

# From Aerospace to Quantum: Bridging the Gap in the Quantum Revolution

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**Quantum refers to the fundamental principles governing the behavior of matter and energy at the smallest scales. Araceli Venegas-Gomez, former Young Minds (YM) EPS member who was also part of the YM Action Committee from 2016 to 2020, contributes to the public and business awareness of science and quantum technologies, providing a bridge between research and industry.**

**T**o enable this, she founded QURECA in 2019, with the aim to support business and institutions to be part of the quantum revolution. She shares with us how YM and EPS has impacted her personal and professional life, and the opportunities it gave her towards developing her quantum physics career.

## An interesting career pivot

When I tell people about my transition from being an aerospace engineer at Airbus in Germany to working as a quantum-simulation researcher in the U.K., I am often met with surprise. My journey into quantum physics was fuelled by a newfound passion ignited while researching Magnetic Resonance Imaging (MRI)

during a postgraduate program. It wasn't until I read the book, *Do What You Want and the Money Will Follow*, that I asked myself what I truly wanted, and the answer was clear: a Ph.D. in quantum physics.

My involvement with groups like the EPS Young Minds (YM) Action Committee (2016 to 2020) and the OSA student chapter SCOPE at the University of Strathclyde was instrumental in developing the network and skills needed for this new direction. I vividly remember the challenge presented by the 5<sup>th</sup> EPS Young Minds Meeting in Budapest, where I had the opportunity to explain my research in just five minutes. This experience, among others, helped me grow both as a person and as a researcher by forcing me to

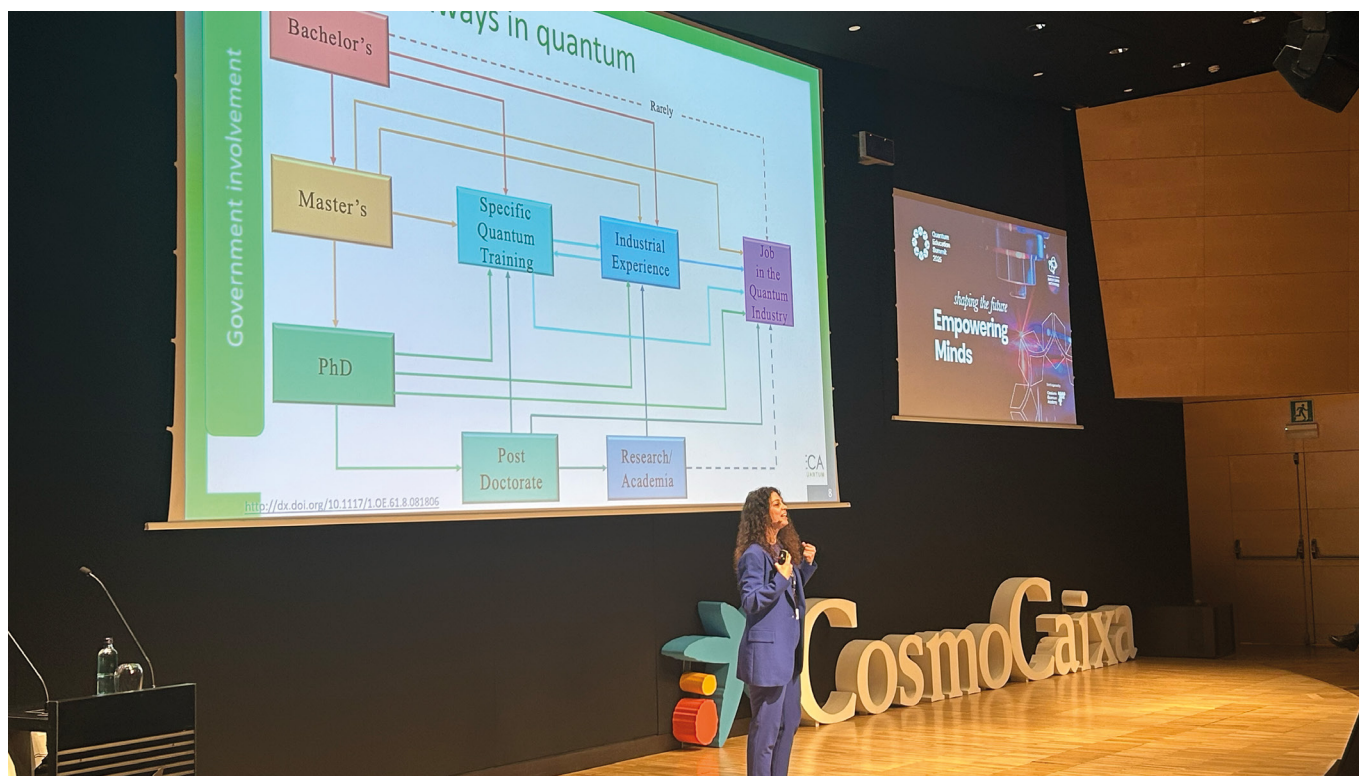
distil complicated concepts effectively. This knack for communicating complex topics eventually led me to conceptualize a role as a "quantum ambassador," a vision which materialized when I received the OSA Foundation Milton and Rosalind Chang Pivoting Fellowship and founded QURECA (Quantum Resources and Careers) to build a bridge between academia and industry.

## Understanding quantum science and addressing misconceptions

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▲ Araceli (middle right) in a YM Leadership Meeting, back in 2019.



quantum revolution," where Quantum Technologies is emerging as a cross-disciplinary field of applied research based on properties like quantum entanglement and quantum superposition. For example, theoretical studies in quantum simulation can lead to engineering magnetism at the quantum level for future materials.

A common misconception, not just about quantum but about research in general, is the expectation of rapid, immediate breakthroughs. It is crucial to understand that science, and research, is a marathon, and not a sprint. Progress requires seeking perfection, often taking significantly more time than industry deadlines might allow. Furthermore, although complex, the quantum field is not "solved"; there is still large space for new ideas.

### Effective communication and advice for aspiring quantum workers communicating this complex topic effectively demands flexibility based on the receiver

Communicating this complex topic effectively demands flexibility based on the receiver. Whether the audience consists of experts, politicians, entrepreneurs, or the general public, the goal is to strike up

conversations with all stakeholders and create a common language that supports this growing field. For example, explaining the same concept successfully requires a sensitive approach whether the audience is a primary school child or a retired physics teacher.

As a former YM member, this is what I wish I had emphasized more early on, and the advice I now share with students:

1. Embrace interdisciplinarity: while learning the essentials is key, don't fear crossing boundaries. Quantum research increasingly requires skills in programming, materials science, machine learning, and nanotechnology.
2. Theory is not everything: you do not need to be a theorist to contribute; experimentalists, engineers, and computational physicists are just as crucial.
3. Soft skills matter: collaboration, communication, and international teamwork are integral to daily life in quantum labs.

### Opportunities for students

The emerging quantum industry urgently requires a skilled workforce, meaning that "quantum skills" are no longer a foreign concept. One of the main components in creating a quantum technology community is to enable and educate

the workforce with the relevant skills and competencies.

For students navigating their career paths, particularly in Europe, there is a clear demand for talent. To meet this need, my company, QURECA, offers professional services, business development, and the first online platform for quantum training and recruitment. The company's goal is to provide the necessary resources to ready the global quantum workforce, supporting those who want to change their careers (as I did) and assisting companies in recruiting the best talent pool.

For a sense of the global opportunities, I have been fortunate to visit quantum research groups across the world at the beginning of my career as quantum ambassador, including the Institute for Quantum Computing (IQC) and the Perimeter Institute in Canada, and the Okinawa Quantum summer school (OIST) in Japan. I also organized a career fair at the CLEO conference in Europe, demonstrating the industry's active search for candidates. The growth of this ecosystem ensures that opportunities—whether through advanced study, internships, or targeted training platforms like QURECA—are multiplying rapidly. ■