

Catalan numbers, Discovery and Naming*

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Euler, Johann Andreas von Segner, Nicolaus von Fuss and Catalan (and others) all studied the same numbers. It doesn't really much matter what name we use as long as we agree on how we 'define' the numbers. In my work over the past 60 years I have sometimes called the numbers 1, 1, 2, 5, 14, 42, ... the 'Euler-Fuss-Segner-Catalan' numbers, especially in my well-known Bibliography. But I always agreed with my old friends John Riordan and Leonard Carlitz that the single name 'Catalan' was sufficient unto the purpose thereof.

I was reminded 60 years ago by Professor E. J. McShane that the Cauchy inequality was also discovered by Schwartz and Bouniakovsky, but the appellation 'Cauchy-Schwartz-Bouniakovsky Inequality' is rather a mouthful to keep saying and so in his lectures he sometimes just called it 'inequality 3.19'.

In the same manner we could speak of the 'Gram-Schmitt-Eberhart' orthogonalization process as there were several people who wrote about it.

We know that Vandermonde had little to do with the 'Vandermonde convolution' and Richard Askey always called it the 'Chu-Vandermonde' formula to give the ancient Chinese some credit.

Since 1955 I have popularized a generalization of this by calling it the 'Hagen-Rothe convolution'. Heinrich August Rothe really came first in his 1793 Leipzig thesis. It was from Johann Georg Hagen's 'Synopsis der Mathematik' that I came to know of Rothe's work. I was assured in 1955 by the late historian Raymond C. Archibald that perhaps only one copy of Rothe's 1793 thesis seemed to still exist, in the Royal Astronomical Society Library in Edinburgh, and he helped me to obtain a photocopy. I decided to use the descriptor 'Hagen-Rothe convolution' to give credit to Rothe and to Hagen for calling attention to it in 1891.

We all know that the 'Fibonacci' numbers were not studied per se by Fibonacci. The first truly exhaustive study was done by Edouard Lucas in his long memoir in an early issue of the American Journal of Mathematics. The dual sequence of numbers he studied 2, 1, 3, 4, 7, 11, 18, 29 . . . were later rightly called Lucas numbers.

Simultaneous discovery is not rare. Let us recall that the calculus was worked out by two people at more or less the same time. by Newton in England and Leibniz in Germany.

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