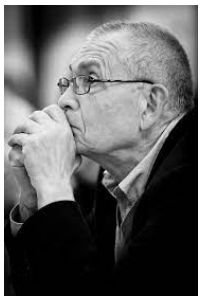
Yuri Manin



Yuri Manin, one of the best mathematicians of his age, passed away on January 7, 2023. He came up with the idea of quantum computing in his 1980 Russian-language book "Вычислимое и невычислимое" ("Computable and Uncomputable"), published by Советское Радио (Soviet Radio) and untranslated to English as far as I know. He was one of the two people who independently suggested this idea. The other was Richard Feynman, the legendary physicist, who put the idea more forcefully in "Simulating Physics with Computers," International Journal of Theoretical Physics 21 467–487 1982.

A three-page Part 6 of the Introduction to Manin's book is devoted to a quantum-mechanical view on computing. Discussing "a complicated network of flawless biochemical transformations" arising in genetic studies, he wrote that it is possible that "to make progress in understanding such phenomena, we need a mathematical theory of quantum automata ... One reason for that is that quantum state space has much bigger capacity than classical state space."

Manin's primary field was algebraic geometry, but the name "Computable and Uncomputable" of his book suggests that Manin was also interested in logic and foundations, and that is true. He even wrote a textbook "A Course in Mathematical Logic," Springer 1977. The one time I met him was at a 2014 inter-disciplinary conference on Philosophy, Mathematics, and Linguistics in St. Petersburg, Russia, `https://www.pdmi.ras.ru/EIMI/2014/PhML/index.html`. In his talk, Manin traced "parallelisms between the origins of geometry, of atomism, and of alphabetical writing." We spoke briefly at the conference and corresponded in the following years.

I am not a big fan of Wikipedia, but its article "Yuri Manin", `https://en.wikipedia.org/w/index.php?oldid=1133679092`, retrieved on Jan. 27 2023, is good.

Yuri Gurevich