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Interview with Alexandra Bellow by Niki Koumoutsos

Born in Bucharest, Romania in 1935, Alexandra Bellow received her PhD from Yale in 1959. She went on to a distinguished career working in ergodic theory and probability. Now Professor Emeritus of Northwestern University's Department of Mathematics, she has endowed an annual lecture called the *Alexandra Bellow Distinguished Lecture Series*.

NK: You have mentioned, in other interviews, that you had loving and devoted parents and that they were both physicians: your mother was a child psychiatrist, your father, a neurosurgeon. How did your family react to your intention of studying math? How did you discover that you wanted to become a mathematician?

AB: My parents were indeed accomplished, dedicated physicians: my father founded the first clinic of neurosurgery in Romania, my mother was a pioneer of child neuropsychiatry. They both held mathematics in high esteem. My maternal grandfather had been a civil engineer who also taught math in high school; my mother wanted to follow in her father's footsteps, but the Polytechnic Institute in Bucharest did not admit women at that time (the early 1920s), she did petition this decision, to no avail, so she chose medicine instead. My mother also had a strong interest in child education, she had her own playful techniques for teaching arithmetic and she loved experimenting on me. As a small child I became her willing, her enthusiastic "guinea-pig" and, before I knew it, I had fallen in love with math. My father died when I was ten years old, but my mother was not a bit surprised (she may even have been secretly pleased) when I announced that I wanted to study math and become a mathematician.

NK: Considering that you grew up in Romania during and post WWII, you experienced totalitarianism first-hand: a dictatorship of the right during WWII, and after, a dictatorship of the left. Given the nature of the political suppression of ideas and intellectual pursuits during that era, what did it mean for you to study mathematics?

AB: My last year in high school, 1953, was my definitive formative year. It coincided with the peak of the Stalinist terror in Romania and in the whole Eastern Bloc. It also coincided with my mother's *political disgrace*. This was very likely triggered by the fact that my mother, as Minister of Health in 1946-48, had asked the West for help and the West had sent food and medical supplies to war devastated Romania. The specter of a purge-style trial, arrest and possible annihilation hung over my mother and me. Fortunately, in the last years of high school, I had a superb math teacher. She was the most respected teacher in our school. She was also fearless and determined to give me the support I needed. That's how I survived one of the darkest periods of my life. I came to feel that mathematics, perhaps more than any other discipline, can endow you with the independence of spirit needed to follow your intellectual pursuits and resist political pressures. The beauty of mathematics, its clarity, precision, elegance, and honesty are universally acknowledged. To quote Littlewood, the great English mathematician of the 20th century, mathematical work "has to be honest, not from any sense of moral superiority, but simply because in mathematics you cannot get away with *fakery*." The language of mathematics is universal too; this gives mathematical refugees, coming to the States from oppressive regimes elsewhere, an instantaneous mode of communication, and a sense of belonging to the mathematical community at large.

NK: In 1957, you came to The USA with your first husband, the mathematician Cassius Ionescu Tulcea and you undertook a PhD at Yale. It is no secret or surprise that you were one of the few women on campus, and even fewer women in the math department. What was it like to arrive in The USA and at Yale? Now, we have many modes to keep groups of people in touch, what, if anything, did you and your fellow students do to support each other?

AB: Yes, I came to The States in 1957, accompanying my husband, the mathematician Cassius Ionescu Tulcea, who was older, had already established himself mathematically and who had been invited by Yale University to participate in a special program in functional analysis. I had graduated from the University of Bucharest with the equivalent of a master's degree in mathematics and C. Ionescu Tulcea had been my professor in the first-year analysis course. When we arrived at Yale, I decided to undertake a PhD in mathematics, I applied and was accepted. We lived rather frugally, but leaving political oppression behind and discovering the freedom of American life, were altogether exhilarating experiences. There were very few women among the graduate students in math at Yale and *no* women on the faculty. Consequently female moral support, which could have been invaluable, was nonexistent. I was also quite shy because I had trouble communicating within the Oxford-English and the rigid grammar rules I had learnt at home. Thus, I spent most of my time in virtual isolation, studying math, deconstructing and rearranging my English. The condescending attitude of my male classmates, I have to admit, lasted only until I gave my first seminar talk. After that I was treated with respect.

I ended up choosing Professor Shizuo Kakutani for my thesis advisor: his math was beautiful, his English simple and accessible. It was a case of serendipity that I found an interesting problem to work on, that I finished my thesis quickly and that I got my doctoral diploma in two years just before I turned 24. Years later my friends were still teasing me that I learnt to speak American-English with a sing-song Japanese accent!

NK: I read that you used to publish under your husband's name. In relative terms, this was not so long ago, but I think the idea could be quite shocking to hear that in the 1960s this was your precise situation? What was the impetus to do so? How has that affected your publications or academic narrative?

AB: In the 1950s, the tradition in Romania and in many countries of Europe was that when a woman got married, she took her husband's last name. That's what I did, I did not even think twice. We became known in the mathematical world as A. Ionescu Tulcea and C. Ionescu Tulcea, respectively, or jointly (since we also published together) as the "Ionescu Tulceas". Many years later, in the 1970s, my first marriage was behind me and I had remarried. My second husband was the writer, Saul Bellow. Under duress, for the sake of peace, both professionally and privately, I dropped the last name Ionescu Tulcea; as a gesture of confidence in my new marriage I switched to Bellow, instead of going back to my maiden name. That was, professionally speaking, a mistake for which I was scolded repeatedly by French mathematicians who were especially concerned with *name recognition*. Life is full of ironies, isn't it? I would advise any young woman choosing a career in mathematics to stay with her maiden name, professionally.

NK: Eventually you took a post at Northwestern University. What was it like to have taken this position? How were you received in the department? Several sources tell me that you have interesting stories from your early years here. Are there any stand outs that you can share?

AB: Professor Ralph Boas was Chairman of the Math Department at Northwestern, when he called to offer me a position for the coming academic year. I was 32 years old and I was thrilled by the offer, *a full professorship*. I asked Professor Boas if I could start my appointment a few months later, in January 1968, since I had two doctoral students working with me at the University of Illinois in Champaign-Urbana. Professor Boas agreed. My husband at that time, C. Ionescu Tulcea, was already on the faculty as a full professor.

I am happy to report that Ralph Boas' confidence in me and his support of me never wavered. But given that I was the first woman full professor in the Department and that I spoke with a palpable foreign accent, I felt quite self-conscious and anxious to know what kind of reception I would receive. On my first day in Lunt Hall, one of my colleagues, an older professor, invited me to his office, closed the door, asked me to sit down and said to me half smiling, "You should know that this department is a place where everyone is for himself." In other words, don't count on me or on any of your colleagues for support. I realized then, that Professor Boas was a maverick who wanted to bring about change.

NK: What was it like for you to come to the Chicago area in the 1960s? Having travelled much and experienced many places, Chicago still remains your home. What keeps you here? Have you travelled back to Romania? What is your relationship to your birth country now? If there is one.

AB: In 1968, when I moved to the Chicago area, the students on the Evanston Campus were by and large blond, blue-eyed, a rather homogeneous crowd, and a far cry from the racial diversity of today.

The tallest building in Chicago was the Prudential Plaza: from the restaurant on top of the Prudential Building you could survey the whole city. None of the signature skyscrapers that made Chicago architecture world-famous existed yet. Richard Daley Sr. was mayor of Chicago, the absolute boss of the *Chicago machine*, and Mike Royko, the irreverent columnist, delighted his readers with the antics of the movers-and-shakers and his *exposés* of political corruption in the city.

I have lived in Chicago now for nearly half a century. During these years I travelled quite a bit, but I was always glad to come back to Chicago to my apartment overlooking the lake. I have grown roots in Chicago, I consider it my home, *my kind of town*, the climate notwithstanding. Over the last decades I have seen both Chicago, the city, and Northwestern University shed their provincial clothing and flourish. Chicago nowadays is a vibrant, modern metropolis and Northwestern one of its world-class universities. I am happy to live in Chicago and proud to be connected with Northwestern.

You asked me about Romania, my birth country. The fall of the Ceaușescu regime, the communist dictatorship, in 1989, had come as a great surprise to most people. Apart from my mother, I had had practically no contact with family, friends, former classmates in Bucharest, since I had left the country in 1957, for fear of causing them harm. I did go back once in 1978, when my mother was dying and my husband at that time, Saul Bellow, accompanied me through that ordeal. The savage book, *The Dean's*

December, that he wrote after we returned to Chicago about our Romanian experience did not endear us with the Ceaușescu establishment!

I have been back to Romania three times, for brief visits, since 2007. The transition to a democratic society is painful: ghosts of the past are still haunting the country, but there are also remarkable strides, dramatic progress, that give one hope for the future.

NK: Since becoming Professor Emeritus, you have endowed the annual *Alexandra Bellow Distinguished Lecture Series*. How would you describe it? What made you decide to endow a lecture series? What are your visions for its future?

AB: Three years ago I decided to make a gift to Northwestern University, specifically to the Math Department and also to honor the leadership of Bryna Kra¹. This gift was used to endow the annual lecture series which became known as the *Alexandra Bellow Distinguished Lecture Series* in Mathematics, or simply the *Bellow Lecture Series*. The purpose of which is to invite each year a world-class mathematician to come to Northwestern and lecture, and it is my desire and hope that world-class women mathematicians be represented among the speakers over the years, so as not only to enhance the position of mathematics at Northwestern but also to raise the visibility of women in the field.

My main reason for making this gift was to express my gratitude to Northwestern University for giving me a secure home for so long. As you know, when Ralph Boas, offered me a job: it was an offer I could not refuse. He offered me a professorship and a good salary, and this is how I became *the first woman full professor* in the Math Dept at Northwestern. Ralph Boas, the legendary Chairman, also broke a second barrier, namely *the 2-body problem*. You may find it hard to imagine, given the circumstances today, but in the 1960s the anti-nepotism rule was one of the serious stumbling blocks for a married couple working in the same field.

My main areas of interest in mathematics were ergodic theory and probability. I taught and did research at Northwestern for nearly three decades. In those early days, before the advent of the computer, the internet, research was often a solitary enterprise and if done in collaboration required the presence of other mathematicians. I am also grateful to Northwestern for another reason: it allowed me to take a leave of absence whenever I needed to interact with mathematicians elsewhere and spend time as a visiting professor at various other institutions, such as: the University of Minnesota, MIT, Brandeis, Caltech, University of Victoria (B.C.), UCLA, the Hebrew University (Jerusalem), Goettingen University (Germany). I retired from Northwestern early, in 1996.

NK: Would you like to say something about your private life?

AB: In my private life, I crossed the bridge between the sciences and the humanities. My second husband was the novelist and Nobel-prize winner, Saul Bellow. I had the unusual *privilege* of being portrayed in his writings, first with tender-loving care in his memoir, *To Jerusalem and Back* (1976), and his novel, *The Dean's December* (1982), then, with relentless satire in his last novel, *Ravelstein* (2000), written many years after our breakup. Later in life, a wonderful marriage compatible with mathematics

¹ Professor Bryna Kra chaired the department from 2009-2012.

became a reality, when I married my third husband, the eminent mathematician Alberto P. Calderón; sadly he died not long after I retired from Northwestern. There was, however, a silver lining to these upheavals in my private life, namely, the stepchildren. By and large, I have had an excellent, heart-warming relationship with my Bellow and Calderón stepchildren, and this continues to be a source of great comfort and joy.

NK: You are retired now and seem so very active. Do you still do mathematical research? What does a typical day in Alexandra Bellow's life look like? What do you enjoy doing?

AB: I am happy to stay connected to the world of mathematics at large, and to some extent to the happenings in Lunt Hall, but my main focus, nowadays, has shifted.

The day starts for me only after my early morning yoga routine has set in motion body and mind. I am grateful to mathematics for the mental discipline it has instilled in me, for I am passionate about learning new things, studying for me is an almost organic necessity. In the last few years I have particularly enjoyed studying Cervantes (*Don Quijote* in the original Spanish of the 17th century, *the golden age of Spanish literature*), Plato (*The Dialogues*), and more recently, the *Bible*. These books were regarded as subversive literature when I grew up in communist Romania. I had never read them when I was young, never had time to read them during my academic career, and I had felt culturally deprived all these years. So it was time to do something about it!

NK: What advice do you have to young students, to graduate students currently finding themselves to be a minority in the department, and in particular, to women? What would you have liked to know as you began your studies and career?

AB: Here is my advice to young students, and in particular to young women: (1) choose your field and, if possible, your life-partner with scrupulous care; (2) work, work, work - there is no substitute for hard work; (3) reach out, get connected, seek advice, make friends, for some of these friendships may last a lifetime and you never know what curve ball life may throw at you. With hindsight, my studies, my career, my life might have been easier, smoother, had I made a deliberate effort to break through my natural reticence and reserve.