

# Late Style—Yuri I. Manin Looking Back on a Life in Mathematics

*Reviewed by Gunther Cornelissen*

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**Late Style—Yuri I. Manin Looking Back on a Life in Mathematics**

*Springer VideoMATH, 2012*

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*Directed by Agnes Handwerk and Harrie Willems*

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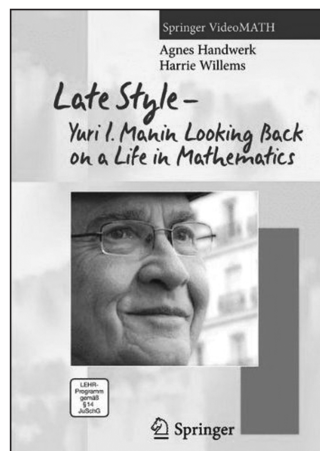
The expression “Late Style” derives from Adorno’s 1937 essay on the *Spätstil* of Beethoven. The phrase was used as the title of a course at Columbia University and later of a posthumous book by Edward Said, who explained that “Late Style” refers to “the way in which the work of some great artists and writers acquires a new idiom towards the end of their lives.” Here one is viewing, however, “artistic lateness not [necessarily] as harmony and resolution, but as intransigence, difficulty, and unresolved contradiction.” With the subtitle “Looking Back on a Life in Mathematics”, it is also the chosen title for a documentary about Yuri Manin.

Yuri Manin’s (1937–) variegated works span much of diophantine geometry (including a proof of the Mordell conjecture over function fields, and pioneering the use of modular symbols,  $p$ -adic automorphic forms, and noncommutative geometry), algebraic geometry (Fano varieties, cubic surfaces), and mathematical physics (he is the “M” in the ADHM construction of instantons, was at the cradle of quantum computing and quantum cohomology, etc.). He wrote influential textbooks on mathematical logic, homological algebra, cubic forms, gauge theory, and noncommutative

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algebraic geometry. He supervised more than fifty Ph.D. students, many of whom went on to do great things. Apart from that, Manin published not only in the philosophy of mathematics and physics but also in socio-linguistics and Jungian psychology, and he wrote a few collections of poems and literary

reviews. This nonmathematical part of his works has now been preserved by the publication of his book *Mathematics as Metaphor*; an English translation was published by the AMS, unfortunately leaving out the literary works. In a foreword to this book, Freeman Dyson identified Manin as the prototype of a “Bird”, a scientist possessing overview and acting as a painter of large landscapes, by contrast calling himself a “Frog”, more the sort of animal that digs around locally in the mud (thus downplaying his own tremendous contributions to science).

From the current documentary, we pick up two related viewpoints. Don Zagier, one of several mathematicians who appear in the documentary, sees the work of Manin guided by the following principle: if one detects a similar structure in seemingly different areas, one should search for an actual mathematical structure that bridges these fields. In the movie, Anatoly Vershik describes Manin as a product of the Soviet system, in which many great minds that in freedom would choose

literature, poetry, or psychology were scared away from such pursuits by the need to embed their thoughts in Communist Party ideology. These minds turned to mathematics, where no such embedding was required, thereby enlarging the pool of different styles of doing mathematics. I very much view mathematics as possessing (or even being) a variety of different ways of speech. Some of these are philosophical or poetical, while others, equally valuable, are visual, formalistic, or computational. In this sense, Vershik's description reveals Moscow mathematics as a kaleidoscopic potpourri of unparalleled variation. In an interview in the *Berlin Intelligencer* (published for the International Congress of Mathematicians held in Berlin in 1998), Manin described one of his life values by the Renaissance term *varietà*, and we see a coherent reflection of this value in his work, which is always imbued with his own distinctively "literary" style. Manin reflects on all of this in a fascinating interview with David Eisenbud that can be seen on the website of the Simons Foundation's "Science Lives" project. Despite the fact that the interview is artificially cut up into fragments of ten minutes or less, I would recommend anyone to watch it.

My feelings about the movie under review are less positive. It is less contemplative, more biographical in the narrow sense, and also does not explain any actual mathematics—not that this is necessarily bad. In it, we see Manin go back to his early university education in Moscow, and we experience his rise to fame and his visits to Paris, where he interacted with Grothendieck. We also learn about his deliberate choice to sign the letter to release Alexander Esenin-Volpin from involuntary psychiatric imprisonment, which led to the withdrawal of Manin's teaching rights and travel permits. We see hints of the singularly lively scientific and cultural life in Moscow after the Stalin era, and we discover how Manin's life was affected by the destruction of the iron curtain, followed by his subsequent travels, and his settlement in Germany. After this, we switch to scenes from his earliest youth in Crimea, including the story of his father, who died young in the Second World War, and his mother, a victim of the "rootless cosmopolitanism" action, an anti-Semitic campaign during the Stalin era.

The movie describes the life of an outstanding and scrupulous scientist in a tumultuous environment. This scientist, Manin, is a man of subtle ideas, not an active dissident, though not without influence. One aspect of his personality, "inner freedom", is described in the movie by Beilinson as "light breathing", apparently referring to the story of the same name by Ivan Bunin. In the story, Bunin describes one of his female characters as "afraid of nothing—neither of ink stains on her fingers, nor of her face flushing; neither of her hair being untidy, nor of exposing her knee when running.

Without any concerns and efforts, and somehow unnoticed, she came to possess all that set her so far apart from the rest of the schoolgirls in the last two years—gracefulness, elegance, litheness, and a clear brilliance in her eyes." But it seems "light breathing" does not create captivating movie characters. By contrast, when Grothendieck enters the scene—certainly a person of rather heavy breathing, if I may use this expression—he instantly becomes the dominant character even though physically absent.

The first reaction to the movie by some of my nonmathematical friends was that they found it unclear why they should watch a documentary about *this* person. This shows the project largely failed in revealing Manin as what he is: one of the most interesting mathematicians of our time. My first impression was that the movie missed its target, but I now believe that, rather than missing the target, the target itself went missing: the depiction of Manin as a character in this rendition of his life is ineffective. This stands in great contrast with the wealth of scientific, artistic, and literary ideas that he has generated. Actually, Manin's own thoughts about his life make an interesting meta-subject.

Also, the technical execution of the (obviously low-budget) project leaves something to be desired, despite the interesting musical score of Tom Willems. For example, many transitions are images of Manin and his wife walking away from the camera in some outdoor scenery. Actually, the moviemakers seem to have a preference for depicting—preferably old—people from the back and for the use of backlighting and shaky handheld cameras, which at first I found amusing but, as the film progressed, irritated me more and more. The movie contains pictures of and short interviews with quite a few celebrated mathematicians; recognizing them is pleasant, at least for the In Crowd, but maybe it is just too many faces and too little discourse.

As I mentioned before, I believe Manin is exactly the person who could arrive at a very interesting reflection upon his own life, but such a reflection is only alluded to in the present movie. Maybe it was just too early, for what would the embodiment of such a reflection be? Surely Yuri Manin is not the Beethoven of mathematics; from the aforementioned book of Said, we extract musicologist Ruth Subotnik's description of Beethoven realizing, as an older man facing death, that his work proclaims that "no synthesis is conceivable." By contrast, everything seems to point to Manin's continuing interest to see mathematics, and the whole intellectual project of humanity, as one big superstructure to be revealed, analyzed, described, painted, sung about, and calculated in. Let us hope that he will be with us much longer to help us uncover many more untrodden paths—that his *Late Style* is still to come.