WE ARE ETH – Episode 10

With George Szpiro, mathematician, economist and former NZZ correspondent

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[00:00:00] **George Szpiro:** When I later became a journalist, it helped me because, especially now when everybody talks about fake news and so on, that couldn't happen if you studied math beforehand because then you know you can't get away with anything that's fake. Everything must be proven rigorously.

[00:00:23] **Susan Kish:** In this episode, I'm talking to ETH Alumni and former NZZ correspondent George Szpiro. I'm Susan Kish host the We are ETH podcast telling the story, the alumni and friends of the ETH Zurich, the Swiss Federal Institute of Technology in Zurich. ETH regularly ranks amongst the top universities in the world with cutting edge research, science and people. The people who were there, the people who are there, and the people who will be there. And these are their stories.

[00:00:55] I'd love to start off just asking, how did you end up attending the ETH? I think you grew up in Switzerland, in Zug, and how did you decide to go to the ETH Zurich?

[00:01:06] **George Szpiro:** I always loved mathematics in high school in Zug. So after I got my Matura, the high school diploma, there, there was no question that I wanted to study math, and there was no question, uh, whether I wanted to go to the ETH, uh, it was the place to go. So that's where I went for the next four years.

[00:01:30] **Susan Kish:** One of the quotes you said when we spoke earlier was that mathematics was appealing because it was so rigorous, required proofs.

What were the main things you took away from studying mathematics and physics at the ETH?

[00:01:44] **George Szpiro:** Uh, mainly mathematics that you can't get away with anything by hand waving. In math, you really need a water type proof for everything. And I think that's what I learned, uh, apart from learning math and physics and all the theorems and the natural laws, but that was a sort of the way.

[00:02:09] You look at the world that everything needs to be proven. And when I later, I'm now jumping, when I later became a journalist, it helped me because, especially now when everybody talks about fake news and so on, that couldn't happen if you studied math beforehand because then you know, you can't get away with anything that's fake. Everything must be proven rigorously.

[00:02:37] **Susan Kish:** That's a lovely expression: you can't get away with hand waving. Um, but after you studied mathematics, I think you went to Stanford to get an MBA. What, how did you decide to switch from mathematics and physics to the world of business?

[00:02:50] **George Szpiro:** Yes. I, I thought I wanted to become a businessman. After I finished studying math, I worked, uh, for a year in, in Paris, and then I went to get my MBA more or less during my MBA I decided, that what I really wanted to do was to go into academics. I worked in, in the summer, during the two MBA years I worked for McKinsey, and after I got my MBA, I decided I wanted to get a PhD.

[00:03:22] I moved to Israel to get my PhD in mathematical economics at the Hebrew University, and I financed my life and my studies by working every year for four to five months with McKinsey in Zurich, in Dusseldorf. And later I took a year off to work for McKinsey in Israel, consulting for the Israel airline El Al.

[00:03:51] **Susan Kish:** And what did you write your dissertation on from Hebrew University?

[00:03:55] **George Szpiro:** Insurance. It's, uh,

[00:03:58] **Susan Kish:** Excuse me. Really?

[00:03:59] **George Szpiro:** Yes. I think the, the title was Risk Aversion and Insurance. Ah, why do people ensure their household, but at the same time, they

buy lottery tickets, which is a paradox because on the one hand, you pay your premium to insure yourself.

[00:04:18] On the other hand, you know, with lottery tickets, you're bound to lose money in the long term. So you buy risk by buying lottery tickets and you buy security by ensuring yourself. So that's a paradox. People are risk averse. They ensure, but they are also risk seeking by going to casinos and gambling or buying lottery tickets. So that, that's in general what my thesis was.

[00:04:47] **Susan Kish:** And if I recall correctly, I think you have 71 paradoxes listed on your website, including my favorite Buridan's Donkey. Why are you so interested in paradoxes and can you tell us that story of Buridan's, Donkey.

[00:05:02] **George Szpiro:** Buridan's, Donkey. He was very hungry. The donkey or she... uh, and there were two hay stacks equally far, and the donkey couldn't decide which to go to, to eat. So the donkey died in the middle. Um, that's, uh, the, the paradox of Buridan's Donkey. I'm very interested in, in paradoxes, uh, all over in math, in philosophy and linguistics, in law, politics. And I am happy to say a book is coming out on paradoxes. It doesn't have a title. That will come out in 2023 published by Columbia University Press.

[00:05:44] **Susan Kish:** Very, very cool. How many books have you written over your career, George?

[00:05:48] **George Szpiro:** Uh, so far, seven.

[00:05:49] **Susan Kish:** That takes a lot of discipline, but there's a transition there. You went from being, writing your dissertation, getting a PhD, being a part-time consultant to flipping to be a journalist.

[00:06:00] How did that switch? That's a pretty, that's not a logical switch or not a standard switch is a better way to put it.

[00:06:09] **George Szpiro:** Uh, there were, there were a few years in between. Two years I taught at Wharton at the University of Pennsylvania. Then I came back to the Hebrew University and I taught there, uh, mathematical economics and finance and decision decisions theory for six years.

[00:06:29] And then I switched. Um, I loved academics, but what I liked to do didn't fit with the plans of the the department at the Hebrew University, because I used methodologies from physics, applied to finance, like chaos theory and so on, and that didn't fit, so I didn't get tenure and it so happened I was very lucky

that the Neue Zürcher Zeitung had an opening for a correspondent, and so I became a newspaper correspondent for the next 30 years.

[00:07:09] **Susan Kish:** So when you say they had an opening, that means you read it in the Sunday edition and you just sent in your resume? Or how did you actually get that job? Because usually they're not gonna be looking for an academic to be a journalist.

[00:07:22] **George Szpiro:** No, it, it wasn't quite like that. First of all, I've been a reader of the Neue Zürcher Zeitung forever and my father used to be a reader of the Neue Zürcher Zeitung for many, many years. I remember when we were living in Vienna, we got the paper three times a day. I was very familiar with the NZZ. I knew some of the people there. Uh, there was an opening that I knew of that it was gonna happen. So I applied and that's how, how I got into it.

[00:07:55] **Susan Kish:** Now, not all of our listeners may know the NZZ. Can you tell us a little bit about what it is and why you considered it so important?

[00:08:06] **George Szpiro:** Uh, it's one of the oldest papers in the world. It was founded in 1780. We wrote about the French Revolution.

[00:08:15] **Susan Kish:** You're kidding!

[00:08:16] **George Szpiro:** That was, uh, breaking news at the time.

[00:08:19] **Susan Kish:** I can imagine it.

[00:08:21] **George Szpiro:** It was a, uh, it is a very serious newspaper. First of all, at the time, foreign news, the first pages were all world news, not local news. Um, so it was internationally important as a, as a paper. Henry Kissinger read it all the time. Also, let's say it has a science part, which is very serious. Uh, and I loved it. And that's what also I, I wasn't just a political correspondent, I got to write a monthly column about mathematics.

[00:08:58] **Susan Kish:** Oh, that's cool. Before we go off the NZZ, what kind of stuff would you cover and how would you make mathematics popular or appealing to a more popular audience? What did you find in mathematics that would resonate with the audience to the NZZ?

[00:09:15] **George Szpiro:** There's a lot of things in math, uh, that's interesting. First of all, there are the things that concern us all. Let's say cryptography. So if there was a breakthrough in cryptography, I would write about it. I'd write about

the people behind the mathematics. Strangely enough, there are many things one can write about mathematics. There are some things you can't write about because they are too technical. But, uh, the NZZ, never tried to dumb down things. We always tried to write on a high level, but make it understandable for the general public.

[00:09:58] **Susan Kish:** What would you say were the two or three things that distinguished the way you would write a column? Let's say you wanted to write about the same thing as an academic and publish in a research paper and at the NZZ. What would be the distinction between the way you'd write about those two things?

[00:10:14] **George Szpiro:** Well, in a research paper, you have to prove it. In the newspaper I could say it has been proven. So it's not, uh, though you have to be rigorous, but you, you could not show everything. You take the salient features - why is it important, where can it be applied? So these are the things that the general reader would be interested in. Academics would want to know how it was proven. What about the special cases? Um, so it, it's much more technical in, in an academic paper.

[00:10:54] **Susan Kish:** George, you've mentioned living in, uh, Vienna, Zug, Zurich, Philadelphia, Stanford, Jerusalem and Tel Aviv.

[00:11:03] **George Szpiro:** And New York.

[00:11:04] **Susan Kish:** And New York, right. I forgot New York. So where was your favorite place to live and and why?

[00:11:11] **George Szpiro:** I loved Zug as a young boy doing sports, and I had very many friends at school. Then Zurich as a student, Zurich in the sixties, when you told people abroad about Zurich, they said, ah, it's a boring town. That was so untrue. I mean, it's still totally untrue, but you have to live there to know that it's not, uh, it just had a bad press.

[00:11:40] Then I lived, uh, many years in Jerusalem, which is a very exciting place for a journalist, but where I really loved to live was New York and Tel Aviv. The life is very similar, busy town with young people, uh, doing their things.

[00:12:01] So I love New York and I love Tel Aviv right now.

[00:12:07] **Susan Kish:** You've been involved in mathematics, as you said, since the 1960s when you studied at the ETH and when you're doing your matura, that's more than half a century. Where is mathematics going? Will it still be as critical as it was when you decided to study it in the sixties?

[00:12:24] **George Szpiro:** Yeah, absolutely. Absolutely. I can tell you one thing I regret about my studies is at the time, there was something called "Datenverarbeitung".

[00:12:36] **Susan Kish:** What does that mean?

[00:12:37] **George Szpiro:** It, it means data processing.

[00:12:39] **Susan Kish:** Ah.

[00:12:39] **George Szpiro:** It was the heyday of computer science and I, myself and some of my friends, we sort of looked down on data processing. It was too applied.

[00:12:52] We wanted to do pure mathematics, and I very much regretted that. I didn't follow up on that because the ETH had the pioneers of computer science and they still do. But I mean, in the sixties, in the late sixties, computer science didn't yet exist, really. That's why it was part of mathematics, but it was applied mathematics.

[00:13:17] We sort of didn't accept that as the pure things that we should be studying. So, uh, nowadays, uh, where's mathematics going? Well, it's everybody's becoming very specialized. You can't know all of mathematics anymore. The last people who knew all of mathematics were David Hilbert and Poincaré. Nowadays, everybody has to work in his niche.

[00:13:48] **Susan Kish:** That's a hundred plus years ago. Is that right? Poincaré wrote in the 19th turn of the century. 1903 or something, right?

[00:13:56] **George Szpiro:** Yes.

[00:13:57] **Susan Kish:** Wow. Okay.

[00:13:57] **George Szpiro:** Um, so they, they still had a grasp of all of mathematics. Now, mathematics is so specialized that people write papers that maybe only a dozen colleagues all over the world really understand, but they prove the things that then can be used to prove other things that are important.

[00:14:16] So it's becoming very specialized, very technical, and of course, computer science has come on its own.

[00:14:24] **Susan Kish:** When you are, um, looking at what you, how you spend your time and what you write about, do you still love maths? Do you still see it as important? Is it, is it a component of, for example, of the books that you write?

[00:14:36] **George Szpiro:** Yes, of course, but I'm, lately I haven't written about the mathematical theory. My first books were about theorems, how they were proven over a hundred or 300 years. So the last book I wrote was about random numbers. Random numbers is something that seems very strange. It's like tossing a coin and you have either tails or heads or throwing a dice, and you get the number between one and six.

[00:15:06] That's a random number, but random numbers are actually a huge field in computer science because one needs millions of random numbers to do simulations, sophisticated simulations in engineering, in in science, in building airplanes and computers cannot produce random numbers because computers are deterministic.

[00:15:34] When you tell a computer choose a number between zero and nine, a computer cannot do that. All it can do is produce pseudo random numbers, and that's a huge field, how to produce pseudo random numbers, which are as nearly random as possible. So that's a field in mathematics, in computer science, and that's what I wrote about most recently.

[00:16:03] **Susan Kish:** How do you tell a computer to be random?

[00:16:06] **George Szpiro:** Yeah. Well, you can't, that's exactly it. You cannot, there's something called in mathematics, the axiom of choice where you assume that the choice can always be made, but the computer cannot make a choice. It's like Buridan's ass. Uh, if you tell the ass, pick a haystack, the ass doesn't know.

[00:16:29] And falls down and dies because the ass doesn't know to which haystack to go. That's the problem. Computers cannot produce random numbers.

[00:16:40] **Susan Kish:** Fascinating. That's really interesting. So in your bio on the ETH Circle website, you, you said, mentioned that you hadn't heard from ETH for 40 years. Until you got the call to join the ETH Circle. Can you give us

a little more context on that and why were you interested in getting back in contact with the ETH?

[00:17:00] **George Szpiro:** I was posted for the Neue Zürcher Zeitung in New York for several years, and all of a sudden Jürg Brunnschweiler who's organizing many things at the ETH, he called me whether we could meet and talk about an event that's coming up. New York meets Zurich.

[00:17:20] **Susan Kish:** I remember.

[00:17:20] **George Szpiro:** And Zurich, of course, ETH was a big part. So we met and that's when we started talking about, uh, ETH Circle, ETH alumni. I didn't even know there was something like ETH alumni. So we started talking and since then he pulled me in and we've had several meetings and, uh, there are two pet projects I have for the ETH, if I can mention them.

[00:17:51] One is to open the Dozentenfoyer in the top floor of the ETH to the general public. At least maybe over the weekends. Because I think it, it should become a place the tourists must visit. It has a beautiful view. It's in the ETH where, uh, Einstein was and Pauli was, and all these famous Nobel Prize winners. You can sit where they may have tread and it has one of the most fantastic views of Zurich.

[00:18:28] **Susan Kish:** Right. It does have a gorgeous view.

[00:18:29] **George Szpiro:** Yes. It's, it's unbelievable. And I think it's a shame that we cannot let other people, uh, partake in that. And as I said, it should be a tourist attraction, at least for weekends when it's not used by the Dozenten, because I think the Dozenten wouldn't like it very much to have to share their Foyer with the tourists.

[00:18:53] But uh, uh, anyway, that's one thing I would like to propose. And the other thing, more importantly, I think the ETH needs a publishing house. Every major and minor university in the United States has a publishing house, not just for academic texts, but books like for the general public.

[00:19:17] **Susan Kish:** You mean like your book, which is getting published by Columbia University?

[00:19:21] **George Szpiro:** Yes, exactly. And uh, I say when I got the acceptance letter, I said, I look at it with one smile in one eye and tear in

another because I would've loved to publish it at ETH publishing. So I think to raise the profile of the ETH, a publishing house, that's one of my pet projects.

[00:19:46] **Susan Kish:** And it also sounds like that connecting the dots, right, which is something that sounds like you did at the NZZ in your math column, a, a publishing house like that could help do that.

[00:19:58] So I'm gonna ask a few questions as we close. So first off, having been somebody who's lived all over the world, if you were in Zurich, what would be your favorite place to be? A coffee house? A patisserie? The Dozentenfoyer?

[00:20:16] **George Szpiro:** Dozentenfoyer, number one. Number two, Zeughauskeller and Kropf. Uh, Zeughauskeller and Kropf are two famous, very old, uh, restaurants with traditional food. Zeughauskeller used to be the munitions depot in the Middle Ages or sometime. So it's now a huge restaurant with 400 seats. That's a great place to visit.

[00:20:41] **Susan Kish:** When you were a small child in Zug or in Austria, what did you wanna be when you grew up? Very few people at 10 years old wanna be a mathematician.

[00:20:51] **George Szpiro:** Well, I wanted to be, uh, a gold medalist at the Olympic Games. That, that was my

[00:20:58] **Susan Kish:** Oh, excellent. In What sport?

[00:21:03] **George Szpiro:** Any sport you can imagine. No, uh, I knew I wanted to do mathematics. I, uh, knew, I think since I was a little boy, I was fascinated by mathematics.

[00:21:17] **Susan Kish:** Understood. George, thank you. What a great conversation. And, um, I really look forward to random numbers and reading more of those paradoxes on your website. Thank you for your time today.

[00:21:32] **George Szpiro:** Thank you very much.

[00:21:35] **Susan Kish:** I'm Susan Kish host the We are ETH series. Please subscribe to this podcast and join us wherever you listen and give us a good rating on Spotify or Apple, if you enjoyed today's conversation.

[00:21:49] I'd like to thank our producers at the ETH Circle and Ellie Media, and most of all, to thank you, our listeners, for joining us.