

PROFESSOR NGUYEN VAN DAO – A GREAT SCIENTIST – MECHANICIAN CONTRIBUTING SIGNIFICANTLY TO ESTABLISHING AND DEVELOPING MECHANICAL SCIENCE IN VIETNAM



Prof. Nguyen Van Dao in 2006 year

1. PROFESSOR NGUYEN VAN DAO – VIETNAM'S GREAT SCIENTIST – MECHANICIAN

Prof. Nguyen Van Dao would have celebrated his 70th birthday in August 10 this year if he had not had the unfortunate traffic accident.

Professor Nguyen Van Dao was born in the Chi Tien Commune, Thanh-Ba District, Phu Tho Province. He graduated from the Hanoi National University of Education with excellent marks in 1957.

When having been assigned to the Hanoi University of Technology at the age of 20, besides his teaching, with his passion in science and especially after hearing speech released

by Academician V.O. Kononienko from the delegation of the former Soviet Union Academy of Science visited Vietnam in 1960, Prof. Nguyen Van Dao embarked on doing research into theoretical nonlinear oscillations. In 1962 he was sent to Moscow State University and prepared the doctorate thesis under direct guidance and instructions of Academician V.O. Kononienko.

In summer of 1965 he defended the doctorate thesis: "*Vibration and stability of dynamic systems with absorbers*" at Moscow University – a famous university in Russia and around the world.

Coming home in the summer of 1965, he embarked on the scientific research: "*Parametric excitations of nonlinear vibrations of dynamical systems*". This was a very difficult works because of the fierce resistance war and he had to study and elaborate the research in jungles. In late 1976 coming to Poland as a senior trainee, he brought with him a complete doctorate thesis of 500 pages. And only three months later this became his doctor of science thesis which he successfully defended in December 1976 at Warsaw University.



Defending the Doctor of Science Thesis at Warsaw, Poland, 1976

With more than 40 years of doing research, Prof. Nguyen Van Dao was the author of famous works on nonlinear oscillations and was awarded the Ho Chi Minh Prize by Vietnam government and the Ukraine Prize. His research results can be summarized as follows:

- Based on asymptotic methods of Krulov-Bogoliubov-Mitropolskii, Prof. Nguyen Van Dao researched the working of the dynamic absorber for in the nonlinear system. These results have been applied to prevent harmful vibrations in machineries.
- Prof. Nguyen Van Dao had researched methodically and properly impacts caused by parametric excitations in the nonlinear systems. His success not only helped himself excellently defend his doctorate thesis at Warsaw University but also made

him famous and put his name in the list of the world's leading experts in nonlinear oscillation.

- Prof. Nguyen Van Dao was the man who identified “interaction” between distinct components of nonlinear systems. He had valuable findings on interaction between external forces and parametric excitations, among nonlinear components of different levels or among different parametric excitations.
- Prof. Nguyen Van Dao had significant contribution to developing asymptotic methods to research nonlinear vibrations in higher level systems (more than two).
- His first scientific works published in Journal of Math-Physics-Chemistry, Hanoi No1, 1961 was “*Applying the Pontriagin's maximum principle to some mechanical problems*”.



The 2nd Vietnam-Japan Symposium on Advances in Applied Electromagnetics and Mechanics, Hanoi, January, 19-21, 2000

Prof. Nguyen Van Dao had written more than 100 articles about research results around issues regarding “Nonlinear oscillations of mechanical systems” and 13 books and monographs. Many of monographs had been written in English by himself and Academician Yu. A. Mitropolskii – a brilliant mechanical profession in the world. Part of research results are published in following monographs:

- Nguyen Van Dao, Nonlinear oscillations of high order systems, NCSR Vietnam, Hanoi, 1979, 64p.
- Mitropolskii Yu. A., Nguyen Van Dao. Applied asymptotic methods in nonlinear oscillations, Hanoi, 1994, 412p.
- Mitropolskii Yu. A., Nguyen Van Dao. Applied asymptotic methods in nonlinear oscillations, Kluwer Academic Publishers, 1997, 342p.

- Nguyen Van Dao, Nguyen Van Dinh. Interaction between nonlinear oscillating systems. Vietnam National University Publishing House, Hanoi, 1999, 356p

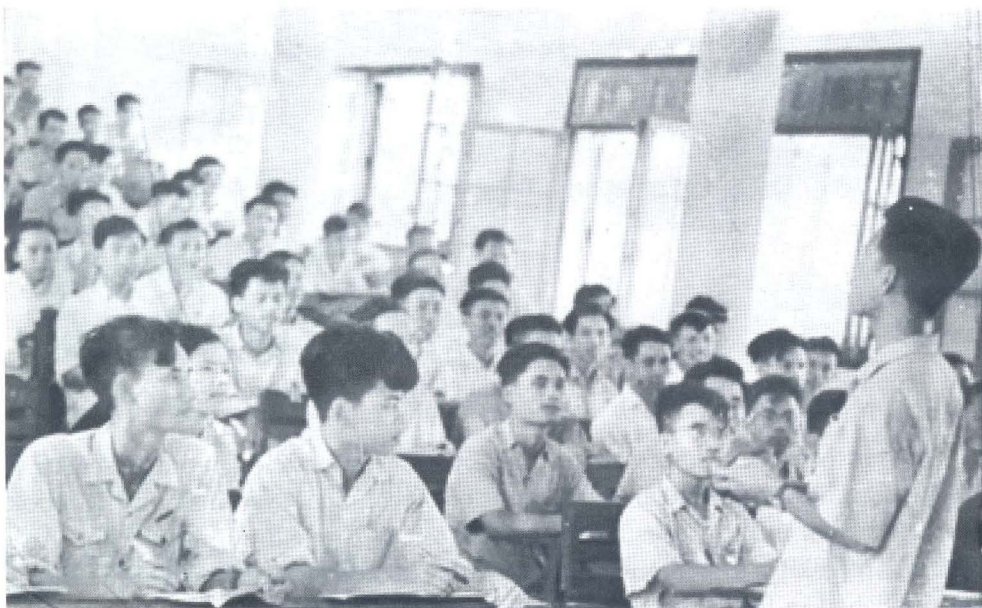
As judgments of many people including the world's leading scientists, Prof. Nguyen Van Dao was the former of the Hanoi nonlinear vibration school equal to famous centres around the world.

Since 1999, Prof. Nguyen Van Dao has initiated a very new research direction into nonlinear systems namely "Chaos – Chaotic Motions". After learning about it, Prof. Nguyen Van Dao and his team members boldly registered this research direction into "The National Basic Research Programme" with the title "Nonlinear Dynamics and Chaos". The theme was implemented from 2001 to 2005 with initial promising results.

Prof. Nguyen Van Dao had eight research works on Chaos of some dynamical systems. His monograph: "An introduction to Nonlinear Dynamics & Chaos" was published (Vietnam National University Publishing House, Hanoi, 2005).

2. PROFESSOR NGUYEN VAN DAO AND ESTABLISHMENT AND DEVELOPMENT OF THE MECHANICAL SCIENCE IN VIETNAM

Prof. Nguyen Van Dao was often talked about as a far-sighted scientist. His consistent point of view is to develop the Mechanics as an independent branch in scientific development and increase its role in the national development.



Teaching at Hanoi University of Technology, 1960

When being assigned to Hanoi University of Technology, Prof. Nguyen Van Dao was the chief of theoretical mechanics division. Most lecturers of the division graduated from Faculty of Mathematics of Hanoi National University of Education. As a result, the common trend was to develop applied mathematic-oriented specialized knowledge.

There were even several drastic discussions on how to develop the division: orientation of pure theoretical mechanics and applied mathematics or adherent to the development of a technical university. Prof. Nguyen Van Dao was determined to choose the latter.

Prof. Nguyen Van Dao had gained achievements in Hanoi University of Technology. Out of ten lecturers of the Division, six successfully defended their thesis of doctor of science and seven was ordained as professors.

Accomplishing his tasks in Hanoi University of Technology, Prof. Nguyen Van Dao embarked on building the leading Research Institute for Mechanics. Working as Vice-Director cum General Secretary of Vietnam Academy of Science, in 1978 Prof. Dao organized a conference in Nha Trang on development orientation of mechanics in the coming time. The conference had the participation of mechanics experts working in Vietnam Academy of Science, research and application institutes and universities nationwide.

Development orientations of mechanics outlined at that time still keeps their value. One of urgent tasks at that time was to establish the leading Research Institute for Mechanics under Vietnam Academy of Science.

With his enthusiasm and prestige, after a short time Prof. Dao successfully establish the Institute of Mechanics under Vietnam Academy of Science in April 1979.



The 25th anniversary of Institute of Mechanics, 10/4/2004

The Institute of Mechanics, which was led by Prof. Nguyen Van Dao and set up from a research department for mechanics with a staff of 20 scientific workers, has become the leading institute with modern facilities and large number of staffs. The institute has also become a mainstay for researchers and lecturers in the field of mechanics.

The Institute has organized and chaired several scientific research themes at national level. Especially the Institute plays a key role in basic research in mechanics nationwide.

Worked as the Director, Prof. Nguyen Van Dao developed and expanded international relations and cooperation and created conditions for Institute's staffs to study, research and defend their doctorate thesis in developed countries.

Establishment and development of Institute of Mechanics proved the significant contribution of Prof. Nguyen Van Dao to development of mechanics in Vietnam.

Another difficult task that Prof. Nguyen Van Dao managed to do was to establish the Institute of Applied Mechanics in Ho Chi Minh City. Both institutes have the same target: for the sake of development of mechanics and linking mechanics experts nationwide.

One event that played a historic role in the development of Mechanics in Vietnam was the establishment of Vietnam Association of Mechanics in Hue in 1982. And Prof. Nguyen Van Dao was the former and the President of the Association for 25 years.



The National Congress founding the Vietnam Association of Mechanics, Hue 1982

The Vietnam Association of Mechanics has gathered thousands of members involved in varied fields such as research, teaching, applying and disseminating information on mechanics. Prof. Dao also was the Association's representative in the International Union of Theoretical and Applied Mechanics (IUTAM).

In 1979, Prof. Nguyen Van Dao was the founding Editor-in-Chief of the Journal of Mechanics published in Vietnamese which was renamed Vietnam Journal of Mechanics and published in English later.

Along with other scientific sectors, the Mechanics sector has its own Council for Professor's Title in Vietnam.

All these above achievements proved that the mechanics sector in Vietnam has become independent and mechanics experts have remarkably contributed to the economic development.

Prof. Nguyen Van Dao' efforts often focused on putting science into practical production. He always sought opportunities to do this. Prof. Dao managed to persuade people to support his Project on manufacturing extra light air planes. And under his guidance, the air plane VAM1 was tested successfully.

It can be said that Prof. Nguyen Van Dao played an important role in and significantly contributed to strong growth rates of Mechanics in Vietnam in the past years.

3. PROF. NGUYEN VAN DAO – CREATIVE AND DYNAMIC ADMINISTRATOR AND SOCIAL ACTIVIST

During his life Prof. Nguyen Van Dao was appointed to key posts.

From 1957 to 1977, Prof. Dao was lecturer and chief of Theoretical Mechanics Division and dean of Faculty of Mathematics-Physics in Hanoi University of Technology.

When Vietnam Academy of Science was set up in 1977, Prof. Dao was assigned to be Vice-Chairman cum General Secretary of the Academy. At these positions, from 1977 to 1992, Prof. Dao contributed remarkably to establishment and development of research units of the Academy.



The meeting with the Deputy Prime Minister Vo Nguyen Giap,
Vietnamese Institute of Science, 1977

Since 1993 Prof. Dao was appointed as the founding president of Vietnam National University of Hanoi and from 2002 he was President of the Scientific and Educational Council of University. Despite numerous difficulties concerning material and technical bases and administration mechanism, he and the teaching staffs and students managed to prove and affirm multi discipline and multi field structure and self-control regime.

His point of views and actions, especially the view on self-control regime of universities, has been backed up by top-rank leaders, brilliant scientists and university administrators. This was his important contribution to establishing and developing a model of university which dated back for a long time in the world but remained new to Vietnam at that time, paving the way to affirm and perfect the model of Vietnam National University of Hanoi now.



The visit of USA's President Bill Clinton, Vietnam National University, Hanoi, 2000

Besides administrative activities, Prof. Dao participated actively to social activities. He was Vice-Chairman of Vietnam UNESCO Committee (1986-1994), member of Board of Advisers to Southeast Asia UNESCO in the field of science and technology (since 1992), member of Steering Council of Pacific-Asian Association of Universities (since 1995). Since 1998 he was Vice-Chairman of Vietnam Peace Committee. Since 2002, he was founding president of Association for Liaison with overseas Vietnamese. And since 2004 he was the Member of the Presidium of the Central Committee of the Vietnam Fatherland Front.

The international activities of Professor Nguyen Van Dao were very rich, and contributed to developing the international co-operations and contacts for Vietnamese scientists.

The great achievement of Professor Nguyen Van Dao has been highly appreciated in Vietnam and in the World.

He was elected as Academician of Tchechoslovakia Science Academy (1988), of Third World Science Academy (1999), of Ukraine National Science Academy (2000) and of European Science Academy (2002).

Besides, Prof. Nguyen Van Dao had been awarded the Ukraine National Prize on Science and Technology in 1996 and the Ho Chi Minh Prize on Science & Technology in 2000.



Receiving the Ho Chi Minh prize for Science & Technology
from Vice-President Nguyen Thi Binh, Hanoi, 2000

He also was the member of the Editorial Board of the International Journal of Advances in Mechanics and the International Journal on Mechanics and Automation.

The Vietnamese experts in mechanics always consider Prof. Nguyen Van Dao as a scientist dedicated whole-heartedly to the development of Mechanics in Vietnam in particular and development of Vietnam science, education and training in general.



Conferring Ceremony of Academician Diploma of the National Academy
of Sciences of Ukraine, Hanoi, 22-12-2000

On occasion of his 70th birthday, the Vietnam Journal of Mechanics publishes a special issue dedicated to the memory of Prof. Nguyen Van Dao and acknowledging his special contribution to the Journal as well as to the development of Mechanics in Vietnam.

**On behalf of the Editorial Board of
Vietnam Journal of Mechanics**

Prof. Nguyen Van Diep

Deputy Editor - in - Chief