

Chapter 9. Invited professor in Kingston and Buffalo, 1971-1973

The year 1971 was one of hectic activity for Grothendieck. Invited by Paolo Ribenboim, he spent the first three months in Canada at Queen's University in Kingston, Ontario, and gave a course on the fundamentals of algebraic geometry with an introduction to group schemes. As he himself writes, his main motivation for lecturing there, and later on in Buffalo, was to earn money for the movement *Survivre*. It came to the ears of the chairman of the mathematics department, John Coleman, that Grothendieck's lectures were not especially understandable, and that attendance was falling off in spite of Grothendieck's renown. He informed Grothendieck that he would only continue to pay him as long as the lectures really took place and received positive feedback.¹

Grothendieck lived near the university, on 208 King Street East, in a typical downtown Kingston house. He wanted to live in a working-class neighborhood, and had declined the university's offer to find him lodgings. (Today the area is a pleasant middle-class neighborhood, interspersed with student lodgings. Presumably it was not very different in those days.) Grothendieck striding barefoot in sandals through the snows of the Canadian winter caused a local sensation. A photograph of him, or more exactly of his bare feet in the snow, appeared on the front page of the local newspaper, the Kingston Whig Standard, without naming the eminent head carried by said feet.²

He didn't have his own office at the mathematical institute, which at that time was still located in Carruther's Hall, but used Ribenboim's during office hours. With only a few exceptions, his lectures took place twice a week on Wednesdays and Fridays from January 13 to March 26, 1971. Altogether Grothendieck gave twenty-one or twenty-two lectures. Leslie Roberts, who made a complete transcript, remembers that the course was well attended. On the other hand he felt that Grothendieck did not overly exert himself and often referred to the literature for details and proofs. The basics of scheme theory was covered, including an introduction to group schemes. The level of the course remained relatively elementary and general; it did not cover cohomology, for

¹ Incidentally, according to Coleman himself (interview 2008), he consistently paid department members as little as possible; this did not apply exclusively to Grothendieck, but also in 1968/69 to the unsuspecting author of this book.

² Even today (2008), when the subject turns to Grothendieck, this episode is still invariably recounted in Kingston.

example.

On February 26, 1971, Grothendieck gave a talk on the goals of the movement *Survivre*. Although the details are not known, one can assume that the text of this talk was not much different than usual. On March 11 he gave another public mathematics lecture, that was announced nationally.³ The title appears to have been “Relations between algebraic geometry and arithmetics (and topology ...).” The content can be characterized with the following keywords: formal properties of the cohomology ring of a compact manifold, Lefschetz formula, zeta functions, Poincaré duality, Weil conjectures, Riemann hypothesis, the special case of an algebraic curve.

At the beginning of his Canada stay Grothendieck received a visit from his Ph.D. student W. Messing, who wrote to the author about this visit:

Grothendieck was in Canada [...] for several months during the winter of 1971 and I went there for several days to discuss my emerging thesis with him in January of 1971. I stayed in his room for ... three days. It was during this visit that I drove with Grothendieck to visit Alex Jamison, an American Indian activist who was living in Northern New York State. Jameson was involved in the American Indian Movement and was trying to prevent the construction of a nuclear power plant near an Indian reservation. Grothendieck was anxious to meet him and to discuss, what, if anything, he could do to aid Jamison's work. It was, for various reasons, a very memorable trip that Grothendieck and I made.

According to Grothendieck, from March 1 until the April 17, 1971, the day of his departure from Boston to France, he visited a total of twenty-one Canadian and American universities in order to give talks on Survival.⁴ This necessitated an extraordinary amount of energy, taking into account the fact that at most of these places he presumably gave two talks, and the one on Survival was usually followed by a lengthy general discussion. In a letter to Paul Koosis about possible topics for mathematical talks, dated February 6, 1971, he suggested the following:

- Algebraic geometry and topology
- Weil conjectures and cohomology theories for algebraic varieties
- Foundations of algebraic geometry: the notion of a scheme
- New foundations of general topology: the theory of topoi
- Crystals and crystalline cohomology

Some of the universities he visited were:

Beginning of March 1971: Hamilton, Buffalo, Rochester

³ Queen's University now and then organizes “public lectures” by prominent scientists.

⁴ See Bulletin No. 4 of the movement *Survivre*.

April 1-4: Stanford and Palo Alto

April 5-7: Berkeley

April 7-11: Los Angeles

April: 12 Princeton

One of these lecture tours took him to Laval University in Quebec City. (Here, too, with temperatures even lower than in Kingston, he appeared barefoot in sandals.) His talk must have been an enormous success; according to Claude Levesque around seven hundred people attended, and he was visibly delighted when afterwards, at a restaurant with a few mathematician colleagues, the students present all rose from their seats and applauded.

The talk in Berkeley came about thanks to invitation by Stephen Smale. Smale had the reputation of being a radical leftist; in particular he uncompromisingly rejected without any university funding by the military whatsoever, which caused some difficulties in renewing his NSF grants. Presumably he found Grothendieck's actions somewhat sectarian; in any case he did not maintain any further contact with *Survivre*. It is possible that on this occasion Grothendieck visited his sister Maldi and her family, who lived in the vicinity (although one of Maldi's daughters denies this).

While in California, he also traveled to the University of California in Los Angeles (UCLA). There he met with one of the first and most active campaigners for *Survivre*, Paul Koosis, who held a position as professor of mathematics there. While living at Koosis' home, Grothendieck expressed the desire to meet the labor leader Cesar Chavez, who had been fighting for years for better working conditions and the right to union activity, in particular for Mexican migrant laborers on Californian fruit farms. In the seventies Chavez was an idol of peace and civil liberties groups, not only in the USA but even internationally. Together, Koosis and Grothendieck drove almost a whole day to Delano, but unfortunately failed to find Chavez and returned to Los Angeles around three o'clock in the morning without having achieved their goal.

On his lecture tour through the USA, Grothendieck also came to Princeton, where his thesis student Bill Messing was living. As usual he gave two talks, one on mathematics and one on the goals of *Survivre*. Messing recalls that on that occasion Grothendieck also met John Nash and his wife.⁵

Grothendieck returned to France from Boston on April 17, 1971. After a little over a year had elapsed, however, he visited the USA once again.

⁵ An interesting correspondence between Grothendieck and Nash exists from the sixties, in which Nash discusses his illness.



In May 1972, Grothendieck returned to the United States on the invitation of the State University of New York (SUNY) in Buffalo. He remained there until the beginning of July, giving a course and visiting a few American universities in order to give talks, mainly in the states of New York and New Jersey. Buffalo is on the American side of the Niagara Falls, and as an industrial city it is not particularly attractive. SUNY in Buffalo was not one of the leading universities in North America, either, but Grothendieck had already broken off with elite institutions. He felt the need to appear at less important universities than Harvard or Paris, and no doubt wished to spread the message of *Survivre* in such places as well. However, during this trip there were already some hints of his withdrawal from *Survivre* and of a new direction in his life. He himself wrote the following about this trip:⁶

⁶ *Bulletin de liaison 10, supplement à "Survivre - et Vivre" 12*; this issue is not dated, but was published at the end of June or the beginning of August 1972.

I was in the United States from the middle of May to the beginning of July, by invitation from the University of Buffalo, where, starting on May 22 I gave a short course. After two years of intensive work for *SURVIVRE*, much of it secretarial work, I imagined that the lull during this residence would allow me to catch my breath, to reflect, to read, to write a couple of articles. In the end I did little of all this, because in the first weeks of my stay in New York I met a very attractive young woman, Justine, and we spent the greater part of my sojourn in the USA getting to know each other. She followed me to France, in order to join the commune *Survivre*, which I am in the process of founding in the Paris area together with a few friends; we are sure that we will remain together and that we complete each other in the best possible way. That is certainly the most important result of my stay in the United States! [...]

Although heart and brain were greatly distracted, I made the acquaintance of interesting people, both in Buffalo and on the trips to various American universities, where I participated in events of cultural subversion⁷ at Fordham (New York), Rutgers (New Brunswick) where I had the honor of meeting my future companion Justine, Brown (Providence), the University of Albany, the University of Massachusetts, and Stony Brook (Long Island).

Grothendieck explains further in his account that to his regret, during the course in Buffalo it had not been possible to break through the conventional barriers of hierarchy, that he remained a prisoner of etiquette, and that he had not succeeded in establishing less stereotypical relationships. This was partly linked to the fact that, as he himself writes, in Buffalo he spoke on an “esoteric” and technical theme for which the audience was not prepared, so that from the very start a certain distance arose between himself and his audience. In a letter to Federico Gaeta dated November 21, 1972, it appears that he was probably referring to the Riemann-Roch theorem.

In May 1972 Justine Skalba was a graduate student of Daniel Gorenstein at Rutgers University. They met at the get-together after Grothendieck's lecture; he spoke of his plans to give up mathematics and move to the countryside, and on that very same evening Justine decided to break off her studies and follow Grothendieck to Europe. They lived together for just under two years and had a son, John Grothendieck, born on October 28, 1973. Many mathematicians who were in Paris or in the American states of the east coast in the seventies met Justine, and they relate more or less fragmentary tales about her.⁸

On a third visit to the US, Grothendieck once again spent the summer months of 1973 in Buffalo, most likely staying in Fred Snell's weekend house starting in

⁷ “*Subversion culturelle*,” a permanent theme in the bulletin of the movement.

⁸ At this point it is important to point out that the author did not succeed in contacting Justine Bumby (her name after her marriage to Richard Bumby) either directly or indirectly. In this biography therefore, no more can be said about her relationship with Grothendieck than what he himself wrote about it, or what can be found in the much cited biographical article by Allyn Jackson.

May, together with Justine, who was pregnant. At this time he gave a course, which was written up and completed by Gaeta under the title “Introduction to functorial algebraic geometry. Part 1 - Affine algebraic geometry,” and which was printed by the university in the form of mimeographed notes. Apparently these notes did not get a very wide circulation, and they are not mentioned in the current bibliographies of Grothendieck's works. Mathematicians from Buffalo recount that Gaeta's write-up differed substantially from Grothendieck's talks. In his foreword Gaeta expresses the hope that soon the second part “dealing with the category of schemes” would appear. This apparently never happened, but tape recordings of Grothendieck's lectures exist.

It seems that Grothendieck gave other talks during this summer, namely “Survey on the functional approach to affine algebraic groups,” as well as “Lectures on topoi”. It has not been possible to acquire any more details about them. His manner of lecturing must have been somewhat unconventional and arduous for the audience. He spoke up to seven hours a day with short breaks. F. Gaeta justifiably asked, “Who can believe that he is not interested in mathematics anymore?”

But perhaps this question, as justifiable and pertinent as it may appear, somehow disregards Grothendieck's personality. Many of his closer colleagues affirm that, in spite of all his “anarchist” traits, he possessed a highly developed sense of duty. He saw it as his duty to render the maximum in return for the invitation and fee which he received. Of course, this does not exclude other possible reasons for his marathon lectures.