



A Leap into the Philosophy of Chemistry

In Greece, where Vanessa Seifert grew up, students in the U.S. equivalent of 10th grade choose whether they want to focus on science and math or humanities, such as literature and ancient Greek. Seifert chose science and math.

"My mother was an architect, and our family really valued engineering and maths and physics a lot, so I grew up with that mentality," Seifert said. After high school, she pursued a master's degree in chemical engineering at the National Technical University of Athens.

After finishing her engineering degree, however, Seifert decided to enroll in a philosophy of science graduate program.

"It was a little bit of a leap of faith," Seifert said. "I didn't know I would be passionate about it." Instead of conducting experiments, philosophers of science want to know what experimental results can tell us about what the world is like on a more fundamental level.

The risk paid off. Seifert loved it, and went on to pursue a Ph.D. in philosophy of chemistry. She now explores whether and how chemistry can help explain the relationship between physics and other sciences. She is interested in intellectual questions such as: Can molecules



PHOTO PROVIDED BY VANESSA SEIFERT

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WHAT SHE DOES NOW: Lecturer in Philosophy at the University of Athens

be summed up as combinations of protons, neutrons, electrons and the physical forces that guide them, or are molecules more than the sum of their parts? Do molecules behave in ways that can't be explained by the complex interactions of those parts? What would that mean for biological molecules such as proteins and DNA, or biological phenomena such as consciousness and social interactions?

She recently completed her postdoctoral studies, and landed a teaching fellowship at the University of Athens. Seifert credits her success as a philosopher to mentorship from her Ph.D. advisor, James Latham. "He wouldn't say 'what you've written is perfect,'" Seifert said. "He would point out the mistakes, but he wouldn't make me feel that I cannot give it a second try." — *Danielle Sedbrook*

This interview was edited for length and clarity.

What led you to explore the philosophy of science as a career path?

I was always interested a little bit in philosophical questions without realizing it, so I wanted to see where this could potentially take me. The first thing I did was apply for a master's in philosophy of science in London. And my mother was very supportive, and said, "OK, you can go and try it, and do something different for a year," not expecting that I would take it so seriously. So I did that, and I learned a little bit about philosophy of science, and then I was hooked. I didn't want to do anything else.

What got you hooked?

It was an event, actually. I still remember it. I went to a conference at the [London School of Economics], when I was doing my master's. There was this very famous professor who came and gave a talk. After the talk, they were having passionate debate about philosophical ideas. And I remember thinking, "That's where I want to be."

What challenges did you face in making the transition to philosophy?

The first year during my master's, especially during the first semester, I didn't understand anything. My essays were horrible. It was a shock. The philosophical mentality is completely different from the mentality you learn in the hard sciences. In the hard sciences, you don't question things in the same way as you do in philosophy.

What would you say to a 15-year-old who wonders: "Why am I studying chemistry"?

Realize how impactful chemistry is in our life in a way that the other sciences are not. For example, chemistry explains, but also can help us solve, climate change. Chemistry has helped us create drugs and vaccines and fight diseases. Our house is full of stuff that are results of chemistry.

At the same time, chemistry, compared to the other sciences, is the most mysterious, because it has its origins in alchemy. It has this sense of mystery, and when you do experiments, you can feel that. You put one thing inside the other, and it changes color. How strange is that? Or, it expands, or it bubbles up, and it does stuff. It's the closest thing we have to a kind of magic, to seeing the weirdness and magic of nature, which makes it exciting.

Do these more mystical aspects affect why you study it?

Yeah. The history of chemistry is very exciting, and it props up philosophical questions that intrigue me. The shift from alchemy to chemistry is a very interesting shift. Something that is not often pointed out is that alchemists did proper chemistry, in a sense, and, those things that they did, a lot of them were taken up by chemists.

When they first started to call it chemistry, they wanted to detach themselves from that image of mysterious people who don't know what they are doing. But in fact, they did know what they were doing. So, these are interesting things that you can think of yourself, too.