

## Acad. Vranceanu in 2004, 25 Years After He Passed in Eternity

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After 25 years from the passing in eternity of the great mathematician Vranceanu, his presence in the memory and in the activities of many people is remarkable.

I want to thank Professor Gabriel Pripoae for organizing this conference in homage to Acad. Vranceanu, and for inviting me to send this short note.

The mathematician, like Acad. Vranceanu, carried along on his flood of symbols, dealing apparently with purely formal truths, may still reach results of endless importance for our description of the universe.

As we all know, Acad. Vranceanu's papers cover all the branches of modern geometry, from the classical theory of surfaces to the notion of non-holonomic spaces which he discovered, creating efficient methods and solving fundamental problems. Other topics he studied include the absolute differential calculus of congruences, analytical mechanics, partial differential equations of the second order, non-holonomic unitary theory, conformal connection spaces, metrics in spherical and projective spaces, Lie groups, global differential geometry, discrete groups of affine connection spaces, locally Euclidean connection spaces, Riemannian spaces of constant connection, differentiable varieties, embedding of lens spaces into Euclidean space (together with myself), tangent vectors of spheres and exotic spheres, the equivalence method, non-linear connection spaces, and the geometry of mechanical systems.

Acad. Vranceanu organized the Mathematical Institute of the Romanian Academy, where I was a doctorand and researcher between 1967 and 1975. This Mathematical Institute was a very important step for theoretical and applied researches.

I remember that Acad. Vranceanu served as a member of the International Committee of The International Union of Mathematicians for many years and, in that capacity, he was involved in publishing the complete works of Elie Cartan.

As an international recognition of his outstanding achievements, in 1975 Acad. Vranceanu was elected Vice-president of the International Union of Mathematicians.

In my long discussions with Acad. Vranceanu in Italy, where I invited him to give a conference and to stay with us, many beautiful thoughts and remarks appeared, which left a profound impression on me. Here are some examples:

- Civilization advances by extending the number of important operations which we can perform, without thinking about them.

- Our minds and capabilities are finite, but the possibilities around us are almost infinite, both positive and negative. The purpose in life is to get as much as we can out of that positive infinitude.

- All sciences, as they grow towards perfection, become more mathematical.

- By relieving the brain of all unnecessary work, a good nation sets it free to concentrate on more advanced problems (like increasing the leaving standards and the quality of life).

- The progress of Science consists in observing interconnections, and in showing that the events of this ever-shifting world are just examples of a few general relations, called laws.

- To see what is general in what is particular, and what is permanent in what is transitory, is the aim of scientific thought.

- There are many things which seem incredible to most men who have not studied mathematics.

- Education is the best provision for old age.

- The roots of education are bitter, but the fruits are sweet.

Acad. Vranceanu was perpetually charmed by his familiar siren, that is, by his geometry. Many times he was in a state of great ecstasy and divinely possessed by his geometry.

One day I was talking with Acad. Vranceanu about cybernetique and its connection with mathematics. He smiled when I mentioned to him that the well known French physicist Andre-Marie Ampère said in 1843 that the future science of government should be called "la cybernetique".

To show the importance of mathematics, and especially of geometry, Acad. Vranceanu used to say that unlocking the secrets of Geometry will help us unlock the secrets of Nature.

Acad. Vranceanu was in general supporting the idea of Nicolaus Copernicus that *mathemata mathematicis scribuntur* (mathematics is written for mathematicians).

In conclusion, Acad. Vranceanu was an illustrious disciple of René Descartes, who said *omnia apud me mathematica finit* (with me everything turns into mathematics).

Great mathematician and great humanitarian, Acad. Vranceanu is always with us.

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