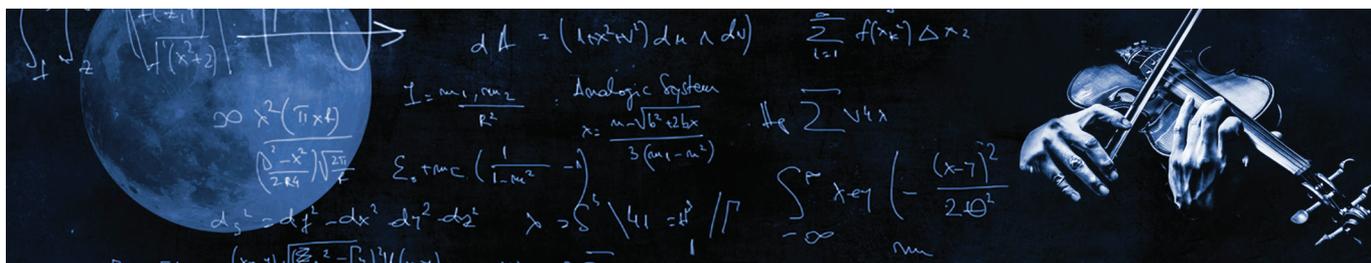


MOONLIGHTING MATHEMATICIANS



Mathematician Turns Melodist

Sophia D. Merow



Figure 1. Alexey Shor.

It is tempting to wax profound about the interplay between mathematics and music, to rhapsodize, for instance, about Bach's use of transformations in the construction of his fugues and canons. Alexey Shor, however, has little to say about how the two disciplines relate. A math PhD with an *Annals* paper (and an Erdős number of 4) whose musical compositions have been rapturously received at concert halls worldwide, Shor resists attempts to couch his story in terms of some magical math-music synergy. He describes his two careers as disparate, as distinct movements, if you like, in his unfolding symphony of a life.

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With an aptitude for and a family tradition in the sciences, Shor never questioned as a boy in Kyiv whether he would become a scientist. What *kind* of scientist was up in the air for a while—a physicist, perhaps?—but his participation in the All Soviet Union Mathematical Olympiad settled the matter. Shor studied math in Moscow—first at a boarding school and then at Moscow State University—before emigrating at 20. He earned his PhD under Anatole Katok at Penn State in 1997; in 1998, a paper he co-authored—“Uniform estimates on the number of collisions in semi-dispersing billiards”—appeared in the *Annals*. After two years as a postdoc at the University of Pennsylvania, Shor opted for mathematical finance over academia. (The choice, he says, “was mostly about money.”)

Though he never took music classes, Shor “always loved classical music.” LPs¹ were in short supply behind the Iron Curtain, he recalls, and available LP players of low quality, but radio and live concerts bred in Shor an appreciation for Bach and Haydn, Beethoven and Chopin. Later, working as a quant in New York City, the self-proclaimed “concert junkie” would often go to two or three performances a week. Curiosity about music's inner workings motivated Shor to attempt, at around age 40, to learn to play the piano. When that didn't go anywhere—“It's not realistic to become any good at it at that age (at least for me),” Shor reports—he read a few books on music theory and tried his hand at *writing* music instead. “Unlike playing this went very smoothly,” he says.

Shor enjoyed writing music but regarded it as little more than a hobby. It wasn't until David Aaron Carpenter—a distinguished violist—started performing some of his early

¹Long-playing vinyl records

compositions that Shor entertained the possibility that he might be on to something. “Even then I didn’t really take it seriously until I saw with my own eyes that the audiences were reacting to my music with a lot of enthusiasm,” he remembers.

For several years, as he began to make a name for himself in the classical music world, Shor kept his hedge fund day job, studiously maintaining a separation between his two pursuits.² Then, in 2016, an opportunity arose that forced Shor to make a choice. The European Foundation for Support of Culture, a Maltese charity, asked him (a Maltese citizen) to write a ballet to celebrate the fiftieth anniversary of diplomatic relations between Malta and Russia. While Shor could compose concert music in the evening at his own pace, a ballet would involve collaborators, deadlines, rewrites. It could not be a side project. “I figured at 46 it was my last chance to have a ‘new career,’” Shor explains, “and I could not resist the temptation.” He chose music.

Shor maintains that his math background does not substantively influence his music³ and sees no reason a mathematician would appreciate his work more than any other music lover. His oeuvre includes no intentionally mathematical pieces; his compositions are informed by the decades that Shor, having come to composition relatively late in life, spent as an everyman audience member.

“When I write music I always imagine myself in a concert hall listening to my music,” he says, “and I always ask myself, ‘Would I have liked hearing this work? Would I have wanted to hear it more than once? Would I feel it’s too long or too short?’ I feel having spent countless hours at concerts as a non-musician is extremely helpful in answering these questions.”

Shor’s consideration of what audiences want distinguishes him from more avant-garde contemporary composers. “He is a melodist,” pianist and conductor Mikhail Pletnev has said of Shor,⁴ “and being a melodist nowadays is the greatest courage. Everyone can write nonsense, and this is considered good. But no one wants to listen to this. Shor is an independent person, he writes what he wants and what he hears. That’s why his music is so popular.” Shor’s traditionally constructed harmonies and melodies pay homage to such past masters as Schubert and Prokofiev; his music is familiar yet fresh, accessible to audiences, memorable. “They have Mozart-like melodies,” Bolshoi Theatre opera soloist Anna Aglatova has said⁵ of Shor’s works. “They are clear, transparent, and they touch your very soul.”

²“I didn’t want to be a freak show in either of the worlds,” Shor told me via email, “and wanted my music to be judged on its own, not in the context of an ‘interesting story.’”

³“Maybe I’m naturally more inclined to notice some undesirable asymmetries, but I am pretty sure that if I was not a mathematician I would have spotted them anyway.”

⁴See <https://tass.com/society/1345669>.

⁵See <https://bit.ly/3z007S6>.

Shor doesn’t have much time for math these days—his mathematical activities are limited to solving some Olympiad problems on occasion—and he does miss it, as much as he relishes composing music applauded by audiences across the globe. While laypeople can—and do—readily appreciate the fruits of Shor’s musical labor, he has experienced the harder-to-share joy of making mathematics. “I think many people see math as being dry and boring,” Shor muses. “To me it is every bit as exciting and creative as writing music is, but it’s not easy to explain this to non-scientists.” He adds: “There is nothing that compares to the thrill I felt when I thought I figured out something worthy in math.”



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Credits

Figure 1 is courtesy of Alexey Shor. Author photo is by Igor Tolkov.