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IN MEMORIAM: VLADIMIR VOEVODSKY

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Vladimir Voevodsky's untimely death continues to be a significant loss to the mathematical research community. It is also a personal loss for me, for I valued Vladimir as a friend and was fortunate to be able to appreciate first hand his mathematical brilliance.

Vladimir was a free spirit, whose mathematical vision was not simply powerful but also all his own. Although he rarely went to the lectures of others (and even missed a few of his own), he learned quickly and understood deeply the mathematics which interested him. Vladimir communicated his cheerful enthusiasm for mathematics, showing patience and clarity as he willingly shared his own surprisingly fresh and powerful ideas. He spoke positively of other mathematicians, apparently never viewing mathematics as a competitive endeavor. If he had a guide, then it probably was the writings of Alexander Grothendieck. He was especially influenced by his collaboration with Andrei Suslin.

I first met Vladimir when he was a student in Moscow in 1989, reviewed his Harvard PhD thesis in 1992, and visited him when he was a junior fellow at Harvard. One memory I have is of Vladimir grumbling about his heavy duty of going occasionally to dinner as a junior fellow, comparing that to my tasks as department chair. Following his time in Harvard, Vladimir joined Misha Kapranov (whom I also met in Moscow in 1989), Andrei Suslin, and myself at Northwestern University. Although Vladimir was a gifted teacher, teaching one year at Northwestern was enough, and he moved to the Institute for Advanced Study. His plenary address at the 1998 Berlin ICM was a masterpiece, giving a sense of a very elaborate and somewhat abstruse topic using a relatively simple special case. Four years later he was awarded the Fields Medal at the 2002 Beijing ICM.

Vladimir's work in algebraic geometry settled conjectures with deep connections to algebraic K-theory and number theory. His proofs first of the Milnor Conjecture and then the Bloch–Kato Conjecture follow a brilliant, very ambitious plan; they contain elaborate constructs and involve considerable geometric insight and virtuso technical power. This was foreshadowed in his PhD thesis, where he dared to localize with respect to $\mathbb{A}^1$-homotopy.

Vladimir's interests were always broad-ranging. Over the years, we discussed many nonacademic issues, but these discussions were merely occasional diversions from intellectual challenges motivated from within. That said, his love of nature and travel remains tangible in his beautiful photographs. Despite his early and continued success in algebraic geometry, Vladimir consciously sought other intellectual pursuits. Within a few years of his PhD, he began to think about artificial intelligence; influenced by his parents, he yearned to achieve practical scientific research.

Shortly after Vladimir's research in algebraic geometry was recognized by a Fields Medal and a professorship at the Institute for Advanced Study, he changed his focus to "algorithmic mathematics", especially proof-checking. My impressions of this work are based on informal conversations with him: he emphasized the importance in his work of replacing "equality" by "equivalence" leading him to introduce homotopy theory into foundations of set theory in the guise of "type theory".

My lasting image of Vladimir took place after a talk he gave in Paris. We went to his apartment (above the lecture hall) where he proceeded to sit at his computer to show me how quickly he could encode a proof. As always, his enthusiasm was infectious.

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