CHAPTER 9 VIETNAM PART I

n the late 1960's, like most anti-war activists I viewed Vietnam almost as an abstraction. I admired the courage of the guerrillas and the fortitude of the people in standing up to the most powerful military machine that the world had ever seen. But I knew little about the country itself beyond what I had read in 1965 in the article by Kahin and Lewis in the *Bulletin* of the Atomic Scientists. To most of us in those years "Vietnam" was the name of a war, not a country.

That started to change when I was in graduate school at Princeton. During the year before I was drafted into the Army — this was 1969-1970 — someone had put up on the math department bulletin board a copy of a report by Alexander Grothendieck on his November 1967 visit to North Vietnam. In algebraic geometry, which was my field of study, Grothendieck was one of the giants of the 20th century; he was responsible for developing an abstract algebraic "machinery" that was powerful enough to handle the most complicated geometrical concepts and constructions. Like many French intellectuals, he was politically on the left and had long been an opponent of French colonialism and then American neocolonialism in Southeast Asia.

Grothendieck's report on his three-week visit, excerpts of which are given below in my translation from the French, was the first detailed account of mathematical life in Vietnam to reach the West. He lectured on abstract algebraic geometry for four hours a day and met with students and colleagues during the afternoons. Here is his description of lecturing in Hanoi during the bombing:

Like most more or less public activities, the lectures were scheduled between about 6 and 10 a.m. because the bombing usually took place later in the day, rarely before 11 a.m. During most of my stay the sky was cloud-covered and consequently there were few bombing raids. The first serious bombardments had been anticipated; they took place on Friday 17 November, two days before we left for the countryside. Three times my talk was interrupted by alarms, during which we took refuge in shelters. Each alert lasted about ten minutes. Something which is at first very striking to the newcomer is the great calm, almost indifference, with which the population reacts to the alarms, which have become a daily routine. I had the opportunity to observe many people during the alarms, both in the street and in the shelters, including children and old people, and I never encountered the least sign of nervousness among them.

It should be noted that things are extremely efficiently organized to reduce to a minimum the number of bombing victims: individual and group shelters everywhere in town, a very tight street-by-street and block-by-block organization of responsibility in case of an air raid, including first aid — a small red cross flag indicating the presence of a first aid station, which otherwise is carefully hidden beneath a protruding roof so as to avoid detection by enemy planes. One senses a great confidence in the populace — in the effectiveness of the air defense, for example — and a general interest in discussing the number of aircraft shot down (a topic of conversation which in North Vietnam seems to take the place of the weather) rather than the damage caused by the bombardments (about which, in any case, the radio tends to be rather discreet, for obvious reasons). As soon as the alarm is over, everyone (at least in the neighborhoods that were not hit) returns to their business as if nothing had happened.

During one of the air raids that Friday morning a delayed-action cluster bomb fell right in the courtyard of the Hanoi Polytechnic Institute, and (after the alert was over) it killed two mathematics instructors at the Institute. Tạ Quang Bửu, who is a mathematician as well as the Minister of Higher Education and Technology (and who attended the lectures that I gave while in Hanoi), was discreetly informed of this during the lecture. He left at once; the rest of the audience continued to follow the lecture while waiting for the next alert. The next day's lecture had to be rescheduled for the following week in the university in evacuation, so as not to have large groups of *cadres* in the city during the period of bombardment.

Interwoven among Grothendieck's descriptions of life in a war zone were comments about the organization of his lectures and other scientific activities:

It should be pointed out that for the past decade or so Vietnamese scientists have been in the process of creating a Vietnamese scientific language in its entirety — a task which, of course, is far from completed. (In mathematics, the first efforts in this direction go back

to the mathematician Hoàng Xuân Hãn, who wrote the first French-Vietnamese mathematical dictionary in the 1940's.)

... The translator [of my lectures] at first varied according to the theme; but after a few days and by what seemed to be a general agreement on the part of the listeners, the choice devolved upon Đoàn Quỳnh, an instructor at the Pedagogical Institute and certainly one of the most competent and gifted mathematicians among our colleagues in North Vietnam.

The system of simultaneous translation seemed to me to work excellently, and on the whole suited equally well the lecturer and the audience. A sentence-by-sentence translation allows the speaker the luxury of collecting his ideas in an orderly way in the course of the lecture without an excessive effort at concentration, at the same time as it enables the listeners to follow at a pace which is more reasonable than that of an uninterrupted talk. Four hours talking at this pace (with two short breaks) seemed to me to be considerably less fatiguing than two hours at the usual pace. But it must be said that the interpreter's work is much more tiring, and at the end of my sojourn in North Vietnam I was in excellent form and well rested, while Quỳnh was visibly drained.

Notes were taken of all the lectures by Hoàng Xuân Sính, also of the Hanoi Pedagogical Institute, who is one of the few mathematicians (even more unusual, a woman mathematician) to have been educated in France (she received her first degree there in 1959).

Grothendieck made some comments about the scientific as well as practical difficulties that an aspiring mathematician has in such an isolated part of the world:

In a country which, by force of circumstance, has few relations with the outside (unless one counts the cluster bombs as a form of relations), it is particularly difficult for an inexperienced mathematician to orient himself among the multitude of possible directions, to distinguish what is interesting from what is not.

He explained that he was astonished to find an active community of research mathematicians in Hanoi:

The first statement to make — a rather extraordinary statement in view of the circumstances —is that *there is in fact a mathematical life* worthy of the name in North Vietnam. To properly appreciate this "ex-

istence theorem," first of all one must keep in mind that in 1954, after the eight-year war of liberation against French colonial occupation (i.e., thirteen years ago), higher education was practically nonexistent in North Vietnam. During the extremely brutal war of 1946-1954, the main effort in education was directed toward achieving literacy for the large masses of peasants, an effort which was carried through to its final goal in subsequent years, until about 1958, at which time illiteracy was practically eradicated in the lowlands.

... The method followed (undoubtedly the only one possible) was to send young people to universities in the socialist countries, especially the U.S.S.R. Among the hundred or so mathematics instructors at Hanoi University and the Pedagogical Institute, about thirty have gone abroad for four to six years of training. They have generally reached the level of a Soviet "Candidate's thesis," which, it seems to me, is slightly below the French degree (there is another, more demanding thesis requirement in order to be entitled to a university chair). This means that they have each published at least one or two original works, generally in a Soviet or East European journal. (In recent years they also publish directly in Vietnamese: in the packet of reprints I received when I departed, some were in Vietnamese.)

Nine days into Grothendieck's stay, because of intensified American attacks on the city, university classes were evacuated to the countryside. Here is his description of the conditions there:

Life is very primitive. Everyone — university administrators, teaching staff, and students — live in the same type of straw huts made of bamboo with mud walls, windows open to the wind, and the sun baking the earth. Some of them live with the peasants and others in communal dwellings, which they usually build themselves. Since there is no electric lighting, they use kerosene lamps; nor is there running water in the homes, so they take water from a well. As is the case in the populace as a whole, very few of the instructors live with their families: the husband works in one region, the wife and children are in evacuation in another, or else she works and the children are entrusted to relatives living in a third location. The family gets together when circumstances permit, perhaps one day a month, from which one must usually subtract about ten hours for the journey (by bicycle, of course). The trip is made chiefly at night, to avoid being strafed. Since the roads are continually being destroyed and rebuilt, the best form of transportation for a single person is a bicycle, which

one can easily carry on one's back to detour around the rubble where the road is torn up. In both the village and the city one lives with the constant possibility of an air attack. Very often when the weather is clear enemy planes fly over the university, occasionally dropping their bombs — haphazardly, so as to get rid of them before returning to base — sometimes wounding or killing some civilians. In the month before my arrival two peasant children had been killed in this way.

One of the villages sheltering the evacuated university and one housing the Pedagogical Institute have thus far not been subjected to regular air attacks. Moreover, as everywhere else, a "self-defense" unit has been formed among the instructors in order to return fire in the event of an air attack. Everyone is required to wear a special hat for protection against fragments from cluster bombs; however, because of the relative calm in the countryside, the safety precautions are not always rigorously observed.

Next to almost all of the huts there are family bomb shelters, dug into the ground with a bamboo roof concealed under dirt; these are very effective against the projectiles and blast of a bomb. Special precautions are taken for lecture and meeting halls, as well as for children's classrooms. They have systems of trenches, usually extending from inside the room, which are hidden from the outside and allow a rapid evacuation of the room without detection by enemy aircraft. Generally the trenches run right next to the benches on both sides of the room, so that everyone can take shelter instantaneously in case of attack. The rooms are most often half buried in the ground, with the above ground part of the mud walls reenforced by a layer of dried earth about one meter thick to protect against bomb blasts. The part that remains vulnerable is the roof, which easily gives way to the blasts, and especially to the fragmentation bombs, which generally explode at a height of several meters in order to strike the populace with greater efficiency.

The problem of scientific equipment, a simple problem for mathematicians, gives rise to a multitude of difficulties for our colleagues in other departments. However, I saw a chemistry laboratory in action, with about twenty students engaged in practical experiments by the light of a kerosene lamp (which had been greatly modified so as to have the intensity of a powerful electric lightbulb). The chairman of the chemistry department, Nguyễn Hoàn, took me to his laboratory for me to admire the running water, which was stored in the gas tank of an American airplane that had been shot down nearby (this tank was carefully hidden from view by an overhanging bamboo roof). His students took turns at "pump duty," refilling the tank by means of a hand pump from water coming from a reservoir farther down which was fed by a spring. In case of necessity, in the laboratories they could also obtain electricity from a gas motor.

Finally, Grothendieck concluded on an optimistic note:

I can attest that both the political leaders and the senior academic people are convinced that scientific research — including theoretical research having no immediate practical applications — is not a luxury, and that it is necessary to promote theoretical scientific research (as well as the development of instruction and the applied sciences) starting now, without waiting for a better future.

... And through an effort undoubtedly without precedent in history, in spite of everything they are succeeding in increasing the cultural and professional level of their citizens, even as their country is to a great extent being devastated by the largest industrial power in the world. They know that, once the war ends, there will be people with the professional and moral qualities needed to reconstruct the country... They have confidence in themselves, and that is the best reason for us to have confidence in them and in their struggle on all fronts, cultural as well as economic and military.

G rothendieck's report caused me for the first time to think of Vietnam as a real country with people like myself who were studying and doing research in mathematics. I started to form the idea of some day visiting and working with colleagues there.

The first mathematician I met who had direct ties to Vietnam was the French-Vietnamese algebraic geometer Lê Dũng Tráng. He needed help with two projects to assist mathematicians in Vietnam — collecting books and journals, and raising funds for a delegation to attend the International Congress of Mathematicians (ICM) in Vancouver in 1974. I set up a table and solicited donations in the Princeton math department common room. When Tráng came to Princeton to speak at the algebra seminar, I told him that I'd like to visit North Vietnam after I got my Ph.D.

In August 1974, I attended the ICM in Vancouver, where I met the two Vietnamese mathematicians who had been able to come. One was Lê Văn Thiêm, who was the founder of the modern institutions of Vietnamese mathematics, particularly the Hanoi Mathematical Institute. The other was Hoàng Xuân Sính, who was the woman whom Grothendieck had spoken about in his report. Both Thiêm and Sính had received their doctorates in France. They encouraged me in my desire to visit Vietnam, but couldn't give me any assurances. We had some trouble communicating, since their European language was French and my spoken knowledge of that language was poor. Some of the time Chandler Davis of the University of Toronto, who a few years before had been the first North American mathematician to visit Hanoi, was with us and would translate between French and English.

Immediately after the ICM in Vancouver, Ann and I left for a year in Moscow. Our plan was to try to arrange a visit to Vietnam at the end of that year, taking advantage of the proximity of a Vietnamese embassy. We carried with us a "letter of recommendation" from Princeton Professor Richard Falk to the Vietnamese ambassador to the Soviet Union. Falk, the author of an important book detailing the violations of international law by the U.S. in Vietnam, had been part of a peace delegation that accompanied three repatriated American pilots back to the U.S. from Vietnam in 1972. He had met the Vietnamese ambassador when the group passed through Moscow. In his letter he recalled the meeting and told the ambassador that Ann and I "were active leaders in the American peace movement and were very effective here at Princeton."

B efore I left for Moscow, Lê Dũng Tráng told me that a Vietnamese student named Hà Huy Khoái had just arrived in the Soviet Union to study number theory under Manin's direction. He requested that I find out from Manin how he was doing. Shortly after getting to Moscow, I asked Manin, who said that he was not able to communicate with Khoái because he could not yet speak Russian. Like other foreign students, Khoái had to spend a preliminary year getting acclimatized — mainly, this meant learning Russian — before beginning his graduate studies. Manin said that his students Volodya Berkovich and Anas Nasybullin, whom Ann and I had met the previous year, could introduce me to Khoái.

Although I met Khoái in the autumn of 1974, at first he was shy and, even though his Russian was rapidly improving, not very sociable. I later learned that in those days Vietnamese students were bound by strict rules governing their conduct when abroad. They were not supposed to have extensive informal ties even with their Soviet peers, let alone with Westerners.

There appear to have been two reasons for the restrictions on Vietnamese students. One was the insularity and paranoia in Vietnam that came from three decades of a war for survival against the French and then the Americans. The other explanation was the extreme poverty of Vietnam at that time — not only relative to the U.S. and Western Europe, but even relative to the Soviet Union. The Vietnamese authorities did not want the young people to become too accustomed to the student lifestyle in Moscow; did not want them, for example, to get married and remain abroad; and certainly did not want them to get drawn into the black market underworld.

Volodya, Anas, and I organized an informal seminar just among the students of Manin. When I learned that Khoái did not feel free to come unless it was part of his required program, I explained the situation to Manin, who promptly "ordered" Khoái to attend the seminar, which he happily did. Khoái still would not have felt comfortable coming to the room of an American couple, so we held the seminar in Zone B, where Volodya and Anas lived. Of course, if it weren't for the unnatural situation with Khoái, it would have made more sense to have met in our place in Zone V, where there would have been room to spread out and where Ann would have fixed us a wonderful meal.

In mid-April of 1975, I ran into Khoái at the university and commented to him that the liberation forces seemed to be making rapid progress in South Vietnam, and that victory should come soon. Khoái said that the tone of news broadcasts from Vietnam had become more optimistic, but he and most others were skeptical. After so many years, it was hard for the Vietnamese to believe that final victory was near. Saigon would be a difficult city to take militarily, Khoái told me, and there would be a protracted seige. I said that I didn't think so — at the U.S. Embassy I had seen the latest *Newsweek*, which was saying that there wouldn't be anyone who would want to defend Saigon, and the fall of the city would come in days, not months.

Just before 8 a.m. on Wednesday, April 30, 1975, the last of eighty-one helicopters left the American Embassy compound in Saigon, evacuating American personnel and South Vietnamese officials to aircraft carriers in the South China Sea. The Vietnam War — and the 21-year partition of Vietnam — was over. The next time I saw Khoái, I congratulated him on the victory and said that Ann and I were planning a party to celebrate both the Soviet holiday on May 10 marking the thirtieth anniversary of the defeat of Nazi Germany and also the defeat of U.S. imperialism by the Vietnamese. Under the circumstances, Khoái decided that he would be able to get permission to come, and he did. That was the only time in 1974-1975 that he came to our room.

For the Soviet graduate students our Victory Day party was, like all holidays, an excuse to get together with friends and have fun. And there was plenty of food, drink, and jokes. I took photographs that show our diverse group — coming from both Asian and European republics of the U.S.S.R., as well as from the U.S. and Vietnam — in animated conversations. All of us look very young. At one point in the evening I asked everyone to pause to honor the occasion, and I proposed a toast to those who have struggled, whether in Europe or in Asia, against fascism, racism, and superpower chauvinism.

Meanwhile, we hadn't heard anything in response to our request for a visa to visit Vietnam. We knew that the chances were slim, especially so soon after the end of the War. Finally I received a letter dated May 17 from Lê Văn Thiêm in which he explained that they wouldn't be able to accommodate us that summer. He concluded by asking me to "please let us know your desire to visit our country some other time and we hope we can welcome you then." So in the summer of 1975 the closest Ann and I got to Vietnam was a four-day trip to Vientiane, Laos.

When we next went to the Soviet Union in early 1978, things were different. In the first place, Khoái came to see us and immediately told us that there were no longer any restrictions on whom he could socialize with, and where. In the second place, we were hopeful that we would be able to visit Vietnam after our semester stay in Moscow.

When Khoái came to our apartment on Gubkin Street, we asked him to teach us some Vietnamese. He was from an illustrious family: his father had been a professor of literature, and his uncle had been a founding member of the Indochinese Communist Party. Khoái himself had won a prize in a literature competition in school before he decided to dedicate himself to mathematics. So what he taught us was not the usual Berlitz "can you tell me where's the bathroom?" type travel phrases, but rather some of the polite and literate conversation openers that sophisticated Vietnamese would use.

Eventually we learned some of the basics of the Vietnamese language and a rudimentary vocabulary of perhaps a couple hundred words. Ann was able to speak and understand a little, but I was hopeless, largely because Vietnamese is a tonal language and I'm tone-deaf. I simply could not hear the difference between certain of the six tones. (By way of comparison, Mandarin Chinese has only four tones.)

At one point Khoái was drilling me on a particular phrase that I repeated after him again and again. Finally he said, "Okay, that's very good. It can even be understood." Ann and I burst out laughing — he hadn't at all meant to be sarcastic. It's just that if you get the tones wrong, someone in Vietnam will simply not understand you. Well, that's not entirely true. I later found that I could be understood at the marketplace when I pointed to something and asked, *Giá bao nhiêu*? No matter how badly I mangled the pronunciation, the sellers somehow figured out what I was asking.

I wanted to start my lectures in Hanoi with a sentence in Vietnamese that paid tribute to the country's mathematical tradition. I wrote a long, elaborate sentence in Russian that Khoái translated — I'm sure into a beautiful literary vernacular. I memorized it and rehearsed it again and again. When I eventually delivered my brief speech in Vietnamese at the Hanoi Math Institute, most likely my pronunciation was so bad that no one except Khoái could figure out what I thought I was saying. But the mathematicians graciously applauded my effort anyway.

After Khoái left Moscow, his friend Nguyễn Đình Xuyên, who was studying geology, started visiting us in Zone V and teaching us a little Vietnamese. The language lessons were valuable not just as a way of picking up a few words and phrases. They led to interesting conversations and cultural insights, and so helped prepare us for our later visits.

We never learned enough Vietnamese to carry on a conversation in that language, so we talked with Khoái, Xuyên, and others in Russian. The fact that we were all foreigners in Moscow and were communicating in a third language meant that we had a common bond. For many years when we visited Hanoi our main language with our colleagues was Russian. We found that for them, just as for us, Russian was a language that was associated with student days, a language of jokes and stories, late-night parties, and shared experiences.

As the semester drew to an end, we still had not received a reply to our visa request. The people at the Vietnamese Embassy told us not to lose hope, since permission often would come at the last minute. But we had to leave at least a couple of days to buy air tickets and make arrangements either to go to a conference in France (if our request was denied) or else to Vietnam. Just about two days before we had to leave, I decided that it would be our last chance. As Ann, Volodya Berkovich and I were on our way to see the Tarkovski film *Andrei Rublyov*, I made one last call to the Vietnamese Embassy from a pay phone. As soon as I gave my name they said, "Yes, yes, permission has come! Come right in and receive your visas." I was ecstatic — and, thinking about our upcoming trip, I didn't pay much attention to the movie.

O n June 28, 1978, Ann and I arrived in Hanoi on the twice-weekly Aeroflot flight from Moscow with a refueling stop in Bombay. The plane circled Nội Bài airport a couple of times before landing. The problem was not air traffic — Hanoi's international airport handled just one or two flights per day. Rather, the runway was far short of regulation length for large jets, and the pilot had to align the plane with great care. From the air, bomb craters, now full of water, were still visible near the runway and at various locations around Hanoi.

Because of a miscommunication, we were not expected and no one came to meet us. The guy who seemed to be in charge of the ramshackle little airport saw us waiting and looked for someone to take us into town so that he could close up for the day. The other foreigners had already been met by their hosts, and the Vietnamese students on the plane had all ridden into town in the back of an old truck. Finally, a representative from the Ministry of Light Industry, whose Swiss colleagues had failed to come on the flight, agreed to take us and put us up for the night in the hotel room that he'd reserved for the Swiss. After waiting for his driver to change a tire on his car, it was another two hours into Hanoi with delays caused by road construction and by rush-hour congestion at the one-lane bridge into the city.

All I had was the address of the Math Institute. The next morning I changed a few dollars into đồngs, bought a map of Hanoi, and set out walking in the direction of Đội Cần, which turned out to be three or four kilometers from our hotel. After passing the Hồ Chí Minh mausoleum and the lotus-shaped One Column Pagoda, I headed into a part of the city where the wide avenues, French colonial mansions, and embassies and government buildings gave way to narrow residential streets full of potholes, bicycles, chickens, fruit- and vegetable-sellers, and children. After about a kilometer I turned into an alley at 208-D and found a group of one-story dilapidated stone buildings — more like sheds with their dirt floors — around a dusty courtyard. That was the Hanoi Mathematical Institute.

To say that I was not expected would be an understatement. The telegram I had sent a few days before had been either misdelivered or misplaced. The Institute director, Lê Văn Thiêm, was out of town, and Khoái wasn't there either. They quickly found someone who spoke Russian, and I explained who I was and where we were staying. They said not to worry, they'd find Khoái, and in the meantime Ann and I should wait in the hotel. By late morning the summer heat and humidity were oppressive, and they got someone to take me to the hotel on the back of his bicycle so that I wouldn't have to walk.

A few hours later Khoái came to our hotel, along with an applied mathematician by the name of Vurong Ngọc Châu, who was the Institute's personnel director, general manager, and Communist Party representative. He was a dedicated, hard-working administrator, and seemed to specialize in handling awkward and impossible situations, such as knowing what to do when an American couple unexpectedly show up on one's doorstep for a three-week visit.

First, they moved us to the Thắng Lọi (meaning "victory"), which was located on the outskirts of town beside the Tây Hồ ("West Lake"). Although the setting was beautiful — rattan fishing boats, lush vegetation, fishermen and their homes by the lake, mountains in the distance — it was isolated from the rest of the city. Moreover, guards were posted to keep townspeople away — in this respect it reminded us of the compounds for foreign diplomats and journalists in Moscow.

One incident when we arrived left a bad impression. After Khoái and Châu got us checked in, we invited them up to our room to talk. They said no, they weren't allowed to go to the rooms; they'd let us settle in and then meet us later. We said good-bye and started to take our luggage toward the room. At that point the hotel personnel angrily shouted something to Khoái and Châu, and Khoái said that they wanted them to carry our luggage. Thus, our professional colleagues weren't allowed to come to our room as guests, but only as porters to drop off our things so that the delicate foreigners wouldn't have the burden. I was furious. What was the purpose of three decades of anti-colonial war if the result was to have the same mentality as in the French colonial days? Perhaps I overreacted slightly — I recall describing the incident in detail in a long letter to our geologist friend Xuyên back in Moscow (he had asked us to write him about our impressions).

Most of the people staying in the hotel were foreign businessmen or airlines personnel. One day when I was out lecturing and Ann was in the room, the maids came in and started talking with Ann in a mixture of Vietnamese, sign language, and a few words of English. Ann finally figured out that they were extremely curious about what I did, since my manner and dress were very different from that of the other men staying in the hotel. Ann knew the words *giáo su toán học* ("math professor"). As soon as they heard that, the women clapped, hugged her, and congratulated her on having a husband in such an honored profession. Back home in the U.S., I would have had to be a famous actor or quarterback — not a mere math professor — to cause such a reaction.

I gave six three-hour lectures at the Math Institute on *p*-adic analysis, focusing on my recent work on Gauss sums. The talks were very technical and were not appropriate for the audience, of whom no one but Khoái was interested in this sort of number theory. He was able to dragoon about a half dozen others to politely listen to all my lectures, but I doubt that they benefited from them. Like many young mathematicians, I thought that I should always give the most advanced, high-brow lectures

I could. It wasn't until I got older that I learned to give broadly accessible talks that someone might actually learn something from. In addition, I was undoubtedly influenced by Grothendieck's report, which described the series of extremely abstruse lectures he had given on current developments in algebraic geometry. In 1980 the London Math Society published my Hanoi talks in their Lecture Note Series — it sold the fewest copies of any of my books and is the only one that was never either translated or reprinted.

Most of the time Ann and I were left by ourselves. In those days the Institute was not equipped to deal easily with guests. The director had part-time use of a car and driver, but he was away during the first part of our stay, and none of the people we knew had motor scooters, which did not become a common sight in Hanoi until about a decade later.

People who've visited Hanoi more recently see none of the primitive conditions and deprivation that we saw in the immediate post-war years. Only foreigners and VIP's had cars, and most of those were old American jeeps that had been jury-rigged to keep them going. Khoái told us that when Vietnamese diplomats went abroad, they would be issued a single suit, which they would return when they rotated back to Vietnam.

On the other hand, we saw no evidence of the extreme distress that one would find in most impoverished countries. There were no beggars on the streets (a small number started to appear in the late 1980's after the marketization reforms started), and there were no children with tiny limbs and distended stomachs from starvation. The level of hygiene was high for a poor country in the tropics: everyone boiled their water and recycled organic waste into fertilizer, and the city had a reasonable sewage system. Moreover, the large number of book stores, newspaper stands, and schools of various sorts all over the city attested to a high educational level among the populace. Despite the devastation of the War, which had ended only three years before, Vietnam compared well with other poor countries according to the most basic criteria — freedom from hunger, disease, illiteracy.

Ann and I spent a lot of time going on long walks around the neighborhoods. Once when we were hot and exhausted, we decided to take the tram, which would take us most of the way back to our hotel. The rickety old tram was very slow — it went roughly at the speed of someone walking — and it cost only 5 xu. Even at the official rate of exchange, which was at least an order of magnitude worse than what a free-market rate would have been, that was equivalent to only a penny-and-a-half. A few years later the tram lines were ripped up, and the tram — and also the

xu — were phased out of existence. We should have been charged double because our butts occupied more space on the tiny benches than anybody else's. But the conductor decided not to charge us at all, perhaps because we provided much amusement to the other passengers as we ran to catch the tram and then tried to find a place to make ourselves comfortable inside without stepping on anyone's chickens or trays of vegetables.

In those days people tended to assume that the Westerners they saw must be Russians, and children would often call out *Chào các Liên-xô!* ("Hello Russians!"). Once when Ann and I were resting from the heat in a shaded park, a couple of children came up to us and showed off the Russian words they knew: *Eto mama! Pora!* ("That's Mom! Gotta go!") That must've been what the Soviet kids they played with would say when they had to leave.

After several days, at our request the Math Institute had us moved back to the Hotel Hòa Bình ("Peace") in the center of town where we had stayed the first night. Even though the Hòa Bình was a much less fancy hotel and had an abysmal restaurant, it had two big advantages for us — its location and its price. We had to watch our money carefully because we had had a mixup with air tickets, and because our American Express credit card could not be used in Vietnam.

The Hòa Bình was on a busy residential street. Like the Vietnamese, we would wake up with the sun at around 5 a.m. Usually the neighborhood would quiet down by about 9 p.m., but one night we were kept up until 11 p.m. because a group of children next door were singing *Guantanamera* over and over again. Perhaps they were rehearsing for a school event.

We noticed that at least two fist-sized, thick, hairy spiders were sharing our hotel room with us. Never having lived in the tropics, we found this disconcerting. I asked Khoái whether these spiders could bite, and he said that they were harmless, but there was a Vietnamese folk belief that it's bad luck if a black one falls on your eye.

When Lê Văn Thiêm returned to Hanoi, he used his car and driver to take us around town for one day. He and Khoái went with us first to Văn Miêu (Temple of Literature), founded in 1076. The remains of the ancient university feature an array of 82 large stone slabs, each containing a list of winners in the royal examinations that were held between 1442 and 1779 in order to determine who would become Doctors of Literature. The stele for 1463 includes the name of Lurong Thê Vinh, who, in addition to his literary accomplishments, was a well-known geometer.

Thiêm and Khoái then took us to visit Đồng Đa Hill, the location of a battle in 1789 that rid the capital of Chinese invaders for the last time. China conquered Vietnam in 111 B.C. and ruled for over a thousand years (until 938 A.D.). The Hai Bà Trưng (Two Trưng Sisters), who led insurrections against the Chinese in 40-43 A.D., are national heroes; a central street and a famous pagoda in Hanoi are named after them. Thiêm told us that, according to legend, Đông Đa Hill was formed from the bones of the defeated Chinese soldiers. None of us would have expected that just seven months later China would again attack Vietnam, and thousands of Vietnamese and Chinese soldiers would die before China was pushed back across the northern border.

It was possible for foreigners to rent a car with a driver, and we did that one day. It was a little expensive, but there were a few places we particularly wanted to see that the Math Institute people had not shown us. We visited Bạch Mai Hospital and Khâm Thiên Street, both of which were destroyed by air attacks on December 26, 1972. The hospital had been completely reconstructed (thanks to Swedish aid), and the street had also been largely rebuilt. At one point on Khâm Thiên Street the remains of a bombed-out house were preserved as a memorial. The photographs there showed the utter devastation caused by the saturation bombing by the U.S. Air Force. The Christmas ceasefire was formally over, but most families had not yet dispersed, thinking that the next day would be soon enough. Early in the morning of the day after Christmas 283 people died on that single street.

When we returned the car, we had a dispute with the driver about some extra charge that should not have been there. The amount of money was not great — probably about ten dollars — but given our uncertainties about our tickets, we weren't going to pay it without a fight. The Russian-speaking young woman who worked in the rental agency tried to mediate. She had a hard time believing that we were Americans. It was not only our fluency in Russian but, more importantly, our tourist visas (which had been authorized by the foreign ministry at the special request of Lê Văn Thiêm) that seemed incongruous. In those years there was no such thing as an American tourist in Hanoi.

During the argument the driver claimed something related to the extra charge. Ann, who has an uncanny knack for interpolating what people are saying in a language where she knows only a few words, used her minimal Vietnamese vocabulary and her best guess to determine what the driver was saying. Without waiting for a translation, she answered in Russian, responding precisely to the driver's claim. At that point the woman gave in. This was just too weird — American tourists in a city that didn't have American tourists, knowing Russian, and now also understanding Vietnamese. We left without paying any extra charges.

As a general rule Americans did not visit Hanoi during the War and the years immediately after. There were some famous exceptions, such as Henry Kissinger and Jane Fonda. Ann and I used to joke that we were the first *unimportant* Americans to visit Hanoi — and that made us feel important! (The reader might notice the similarity to the well-known proof by mathematical induction that there is no uninteresting number. Namely, let S denote the set of uninteresting natural numbers. If S is non-empty, it has a least element n. But being the smallest number in such a set is certainly an interesting property. Hence, n does not belong to S. This contradiction shows that S is empty.)

major occupation while in Hanoi was trying to straighten out the A mixup with our tickets. Our plan after Vietnam was to go first to Israel and visit our friend Ephraim Isaac, who was doing research in the Coptic Monastery in Jerusalem; then we'd visit Andrei and Betty Todorov in Bulgaria, and finally take the train through the Soviet Union to Helsinki in time for the International Congress of Mathematicians in August. Before we left Moscow, the Aeroflot office had sold us tickets on an Air France flight that supposedly went from Hanoi to Teheran before continuing to Paris; we then got El Al reservations from Teheran to Tel Aviv. The problem was that there was no such Air France flight; in fact, no Western airline flew into Hanoi at that time, and when we saw the conditions of the runway and airport, we knew why. For the socialist countries the air connection with Hanoi had strategic importance, and Aeroflot and Interflug (the East German airline) must have put their best pilots on the route. But the idea of Air France flying out of Hanoi clearly never got beyond the planning stage.

So we were stuck in Vietnam with useless tickets out of the country and little money to buy anything else. After it became clear that no one at the Math Institute knew where we could turn for help, I got the idea of stopping in at the Soviet commercial building, which, among other things, had administrative responsibility for Aeroflot's operations in Vietnam. After all, in some sense the whole mess was Aeroflot's fault. That building was in the center of town next to the Soviet Embassy.

There we met an amusing Russian guy who seemed to be the all-purpose trouble-shooter. He was jovial and laid-back, and wore a large bright tropical shirt over his big beer-belly. He reminded me somehow of Saul Bellow's *Henderson the Rain King*. When we explained the situation to him, he said that the Moscow people were crazy to think there was an Air France flight out of here. They just didn't realize what a remote outpost Vietnam was. Well, he said, he'd see if he could think of something.

The next day the Soviet commercial representative found us in our hotel and said that he had a solution. He could exchange our Air France tickets for tickets on an Interflug flight from Hanoi to Karachi that left three days later, followed by an Aeroflot flight from Karachi to Teheran that left six days after that. We did that, although we realized that there was no way we were going to wait around Karachi for the connecting flight almost a week later — to do so would mess up our plans for both Israel and Bulgaria. So in Karachi we ended up buying Pan Am tickets to Teheran; in the process we lost about \$500, which was a lot of money for us in those days, all because of a non-existent Air France flight.

In Karachi I tried to get word to Ephraim Isaac that we had been delayed, and I also wanted to change our El Al reservations. But it was absolutely impossible to do either in Pakistan. No communication with Israel was permitted, and neither the Pan Am office nor the U.S. Embassy was willing to help. So when we arrived in Teheran at about 2 a.m. on Friday, July 21, all we could do was hope to get on the daily El Al flight standby.

That flight went without fail every day except Saturday, the Jewish sabbath (this continued until the Shah was overthrown a few months later, after which there was never again a direct air connection between Iran and Israel). It was a popular flight, not only because the Shah's regime had significant business ties with Israel, but also because for American travelers wanting to reach Israel from the east, rather than from Europe or North America, there were very few countries that had an air connection. So it wasn't at all clear that we could get on the flight standby.

The security was the most impressive I have ever seen before or since. A couple of hours before the incoming flight arrived, plainclothes men presumably from Savak (the Shah's security force) gathered in the checkin area. Six big tables were set up for examining luggage. When the El Al aircraft arrived, it parked at the opposite corner of the airfield and was surrounded by troops. The El Al personnel were brought in under guard, and proceeded to examine the checked luggage. All electronic devices were inspected by an El Al specialist. Other El Al security people questioned each passenger at length. The hand luggage was inspected later, just before boarding.

Finally they called the flight. When they came to our names on the standby list, there was only one seat left. We resigned ourselves to staying in Teheran for a couple of days and trying to be first on the standby list on Sunday or Monday. I went to another part of the airport to change money.

As Ann started to follow behind, she heard an El Al person on the other side of the partition tapping on the glass to get her attention. It turned out that one of the passengers had made a joke or remark about security and had been immediately removed from the flight. The El Al guy remembered that we were the next in line and signaled Ann that we should come through.

Ann motioned that we'd come and went running in my direction screaming "Neal! Neal!" Several Iranians then started running after her, trying to calm her down. Earlier that morning we had seen an instance when an Iranian woman, perhaps in public in such a strange place for the first time, had started screaming and had had to be quieted down; so the Iranians must've thought that Ann was having some kind of fit of hysteria. Fortunately, I was nearby, still in line to change money, and we went directly to the gate. Amusingly, in the rush the El Al people forgot to inspect our carry-ons, which included a big exercise bar that I was taking with me everywhere. This large metal object in its own case could have been a rifle for all El Al knew.

The last El Al person came with us in a van that sped across the airfield to the plane, which was being protected by the Shah's troops with machine guns drawn. We boarded the plane, they pulled away the stairs, and we were off. Despite all the drama and uncertainty, when all was said and done, we managed to get from Hanoi to Tel Aviv in less than 48 hours.

n August 1978 at the International Congress of Mathematicians in Helsinki I arranged a meeting between Hoàng Tụy, who was the senior member of the Vietnamese delegation (and soon after succeeded Lê Văn Thiêm as director of the Hanoi Math Institute), and Shiing-Shen Chern. Although Chern taught at Berkeley and was a U.S. citizen, even at that time he was known to be extremely influential in the Chinese mathematical world. My purpose in setting up the meeting was to try to improve relations between Chinese and Vietnamese mathematicians.

Before the Cultural Revolution, the Chinese had helped their Vietnamese colleagues considerably. For example, not belonging to international copyright conventions, they routinely photocopied Western math journals for their own use, and they sent a copy to Vietnam as well. However, contact largely stopped with the Cultural Revolution, and Sino-Vietnamese relations deteriorated during the 1970's. I thought that, despite the political tensions between the two neighboring countries (which erupted into war in 1979), it should be possible for mathematicians to get along.

The meeting between Hoàng Tụy and Shiing-Shen Chern was a friendly one, although I doubt that anything concrete resulted from it. Hoàng Tụy asked Chern about several Chinese mathematicians he had known in the 1950's and 1960's and had lost touch with during the Cultural Revolution. When he saw that his pronunciation of the names didn't ring a bell with Chern, he wrote the Chinese characters for their names, and immediately Chern knew whom he was talking about. Vietnamese who have studied the Chinese characters, as Hoàng Tụy had, pronounce them in a way that is close to Cantonese, but very far from Mandarin.

In the 1980's, I contacted the editors of *Annals of Chinese Mathematics* and proposed an exchange with *Acta Mathematica Vietnamica* (AMV). I knew that at this time the Chinese government would not permit them to have direct relations with Vietnam. However, the journal exchange between Shanghai and Hanoi would be routed through Seattle, and the Chinese agreed to this plan. For many years I regularly received a copy of the Chinese *Annals*, which I passed on to the Vietnamese, and sent two copies of AMV (which was published half as frequently as the Chinese *Annals*) to Shanghai.

n 1978 Ann and I had a vague idea that we'd return to Vietnam some day, but we had no concrete plans. We were not collaborating with anyone in Vietnam, and in our frank moments we would have had to admit that little of benefit to Vietnam had come out of our first visit. I wrote an article about our trip for *The Mathematical Intelligencer*, a journal with a fairly large readership, and that presumably encouraged other mathematicians to think about developing ties with their colleagues in Vietnam. And Ann and I learned a lot and got some wonderful memories from the three weeks. But that was all.

Soon after we moved to Seattle in 1979, I received a letter from a physicist at Cal State Fullerton named Ed Cooperman. When working in France he had been impressed with scientists' activities in support of Vietnam and had decided to start a similar group in the United States, called the U.S. Committee for Scientific Cooperation with Vietnam (USCSCV). He had heard about me from Lê Dũng Tráng and wanted to know if I would head up the mathematics subcommittee of the USCSCV, which I agreed to do.

Between 1980 and 1984 what this meant in practice was that I advised Ed Cooperman on visits to the U.S. of Vietnamese mathematicians, and Ann and I hosted them in Seattle. I would introduce them to people in their field at the University of Washington, photocopy things from the math library for them, and talk with them about a range of subjects. We would rent a car (we didn't own one during our first ten years in Seattle) and take them to see some of our favorite attractions in Puget Sound. The mathematicians who came to Seattle in those years included Lê Văn Thiêm, Hoàng Tụy, Nguyễn Đình Trí (who headed the Polytechnic Institute in Hanoi), Nguyễn Văn Đạo (who later became chancellor of the Hanoi University system), and Phan Đình Diệu (the most prominent computer scientist in Vietnam). In addition, we helped with a visit to Seattle of two marine biologists from Nha Trang.

What seemed remarkable to a lot of people at the time was that throughout the Reagan years — a time of deep chill in relations with Vietnam — Cooperman was able to get U.S. visas for all these scientists. It turned out that the U.S. State Department sometimes liked to maintain small-scale low-visibility contacts with nations toward which the U.S. government was extremely hostile. As long as the scientific visits "flew under the radar," they would be allowed. Cooperman and his successor, Judith Ladinsky, maintained cordial and cooperative relations with the State Department's Vietnam Desk throughout the 1980's.

In 1983 when Ann and I were in Bangkok awaiting our visas for Vietnam, we met a Canadian woman from a Mennonite charity who was incredulous that we were allowed to bring Vietnamese scientists to the U.S. in apparent defiance of the embargo. She said that her organization had tried unsuccessfully to get permission to send badly needed soap and other supplies to Vietnam after the devastating typhoons of a few months before, and the shipment had gotten held up in the U.S.

O ne evening in 1981 a heavy-set man in a suit came to our door in Seattle, said he was from the FBI, and asked if he could talk with us. He wanted to know if any of our Vietnamese visitors had shown a special interest in anything or tried to get us to find out information for them. He said that he was concerned that people from countries such as Vietnam might spy for the Soviet Union or try to entice Americans into spying for them.

I politely explained that there was nothing the least bit suspicious about any of our guests, that the last thing they'd want to do was spy for anyone, and that I thought that it was out of line for the FBI to be inquiring about our scholarly contacts. Beyond the assurance that the visitors were above reproach, I wasn't going to talk to the FBI about the nature of conversations with them. However, I was happy to discuss the whole issue of whether or not the FBI should be questioning people about visiting scientists. Ann made tea for the guy, and we had a long discussion. I gave him a detailed argument explaining why he shouldn't be interfering with these visits. My tactic with the FBI was the opposite of the usual "don't say anything to them." Rather, I talked the guy's ear off.

At one point I told him that I had no connection to anything classified, and as far as I knew neither did my university. He asked me if I'd heard of the Applied Physics Lab on campus. At that time I hadn't, but apparently it was doing secret government research. I said that now that he'd mentioned it, that brought up one of the reasons why many professors had campaigned to prevent universities from engaging in classified research. Namely, the presence of that type of work on campus gave the FBI an excuse to go around questioning faculty about their foreign contacts. Well, this conversation (much of it more in the nature of a monologue) went on for over two hours. We were never again bothered by the FBI.

Ann and I met Ed Cooperman only once, when we were visiting Los Angeles in the spring of 1981. He took us to dinner in a Vietnamese restaurant that he said was one of the few where he would be served. Although the scientific exchanges had low visibility, some of Cooperman's other activities on behalf of Vietnam did not. For example, he organized a showing on his campus of films from Vietnam. Anti-communist Vietnamese refugees demonstrated angrily, and some threatened violence. There were many Vietnamese-American students at Fullerton, and for the most part Ed got along well with them. But he was *persona non grata* in "Little Saigon," and he had received death threats.

Although most Vietnamese refugees were anti-communist (or apolitical), there were a small number who either had been opponents of the South Vietnamese regime, had come to the U.S. before the War and been in the anti-war movement, or had been influenced by Cooperman or others who had a positive viewpoint toward socialist Vietnam. In the mid-1980's when Ann and I were in the Bay Area we sometimes stayed with a group we called the "Berkeley Vietnamese" who supported Cooperman's efforts. Another person we met who was in this category was the Vietnamese wife of Columbia University mathematician Pat Gallagher.

When I realized that Cooperman had funding to bring mathematicians to the U.S. and could get them visas, I started trying to arrange a visit by our friend Hà Huy Khoái. It was in 1978 in our apartment in Moscow when I'd first mentioned to Khoái the possibility of some day visiting the U.S. Ann said that that was a "stupid" thing to have said, since it seemed so unlikely, and Khoái laughed and said, "Yes, that really was stupid." Among other considerations, Khoái did not have any administrative status in Vietnam and was not a member of the Communist Party. He seemed to think that the Vietnamese authorities would never permit him to travel to the West. Undoubtedly Khoái was thinking by analogy with the Soviet Union, where the government tightly controlled exit visas for scientists.

However, in the case of Vietnam there were rarely any problems in getting permission for scientists to travel, provided that their trip was funded from the West. The Vietnamese government attached great importance to scientific ties with the technologically advanced countries. The potential problem in arranging Khoái's visit was rather at the U.S. end and arose because Khoái would be coming from Moscow, where he was studying for his Soviet doctorate (the "more demanding" degree referred to by Grothendieck that follows the Candidate's thesis) under Manin's direction. None of the other Vietnamese scientists to visit the U.S. had come from Moscow.

We set up Khoái's visit for April 1982. For most of the academic year 1981-1982 Ann was in Leningrad, but in the spring she went for a month to Moscow, where she was able to assist Khoái. Several times she went with him to the U.S. Embassy, translated for him when necessary (his English was still pretty shaky), and helped him understand the procedures. About three days before Khoái was scheduled to leave, he and Ann went to the U.S. Embassy again, but still nothing had come through. Ann called me from Khoái's apartment to say that there was no visa for him. I phoned Cooperman, who said he'd get back to me soon. After a while he called back to say that the person at the Vietnam Desk had just that moment sent a cable authorizing the U.S. Embassy in Moscow to give the visa. It was the middle of the night in Moscow. A few hours later, I called and woke Khoái up, said that he must go wake up Ann and return to the Embassy, must not take no for an answer, and must insist that they look for their latest cables. He later told me that he hadn't understood me well and had thought that I was raving; the version that he relayed to Ann made it sound as if I was saying that they should go back and demand a visa whether or not the authorization had come. This made no sense. But they went anyway, and the authorization was there.

Once Khoái had his U.S. visa, a number of urgent tasks remained before he could leave Moscow. Foremost was getting his ticket from Moscow to Seattle on Finnair. The people at Aeroflot were so impressed that a Vietnamese scientist had prepaid tickets from the West that they addressed him as *gospodin* ("mister" or "sir"), which he had never been called before (the Soviets always used the term *tovarishch* — "comrade" — with the Vietnamese). More importantly, the Aeroflot agent called in a repairman to tamper with the timestamp so that his ticket could be backdated; if they hadn't done this, his ticket would not have been available at the original fare. Khoái then made provisions for his wife Cúc to receive his paycheck in his absence. Ann saw him off at the airport and gave him a quarter for a pay phone in case I wasn't at the airport in Seattle (he wasn't permitted to carry dollars through Soviet customs).

Khoái spent two months in the U.S., visiting Seattle, Harvard, Princeton, and New York. He lectured on *p*-adic analysis, talked with people in his field, and worked in the libraries. In Seattle I borrowed a bicycle from a

colleague for Khoái to use. However, the first time we went from home to campus he was unable to ride most of the way. Conditions were very different from what he was used to — hilly terrain and cars whizzing by at speeds that would've been unthinkable in Hanoi. After that we walked all the time, except when I rented a car for a few days.

While in New York, Khoái spent a day or two with Vietnam's U.N. delegates, who were the only Vietnamese officials on U.S. territory at the time. Once he was with them going to an event that had been organized by Americans who were friendly to Vietnam to mark the seventh anniversary of the end of the War. Suddenly a group of Vietnamese refugees attacked them, beating them and knocking them to the ground. Khoái was stunned. He minimized the physical injury — he compared it to falling off a bicycle — but he was clearly shaken. He had lived through the War, but for people in North Vietnam the enemy had been distant — American pilots dropping bombs. To be attacked by one's own countrymen was a new experience for him. Before he left, he told me that he would play down the incident in his report, because he didn't want to alarm people and discourage other scientists from visiting the U.S. But he wanted me to know that he thought that Cooperman was underestimating the danger from right-wing immigrant gangs in the U.S.

A nn and I made our second trip to Vietnam in April 1983. We went from Oakland to Bangkok on a special charter flight that was going to be returning with a plane-load of Vietnamese from the refugee camps in Thailand for resettlement in the U.S. The outgoing flight was almost empty — it had only fifteen passengers, mainly deadheading airlines personnel and United Nations people. Ed Cooperman had connections with the U.N. agencies that were involved with the refugee camps and was able to get us seats almost free of charge.

I had asked the Math Institute to arrange for us to pick up our visas in Bangkok, and we received them within a few days of arrival. We then took one of the thrice-weekly flights from Bangkok to Hanoi. We stayed in Vietnam for four weeks, which was the longest period we've ever been there.

The Institute had moved into a nice building on the grounds of the National Center for Scientific Research that had been constructed at the urging of Prime Minister Phạm Văn Đồng, who had visited the Institute in its earlier location and been horrified by the conditions there.

I lectured in Russian, with a Vietnamese translation, for three hours in the morning three times a week (ten lectures in all). Mainly I covered topics in elliptic curves and modular forms (essentially the content of my third book, which was published the following year). Ann and I gave talks in English at the Math Society — mine was on higher education in America and hers was on the life and work of Sofia Kovalevskaia — both of which were translated by the mathematician Nguyễn Đình Ngọc. And Ann also gave a talk in Russian on history of science at the Pedagogical Institute. Despite all this, our activities did not fill the four weeks, and there was a lot of dead time.

We later decided that the visit was too long. We must have been a burden on the Math Institute, which was paying for our hotel. We've found that we usually get as much done in a two-week as in a four-week visit. When people know you're there for only a short time, they schedule everything more efficiently and give you a higher priority.

On the other hand, we learned a tremendous amount in that fourweek period. First of all, mathematicians everywhere love to gossip, tell jokes, and complain about bureaucracy. That was especially true in Hanoi, because our common language with most of the people at the Math Institute was Russian. That had been the language of their student years, and it felt perfectly natural to sit around trading amusing stories and sarcastic comments on various subjects. The people who spoke English with us had also spent time overseas - the algebraic topologist Hùynh Mùi, who had studied in Japan, and the algebraists Hoang Xuân Sính (whose English had greatly improved since the ICM in 1974) and Nguyễn Đình Ngoc, who had studied in France — and they were similarly uninhibited in conversation. Ngoc was a particularly unusual figure in the mathematical community. He had played a key role in the South during the War (see the postscript to this chapter), and had the habit of always wearing military fatigues. He had eclectic and sometimes bizarre interests - ranging from the occult to fuzzy set theory — but at the same time his comments on conditions in Vietnam and on organizational issues in mathematical life were thoughtprovoking and often surprising.

In addition, Ann gave English lessons that were popular with the Math Institute members. From reading and correcting their essays and listening to their oral presentations, she learned a great deal about their backgrounds and what was on their minds. One of her students, for example, had a brother in Cambodia in the Vietnamese army, which was fighting the remnants of Pol Pot's forces and helping with reconstruction.

We also had long conversations with Khoái and the Institute's general manager Châu, especially during a weekend with them at Hạ Long Bay. The bay was only about a hundred miles (160 kilometers) from Hanoi, but given the conditions of the roads in those years, it took four or five hours each way. There aren't many seascapes in the world that can compare in beauty with the islands and seastacks of Puget Sound and the Pacific Coast near Seattle, but Ha Long Bay is one of them. Ann and I were thrilled to go out by boat among the giant rock monoliths and small islands in the South China Sea off the coast of Vietnam.

In our hotel most of the other guests were from Eastern Europe. Ann and I always tried to get hotel restaurants to bring us Vietnamese dishes rather than the greasy, terrible "Western" dishes that they insisted on preparing for non-Asian foreigners. We were rarely successful when we were on our own, but Châu was able to convince them to make us the Vietnamese breakfast, a type of chicken-noodle soup called $ph\dot{\sigma}$. While Khoái, Châu, Ann and I, and two French women were happily eating our $ph\dot{\sigma}$, several dozen other foreigners, almost all of them men from Eastern Europe, seemed equally happy eating greasy sausages, greasy eggs, and some awful-looking salami.

During our first six visits to Vietnam — in 1978, 1983, 1985, 1987, 1989, and 1991 — we always had problems with the hotel food. In those years, when there were few foreign tourists in Hanoi, the infrastructure and administration of hotels were in poor shape. The water and electricity were always going out, and the restaurant food was atrocious. During our seventh visit in 1993 we stayed in a tiny hotel that had been started by a former mathematician — this was one of the first privately owned hotels in Hanoi — and for the first time we did not get sick on the food. In subsequent visits we have always stayed at the Math Institute Guesthouse, which opened in the mid-1990's, and there the food and accommodations have been fine.

After we returned to Seattle in 1983, I wrote a detailed "Confidential Report" of ten single-spaced pages based on conversations and observations during our month-long visit. It dealt with a range of sensitive problems:

- Institutional rivalries in Hanoi among the Math Institute, Hanoi University, the Polytechnic Institute, and the Pedagogical Institute were standing in the way of efficient use of resources. There was an especially worrisome "psychological distance" between the Math Institute and Hanoi University.
- The Math Institute library, which was the best math library in the country, was often closed, and was underutilized.
- Research was divorced from teaching, and the best researchers, most of whom worked at the Math Institute, had little role in undergraduate education.
- Travel abroad, foreign degrees, and any type of foreign ties had too much prestige, and it didn't seem to matter whether or not anything of value resulted.

- Many young people tried to arrange trips abroad because of the money and status, even when they were unprepared to make scientific use of such a visit.
- Most young scientists lost touch with their former colleagues and professors after returning to Vietnam with their foreign degrees.
- Foreign visitors were received with too much formality; in particular, the large banquets were expensive and not appropriate for scholars and scientists.
- Too few women were being trained for careers in the physical and mathematical sciences and technology. For example, only 8% of the students at the Polytechnic Institute were women.

I gave Ed Cooperman copies of my Confidential Report to distribute to a list of leaders of the mathematical and scientific establishment in Hanoi. I later learned that my report reached the desk of Võ Nguyễn Giáp, who at that time was head of the State Committee for Science and Technology. During the French and American wars, General Giáp had become almost a legend in the West — the Pentagon had dubbed him "the Red Napoleon" — for having masterminded the humiliating defeat of the French at Điện Biên Phủ in 1954 and the Tet Offensive of 1968, often regarded as the turning point in the American war.

I doubt that my report had much influence, except perhaps in areas related to the administration of the Math Institute (especially the library, to which I'd donated many books). The main reaction of the other people who read it or had an aide read it probably was just to be surprised that a visiting American would have learned all these things — airing one's dirty linen in public (or to foreigners) was not the Vietnamese habit. We heard that General Giáp had called in the Math Institute director, Hoàng Tụy, and had commented to him about this.

Despite the harshly critical tone of some of my report, none of the Vietnamese reacted badly. They understood that I was trying to be constructive, and that I was a friend. Whether or not the report had any positive effect, at least it did no harm.

n the summer of 1984, a few months after Ann's biography of Sofia Kovalevskaia was published, she and I decided that we didn't really need the money from sales of the book for ourselves, and it would be nice to do something with it to support women in science and honor Kovalevskaia's memory. A project in the U.S. didn't seem to make much sense, since there were already many programs for women in science, and the amount of money we could come up with would be a drop in the bucket. On the other hand, after our visit to the Polytechnic Institute in Hanoi, we had become aware of an extreme gender imbalance in science and technology in Vietnam, and no one seemed to be doing anything about it. So we decided to start a project called the Kovalevskaia Fund that would address this problem.

Our initial idea was to work exclusively in Vietnam, and, with Ed Cooperman's help, we set up our fund under the rubric of the U.S. Committee for Scientific Cooperation with Vietnam. The very first initiative would be to bring two women scientists from Vietnam in 1985. (All of the scientists who had visited us in Seattle had been men.) And in fact, in August 1985 the mathematician Hoàng Xuân Sính and the medical researcher (and expert on the effects of Agent Orange) Durong Thị Cương came to the U.S., attended the International Congress of the History and Philosophy of Science at Berkeley, and visited several research centers. Ed Cooperman made Ann chair of a new subcommittee concerned with issues of women in science in Vietnam.

We realized that if we wanted to have ongoing projects in Vietnam, we had to start visiting more frequently than once every five years. We decided to go to Hanoi for two weeks during the spring of 1985, primarily for the purpose of meeting with the Vietnam Women's Union, of which Hoàng Xuân Sính was a vice-president, and setting up a program for women in science. We knew by then that we would be in Moscow for the first half of 1985, so we would once again go to Hanoi from there.

With our increasing involvement in Cooperman's committee, our relation to Vietnam was starting to look like a long-term commitment. But it was a horrifying and tragic event in October 1984 that would cause us to take on a much more active role in the functioning of the USCSCV.

O n Saturday, October 13, 1984, I received a phone call from Pat Gallagher, whose wife had just been called by Vietnamese-American friends in California with shocking news. Ed Cooperman had been shot and killed by a Vietnamese refugee.

I was stunned. I tried to learn more, but the early information was sketchy. I called Ann, who was spending most of the year at the Institute for Advanced Study in Princeton.

At the time of the killing Judith Ladinsky, a professor of public health at the University of Wisconsin and the most active member of the USCSCV after Cooperman, was in Hanoi. It was already Sunday in Vietnam, she was out of touch with international news, and she didn't know what had happened until she was urgently summoned on Monday morning to the office of Foreign Minister Nguyễn Có Thạch. He informed her of the shooting. On behalf of the government of Vietnam he offered his condolences to the USCSCV and asked Judith to convey his sympathies to Dr. Cooperman's family.

The reaction in Vietnam was extreme. It was a major news story, and initially the news service accused the CIA of having had Cooperman killed. I flew to Los Angeles the following weekend for a memorial service at Cal State Fullerton, and saw that the Vietnamese Mission to the U.N. had sent a large floral wreath.

It was not surprising that Vietnam suspected a CIA plot. Many former high-ranking officials in the South Vietnamese regime — men who had worked closely with the CIA during the War — had immigrated to the U.S. and settled in the Los Angeles area. For example, Nguyễn Cao Kỳ, the one-time prime minister of South Vietnam (who had acquired special notoriety after telling a reporter that he admired Adolf Hitler), had become powerful in the Vietnamese-American community. In 1984 a witness testified before the President's Commission on Organized Crime that Kỳ headed a Vietnamese "mafia" that engaged in extortion and politicallymotivated killings.

However, it was doubtful that Kỳ and the others still had ties to the U.S. government. It is often hard for people in other countries to understand that someone might work closely with the U.S. for a while and then later become involved in terrorist activities completely on his own. The Cuban exile Luis Posada Carriles, whom Venezuela has been trying unsuccessfully to extradite from the U.S. for the terrorist attack on Cubana Flight 455 in 1976, worked closely with the CIA in the 1960's. And Osama Bin Laden was a valuable ally of the CIA in Afghanistan during the Soviet war there in the 1980's. But the terrorist attacks of Posada Carriles in 1976 and of Bin Laden in 2001 were presumably not CIA plots.

In the U.S. Committee for Scientific Cooperation with Vietnam we were concerned about the possibility that the Vietnamese government would overreact and cut off future visits. I telephoned Hoàng Tụy, who was in Paris, and stressed to him that, first of all, there was no reason to believe that anyone else was in any danger — it was most likely other activities of Cooperman, not the scientific exchange work, that had led to his being targeted — and, in the second place, the Vietnamese leaders should be told that the U.S. government almost certainly had no involvement in the murder.

Cooperman's killer, a Vietnamese-American student at the university, soon confessed, while claiming that it had been an accidental shooting. The Fullerton police declared from the beginning that the killing was a personal rather than political crime, and so there was no need for the FBI or for an extensive investigation. Even though the San Francisco police noted similarities between the crime and the shooting of a Vietnamese-American publisher in the Bay Area three years before, and the older brother of Cooperman's killer was known to be active in a right-wing extremist group in Hawaii, neither of those leads was followed up. The prosecutor tried to get a conviction for first-degree murder, but since the police investigation failed even to establish a motive, the jury rejected that charge and deadlocked on the charge of second-degree murder. Eventually the killer served a short jail sentence on a lesser charge.

To this day it is not known who ordered the killing of Ed Cooperman. No one can seriously think that the 20-year-old shooter, who had had a history of petty crime but nothing more, had done it on his own initiative.

Cooperman's death received much more attention than any of the earlier killings in the refugee community, because it was the first time that someone who was not Vietnamese-American had been targeted. The local press took a predictable blame-the-victim approach to investigating the circumstances of the crime. A reporter for the *Santa Ana Register* used records the police had found of Cooperman's last trip to Asia in order to "prove" that he had been a communist spy. For example, the newspaper noted that he had spent a night in Moscow on the way from Vietnam to France, but "shows no expenses, indicating lodging was provided for him," presumably by the KGB.

The attention in the media soon subsided, and Cooperman's friends and collaborators had to pick up the pieces and do our best to continue the work of the USCSCV. The obvious person to assume the role of chair was Judy Ladinsky, who had shortly before started making twice-yearly visits to Vietnam to carry out public health projects there.

Judy Ladinsky called a meeting of the surviving members of the Board of Directors of the USCSCV for Saturday, November 17 in Los Angeles. Ann flew in from New Jersey, and I came down from Seattle. About a dozen people attended the marathon meeting, the main purpose of which was to learn about the status of the various projects and reorganize the work of the USCSCV.

It was not an easy task. Cooperman had run the USCSCV as a one-man show, and other people on the Board of Directors knew only of their own projects. What was worse, Ed had had a cavalier attitude toward keeping the books. His records were in disarray, and he had been sloppy in his handling of funds, frequently using a grant for a different purpose from what it had been given for. Even though it seemed that the money had always been spent on something worthwhile, his financial practices had been improper and possibly illegal. One of the USCSCV's main granting agencies had already cut off funding after learning this, and Judy was desperately trying to convince them to reconsider.

In addition, not long after the November 17 meeting some simmering tensions within the USCSCV came to the surface. Three members of the Board started feuding with Judy Ladinsky, and it was never clear to us exactly what the issues were. They resented her leadership and eventually resigned from the group. On the other hand, a few of the Board members — including Ann and me — became more heavily involved in the affairs of the USCSCV after that meeting. When we visited Vietnam — almost always over Christmas vacation — we would often see Judy in Hanoi and work with her. On one occasion Ann assisted her in giving the TOEFL exam; and Judy consistently helped us administer the Kovalevskaia Fund projects.

Aside from the practical impact of the killing of Cooperman, there were psychological effects as well. None of the other people in the USCSCV had anything like the kind of visibility among refugees that Ed Cooperman had had, so we knew that we were not in danger. Yet the outbreak of violence had frightened and disoriented us.

For the Vietnamese, the killing probably increased their tendency to hold an exaggerated view of the sacrifices that people in the U.S. had to make during the War and afterwards in order to oppose our government's policies and support Vietnam. During a period of almost two decades of U.S. hostility, the USCSCV was one of the few channels for aid and cooperation from Americans. After normalization of U.S.-Vietnam relations in 1995, Ann and I at first feared that with the sudden influx of American groups the Vietnamese would lose interest in people like us with our relatively small projects. However, that did not happen. The Vietnamese have a keen sense of history, and they value old friendships. There is an expression $c \delta t inh$, $c \delta nghi \tilde{a}$, which, roughly translated, says that longstanding friendships are, like family ties, of great importance.

Postscript

I wrote the following obituary for the July 2006 issue of the Newsletter *of the Kovalevskaia Fund.*

Maj. Gen. Nguyễn Đình Ngọc (1932 – 2006)

The Vietnamese mathematician and expert in military intelligence Nguyễn Đình Ngọc died on 3 May 2006 at the age of 74. Ann and I met Ngọc in 1983. In 1985 he was one of two mathematicians (the other being Hoàng Xuân Sính) with whom we had extensive informal discussions about initiating Kovalevskaia Fund projects in Vietnam. It was from these conversations that the proposal emerged to establish the Kovalevskaia Prizes.

In the 1980's Ngọc was a valuable source of information and candid insights into conditions in Vietnam, especially in the scientific and academic realm. In 1983 I gave my first public (non-mathematical) talk in Vietnam. Ngọc translated it from English into Vietnamese. Judging from the comments of our Vietnamese acquaintances, who described the talk in glowing terms, Ngọc's translation was much more eloquent than the original.

Despite his superb fluency in English, Ngọc's first European language was French. He studied in France for eleven years, returning to Saigon in 1966 with several advanced degrees in different branches of engineering. He was truly a polymath, finding abstract subjects (especially algebra and topology, fields in which he helped organize seminars in Hanoi in the 1980's) to be as fascinating as the more practical areas of math and science.

In the 1980's we heard stories and rumors about Ngọc's eccentricities. For example, he always wore combat fatigues. The reason, we were told, was that although he had been a high-ranking officer during the American war, he could not wear the uniform in those years because he was operating undercover as a college professor in Saigon. As a result, after liberation he made a point of wearing it always. When we asked about arranging a scientific visit for him to the U.S., we were told not to bother, since the U.S. government would know now of his role during the War and would never give him a visa.

We thought that the stories about Ngoc were probably exaggerated. But we were wrong. Shortly before his death from liver cancer, the Vietnamese government published tributes to his life, which revealed that he had played a crucial role as an intelligence agent during the War and had risen to the rank of Major General before his retirement. The son of a freedom-fighter who was executed by the French, Ngoc continued his father's tradition of struggle against French and then American imperialism.

Ann and I are privileged to have known this multifaceted intellectual and anti-imperialist. We are also grateful for his help and guidance during the early years of the Kovalevskaia Fund.