A Tribute to a Brilliant Mind: Jerry Vloka, MD, PhD

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As the recipient of the Gaston Labat Award, I was given the privilege to publish a piece in *Regional Anesthesia and Pain Medicine* on a topic of my choosing. Most awardees elect to write about trends in the field, offer a synopsis of their own research, or pay tribute to an important, but long deceased, contributor to the science and practice of regional anesthesia. But writing accolades to those who are long gone has always puzzled me, for it seems more fitting to show appreciation for those who still draw breath, those on this side of the rainbow. This way, they, too, can enjoy the rewarding feedback on how their colleagues value their hard work and dedication. It did not take much deliberation on my part to choose the story of a truly unique living individual whose contributions to regional anesthesia have not only influenced the practice but also substantially shaped its research trends. Indeed, much of my award also belongs to Jerry Darius Vloka, MD, PhD. It was Jerry's zeal for new knowledge, vision for the future of regional anesthesia, endless energy, and spirited leadership that drove our joint contributions to the field, including the foundation of the New York School of Regional Anesthesia.

Rolling the tape back some 20 years brings memories of my residency in anesthesiology under the leadership of Professor Daniel Thys, MD, in the vaults of St Luke's-Roosevelt Hospital Center, New York, NY. It was the early 1990s, and Jerry and I were second-year residents in anesthesiology. We were awed by the ability of peripheral nerve blocks (PNBs) to provide anesthesia or analgesia for patients who were unfit for general or spinal anesthesia due to frail medical status or anticoagulation. However, we both felt that the PNB techniques of the day were poorly defined and often mere reproductions of techniques published in outdated textbooks. It seemed that new techniques were devised based on logic relying on the perfect anatomical drawings in textbooks, instead of crafting PNB techniques in the anatomy laboratory followed by formal clinical trials to assure their efficacy. Jerry maintained that just as surgery relies on surgical anatomy, and pathology on pathologic anatomy, it was about time that regional anesthesia embarked on developing *functional regional anesthesia anatomy*, a term that justly should be credited to his name.

At that time, Jerry and I were conducting research projects independently and had presented our work separately at various symposia offered by the organizing societies. When he started residency in anesthesiology at St Luke's-Roosevelt, he had already been an accomplished anesthesiologist in Poland. Although I was a newcomer in the field of anesthesiology, I had completed an internal medicine residency at Seton Hall University School of Graduate Medical Education. So perhaps, early on, we had a bit of an edge over our peers with less exposure to medical training. Our relationship, initially bordering on academic rivalry, quickly morphed into a fruitful academic journey and an amazing friendship on Christmas Eve of the second year of our residency training in 1993. I remember Jerry inviting me to an after-party drink in the wee hours of that cold winter evening in New York City to discuss "regional anesthesia." We stepped into the Kennedy bar off West 57th Street in Manhattan, and I vividly recall Jerry's outpouring passion and zeal for regional anesthesia. He described his view on the need for regional anesthesia to be transformed from a subjective field practiced by a gifted few to a more objective, reproducible discipline. Indeed, most nerve block techniques of the day were based on surface landmarks and blind injections after elicitations of fascial "pops," "clicks," or subjective paresthesia reported by the patients. A few bourbons later, we shook hands in agreement and made an academic commitment to each other that would take more than a hangover cure to retract. Henceforth, we would join forces in our effort to advance the clinical practice of PNBs and create a school of regional anesthesia.

Jerry was born and raised in Kielce, Poland, to a father who was a high school principal and a mother who was an accountant. He was a creative, athletic-minded youngster who actually did not have much interest in science growing up. That changed during his junior year of high school when he entered a national biology competition and won first place for his original experiment. "I took beans and planted them in the soil with varying amount of nutrients, and it turned out that the bean plants grew differently depending on the nutrition value of the soil. So, I measured the height, and the surface area of the leaves; it was a pretty involved experiment for high-school level, and it gave me a flavor for scientific work."

This victory was his introduction into the world of science and research. Since Jerry's father was a teacher, he had access to the scientific teachers library (the only library of this kind in the town of Kielce). "At that time, in the '70s, there was no Internet," Jerry recounts. "We had to learn everything from books, and I studied biology at the library." Because of his continued success at the national science Olympiads, Jerry was granted a scholarship to any university in Poland without having to take an entrance examination, although he still voluntarily took the competitive examination to medical school in Warsaw in 1976.

In the late 1970s, the Polish economy was on the brink of collapse with an astonishing inflation rate and a staggering national debt, leaving many citizens impoverished. Polish law prohibited workers from forming organizations opposing the government, which resulted in uprisings in the form of protests and strikes, martial law, and the closure of schools and universities across the country. In the interim while his medical school was closed, Jerry worked for 2 years as an ICU nurse at the children's hospital, Centrum Zdrowia Dziecka, in Warsaw—the

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Jerry Darius Vloka, MD, PhD.

setting in which his love for anesthesiology was born. His training as an ICU nurse led him to believe that anesthesiology was "the mother of all the other specialties." "The anesthesiologist had to know pediatrics, anesthesiology, intensive care — everything!" he explains.

In Poland, as in many other countries throughout Europe, anesthesiologists also routinely practice critical care; therefore, specialization is titled "Anesthesiology and Intensive Care." When Jerry graduated from Warsaw Medical School in 1983, he was quickly snatched up by Professor Szreter, MD, a top opinion leader in anesthesiology and critical care in Poland, for a position in pediatric anesthesiology and intensive care. He spent his days working at the children's hospital and his nights taking call at adult hospitals. It was during these night calls that he developed an interest in regional anesthesia. "We were doing nerve blocks on trauma patients, but I always felt that there was so much left to be redefined."

Although Jerry's career was thriving, his dreams rapidly outgrew the opportunities available in Poland in the 1980s. Thus in 1987, Jerry and his wife, Dr Margot Eva Vloka, moved to the United States to accept a research position in the microbiology laboratory of Professor Cleveland at the College of Physicians and Surgeons, Columbia University in New York, where Jerry conducted research in immunology on hybridomas and molecular biology.[1] In a twist of fate, his office had windows facing the operating room, feeding his desire to return to anesthesiology and patient care. That dream came true in 1992 when he was offered a residency position at St Luke's Roosevelt Hospital—fortuitously, the same year as I.

Together, we embarked on an academic journey, spending much of our free time in anatomy laboratories and libraries of Columbia University, fine-tuning regional techniques, and discovering new ways to accomplish various PNB procedures. Admittedly, I had moments of weakness and felt the need to defect and delve into my other life passions, music and electronics, among others. For Jerry, however, regional anesthesia and his family were sine qua non. If I protested against staying another hour in the office to go over plans during our 2-men research meetings on Friday afternoons, Jerry would say, "Admir, remember our rule: We work until we stop having fun!" This, however, never happened, for Jerry organized an exciting body of work on functional regional anesthesia anatomy that kept us submerged in the pursuit of discovery and led to the creation of several crucial concepts for the success of PNBs. Although Jerry's illustrious career came to a sudden halt in 2000 after a freak fencing accident left him disabled, his legacy lives on through every practitioner of regional anesthesia.

Indeed, despite the fact that Jerry left clinical and academic medicine thirteen years ago, his contributions remain essential for the practice of anesthesiology. It was Jerry's work on functional regional anesthesia anatomy that led to the development of reliable techniques to block the sciatic nerve in the popliteal fossa.[2] Jerry was the first to apply Dr Alon Winnie's concept of the single-injection block of the upper extremity to blocks of the lower extremity.[3] Just as Winnie established the functional value of the brachial plexus sheath for successful interscalene and supraclavicular brachial plexus blocks, Jerry introduced the concept of the sciatic nerve sheath and established the importance of injecting local anesthetic within this sheath for successful block of the sciatic nerve.[4] Thus, the popliteal block, once thought to be unreliable, became widely adopted in the clinical practice of anesthesiology. Jerry further modified the technique so that it can be used in patients who cannot assume the supine position previously required for the block.[5,6] The anatomical concepts introduced in his body of work have been universally accepted and remain valid to this day. Recent data using high-definition 3-dimensional ultrasonography confirmed Jerry's findings of almost 2 decades ago that an injection of local anesthetic into the common connective tissue sheath substantially spreads within this tissue plane leading to a successful block.[7] Jerry's work has redefined the anatomic landmarks for femoral nerve blocks, infraclavicular brachial plexus blocks, and many others, and his concept of functional regional anesthesia anatomy has been adopted by generations of researchers in their own research.[8]

Jerry maintained that the only path to significant improvement in medicine is to focus on a well-defined area of research and to chisel its secrets in a continuum, one at a time. Jerry focused on PNBs—lower extremity nerve blocks in particular—and regional anesthesia at large.[9,10] The late 1990s were the years of Jerry's utmost devotion to advancing the field of PNBs. I vividly recall nights spent with Jerry in the anatomy laboratory with 40 to 50 cadavers spread around in a windowed room overlooking Harlem, and collaborating with a great anatomist at Columbia University, Professor Earnest April. After spending hours in the operating room during the day, we drove up to Columbia University Anatomy lab some 50 blocks uptown to continue working on the dissections often until 2 A.M. or 3 A.M. the following day. Some nights, even Jerry "capitulated" to exhaustion: while driving home from the laboratory, he would pull over on the Garden State parkway headed north and sleep in the car, waking just in time for a quick shower before returning to the operating room.

After years of research improving the techniques of PNBs, Jerry felt that the time was ripe to test the newer techniques against general anesthesia and to evaluate their patient benefits. A series of research projects ensued that demonstrated the value of PNBs in ambulatory surgery.[11–13] Concurrently, Jerry worked on improving the equipment for PNBs and studied the dynamics of fluid administration and the effects of opening injection pressure during intraneural, intrafascicular injections.[14–16] One of his collaborative works revealed the lack of underlying standards in manufacturing peripheral nerve stimulators, which ultimately led to the establishment of industry standards and the incorporation of constant current generator circuitry in manufacturing the nerve stimulators used during electrolocalization in regional anesthesia.[14] As if his immense work in regional anesthesia research was not enough, Jerry also led the departmental basic science research and set up multiple protocols of measuring plasma levels of local anesthetics using high-pressure liquid chromatography, among others.[17]

On the gloomy day of October 22, 2000, Jerry returned from a long trip of lecturing in Chile followed by presenting at the ASA in San Francisco. Upon returning home, with his reflexes blunted by fatigue, he had a saber fencing accident that left him with thalamic brain injury and eventually, disabling central pain syndrome. Seeing him injured on the floor, his wife first called 911 and then me. I remember racing to the trauma center in Hackensack Hospital, New Jersey, to find Jerry on the brink of respiratory collapse, undergoing imaging studies to determine the extent and operability of his life-threatening injury. Although contracted and in pain in the surgical ICU, Jerry insisted that life and commitments must go on and encouraged his children to continue fencing. This demonstrated his trademark resilience, incredible adaptability, and ability to see the large picture during a difficult time, beyond what words can describe.

Not surprisingly, his family legacy continues. His daughter, Caroline Vloka, won the NCAA championship in saber fencing in 2010 and was a runner-up for the Olympic Games in London. She graduated from Harvard in 2012 and currently studies medicine. His son, Alex Vloka, is also in medical school, whereas Jerry's wife, Margot, continues her practice as a top interventional cardiologist-electrophysiologist.

Jerry's physical injuries left him unable to continue his academic endeavors, but his legacy and wisdom suffuses our regional anesthesia team at St Luke's-Roosevelt. Even as I write this piece with one of our European-trained regionalists and one of our stellar anesthesia residents, examples of Jerry's concepts are constantly brought to light as we work together in the operating room, and they both witness on a daily basis how his work has made a crucial impact on the practice of regional anesthesia. Back in the day, when the going got tough and the work became tense, prompting thoughts that there is life beyond medicine, Jerry would say, "If it were easy, everyone would do it!" Even today, when the work in the research office at St Luke's-Roosevelt gets overwhelming, we write out his words on our white board and the entire team moves on. In 1984, Margaret Mead wrote her famous words, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." Jerry's approach to life and his work are a testament to these words. My hope is that his story will continue to inspire all of us to pursue our dreams and work toward a better tomorrow.

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