261	1,585	2,057	2,521	2,764	2,829	2,684	2,720	2,720	
Saxony	570	817	1,051	1,292	1,415	1,654	1,949	2,338	2,552	2,635	2,595	2,594	2,484	
Saxony-Anhalt	604	754	754	1,826	2,501	2,839	3,365	3,686	3,945	4,022	3,893	3,670	3,703	
Thuringia	360	648	1,087	1,337	1,093	1,297	1,655	3,365	3,034	3,291	3,533	3,626	3,626	
Berlin	67	90	99	96	101	54	67	120	120	135	56	56	117	
Bremen	13	15	16	17	16	16	21	24	40	35	31	35	36	
Hamburg	14	37	58	73	72	81	83	109	130	129	128	130	143	
Total	19,345	22,511	27,099	31,378	34,474	38,123	43,484	49,334	53,089	55,554	56,989	58,151	59,130	

Number of Girls in Youth Fire Brigades in the German States
(from the website of the German Ministry of Family Affairs)

There are chapters about primes, number theory and computation, just as in the first book, but there is always something extra for a mathematics reader to learn. For example one chapter doesn't deal with the history and the current state of computing the decimals of pi, but instead there is a similar discussion about the computation of the Littlewood-Salem-Izumi constant. Another curiosity: The proof of Kepler's conjecture was not published in the *Annals of Mathematics* in 1998 (only the strategy of the proof was accepted). The reason was that it was a proof by computer, and therefore it was deferred to *Discrete and Computational Geometry* where it appeared only in 2006. Or the story of the paper published by Shalosh B. Ekhad, who turned out to be an Hebrew pseudonym for a computer 3B1, a name chosen by the co-author (Doron Zeilberger).

Another thing that surprised me: In many real life data sets, the probability that the numbers start with the digit 9 is not about 10%, but instead the frequency of numbers starting with the digit d is $\log(1+1/d)$, which is approximately 0.046 for $d = 9$ (check in table above). Did you know that the human brain can interpret quantitative data properly when they depend on not more than four parameters. I never realized that the time between receiving an e-mail and me sending an answer obeys the same law as the time that Darwin or Einstein needed to answer their letters. There are of course the chapters about games and puzzles. So I learned about old and recent results related to Rubik's cube, Sudoku puzzles, magic squares, chequers, tic-tac-toe, and the likes. But there are many more nice things to learn about scheduling problems, how an extra road can cause more traffic chaos, the frequency of earthquakes, ringtones, and so much more. I believe that every chapters of this booklet will trigger a "whaw!",an "aha", a "meuh nice", or an "oh really?" type of experience. So it is an absolute must if you are interested in mathematics. Although mathematical knowledge is not really assumed, an mathematical insider may be more alert for the finer shades in significance of the short stories.

Adhemar Bultheel