



Review

An interview by Dr. Ernesto Carafoli with Dr. Gottfried Schatz

Ernesto Carafoli

Venetian Institute for Molecular Medicine, Via G. Orus 2, 35129 Padova, Italy

1. What made you to decide for science as a life activity?

Sadly, I owe my first inspiration to the bombs that rained down on my Austrian home city of Graz during the last phase of World War II. The night before my eighth birthday, I was late in reaching the bomb shelter and witnessed the destructive power of demolition bombs and incendiary devices from a distance rather too close for my health. Soon after the war ended, I started to fabricate my own little “devices”, first in our kitchen and then, after having been duly expelled from there, in our basement. Later on, when I became aware of the intellectual ravages the Nazi terror and the war had inflicted on my country, I hoped that science would help me to join an international community for which national borders were largely irrelevant.

2. I know that music, too, was important for you. What tilted your decision towards science?

I fell in love with the violin at the age of five and have devoted a significant part of my life trying to master this wonderful, but demanding instrument. During the last years of my chemistry studies in Graz I played as a substitute first violinist with the Graz Philharmonic and the Graz opera and I continued this activity in Vienna at the Vienna Volksoper. Making great music in the company of professional players was sheer magic, but I was not sufficiently talented to become a first-rate soloist. I also figured that one ages better as a scientist than as a violinist.

3. To go a little deeper on that, you are known as the type of scientist who is also open to the “other” culture. Do you think your interest in themes that are outside the normally accepted realm of science, from philosophy to the arts, has made you a better scientist?

Yes and No. No, because my interest in these “other” subjects took time away from my research. These days one is never “abreast of the scientific literature” and every hour devoted to other pursuits only exacerbates our chronically bad conscience. Yes, because thinking about non-scientific issues has helped me become a better teacher and role model for my students and postdocs. By teaching I do not mean reciting facts, but shar-

ing with students my personal views on science and its role in defining our humanity and our world.

4. What is your appraisal of the changes in our area of science that have occurred during the 40 years of your direct involvement in it? I mean, general changes in scope, in approaches, and in attitude? Would you still decide to become a scientist in the light of the way science has changed since the times of your youth?

Science – and particularly biology – has become bigger, more competitive, more expensive, and louder. This is not surprising given the fact that scientific knowledge has been increasing exponentially since the mid-eighteenth century and hyperbolically since the middle of the past century. As the number of biologists of all stripes has increased as well, researchers find it more and more difficult to publish their results. The general noise level forces them to shout – to rush from one meeting to the next, to worry all the time about “getting scooped”, and to publish their findings only in “high-impact journals”. The competition of the best is turning into a competition of the loudest. This development undermines the communal spirit of science. Science, like every cultural activity, depends on the sharing of information and values; it is a contract between generations. This contract is now in danger. Still, if I could start all over again, I would probably again opt for science.

5. All of us in science recognize a personal role model to whom we owe an especially great debt. For you, I believe, Efraim Racker was such a role model. What did you especially learn from him as a scientist and as a human being?

Efraim Racker has shown me how a mentor and a personal role model can shape one's career as well as one's life. Being Jewish, he had to flee Vienna in 1938, yet he treated me with disarming cordiality from the moment we first met and became my mentor and friend. He was a true humanist who did not put people into labeled boxes and showed me by his personal example that science is one of the most universal bonds between people from different cultures. As an accomplished painter, he also valued art as a sister of science. During my years with him in New York City, I was the only postdoc who was allowed to stay home on Saturday – in order to practice the violin. I have tried to portray his unique personality and his seminal contribution to science in a memoir for the US National Academy of Science and also in my book “Feuersucher”.

E-mail address: ernesto.carafoli@unipd.it

6. A general trend is the increasing “monetization” of science. Scientists now start companies and patent everything they discover. What is your opinion on this change of approach?

“Monetization”, as you call it, is a double-edged sword. It tends to go hand in hand with “professionalization”, increased technical virtuosity – and a widening gulf between the “professional” and the “amateur”. Take, for example, the sports or “classical” music: these days, an Olympic athlete or a member of a good professional orchestra has little in common with someone for whom sports or music is “only” a source of inspiration or of pleasure. It is similar in science; electronic kits or amateur science clubs used to be very popular in my youth, but have virtually disappeared. Yet there is also a good side to “monetization”: the rise of “Biotech” has opened up new career prospects for young scientists and has been a powerful motor for medical innovation. And the incredible power of today’s research tools has allowed science to accumulate new insights at dizzying speed.

7. You have been an extremely accomplished scientist in the USA and in Europe. Could you give us a quick appraisal of science in the two systems? Which of the two, in your opinion, has a better chance?

Both systems are very heterogeneous and Europe has recently made large strides, yet on balance the US system still wins. Many of its universities and colleges may be of low quality, but what counts are the top places that are still a magnet for the best young brains. It is not the money (on this count, Germany, Switzerland

and a few other rich European countries come out ahead), but a question of attitude. Top US universities are unashamedly elitist and select only the best when it comes to admit students or recruit young faculty; they offer their young staff complete scientific independence, but only give them tenure if they perform well; and all of them offer excellent graduate programs which are only now being copied in Europe. In Europe, negotiating a faculty position may involve filling out endless and often insulting questionnaires, whereas in the US, it may include a dinner invitation to the president’s or the dean’s private home.

8. One last question that could also be considered an advice to young people wanting to enter our area of science: which problems in the life sciences do you view as the most fundamental ones?

The most fundamental problems awaiting resolution are undoubtedly those whose very existence is still unknown to us. After all, the loftiest goal of science is not to create new knowledge, but to create new ignorance: to discover something of which we did not know that we did not know it. I would like to know whether extremely complex systems such as a human body obey rules or even laws that apply only to systems that are far more complex than anything we have tried to model in our computers up to now. Most natural laws are only valid within certain physical limits; if this should also hold for laws governing the behavior of a human being, we would have opened a door to a dizzying new world of ignorance.