

# Ars Mathematica



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Z S U Z S A N N A R É N Y I



*B i o g r a p h y o f m y p a r e n t s*

KATALIN & ALFRÉD RÉNYI



**TYPOTEX**

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*Dedicated to my two daughters,  
Nauszika Máthé-Árvay and Eszter Erdélyi-Várady,  
and to my five grandchildren*



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# INTRODUCTION TO ARS MATHEMATICA

I am inviting the reader on a long journey in past times. To cite the famous French writer, Marcel Proust, let's try to search the *Lost Time*. (See his book: *Time Regained / In Search of Lost Time*.) I recall my father's and mother's life, the memory of the Hungarian mathematicians Alfréd and Katalin Rényi.

This biography is not presenting the mathematical oeuvre of my father. I am a historian and a linguist, not a natural scientist. Nevertheless according to the close connection to my parents and their wide friendly circle in the first 21 years of my life I venture to search for answers to important questions: Why this couple, Katalin and Alfréd Rényi had a unique influence on generations of colleagues and friends? Is this effect vivid even today? Why do I connect with their former colleagues, students and friends worldwide and even their children, all of whom have been impressed by the example Alfréd Rényi set for them? How was it possible to conduct a volume of interviews with their former colleagues, students and friends thirty and even forty years after my parents' early deaths? And finally, what is meant by *Ars Mathematica*, a sort of scientific philosophy, a 'credo' which was written in a way to be understandable for laypersons as well. My biography attempts to find the answers to all the questions listed above, hopefully in an inspiring way.

This book will make clear for you the highly intellectual atmosphere provided for Alfréd, the young boy by the Rényi and the Alexander families (my father's parents and grandparents). You will learn about the unexpected and exceptional difficulties during the prewar and wartime in Budapest and how they had to face and cope with those problems. You'll know how my parents, being university students at that time, met during

the war and how they lived their lives later and created an atmosphere that resulted in a source of inspiration for all with whom they contacted.

### Dilemmas of the biographer

While working on a natural scientist's biography, I had to face particular challenges and overcome serious difficulties.

Let me share my dilemma I had and might occur to the reader as well: how one dares to write a biography of a great mathematician, what's more, how a layman attempts to explain *Ars Mathematica*, the philosophy of a world-famous scientist.<sup>1</sup>

You will read in this book how my father shared his views about the world with me from my teenage years onwards. He and I talked for hours about researching and teaching mathematics and his *Ars Mathematica* concept. We often discussed his *Dialogues on Mathematics*, which I always highly appreciated and enjoyed. The two of us provided live performances, based on these *Dialogues* at various British, American and Canadian universities in 1964, when we spent a semester together in the US and some weeks in Cambridge, England. Despite being more interested in humanities, I did enjoy my father's *Dialogues*, understood its message.

The *Dialogues*' secret is its enjoyable, literary way, following the style of Plato's ancient Socratic dialogues. We had long talks during the live performances and later years. He dedicated the English version of the *Dialogues* to me. He could brilliantly explain all his ideas in terms of history and literature, subjects which were familiar to me.

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<sup>1</sup>*Ars Mathematica* by Alfréd Rényi. Published first as an essay in 1960, later in a book form in 1973 by Magvető Kiadó, Budapest. In 2004 Typotex Kiadó published the book entitled *Ars Mathematica*. The book contains this essay, the *Dialogues on mathematics*, the *Letters on Probability*, the *Diary on Information Theory* and other writings of Rényi.

For getting closer to the *Dialogues*, you'll find the summary of two radio interviews in this book. They got recorded by a Hungarian radio station in the late sixties when Rényi was interviewed on his interests in arts and humanities, his views of conducting research and reforming teaching mathematics.

For preparing this biography, my main concept is using the findings of personality psychology. Based on that branch of psychology I do state that thinking of a scientist, even in such an exact field as mathematics can be traced back to his personality traits. That is why I am convinced that having been extremely close to both of my parents in the last seven years of their lives (since my middle teens) I am in the position to reproduce their way of thinking authentically.

More than fifty years have passed since 1969/70 (the years of their deaths). This time, however has not been a 'lost time' (citing *Proust* again). I regard it as the period for the chronicler to grow up, recollect and evaluate her memories. Those years helped me appreciating my father's oeuvre more maturely.

By reading the *Dialogues* one can notice that antiquity was a frequent source of reference in our family. Let me put it this way: using recollections I aspire to reach the impossible: getting back my parents from *Hades*, the other world as an *Orpheus*. Simultaneously I have aimed to outline my parents' live portraits for all those having no chance meeting them in person.

### **In search for lost time**

Based on art and philosophical interpretations of time's function in general one can conclude that time is not always the dominating factor for getting to know another person. Both the intensity and the emotional content of a personal connection play an important role in deepening the understanding of each other's ideas. Following these statements, I did my best

to become an authentic biographer – and conveying all necessary and available information in an enjoyable way.

The reader of this recollection might wonder why did I wait for long decades to produce this biography. There are personal reasons for explaining this delay. First of all I was paralysed for a long time by the early loss of my parents at a young age and was unable to use remembrance as part of a psychologically healing process.

On the other hand, I was busy studying all the materials needed to write such a biography.

I do hope that completing it fifty years after my parents' deaths, I learned a lot:

- knowing people, methods of scientific thinking,
- and the most important one: interpreting the quest for *Ars Mathematica*, the philosophy of a crystal clear way of thinking and the joy of its discoveries.

Though it is shocking for me to realize being older now than my parents were when they had passed away, I must admit I needed all these decades to grow into the task.

This biography's content is equivalent with a volume of interviews published in 2013 in Hungarian. The English translation of its title is: *Dialogues on a Mathematician – The Portrait of Alfréd Rényi as Mirrored in the Memories of his Friends, Colleagues and Former Students* (2013, Polygon Publisher, University of Szeged).<sup>2</sup>

Besides working with the interviews I did in-depth research for recollecting memories, 'lost' or (more or less) faded ones as time has passed. By grasping and sharing them with the reader I hope to compile the right biography of my father, Alfréd Rényi and – partly – that of my mother, Katalin Rényi.

From chapter to chapter I will introduce first the families of Katalin and Alfréd Rényi, present their childhood and young

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<sup>2</sup>*Dialógusok egy matematikusról, Rényi Alfréd emberi portréja barátai s egykori tanítványai visszaemlékezésének tükrében*, 2013, Polygon, a Szegedi Tudományegyetem Kiadója.

years as university students. Prewar and wartime difficulties followed the youth's idyll, but the families had to overcome them.

I will discuss the teaching, researching and science popularizing activities of Alfréd Rényi. By interviewing their friends, colleagues and former students I can also present the influence which Katalin Rényi had by teaching mathematics and organizing university life for all of them.

Our discussions mirror the human characteristics of my parents. Hopefully, the reader will understand how they created a memorable and unique atmosphere, both in their home, in the Mathematical Research Institute and at the University as well. All of these made their lives and characters unforgettable and immortal.

# 1

## **SOURCES OF THE BIOGRAPHY AND THE FAMILY BACKGROUND**

Though my memories go back only to the early 60s (being a young teenage girl then), the interviews' narratives lead their readers back into my father's childhood and follow his life in detail until 1970.

I can rely on long talks with some of his former friends and colleagues including those who did not wish to form these talks into interviews.

Valuable sources of the past are of 'real evidence'-type objects:

- my father's talented drawings from his school years, mirroring his broad field of interest,
- my collection of almost one hundred postcards and letters sent by my parents during their foreign travels,
- postcards and numerous letters, written by Alfréd to my mother and me mostly in the second half of the sixties.

The letters report not just on my father's travels but on the scientific and social life at the places where he spent weeks or months. My father participated in many international conferences, worked as a visiting professor at outstanding American and British universities and made real friendships.

For the portrayal of the family background I have got authentic sources. About the first 25 years of my father's life I gained valuable information from a lively diary, written in 1946 by Artur Rényi, my paternal grandfather documenting their lives since Artur's marriage in 1920.

## The family background

One says that great talents find their ways even in challenging circumstances. On the other hand, a good family background might inspire their development even better. The second version is true for Alfréd Rényi, born in March 1921 in Budapest.

His parents called him ‘Buba’, and his nickname (referring to the German word ‘a little boy’, ‘der Bube’) became the standard way as he was called and mentioned by almost every Hungarian-speaking person.



*Artur Rényi (Buba's father) and Buba as a one-year-old child, 1922*

His father, Artur Rényi worked as an engineer. He was a real language talent who could make a living for his family during the war years by translating technical and other texts

for the Soviet troops who occupied Hungary at the end of the war, defeating the Nazi army. Later on he translated professional mathematical books as well. There are plenty of anecdotes which show Artur as talented but at the same time a very absent-minded person. Before the war he often travelled to Vienna on business by ship and as rumour has it, he was usually sitting on the deck with food service. He always read some books or newspapers and got so much emerged in this activity that he realized having eaten 40 pieces of rolls while reading a book when he received the bill at the end of the Budapest–Vienna cruise.

At the same time he had a universal field of interest. He learned many languages but had such a good command of English that he translated, for example books of H.G. Wells. Some time in the 1920s he participated in a competition of translations organized by the Royal Society. Artur Rényi translated the beautiful poem, written by the outstanding 19th-century poet János Arany in Hungarian, with the title *The Welsh bards*.

The poem is about a protest against tyrannic rules, written to remember the Habsburg ruler who defeated the 1848–49 war of independence in Hungary. Artur Rényi created a lovely translation of the original poem. The Royal Society appreciated his translation, still denied giving an award for him, saying that ‘the poem’s message was against the spirit of royalty’.<sup>3</sup>

I got a big drawer for keeping all my documents. Fortunately, I found many old and worn copybooks in this drawer, full of handwritten text.

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<sup>3</sup>Several bards in Welsh mythology have been preserved. The royal form of bardic tradition ceased in the 13th century when the 1282 Edwardian conquest permanently ended Welsh princes’ rule. The legendary suicide of *The Last Bard* (c. 1283) was commemorated in the poem *The Bards of Wales* by the Hungarian poet János Arany in 1857, as a way of encoded resistance to the suppressive politics of his own time.



*Borbála Alexander, Buba's mother at a young age, 1920s*

It soon turned out that it was the diary Artur Rényi wrote for his son in 1946 when his beloved wife, Borbála Alexander, the mother of Alfréd Rényi died unexpectedly in her early fifties.

Later on I also found the typed version of the same diary thanks to the secretary of my father. My younger daughter, Nauszika Máthé-Árvay and me spent long months translating this incredibly touching text.

This diary was published in English by Karnac publisher in 2017 and had a favourable reception by the British reading public. One of the book's reviewers, the well-known psychiatrist professor, Brett Kahr called it 'a memoir of love and struggle'. He went on as follows: '*Love and Survival in Budapest: The Memoir of Arthur Rényi* has the capacity to touch our hearts and to break our hearts in equal measure.'

This diary has been the best and most authentic source of Buba's childhood years, wartime stories. Some of which I have already heard, told by my father.<sup>4</sup>

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<sup>4</sup>This diary was published in English by Karnac Publisher in 2017, entitled *Love and Survival in Budapest*.

Borbála Alexander, Alfréd's mother, a photographer, represented arts and the emphatic approach in the family. I am going to refer to her as Borka (her nickname in the family). Bernát Alexander (1850–1927) was an eminent professor of aesthetics and philosophy at Budapest University of Sciences.<sup>5</sup> He worked at other, mostly German universities as well. During the prewar years and after the war, the Alexander family (including Buba's parents) had close ties to Budapest's progressive intellectual circles.

Budapest has always been a lively cultural center from the turn of the 19th/20th century. Writers, poets, journalists, musicians, painters and even psychologists and scientists lived a busy social life, both in the famous cafés of the capital and at dinner parties, organized in their homes and summer homes. The list of them would be too long to follow for the reader. The members of this social circle radiated a bright, intellectual atmosphere which meant a source of inspiration, especially for young, talented people, such as Buba was at that time. He often participated in these meetings together with his parents.

Children of the other families did the same. These friendships lasted in all of the lives of the members of the young generation. The memories of many friends of my father – who were his mates in childhood or during his university studies and who talked about it more than half a century later – were fresh and live ones even then.<sup>6</sup>

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<sup>5</sup>The university was initially called *Budapest University of Sciences*, which was later changed to *Royal Hungarian Péter Pázmány University of Sciences* in 1921, presenting the conservative and clerical ideology dominated in Hungary in the 1920s.

<sup>6</sup>In *Dialogues on a Mathematician*, in Hungarian *Dialógusok egy matematikusról*, p. 129. Interview with Szilágyi.