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Vladimir Babitsky

On the Waves of a Pulsating World

An Engineer's Adventures in Innovation,
Education and Politics: From Russia
to the West

 Springer

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Vladimir Babitsky

To the luminous memory of my parents and sister.

Author's Preface: It's a Long Way to Tipperary

I was born before the war began. My first impressions of the world are as alive as only first impressions can be. A world at war, as heard through the radio. In early 1943, my father became Head Doctor of the Soviet Railways' Healthcare system. My mother, my sister and I had been evacuated, but this appointment meant we could join our father in Moscow the following year. My older cousins all fought at the front. The talented pianist Michael Marmurstein went missing within the first few days of fighting. His brother Leonid, a bright cellist, returned from the front with his hand hanging limp from his wrist. He was fortunate enough to recover and graduated from the Moscow Conservatory with honours. Fresh from his high school graduation, Boris Graus joined the war right from the start and served in aviation. As a kid, I tore out pages from my school notebooks just so I could write Boris letters to the front.

In kindergarten, our children's choir learnt a British song from the First World War. We sang it with Russian lyrics in translation. The chorus went:

It's a long way to Tipperary,
It's a long way to go.
It's a long way to Tipperary,
To the sweetest girl I know.
Goodbye Piccadilly,
Farewell Leicester Square.
It's a long way to Tipperary,
But my heart's right there!

I remember we got to sing "It's a Long Way to Tipperary" to some British officers stationed in Moscow. One of the British officers approached me, probably because I was the tallest kid in the group and as such commanded instantaneous authority. The officer had an interpreter with him.

"You like it here?"

Not really.

"Why not?"

We have to get up really early every day. I like to sleep in.

"In my country, children are allowed to sleep three hours longer than here!" the officer told me with a smile.

Being a child, I believed him without question, and thus began my dream of ending up in Britain, where the morning was sweet as sleep.

My childhood dream came true. For more than two decades, I have lived in a land with a real Queen, in a rural part of the country where people say hello to each other in the street and discuss the weather no matter what.

If my wife Ella is ever struggling to find her bearings, I remind her that the United Kingdom constitutes the bridge between Europe and America, and that at the centre of the UK is the village of East Leake, where we live, and that in the centre of the centre, on the tallest hill, is our house. And so, really, we live right at the centre of the Western World. That's where we are, darling: right in the middle of it all.

After 60 years of research and innovation in my field, which began in Russia, continued in Germany and flourished in Britain, I have so many colleagues to thank, so many collaborators to mention, so many students to be grateful for... But most of all I am thankful to my parents for bringing me into this fascinating world; a world of immutable physical laws that is nevertheless filled with inexhaustible possibilities. The author thanks the translator of the book, Alex Gruzenberg, for the great work that has been done to create a compact English version, which representatively reflects the main content of the Russian prototype.

East Leake, UK

Vladimir Babitsky

Vladimir and His Memoirs—A Translator’s Note

Vladimir Babitsky has always been entranced by the vibrations at the heart of our world. Light and sound oscillate. Stars glimmer. The surface layers of oceans fall and rise according to the Moon’s attraction. There exist different and permanent pulsations inside every living organism. Metabolism... Heartbeats... The tremors of pupils... Voice modulation... Music... We live in a vibrating, pulsating world.

Vibration chose Vladimir to uncover its secrets. Over time, Vladimir developed machines that could deliver up to thirty thousand micro-impacts per second. His engineering concept, which he called “auto-resonance,” helped to create the world’s safest and most efficient jackhammer. When humans drill Martian rock, we will be using auto-resonance to do the drilling. Vladimir’s vibration machines will travel past the Moon, all the way to Mars.

It is hard to describe just what a kind, bright and special man Vladimir is, but I will give it a try, using his temper as a prime example. Vladimir is almost always calm. Yet this husband and father is not reserved or aloof, as scientific greats are often portrayed. Quite the opposite. He shines with great enthusiasm, great energy and great joy. He has, if you might excuse the cliché, a glint in his eye. He tells funny jokes. He writes lovely poetry. He is a wonderful storyteller. He is critical and encouraging. He makes room for people to feel like they can give the best of themselves. When we argued over the edit, someone else might have interpreted my passion as agitation, but Vladimir kept his cool and never made me feel like I was inferior for having a voice filled with raw emotion. We had a rule which Vladimir suggested early on in our collaboration: “No hard feelings.” This allowed us to

have honest discussions about the material, which was crucial for the best ideas to triumph in the edit.

From Vladimir’s original memoirs, written in Russian, I have made many cuts, but all of them with the intention to tell a better, more concise story. If Vladimir ever wanted any cut material back, I always gave him the option, as long as we had a discussion about it first. The story, it was agreed, was our common priority. We made other editorial decisions, like dropping footnotes and patronymics—all for the sake of clarity. To give us a fresh eye, my friend Alina Young proofread the text and ironed out infelicities with her distinctive insight and precision. Alina knows my voice, so it was encouraging to hear her tell me that I managed to capture Vladimir’s voice in my translation.

The book is filled with anecdotes, and each one holds surprising lessons. There are many short essays that breeze by, but the three longest chapters—“Chronicles of MARS during Perestroika,” “The Eighth Liberal Art” and “A Genius of Faultless Beauty”—deserve also the most attention. The first two are about the fascinating trajectory of engineering breakthrough. The third is about talent, told through the story of a famous chess Grandmaster.

Each chapter in this book is its own world and can be read separately, in any order. If you are not enjoying a chapter and want to skip it, go ahead; you have Vladimir’s blessing: he is a kind soul that way. There are chapters about history, chapters about science, chapters about machines and chapters about people. Aside from vibration of nonlinear discontinuous systems, recurring themes include the Soviets, great teachers, success under autocracy, clashing cultures, migration, dynamic breakthroughs, and the way something as mathematical as engineering can become politicised. This book is also about small-time heroes. That’s who Vladimir is, at least to me: a humble hero who is happy to be heroic with a small h.

Hackney, UK
2019

Alex Gruzenberg

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