



Pasha Kamyshev '05 (left) and fellow "mathlete" Jarupon Sathirapongsauti '05 work in tandem to solve the problem featured on page 17.

# PASHA'S JOURNEY

BY FRANK HENRY '69 P'08

When Eric Widmer interviewed for the job as headmaster, he declared that he wanted Deerfield to be known as a school that produced good scientists and that recognized its place in the world as well as in the neighborhood. As we recall the Round Square Congress of September 2004 and anticipate the completion of the David H. Koch Center for science, mathematics and technology, the institutional fulfillment of that dream is tangible. What Eric could only hope for would be students to propel that vision; no sure thing. But Deerfield has been extremely lucky and just as our ambitions materialized, students have found us, too.

**S**OMETIME DURING THE SUMMER OF 2000, a versatile polyglot, Nila Jacques, a Choate graduate and recently married, visited his wife's family in Bishkek, Kyrgyzstan, where he met a young boy, his wife's brother, who was precocious in mathematics at Lyceum N13. Over the course of several weeks, a desultory discussion ensued and finally Pasha Kamyshev's parents, really Valentina, Pasha's mother, consented to Pasha applying to American boarding schools. Nila ruled out Choate but nudged him toward Deerfield. No one that summer could have written the story that has become Pasha's life in the United States.

Pasha's parents accompanied him to Deerfield in September 2001 but did not see him again until the morning of the graduation luncheon this past May. Only two days before the attack on the World Trade Towers and Pentagon, Pasha moved into John Williams with Peter Brush. The first I heard of Pasha was from Wanda Henry, my wife, when he was moved into her Precalculus Accelerated class during his freshman fall term; she reported a remarkably self-confident, even arrogant, math wizard, who spoke little but always had the right answer and elegant reasoning. The story that became legend soon circulated; Pasha played chess with several of his John Williams housemates simultaneously, with his back

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turned, and demolished them. I finally met Pasha at the track that spring where a scrawny, wiry fellow attacked the 400 mostly with elbows and knees.

That first summer, the first in the post 9/11 era, Pasha had to stay in the United States, and his parents could not come to see him. Since his arrival at Deerfield, Pasha has been substantially on his own; Evgenia, his sister, and Nila were graduate students living in tight grad student housing, so, as a 15-year-old, Pasha had to find a home for the summer. By good fortune he discovered a math/science program at Boston University for talented high school students. Wanda's recommendation for Pasha to the PROMYS program that first summer includes other anecdotes that never made it into the legends but help define Pasha's preternatural

ability with numbers: "To sustain Pasha's interest in class, I have taken to creating challenges for him specifically... I asked him to determine all the probabilities for various poker hands so that when all the probabilities were added together, the sum would equal one. Pasha realized as soon as I stated the problem that he would need to subtract the probability for a straight flush from a flush and the probability for a royal flush from both the flush and the straights. He worked out the answer in about 15 minutes."

As sophomore year began, Pasha and I, now his advisor, began discussing how he could make his experience at Deerfield as varied as possible and at the same time do the most to improve his own chances of staying in the United States for college. The chief hurdle was his facility with English; he took ESL as a freshman! Still English class was not a priority the second year either; in fact, at the end of fall term his English II teacher wrote, "Pasha cannot afford to work less in this subject or appear as uninterested as he does many days in class."

But Pasha was working on English in his own way. On Field III, around campus with a variegated group of friends from the theater and debate team as well as the math team, and during the shorter vacations in the homes of generous families like that of Lisa Jacques, a teacher at The Children's

School, Deerfield's own daycare center, Pasha was learning to manage social English and to negotiate his own place in settings beyond math classrooms and math competitions.

Having discovered running as a freshman, Pasha tried cross country the fall of 2002. His determination and competitiveness earned him the Edmund J. Saunders Trophy, one of the oldest athletic awards at the school, and given to the underclassman who "displayed during the season that selfless devotion to the sport and quiet determination which so personified Ted Saunders and his teams." Meanwhile the math team thrived with its new go-to player; Pasha, Deerfield's top mathlete, was invited to take the American Invitational Mathematics Exam administered to 258 students nationwide. And then Pasha took up debate.

**B**y junior year, Pasha had become the foundation, bulwark, pillar, and rampart of the math team. Like Pelé and Ronaldo, Pasha was known about campus simply by one name. His excellence in the classroom was rewarded by election to Cum Laude at the end of his junior year, and he qualified for the United States Mathematics Olympiad. Like the athletic announcements of another era at school meetings, math team announcements about Pasha's latest exploits spurred sustained, proud applause.

BU was glad to have Pasha back that summer between sophomore and junior years, and Pasha was learning how to travel light and by Greyhound as he visited classmates in western Virginia and his sister in Chicago and made it back in time to begin PROMYS. As junior year began Pasha considered the advice to work on his English and set out during his last two years to take as many courses as possible that were outside his field of expertise. Yes, he did stick fairly close junior year with a good run in computer programming, but as a senior, after another summer math program at William and Mary and an August job in Deerfield's own Information Technology Department, he deliberately chose not only a

great is the pleasure that I would give it up gracelessly. The job requires little except the occasional signature to a form and perpetual applause. One must be prepared to cheer a lot in this role." I have really had little advice for Pasha over the years but have always been grateful for the moments I have been able to look into his world. Midway through his junior year, his math teacher passed along a synopsis of a research paper Pasha planned to write for that class. "It is typical Pasha: First, he will describe the current condition of a particular system of cryptography ('Intro to Public Key Cryptography [RSA]'), then he will analyze its vulnerabilities ('Why RSA is so hard to break with modern computers [NP completeness]'); ('How RSA is possibly breakable with quantum computers'), and finally he will attempt to describe a better, more secure system ('A possible new system of cryptography, again, using quantum computers')."

I have no idea what I did for Pasha, but as his advisor I have felt insulted for Pasha and have been more outraged publicly than he was when a choice summer program denied his application despite the Dean of the Faculty Richard

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couple of philosophy classes but also creative writing, which he admitted was one of the most difficult classes he'd ever taken, but one for which he worked hardest. (After four years in the United States, he still disdains articles!) But Pasha did not take these classes just to improve his candidacy for college; he had discovered a real appetite for and capability in these classes. As he honed his keenness as a logician, he also became more alert to nuances of diction and construction of argument and his fortunes as a debater rose. During his last spring at Deerfield he chose to enroll in six classes: he arranged with a small, highly select group to carry on with political philosophy at an accelerated rate and signed up for an elective on existentialism entitled "Live Dangerous" and another on the Holocaust. An intellectual omnivore, Pasha has the appetite to sit at any seminar table and take advantage of whatever is offered.

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Bonanno's endorsement: "Pasha is mathematically intuitive, precise in the execution of details, interested in mathematical theory, ever seeking the exception or the extension of a principle, and the clear intellectual leader of the class...Pasha is quite simply an extraordinary student in general and of mathematics in particular." Imagine my dismay when Princeton turned down his early application in December; our own answer to John Nash and a logical denizen of Fine Hall, but Princeton did not take him. I lashed out but Pasha, hurt too, was far more mature, resilient, and resourceful. He holed up at our house in the early days of the December break and worked tirelessly to churn out another 22 applications. While we trimmed the tree, new essays floated down the stairs; I would comment, send them back up, and wait for the next flurry.

Only when reading those essays last fall and winter did I begin to conceive of how Pasha came to be. His parents, Alexander and Valentina, are both graduates of Tomsk Polytechnic University with degrees in physics and both began

scientific careers. But in Pasha's lifetime he remembers only that his father has been a numismatics expert and that coins and history have been his father's consuming interest. From an early age, Valentina challenged and prompted Pasha with mathematics problems from more advanced textbooks than those in his school and with stories from classic Russian authors. And Evgenia was away at Georgetown until she brought home an enormous illuminated diploma, the one awarded to the top student. A spirit of excellence, passion, and devotion to doing the best one can filled the little apartment on Lez Tolstoy Street.

**A**t the graduation luncheon this May, Pasha carried away his share of prizes for math and science. The highlight though was the inscription in the book for his achievement in physics which quoted a frustrated Pasha when he and Christine Eckhardt '05 were working on their robots for competition in an international contest in Detroit. As calculations failed to anticipate the performance, Pasha exclaimed, "Reality must be wrong." During this year's science symposium Pasha and Christine watched

again as their robots failed to perform as planned, but then we wandered behind the science buildings to where they kept an earlier project, their trebuchet! Simple, majestic in motion, singularly reliable, one could picture castle walls falling under the repeated impact of boulders flung by a larger model than the one I saw lobbing softballs 40 yards. The elegance and predictability of this machine appealed to Pasha. His teacher, Ben Bakker, later told me that Pasha works best in the theoretical world; I like to think that Pasha works best in a world in which he is closer to the fundamental laws not only of physics but of argument, composition, and justice.

Who would have thought that internationalism would lead to our own "wild and crazy guys," Pasha and Igor Stelea, a one-year student from Moldova, broadcasting a Friday night radio show on WGAI? Over the four years at Deerfield, Pasha is among that new strain of students who have become more than citizens of states; he has become a citizen of the world. Though he introduced Lech Walesa in Russian at the Round Square Congress, his national and political loyalties have been attenuated while

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#### **"The Problem"**

*What follows is an example of one of the problems Pasha and his fellow mathletes might encounter during one of their competitions. Please feel free to solve and send your answer to Editor Lee Wicks at [lwicks@deerfield.edu](mailto:lwicks@deerfield.edu) or c/o Deerfield Academy.*

**Let  $n$  be an integer greater than 1. Suppose  $2n$  points are given in the plane, not three of which are collinear. Suppose  $n$  of the  $2n$  points are colored blue and the other  $n$  are colored red. A line in the plane is called a balancing line if it passes through one blue and one red point and, for each side of the line, the number of blue points on that side is equal to the number of red points on the same side. Prove that there exist at least two balancing lines.**

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his sense of a global community has grown. He is one of that new class of young people comfortable with and interested in peers from anywhere and who have achieved enough and are informed enough to have common ground with nearly anyone they meet.

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