

# For Serge

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In 1958, at Princeton, I had accidentally slipped into the room in which Serge was giving his seminar in Abelian Varieties; I was transfixed by the metallic urgency, the vitality, of the voice of this chalk-wielding person; I understood absolutely nothing of the subject, but was instantaneously convinced, with that utterness of conviction that is the gift of ignorance, that abelian varieties—whatever they were—were of breath-taking importance, and furthermore, of breath-taking importance to me.

That Serge (a “mathematical grown-up”) would, shortly afterwards, collar me (for whom “abelian varieties” were just seven or eight euphonious syllables) and request a series of private lectures in differential topology was astounding to me. I treasure the halting lectures I gave him, as a rite of passage, of immense importance. And Serge did this sort of thing, through the decades, with many of the young: he would proffer to them gracious, yet demanding, invitations to engage as a genuine colleague—not teacher to student—but mathematician to mathematician; he did all this naturally, and with extraordinary generosity and success.

Serge was a gadfly with formidable tenacity. That we are *personally responsible* for the web of compromises that we have all come to accept, and to think are inevitable, is something he would never let us forget. That we, as editors or referees of journals, make our judgments based on some presumed social, or sociable, contract (e.g., no political articles in a math journal) does not let us off the hook when asked to examine without prejudice the underpinnings of our (usually only implicit) social contracts. That scientists who expound opinions—in the professional arena, or ex cathedra—either “stand by” their writings and defend rebuttal, or else explicitly announce their change of mind, Serge took as an axiom of the basic credo of intellectual honesty.

We all believe this credo, but Serge was its fierce guardian.

Serge seemed to be, over the decades, of one age, and that age was young (with its virtues and drawbacks). He had, when he played the piano, something of a brilliant French articulation to his style, and there was a hint of this in everything he did, from his walking gait (staccato) to the way in which he pronounced certain key words in mathematics, like *idea* which, from Serge, would sound like *EYE-dee*, which has a kind of platonic zing to it.

Serge must have admonished generations of seminar speakers by proclaiming—from his seat in the audience—the Leibnizean manifesto:

The notation should be functorial in the EYE-dees!

Indeed, Serge followed the ideas, wherever they led, from subject to subject, with no confines. Over decades of mathematics Lang was led, more specifically, by an over-arching vision, which he pursued through the agency of various fields of mathematics. The vision, baldly put, is that *geometry* is an extraordinarily striking dictator of qualitative *diophantine* behavior. To put it just slightly more technically, let  $K$  be a number field and  $V$  an algebraic variety over  $K$ . If  $V(K)$  is the set of  $K$ -rational points of  $V$ , if  $\overline{V(K)}$  is its Zariski closure in  $V$ , and if  $W \subset \overline{V(K)}$  is an irreducible component (over  $\mathbf{C}$ ) of  $\overline{V(K)}$ , then  $W$  is an algebraic variety with *exceedingly special properties*. To use the current terminology, Lang conjectures that  $W$  is *not of general type*. For example, when  $W$  is of dimension one, this is equivalent to the famous conjecture made by Mordell in 1922, and proved by Faltings in 1983; that is,  $W$  can only either be a single point, or else the—nonconstant—image of a rational curve or an elliptic curve.

The still open *Conjecture of Lang* in higher dimensions continues to serve as a guiding principle to the way in which the grand subjects of geometry and number theory meet, just as Serge himself served as an inspiror of generations of mathematicians, and a spokesman for intellectual honesty.