

Reminiscences

Professor Milton Vargas

Life and work of the most important living Brazilian geotechnical engineer

Interviewer: Mr. Helvio Falleiros, journalist of Brazilian Society for Soil Mechanics and Geotechnical Engineering



Academic titles: Electrical Engineer, Sao Paulo University, 1938; Civil Engineer, Sao Paulo University, 1942; Special Student, Harvard University, 1946; Emeritus Professor, Sao Paulo University Polytechnic School, 1988.

Career: IPT – Researcher at State of Sao Paulo Technological Research Institute - (1938-1952), Member of Research Council - IPT (1952-1987), and President IPT (1987).

Founder of THEMAG Engenharia Ltda, in 1961.

Publications: more than 140 papers on soil mechanics, foundations, earth dams, etc.

Milton Vargas smiles in a reserved way when he starts to tell his story. He is ninety five years old. He dedicated his life to Engineering. This vocation started to show up when he was a kid, because the boy grew up surrounded by engineering civil works, following his family. By that time, one of the plays he liked most was building dams. Later, he was one of the first to study Brazilian residual soils. He believes in the Chinese proverb: “knowledge comes from the hands”. Milton Vargas introduced his country’s

soil to the most important name of international geotechnical engineering – Karl von Terzaghi. In almost a century of life, Vargas developed three passions – Engineering, Philosophy and Literature. But when someone asks which one is the most important to him, he does not hesitate: “Engineering, I have no doubt”.

IPT (State of Sao Paulo Technological Research Institute) was something very important in your life, wasn’t it? Can you talk a bit about it?

I started my career at IPT, in 1938, when I was 24. By that time, I was completing studying Electrical Engineering at Sao Paulo Polytechnic School. My first position was at the Foundations and Soils Session of the Institute. I went there because they organized a geophysics team. I studied electrical engineering, so I knew about electrical phenomenon.

Did you have any challenge or contribution at IPT?

Well, once my boss asked me to sound the ground. After that, I published an article about this technique being used in civil engineering works, as it was only used in mining jobs.

How did you choose electrical engineering?

My father, Abel Vargas, was a medical doctor and worked at Light and Power – electrical company. We used to live at dam’s sites and we were always close to the civil engineering works of the company. I have spent my childhood seeing dams and playing with sons of other engineers. We used to play building dams. I recall once adults come to destroy our dam because it was disturbing their job. It was indeed blocking their way, because it was well built. Growing up surrounded by engineers made me like them, rather than like my father, a physician.

You also studied civil engineering...

Yes. I graduated in 1942 from the same engineering school. I was still working at IPT.

You studied in Harvard University. What took you there?

It happened in 1946. I always had a scientific curiosity and a strong will to know Brazilian soils. The characteristics presented in studies and techniques did not correspond to the reality. So I decided to go to Harvard University, which was the main soil mechanics school at that time. By the way, professors Karl von Terzaghi and Arthur Casagrande were there, and were the two most important names in soil mechanics then.

I did not arrive there with empty hands, however. I took along me the experience I gained when doing research with tropical soils, at IPT. As a result of researchs in Brazil and at Harvard, it was possible to explain the differences between tropical soils, in Brazil, and sedimentary soil, elsewhere.

However during classes I did not hear about tropical soils. They only talked about sedimentary soils, which was what people knew about then. They were very interested in Boston’s clay and I knew Brazilian soils were different.

Reminiscences

Professor Milton Vargas

Life and work of the most important living Brazilian geotechnical engineer (continued)

I consider this a very important experience to me. Everything I know about soils I owe to them at Harvard. Terzaghi was an excellent professor, but I owe even more to Casagrande, the best teacher I ever had.

What happened when you came back to Brazil?

Terzaghi came along with me to learn about residual tropical soils. He visited Consolação street's civil works, in São Paulo. His face's expression showed he was seeing something new for the first time. When I talked about peculiarities of these soils during his classes, Terzaghi used to show interest. But when he touched this soil for the first time, his face was more expressive than any verbal commentary. He was astonished.

You also took part in the foundation of ABMS (The Brazilian Society for Soil Mechanics and Geotechnical Engineering), wasn't it?

Yes. We had the idea of joining all Brazilian professionals acting in geotechnical engineering. We wanted to make the geotechnical engineering something official. That is why me and some engineers from Rio de Janeiro and Rio Grande do Sul, created the Brazilian Society for Soil Mechanics and Geotechnical Engineering, ABMS.

Antônio Costa Nunes, Antônio Nápoles Neto, Casemiro J. Munarski, Francisco Pacheco Silva, and I used to discuss little and work a lot. So ABMS was born, on July 21th, 1950. And I also had the honor of being the entity's first president, between 1950 and 1952.

When did you start giving classes?

In 1952 I stopped working at IPT and started my career as a teacher, at São Paulo University's Polytechnic School. It was really hard, but it was worthy. Teaching is really worthwhile.

Tell me about THEMAG (a Brazilian consulting company in civil engineering)?

Well, I always say I was convoked to integrate, with other four engineers, a company which joined technical capacity to project big civil works. The call together came from CELUSA (Urubupungá Electrical Centrals) and the reason was to develop Brazilian engineering projects and to build Brazil's hydroelectric power plants. At that time, the important project was the construction of Urubupungá and Ilha Solteira dams. I accepted the challenge and, together with Telemaco Van Langendonck, Henrique Herweg, Yves Eugene Josquin and Alberto Giaroli we created Themag Engineering. Souza Dias, CELUSA's principal engineer, did not want to hire foreign engineers. He said that if he had only Brazilian engineers, he would have them 100% focused on that project.

You wrote many technical articles. How was it?

The first one was "Soil Exploration to Study Foundations", published by Polytechnic Magazine, in 1948. In the next year, the same magazine published "Vertical Sand Drains' Theory". In 1950, this magazine brought "Observations about São Paulo Buildings Settlements". My post graduate thesis at the Polytechnic School was "Strength and Compressibility of Residual Clays". In the next year, I took part of the 3rd International Conference on Soil Mechanics and Foundation Engineering, in Zurich, Swiss, where I presented "Some Properties of Residual Clayey Soils of Southern Brazil".

Another passion you have is the Philosophy, isn't it? Have you also published articles on this subject?

Yes. In 1997, the Brazilian Magazine of Philosophy published "History of Nature's Mathematization". About Philosophy I also wrote a book, titled "Towards a Philosophy of Technology".

But you also wrote other books, didn't you?

Yes, I wrote "The History of Science and Technology in Brazil". By this time I was in charge of classes on Philosophy and Science Evolution, at São Paulo University's Polytechnic School. "Truth and Science" was published in 1981. And "Introduction to Soil Mechanics", which gave me Jabuti and Roberto Simonsen prizes, in 1978, what have made me very proud.

Reminiscences

Professor Milton Vargas

Life and work of the most important living Brazilian geotechnical engineer (continued)

Was at this time that you participated in the foundation of the Brazilian Philosophy Institute?

No. The Institute came earlier, in 1951.

And the articles at Folha de S. Paulo (Sao Paulo city newspaper)?

These were published regularly between 1976 and 1984.

And what was it, exactly?

It was about one hundred chronicles on socioeconomical aspects of Brazil and philosophic reflections on Latin America.

Tell me about the literature?

Well, in 1989 I was elected to the State of Sao Paulo Literary Society. It was when I published "Poetry and Truth".

Six books, 140 articles, nine prizes, tens of civil engineering works. Ninety five years old. Almost a century dedicated to three passions – Engineering, Philosophy and Literature. But when someone asks which one is the most important to him, he does not hesitate: "Engineering, I have no doubt. I'm an engineer, before anything else".

Milton's answer is given with a sort of shy smile. The smile of somebody that accomplished much more than proposed. More than understanding his country's soil, Vargas spread this knowledge beyond Brazilian territory. When he reveals his history, Vargas also reveals Brazilian Soil Mechanics history with a grin.