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MICHAL'S ROSES OF JERICHO

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Although my memories of childhood have mostly dissolved in the gray mist of oblivion, the memory of the moment that I saw a miracle is still as vivid and impressive as it was that day decades ago.

As a boy, I perceived my grandparents' apartment as a realm of respectable furniture that impressed me by its elegantly curved shapes, polished wood, and decorative details; by its noble counter-distinction to the plain mass production of the 1960's. For me, the centerpiece was a glass cabinet where porcelain figurines, china cups, rummers, and other little somethings were displayed. Among them, next to a bright yellow bird nesting in a small cut crystal bowl, an engraved silver-like box resided.

The door of the cabinet was locked but one afternoon my grandmother unlocked it, took out the box and put it on the oval dining table next to the window. On the table, she had ready a soup plate with a little water in it. She opened the box and I caught sight of a brown ball that looked like made of hemp strings. She took the ball and placed it in the center of the plate. The ball soaked with water and, after a while, the clenched strings started to open. The seemingly dead tuft showed signs and symptoms of a resurrection. A few spoons of plain water brought a brown tangle into life. I encountered the Rose of Jericho.¹

Michal's appearance is neither knotted nor ball-shaped. Just opposite. Look at his straight build and wide shoulders that reveal his past of an active swimmer. I do not intend, however, to write about water in this direct sense. I would like to write about Michal's exceptional ability to actively respond to stimuli that we ordinary people passively accept or even totally miss. For his mind, the same droplets of information that uselessly trickle down our oblivious minds are moisture that results in green sprouts of new knowledge.

¹According to Wikipedia, different plant species (such as *Anastatica hierochuntica*, *Selaginella lepidophylla*, or *Pallenis hierochuntica*) are commonly called the Rose of Jericho. I am not able to determine the particular one that was in possession of my grandmother and that inspired this article.

Even cursory reading of his list of publications reveals the constantly widening scope of Michal's scientific interests. Although his early scientific writings followed a rather standard path of a numerical analyst focused on the finite element method and its theoretical background, in the 1990's, however, his first paper on number theory was published. At the same period of time, Liping Liu was awarded a visiting scholar position in the Michal's department in the Institute of Mathematics of the Academy (Mathematical Institute at that time). The collaboration with Dr. Liu resulted in several papers on the finite element method, but its side effects, as I interpret them, were that, through Dr. Liu, Michal acquainted himself not only with other Chinese mathematicians, but also with the achievements of ancient Chinese mathematics and number theory in particular. Moreover, the Chinese calendar system fitted well to his astronomy hobby.

The stay of Florian Luca, a number theory expert and another visiting scholar, signaled that Michal's number theory rose had come fully alive. It was the time when also Lawrence Somer appeared on the scene (to stay there and, later, in the Institute to this day) and when the trefoil celebrated the new millennium by a book on Fermat numbers.

Astronomy, time measuring, and number theory merged in Michal's research of the Prague horologe and its mechanism. Consequently, it resulted in several publications (jointly with Alena Šolcová and L. Somer) and in the introduction of the Šindel sequence.

Michal's passion for astronomy has found another fertile field in the problems connected with the notion of gravitational aberration, that is, with the consequences of the finite speed of gravity. Even by using high school mathematics, he has been able to develop a consistent structure of predictions and to support them by a collection of commonly available observations and measurements related to celestial mechanics. Although his submissions on this topic are yet to be accepted and published, they can at least serve as a proof that a new Rose of Jericho turns to green.

Meanwhile, quite a different subject has attracted Michal's attention. Influenced by František Katrnoška and by memorabilia of Vladimír Vand² (that gave rise to a biography of V. Vand by M. K. and A. Šolcová), he has occupied himself with mathematical aspects of DNA and RNA codes. His first scientific paper on this subject is under review in an international journal right now.

One might think that such diversity of topics has led to the neglect of the original field of Michal's research. The list of his publications shows that such a surmise is wrong. He remains devoted to the finite element method, especially to geometric aspects of finite element meshes, as is substantiated by papers written with various co-authors — Jan Brandts, Antti Hannukainen, or Sergey Korotov, to list at least a few of them.

²An amateur but distinguished astronomer and a professional crystallographer whose results inspired F. H. C. Crick's and J. D. Watson's analysis of the DNA structure. A member of Michal's extended family.

Michal Křížek is a gifted mathematician and a sort of a renaissance man. The list of his achievements and activities is long. It includes his membership in the Learned Society of the Czech Republic, the position of Editor-in-Chief of both *Applications of Mathematics* and the membership journal of the Union of the Czech Mathematicians and Physicists, almost uncountable activities in the field of popularization of sciences, and many, many more.

I wish him decades of continued successful research in the fields that he has already been exploring, as well as in topics that he has not touched upon yet, but that are, droplet by droplet, soaking in his keen and persevering mind.