

## **Address to the 2007 Graduates**

**Diosdado Banatao, Doctor of Science, *honoris causa*, Ateneo de Manila University**

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Dr. Leovino Maria Garcia, Dean of the School of Humanities (my high school classmate at the Ateneo de Tuguegarao)

Dr. Fabian Dayrit, Dean of the School of Science and Engineering

Mr. Rodolfo Ang, Dean of the John Gokongwei School of Management

Administrators, Faculty and Staff of the University

The Graduating Class of 2207, their parents and friends

Distinguished guests

Ladies and Gentlemen

I would like to thank the Board of trustees of the Ateneo de Manila University for the degree granted upon me today.

Having studied under the Jesuits in High School where Dr. Leo Garcia, Dean of the School of Humanities, was my classmate and have kept in touch with all these years, I have always had this feeling of closeness with Ateneo.

To the graduates, congratulations for a job well done.

To the parents, congratulations, for just being there for your sons and daughters,

To the faculty and administration, again another year of imparting knowledge and I am sure the graduates and their parents would join me in thanking you for helping them achieve a very significant milestone in their young lives.

I would also like to acknowledge the presence of some of my family here today...

In the last ten years, top universities in the United States, and in the last few years, universities in other parts of the world, including the Philippines, started to hold seminars in entrepreneurship for students in business and engineering.

The idea is to encourage entrepreneurship at a much earlier stage in their training and possibly give them insights into the real world of business. Today, in some leading schools, entrepreneurship is an optional course.

After all, technology and products created by engineers and entrepreneurs, in the hands of capable managers, is what technology based companies and industries are made of.

However, some students, both undergraduate and graduate, whom I had the opportunity to advise, had this stated passion and goal to be an entrepreneur. Having passion to create something is always good, but being passionate to be an entrepreneur, in my opinion, is missing the whole point about what an entrepreneur is.

An entrepreneur is passionate about a technology, a product idea, a unique service, and many others, but not about being an entrepreneur. The focus should be in accomplishing something tangible and in line with one's passion.

It was years after the first company I founded became successful that I was described as an entrepreneur. My passion then and still today is to create technologies, products, and companies that make an impact in the industry.

It was and still not about making money, or about being an entrepreneur.

It was passion in the goals that I wanted to accomplish that got me over the difficult times and pushed me over the top.

To the graduates of the school of management, your training suggests a more straightforward assimilation into the industry, in any segment of any market, and in any functional area of the company of your choosing.

While this is generally a good situation, it could be confusing but is typically solved through proper advising, my advice is, let your passion be your guide.

To the graduates of science and engineering, as you already found out, engineering is one of the most difficult degree programs in any school and practicing it is even tougher.

For you to be part of the ceremonies today shows your natural abilities and your passion for science and engineering. It is important to decide early on to practice your core training in science and engineering or a practice that is different altogether.

Keep in mind, however, that it takes only a few years of not practicing engineering to lose currency and unless retrained, such as, going back to school for graduate studies, you will find yourself unable to get back altogether or a practice in the periphery of engineering.

To all the graduates, let me then propose that you develop a passion for being part of this technology based global economy. Your knowledge in the sciences, engineering, and management is what the country needs for it to be a major player in the global economy.

In the last ten years, maybe more, there has been a lot discussion and the desire for the Philippines to become a newly industrialized country in this decade.

Ambitious goal, and extremely difficult to achieve. But it does not take away the fact that through industrialization, we can be a major contributor to the technology based global economy. Industrialization is simply the process of creating technology based value add products and services. It transforms countries from a consumer status to that of a producer.

The value of these products involved in trade is largely determined by the complexity of technologies embedded in these products.

Likewise, the value of services is enhanced through automation using technology.

The innovator of these technologies typically gets the largest share of the value. Therefore, since industrialized countries usually lead in technology innovation, they get the largest share of the value of products and services.

To be part of this value creation, we must have the technical and managerial expertise that can compete against the best and the brightest from other developed countries.

Michael Spence, a Nobel laureate in economics, a professor emeritus of management in the graduate school of business at Stanford University, and Chairman of the Independent commission on growth in developing countries.

In his book “Wealth of Nations,” he states that the common factors in sustaining growth within an economy include a functioning market system, high levels of saving, and public and private sector investments.

But he asserts that it is the resources of the global economy that stand out as the driving forces in high growth, and that these come in three forms:

#### Demand, Investments, and Technology

Demand: In a relatively small or poor economy, demand is limited, but the global economy is huge in comparison, and at the right costs and prices, demand is for practical purposes, unlimited.

So the task and challenge for a developing economy, like that of the Philippines, is to identify industries, therefore, expertise, technologies, and infrastructures, that create a competitive advantage in growth sectors of the global economy.

The growth of exports can set in motion a process of sustained growth which could not be achieved by relying on domestic demand alone. We saw this in the case of Japan, Korea, and Taiwan.

They took advantage of global demands and foreign investments leveraging their technology based infrastructure sustained internally by a strong science and engineering educational system. They created technologies to get the best value from their products and services.

By comparison the Philippines has participated mostly on low value add components of the global economy export sector. These are mostly manufacturing for products and BPO outsourcing, such as call centers, in services. As a result the Philippines has not experienced the high growth rates brought about by global demand.

The case of China and India is that of an inexhaustible source of very cheap labor, much cheaper than that of the Philippines, and of such magnitude that it compensates for less value add exports.

However, this is changing fast due to rapid transfer of technology brought by foreign investments and sustained by local expertise in research and development.

Another factor contributing to high growth is foreign investments. While typically not a large fraction of total investments, its importance lies in its role of bringing technology, know-how, and access to external markets.

So whether through demand or foreign investments, technology plays an important role and is the driving force in sustaining growth.

This technology know-how includes engineering, production technology, managerial expertise and knowledge of global markets.

For the case of the Philippines, the key priority areas in technology should be defined based initially on global technology demands and technology transfers through foreign investments, and then long term, a shift to local technology demands as the local economy expands and domestic consumption is at a high rate of growth supported mostly by domestic savings and local investments.

We must ask ourselves, however, if we are capable of taking advantage of this opportunity today. Unfortunately, in my opinion, the answer is probably not.

At the risk of being a naysayer, or simply wrong, I venture to say that we do not yet have the technology infrastructure to receive the transfer of technology know-how that comes with foreign investments nor the ability to sustain technologies and compete against other developed and developing countries.

The lack of technological base for national growth manifest in at least four forms:

- Shortage of research scientist and engineers
- Low level of research and development activity
- Low quality of research and development, and
- Inadequacies in higher educational system

To be precise, let us see what we have in our technology infrastructure:

They are: Science, Technology, and Engineering

Firstly, in science, the relevant fields are mathematics, physics, chemistry, material science, and the most recent addition, biology. These are the basic tools necessary in research to develop technologies. These are usually the basic courses in engineering.

In the Philippines, while we do have a lot of knowledge in the basic sciences, we are generally lacking in advanced sciences due to two factors:

- Lack of leading edge research laboratories
- Lack of depth and breadth in university teaching due to the predominant use of teachers with only bachelor of science degrees.

The second component, technology, is the instantiation of concepts using science as a foundation. It is usually an application of multiple science concepts and theories.

Technologies are usually created in university and industry research labs. The situation in the Philippines is different in that there is virtually no industry participation in research.

Science and Engineering schools are our only source for R&D.

But we have some issues, namely,

- Lack of funding, both public and private
- Lack of researchers with graduate degrees

At this time we do not own enough technologies to be able to create globally competitive products.

The third component in the infrastructure is engineering. Is the practice of using a technology or multiple technologies to design and implement technology based products and services.

To the engineer, science concepts and technologies are merely tools for creation.

Basically, engineers make science and technology useful to society.

Due to our inadequacies in advanced sciences and deficient technological base, our engineers have the most difficult task in creating innovative and competitive products and services.

As a result, we have not been able to achieve a high growth rate in our economy that should have been brought about by this infinite global demand and technology transfer through foreign investments.

So, what should we do?

Government, industry, and academe must implement:

- A cultural change in values where deep knowledge in science, technology and engineering is respected and rewarded.
- An educational system overhaul that enables the Filipino student at any level to compete in the sciences.
- A reward system that puts a high value in advanced research and development and the necessary risk taking involved.

The government must support and fund the necessary educational infrastructure for public institutions, such as the university of the Philippines, in the form of:

- Focused research institutes
- State of the art laboratories, facilities, equipment, researchers and staff
- A reward system to keep the brightest minds in teaching and research

As a side-note, the university of the Philippines, Diliman, received a huge amount of funding for the school of science. Meanwhile, the school of engineering is having difficulties getting enough funding for graduate programs and research.

Obviously a huge problem, but the real issue is the lack of understanding by the government in the dependencies between science, technology, and engineering.

In this regard, I favor a structure where science and engineering is combined in one school, like what you have here at the Ateneo de Manila. (now that is an example of a typical Jesuit thinking)!

For private schools involved in science and engineering where tuition fee is the main source of funding, it is worth mentioning that learning institutions should not be considered business and clearly not profit centers.

Once quality metrics are met, excess monies must be used for graduate degree programs and research facilities with the necessary qualified teachers and graduate students.

As in other developed countries where private schools are non-profit, the industry, private individuals, and alumni support should account for approximately seventy percent of the school's operating costs through discretionary gifting and endowments.

For both governments and academe, we cannot get there soon enough by being insular in implementation.

The rapid transfer of knowledge in science and engineering will only be accelerated through foreign education and explicit programs aimed at learning.

In the Philippines, we need an industry involved in research and development, an industry that should be

- paranoid about its future, because its survival is wholly dependent on properly trained engineers and managers
- And, an industry that works with academe in funding and directing research.

And for private individuals, especially alumni, to support these ideas because a very high percentage of your investments in the future will be based on high value add products and services.

For the management graduates, like it or not, your future will be in and around technology. There is nothing more complex and yet more rewarding than business of leading edge technology.

For the graduates of the school of science and engineering, you will only succeed if you become part and take advantage of this technology infrastructure. To do that, you must:

- Not give up on your love of science, technology, and engineering.
- Through more advanced education and training, strive to be the best in your field of practice.
- Whether in academe or industry, solve some really tough but relevant technology problems that the global economy presents
- Have an absolute belief in your technical abilities, and then
- Take some risks. As engineers and scientists, it is in our nature to keep on challenging and extending the limits of technology.

Finally, to all of you graduates, Define your passion and vision for your contribution to management, science, and technology.

Continue to train yourself to be the best in your field. If more training in your practice lead you to leave the country, then do it. Believe me, you will be that much better.

However, when you think you have learned enough and ready to make an impact in industry, you must come back.

The industry and academe would want you to give back some of what enabled you to be here today.

And for me, this is my own way of giving back.