

The professor who found wings in mathematics



“God took my legs, but he gave me wings. I consider polio a blessing. I realized that I was going through something. Ever since then, I felt like I had a mission.”

With time, [Dr. Cipriano Santos](#) would discover that that **mission was to try to make the world a better place**, which he would do via **mathematics**, inspired by his 2 greatest examples: **Albert Einstein** and **Jesus**.

The **polio** he contracted **aged three** caused **paralysis of his legs**, but far from discouraging him, it gave **him further impetus** to achieve his mission.

Dr. Santos managed to become proficient in math and forge a career as a technologist, during which he was granted 18 patents. He is now a **distinguished professor at [Tec de Monterrey](#)** through the [Faculty of Excellence](#) program.

El Dr. Cipriano Santos se incorpora al Tec como profesor distinguido a través de la iniciativa Faculty of Excellence. [width="900" loading="lazy">](#)

Taking flight on the “wings” of mathematics

Dr. Santos, who holds a PhD in **Operations Research** and uses a **wheelchair** to get around and walking sticks to stand up, says not being able to **walk** at such a young age made him reflect upon

his **mission in life**.

*"I knew I had a mission that was going to take me far. Albert Einstein is one of my role models. The other is **Jesus**, who, as a mentor, is my guide, the example that **provides me with empathy**."*

*"The interesting thing about **Operations Research**, which is my passion and what I do, is **creating the Kingdom of God**. That's the purpose for which we're here, that's what we live for, and **if I have a mission in life, it is to transform and improve the world**," he said.*

As far as Dr. Cipriano is concerned, **science doesn't move without math**. He defines his relationship with them as something mystical, since he sees them as the "**official language**" of **science, nature, and God**.

*"I never saw my experience with polio as negative, but rather it was **mystical**, knowing that I can **develop into something that benefits more people**," he says.*

Polio is a contagious disease caused by a virus, which in **1 out of 200 cases** destroys parts of the nervous system, causing **permanent paralysis in the legs or arms**.

So, when he takes flight on the "**wings**" of mathematics, Dr. Santos feels like he's changing the world by infusing his skills in technology applications for the **optimization and management** of human resources.

*"**God took my legs, but he gave me wings. I consider polio a blessing.**"*

As a child, he wasn't good at math

Dr. Cipriano remembers that during a trip with his parents, he experienced a **moment that left a mark on him**.

*"I was gazing at the stars, and I suddenly had a moment of **catharsis** and I said to myself: '**I want to be a scientist.**'"*

*"**Einstein was my first role model**. The other kids had football players or artists, but **I wanted to understand the universe**, and that's how I became interested in science."*

With Einstein as one of his role models, he realized that if he wanted to be like him, **he had to be good at math**, but he wasn't that good at it as a child.

However, **fate** led him to have his spine operated on at the age of 13, during which he spent **three months in bed** recovering.

*"So, they gave me a teacher who was going to **teach me math.**"*

That **teacher** was the one who **helped him to first understand the subject and then become passionate** about it, a passion that led him to studying Actuarial Science at the National Autonomous University of Mexico.

Later, over time, he did a master's degree and a PhD in **Operations Research** at the [University of Waterloo](#), in Canada.

“If I have a mission in life, it is to transform and improve the world.”

El Dr. Santos es experto en machine learning y optimización matemática. width="900" loading="lazy">

Working with one of the most renowned computer scientists

Dr. Santos worked for almost **30 years at Hewlett-Packard (HP)**, from which he retired with honors. There, he was granted **18 patents**, and collaborated with **Robert Tarjan**, one of the **most renowned computer scientists in the world**.

*“(Tarjan) would come and say to me: ‘Ah, you have a math problem. Now, I’ll bring my people and we’re going to fix it.’ That happens to a lot of mathematicians, who don’t know **how to translate a real problem into a mathematical one, and that’s my virtue.**”*

After spending **23 years at HP Laboratories**, he moved to **Global IT Services** to implement a technology project to manage the **IT portfolios** at HP.

The project, known as **“Project Portfolio Optimization,”** consisted of an application that helped decide **which projects were going to be developed** over the year, in which part of the world, and with which personnel, based on budgets and seeking to minimize costs.

*“Before they used our technology, **it took them three months to generate a protocol.** When we finished our implementation, the system ran in **two or three minutes** and produced the output. That’s why **they named me Mr. Optimizer.**”*

Durante su estancia en HP Laboratories, Santos promovió un programa de estancias de investigación par width="900" loading="lazy">

One of the most influential Hispanic people in technology

While working as a researcher at HP Laboratories, Dr. Santos wondered whether he could have **research assistants, just like professors at universities**, and he raised his concern with his directors.

That vision of adding **talented young people from Mexico and Latin America** to HP research led Dr. Cipriano to becoming one of the creators of an **internship program** for engineering students called **University Relations**.

*“We **connected with every university in Mexico and Latin America, and we began to generate talent that could join HP Laboratories.**”*

*“Our interviews were very hard. We gave the young people problems to solve in three days. We knew they weren’t going to be able to do it, but what **we wanted to know is how they thought,**”*

he said.

This initiative resulted in the **GUAPO (Guadalajara Prototyping Organization) program** which the Mexican scientist implemented along with his colleague, Francisco Andrade, and in which **more than 100 students from leading universities participated, including Tec students.**

Today, over 80% of the program participants hold leadership roles in Data Science at companies such as Microsoft, Google, Meta, eBay, DHL, and LinkedIn.

In 2005, this endeavor led to him being distinguished as one of the 50 most influential Hispanic people in technology and business in the United States by the [Hispanic Engineer & Information Technology](#) journal.

Arriving at the Tec as a distinguished professor

Santos recalled that **his connection with the Tec dates back to the start of the century**, when the institution joined the research stay program for engineering students.

*“Back then, [David Garza](#) was the Rector for Higher Education, and we explained the program to him, so **they started inviting me to give tutorials** to identify more of these students.*

*“Now, as a **distinguished professor at the Tec, the most important thing is going to be research and outreach.** The strong point is going to be creating research centers with this idea that the faculty of excellence start to **push technology**,” he explained.*

The **Advanced Logistics and Mathematical Modelling** professor at the **School of Engineering and Sciences** is looking to replicate the research stay model to **link students and professors with tech companies** and contacts he’s made throughout his career as a technologist.

*“Being part of the **Faculty of Excellence** is a privilege, an honor, and an opportunity to interact with front-line people to solve complex problems in a multidisciplinary way,”* said the distinguished professor.

He will lead the **Operations Artificial Intelligence** program, which aims to steer students to specialize and carry out stays as research assistants in computer science, artificial intelligence, machine learning, and optimization.

*“The Tec has access to the best technology and excellent professors, so I feel that **I’m at the top of my career** and I can achieve things here that I’ve always wanted to.”*

Reflecting upon his life, Dr. Cipriano pauses to answer what **his professional career has meant to him.**

*“I feel like God blessed me through polio because it made me think differently. I feel like I grew up, I got strong, and in the good sense of the word. I think **I’ve managed to bridge the gap between the spiritual human part and science**,” he concluded.*

*“**I’m at the top of my career (at Tec) and I can achieve things here that I’ve always wanted to.**”*

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