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Searching and Researching

An Autobiography of a Nobel Laureate

Richard R. Ernst with Matthias Meili

Translated by Mark Pearce



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Translated by Mark Pearce

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Stockholm on Pan Am 31

It is 16 October 1991 and I am sitting on a flight to New York from Moscow, where I had delivered a lecture. I am heading to New York to receive the Louisa Gross Horwitz Prize. I feel great pride in being awarded such an illustrious, international prize, even if few outside the research community have heard of it. We are three hours into the flight, somewhere between Scotland and Ireland, and I gaze out of the window at the plane's engines humming, set against the endless blue sky. I am sitting in business class, and as is always the case on a flight, am preparing my next lecture. Over the top of my notes, I suddenly see the pilot enter the passenger cabin and I start to think: Is this an emergency or just a routine check? It is neither. The captain approaches me and leans down to my seat. "Mr. Ernst?" he asks. I nod. "Could you please come with me into the cockpit. We have a call for you. From Stockholm." Stockholm? This can only mean one thing: the Nobel Prize!

My sister recently told me that when I was young, she always used to tease me by saying I would at some point win this accolade like no other. In other words, I was seen as a bit of a "nerd" even then, a reputation that was not necessarily the envy of my peers. But for scientists, there is no higher honor than a Nobel Prize. It is impossible to describe the sense of satisfaction and pride that it brings. Aside from the honor of receiving one, there is also the matter of the sizable cash prize – something that is of course nice to receive, yet still somehow unexpected. And when it is your turn and you take

the call, you seize the prize with both hands. It goes without saying I am overjoyed, but at the same time, I feel a pang of conscience: Have I really earned it given science is ultimately teamwork? Who else has won one, who hasn't? What will other people think? These are just some of the thoughts going round my brain as I make my way to the cockpit.

Picking up the aircraft radio quickly brings me back down to earth. On the other end of the call is the Secretary General of the Royal Swedish Academy of Sciences, who gives me the good news and congratulates me. A call is then quickly placed to Zurich, where a spontaneous press conference is being set up in my honor. Although there is some interference on the line, I can make out the voice of Jakob Nüesch, the President of the Swiss Federal Institute of Technology in Zurich (ETH Zurich), who passes on his congratulations. It is then the turn of the assembled journalists to ask me their questions: How do I feel? What will I do with the prize money? While Swiss journalists have priority, I hear someone speaking broken Swiss-German with an Italian accent. I assume that it must be a journalist from the Italian-speaking south of the country. "Mr. Ernst. This is Flavio Cotti on the line. *Gratulazione*. You are a credit to our country!" It turns out I am mistaken: I am now talking to the President of Switzerland. It is at this moment that it begins to sink in and a feeling of joy begins to overcome me. I think of my mother Irma, my wife Magdalena, my children Anna, Katharina, and Hans Martin, all sat at home in Winterthur. It has been many years since they accompanied me on my travels for my scientific career. I told Magdalena a long time ago, on our wedding day even, that I would never have a great deal of time for family – and she accepted this graciously. And now, at the moment of my greatest success, this is something I regret. It is bizarre that while people need their loved ones when they are suffering, they need to be with them even more during those moments of pure elation. As the Swedish proverb goes, a joy shared is a joy doubled. I am unable to contact my family as the radio connection is once again interrupted.

I make my way back to my seat, somewhat bemused by what has gone on. I am met there by the cabin crew, who ask for a souvenir

photo. I feel like a cyclist standing on the top of a podium, surrounded by pretty air stewardesses. Can this really be true? In my head, I replay the call from Stockholm, trying hard to work out if there has been a mistake. I dissect each and every word of the Committee's motivation for awarding me the Nobel Prize in Chemistry: "for my contributions to the development of the methodology of high resolution nuclear magnetic resonance (NMR) spectroscopy". Originally developed as an analytical method to be used in the field of chemistry, the importance of NMR spectroscopy now extends far beyond this. Nowadays you will find an MRI scanner in the basement of any hospital, with thousands of patients and test subjects being scanned each and every day around the world. The MRI images produced help detect dangerous illnesses, identify brain tumors at an early stage, and show where blood vessels are clogged – in short, they save lives.

This short explanation does a disservice to all the brilliant scientists who also contributed to the development of this highly effective method, without whom I would not have been in a position to carry out my work. Many of the Nobel Prize recipients who went before me won the prize for developing theoretical principles, which I then built on. But a great many researchers who came after me and made key contributions towards transferring methods from chemistry labs into hospitals have gone unrecognized. Or the colleagues I have worked alongside, who have not received (or are still yet to receive) any commendation for their work. Wes Anderson, for example: My friend and previous boss at Varian Associates in Palo Alto, California. In the 1960s, Wes and I spent many days and nights discussing and tinkering with various processes until we found a way to make nuclear magnetic resonance a functional method. And my colleagues at ETH Zurich: "What happened to Kurt Wüthrich?" I was later quoted as saying in the newspapers. Did the Committee in Stockholm simply overlook him? The man who applied the method to research and then foster an understanding of macromolecules? When I soon afterwards realized that I was the sole recipient of the prize, I felt a sense of embarrassment.



Richard Ernst celebrates winning the Nobel Prize with the cabin crew shortly after receiving the famous phone call from Stockholm in mid-flight from Moscow to New York.

I had barely landed in New York and I saw that another press conference had been set up in the arrivals hall of JFK Airport – was this also for me? Or maybe because I was coincidentally on the last Pan Am flight to ever take off? On this day of all days, it so happened

that this long-established US airline had gone bankrupt. Later on in the hotel, I meet Kurt Wüthrich, with whom I had jointly received the Louisa Gross Horwitz Prize as mentioned above. Together we had done it: We had managed to turn ETH Zurich into an international mecca for research into nuclear magnetic resonance. Him, the ambitious sports teacher, the high flyer. And me, the silent achiever, who frequently used to doubt himself. But our meeting in New York is somewhat awkward, given our working relationship has been, to put it mildly, troubled for a number of years now. It is a relief to be able to leave New York again. Happily, eleven years later Kurt would also go on to receive the Nobel Prize in Chemistry for his development of nuclear magnetic resonance spectroscopy in the area of biomolecules. While this represented another success for ETH, more importantly it helped thaw the frosty relationship that we had after he was overlooked in 1991.

Top scientists can be strange people, and I include myself in this. To achieve success, you have to exercise great discipline over your own needs; you have to do everything to achieve your goal in the name of science. There is no room here for emotions, feelings, indeed the “soul” of the scientist. The single overarching goal is to be as “objective” as possible in representing the laws of nature. That is why scientists frequently neglect to exercise their personal freedoms in many respects. Nevertheless, they are still people, working away in a lab, with all their emotional ups and down, their irrational tendencies, which at first glance would only seem to have a disruptive effect on objective science. However, I am convinced that such a multi-faceted personality is absolutely essential to progress. As they say, a person who stands on only one leg can rarely move forwards quickly. At first it was classical music, then the Tibetan art that became extremely important in my life. I immersed myself in the Buddhist culture, building up a collection of Tibetan scroll paintings, the so-called thangkas. They provided a balance in my life and became a real passion, something that helped me overcome any number of crises. Overall my life has been an emotional rollercoaster, full of highs and lows. I never had the feeling that I was a lucky person; fate never seems to favor me, but despite all the hurdles I have faced, I have done my own thing. But never did I want to be known just as “the scientist” or the “spectroscopist”.

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