The Interview Column

by

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KNOW THE PERSON BEHIND THE PAPERS

Today: Sergio Rajsbaum

Bio: *Sergio Rajsbaum received a degree in Computer Engineering from the Universidad Nacional Autónoma de México (UNAM) in 1985, and a PhD in the Computer Science from the Technion, Israel, in 1991. Since then he has been a faculty member at the Instituto de Matemáticas at UNAM. He did a postdoc at MIT, and is currently visiting the Institut de Recherche en Informatique Fondamentale in Paris. His research interests are in the theory of distributed computing. He is one of the world leading researchers on the topology approach to distributed computability, and published a book on the subject with Maurice Herlihy and Dmitry Kozlov. He has been chair of the Program Committee of conferences such as LATIN, PODC, SIROCCO and a member of the editorial board of IEEE Transactions on Dependable and Secure Computing, Information Processing Letters, and Computer Science Review.*

EATCS: Do you have any advice for young researchers? In what should they invest time, what should they avoid?

SR: I once heard a talk by Yehuda Afek from Tel-Aviv University, where he was describing his experience with creating a startup company. He explained that there are many great ideas out there, that the key to succeeding in the face of competition to other proposals with good ideas, was that he had put together a team of extraordinary people. My advise to young researchers is to always be close to colleagues which are excellent both academically and as teammates.

EATCS: What do you mean by being excellent as teammate?

SR: This is a great opportunity to honor my PhD advisor Shimon Even (1935–2004). In addition to his pioneering research contributions and his role in establishing computer science education in Israel, he is known for having been a highly influential educator. I believe being such a good educator is related to being a good teammate. To feel deeply that that you and your student belong to the same team.

EATCS: This seems related to the topic of being a good PhD advisor.

SR: Certainly, Shimon was for me a role model, a professional inspiration, in a broad sense, an "academic father," and I think a reason for that is a feeling that I

still remember more that 30 years later, when I first met him: I was entering his "academic family." This had various, diverse implications. I experienced for the first time the feeling of someone listening to me with full attention, with great interest. I have experience since then that great researchers are also great listeners. What made Shimon special is that this was the case in both our research discussions and outside of them. When I was talking about a new idea, about how to prove a result, he always payed full attention. He was equally interested about topics outside academia, and about myself, a young student coming all the way

from Mexico to study in Israel.

EATCS: What does it take for someone to be able to be a great listener?

SR: I think a fundamental component needed to achieve this level of interest and attention for a colleague in a team, is *trust*. I am not sure why, but Shimon had full trust in me academically, and as a person. I was not a particularly good student, of course compared to the top level students of the Technion, and in particular with his former PhD students, just to mention the two that came before me, world stars such as Oded Goldreich (1983) and Baruch Awerbuch (1984). But additionally I came from Mexico with an average level of undergraduate education, and struggling with the lectures which were then all in Hebrew.

EATCS: Is there a nice anecdote you would like to share with our readers from the days of your PhD?

SR: I saw for myself how *trust* can change the life of a person. After taking a few courses as a Masters student at the Technion, I needed to find an advisor. I loved graph theory, and Shimon was famous for his book on graph algorithms, so I went to his office and told him I was looking for an advisor, without knowing much more about him. He received me happily, also without knowing much about me. I still remember the long conversation, he was a brilliant conversationalist. He told fun anecdotes about famous researchers, asked me about Mexico, and gave me a paper to read, and soon after he had accepted me as a student. Immediately my status changed at the Technion, all secretaries where nice to me, and I became famous with the students, which asked me how I dared to knock the door of such a famous professor, who in addition was feared by many. He was imposing physically, spoke loudly and was very opinionated.

EATCS: We ask all interviewees to share a photo with us. Can you please tell us a little bit more about the photo you shared?

SR: Becoming part of Shimon's academic family included having fun together. This I have found over the years, is important for me to do good research, both during the discussion sessions, and around it, in long walks, going out for dinner, etc. The picture is while traveling in France, we rented a car and visited beautiful villages to get to a conference where we were presenting a paper. Such experiences contributed to making him into such an influential figure for me. Being a scientist for me became a highly social endeavor, that includes sharing interests in culture, in traveling, eating, but most of all, as Shimon would say, talking. My love for Wagner is due to his taking me to Wagner's opera The Flying Dutchman at The Met, in a trip to present a paper in New York, where for 2.5 hours my ears heard nothing but noise.

EATCS: What makes someone a good advisor?

SR: Indeed, I share the feeling expressed by Oded, “he also fits in the set of dozen people (including my parents...) that have most influenced my life at large.” and as him, after 30 years, I still find myself repeating “my adviser, Shimon Even, would say....". He had very strong opinions, and in particular, a very clear sense of what is good research and what is not; he would say that when a problem looks natural to him, he does not need to see an application. He would tell me never to cite a theorem that I don’t understand, and instead of going straight to read the proof, always try to prove it myself.

EATCS: Is there a paper which influenced you particularly, and which you recommend other community members to read?

SR: An advise from Shimon was to follow the papers of great researchers, he told me, read Awerbuch’s paper “Complexity of network synchronization" (JACM 1985), and explain it to me. This way of working with a student can be very effective, and indeed this paper was my introduction to the world of scientific research, and to distributed computing: learning about synchronous versus asynchronous computing models, about how one can simulate one model on top of another. A related beautiful paper by Shimon that I would recommend is “Marked Directed Graphs" (J. Comput. Syst. Sci. 1971), about a special class of Petri Nets.

EATCS: Is there a paper of your own you like to recommend the readers to study? What is the story behind this paper?

SR: When I presented Awerbuch’s paper to Shimon, he noticed that there was an interesting issue with the initialization of the computation, and we began to suspect that there was no need for a special routine that would start all processes at the same round, as in a Firing Squad solution (this is how I learned about this beautiful problem). My first research result was that the processes would synchronize themselves naturally, and we gave to such a process the name *unison* starting a research area that is still active today, popularized by a paper on self-stabilizig unison by Mohamed Gouda and Ted Herman (IPL 1990). This was also the beginning of a long list of additional outstanding teammates, “angels” that have appeared along my academic life, trusted me and to which I thank for my career development. Soon after publishing our unison paper (Seq. Comb. Comp. Sec. and Transm., Springer 1990) Paul Spirakis invited me to an unforgettable stay in Patras; Hagit Attiya arrived at the Technion after her posdoc and during my last year as a PhD at the Technion; Amir Herzberg with whom I shared an office, and then Boaz Patt-Shamir, with the paper I would recommend readers, “A theory of clock synchronization" (STOC 1994), a simple addition of timing constrains to the events of Lamport’s causal order.

EATCS: What is your most important scientific contribution?

SR: I am not sure, but continuing with the list of the first angels that have trusted me, accompanied me and made a pleasure being in academics all these years, there is Maurice Herlihy, arriving to my life the same year I was a posdoc at MIT with Nancy Lynch and working with Boaz, and introducing me to the topology approach to distributed computability, this year we are celebrating the 30th anniversary of our first publication on the topic (PODC 1994).