Close Encounter with Cosmic Icon Datuk Dr Mazlan Othman

Ir. Sharifah Azlina Raja Kamal Pasmah

Professor Emerita Datuk Dr Mazlan Othman has a long list of firsts. She graduated as Malaysia's first astro-physicist and, on completion of her doctorate degree, she became the first woman in University of Otago's 120-year history to get a PhD in physics. She returned to Malaysia to be a lecturer at Universiti Kebangsaan Malaysia in the Physics department. In 1990, she was seconded to the Prime Minister's Department to establish the Planetarium Division, later known as Space Studies Division (1993), and thereafter became its head. As its first Director-General, she led in the designing and manufacturing of Malaysia's first remote-sensing satellite, TiungSAT-1, which was launched in 2000. In 1999, she was appointed the first female director of the United Nations Office for Outer Space Affairs (UNOOSA), based in Vienna, Austria.

In 2002, at the request of the then Prime Minister of Malaysia, she returned to serve as the founding-and-first Director-General of the Malaysian National Space Agency (ANGKASA) and spearheaded the Angkasawan Programme which successfully launched the country's first astronaut, Datuk Dr Sheikh Muszaphar Shukor, into the International Space Station (ISS) in 2007. ANGKASA is responsible for the development, research and dissemination of space science programme including formulating policies and regulation, coordinating, implementing and monitoring all activities related to space.

In 2007, as she "hadn't quite finished her task", she was re-appointed Director of UNOOSA in Vienna, followed by an appointment as the first female Deputy Director-General of United Nations Office, Vienna in 2009. Datuk Dr Mazlan retired from the UN in 2013.

I was in awe when, as an alumni, she visited our alma mater, Tunku Kurshiah College, back in the early 1980s. She was already well ahead then in charting her career, while I was still a teenager who hadn't a clue as to what I would be. Three decades later, I was still in admiration, listening to her inspiring achievements when she granted me a courtesy call at her United Nation's office in Vienna, in 2011.

Today, the remarkable Datuk Dr Mazlan still has a similar impact on me. Short of her retirement, she was contemplating about "taking it easy and enjoying life' but soon, the tireless scientist was back in Malaysia, pouring her energy into advisory committees and boards involving science and space, teaching as a visiting professor and became the Project Director for Mega Science 3.0 at the Academy of Sciences, Malaysia.

MEGA SCIENCE 3.0

Mega Science is a project championed by the Academy of Sciences Malaysia to position Science, Technology and Innovation (STI) as the key driver for socio-economic transformation. The project looks at global mega trends with projections into the year 2050 and aims to position Malaysia within these future scenarios. Under the programme, a total of 15 sectors are covered:

- First phase: Mega Science 1.0 (2010-2012) focused on the water, energy, health, agriculture and biodiversity addressing energy for the future.
- Second phase: Mega Science 2.0 (2013-2014) focused on housing, infrastructure, transportation, electrical & electronics and the environment.
- Third phase: Mega Science 3.0 (started in 2015) is more industry-focused, namely furniture, automotive, creative, tourism and plastics & composite.

The project aspires to build a prosperous, harmonious and sustainable nation and population, maximising on STI. The success and realisation of this project also entails Science, Technology, Engineering and Mathematics (STEM) talents to be the key drivers of research, innovation and enterprise through transformative thinking and integrated actions.

Professor Emerita Datuk Dr Mazlan Othman

As the Project Director for Mega Science 3.0, Datuk Dr Mazlan has ensured that common futures are projected in all 15 sectors. In addition, she is spearheading the Malaysia Foresight 2050 study. The findings of this study and of Mega Science will be the launching pad and game-changer in achieving the aspirations set out. In the course of doing so, risks are simultaneously identified and the risk-management framework developed.

OUR EDUCATION SYSTEM

There is growing concern that our current education system may not be creating enough thinkers for the future. Datuk Dr Mazlan opined that to produce thinkers, both creativity and arts must also be encouraged. Building knowledge on STEM alone is insufficient and there should also be the inclusion of arts and culture to make the system holistic. Japan, France and Italy are among countries in which the element of culture is very strong and ingrained in their education systems. Innovation comes from creativity and unless creativity is consciously and structurally encouraged and motivated in schools, a country may continue to produce generations of workers, not thinkers. The nation may lose out in building its long-term competitive edge because of the lack of thinkers. She advocated that our education system teach students how to think and to have foresight.

On another concern, while Malaysia may have the facilities and human resources, it is equally pertinent to invest in technology, lest good talent leaves. Without structured programmes and with the absence of aspirational targets, the best minds will ultimately leave. This will subsequently create a gap and impair our capability and capacity. Often an industry is sustainable only when people are intrigued and inspired by big and noble goals, some bigger than themselves or their companies.

BIGGEST CONCERNS

One of Malaysia's handicaps is the lack of relevant data to form the basis for policy making. For example, while a goal for 60% of students to go into STEM has been set at university level, we subsequently find that barely 10% are qualified to go into the Science stream in the first place. There is an anomaly of prevailing pre-requisite requirements against the policy, an area that should have been re-examined had there been sufficient data. Research culture must be instilled and made as an agenda towards formulating realistic and achievable goals.

As for the prevailing decline in STEM enrolment which is phenomenal in Malaysia, several factors have been found to contribute to this. They include:

- Science is not taught interestingly enough to attract students in schools.
- Remunerations and rewards for a scientist and retaining scientists must commensurate with effort; promotion to administrator's role is thought to be the only route to better remuneration and in the course, the best minds are no longer retained for their science roles.
- A new generation is brought up to expect instant gratification, while science is known to require rigorous thinking, time-consuming research processes and often slow discovery before reward is recognised.
- There may simply be insufficient career opportunities in science and one will not embark on any discipline if statistics show there are few job prospects in it.

An individual will typically take 12-16 years to complete his/her education prior to entering the workforce. Education policies must be formulated to take this into consideration. Malaysia's demography indicates strength in our young population and our leaders need to be forward-thinking and visionary in motivating this young generation in preparing the country for the future.

UNIVERSE VS MULTIVERSE

Datuk Dr Mazlan introduced the concept of "multiverse" as opposed to "universe", taking the word "multi" to a higher level. She prompted me

to imagine that the Universe we observe, from end-to-end, as a drop in the cosmic ocean (which I did, but my simple mind seemed incapable of perceiving such).

Beyond what we can see and observe, there is more space, more stars and more galaxies for innumerable billions of light years farther than we will ever access. Further on there are, again, infinite more Universes similar to this. Our universe is believed to be at least 10 billion light years in diameter and to contain a vast number of galaxies; it has been expanding since it was created in the Big Bang about 13 billion years ago. This concept of multiverse is simply overwhelming and equally daunting to my earthling mind.

Space travel is another topic that fascinates Datuk Dr Mazlan. She relates the discovery of water on the planet Mars, indicating the possibility of lifeforms there. But apart from the anticipation of meeting Martians, the planet offers many amazing attractions like Olympus Mons, the mountain with a summit that reaches 25km into the sky and has a base measuring 600km in diameter and Valles Marineris, the Grand Canyon which is deeper than the Grand Canyon of the USA and spans the width of the US, coast to coast.

At the time this article was being written, the rare celestial phenomena of the super blue blood moon occurred on the evening of 31 January, 2018. Despite her busy schedule, Datuk Dr Mazlan took time to provide facts on the phenomena, the last of which occurred 150 years ago.

"Super moon" was because the moon was 14% bigger and 30% brighter due it being closest to Earth at that time, "blue moon" was because it was the second full moon within the same month, and "blood moon" was because it was a total lunar eclipse which gave the moon a red tint where the Earth sat between the sun and the moon.

MOST VALUABLE EXPERIENCE IN UN TENURE

At UNOOSA, Datuk Dr Mazlan took the lead in international co-operation in space and co-ordination of space law among countries. When asked what the most valuable experience was during her tenure in the UN office, her reply was nothing celestial but simply the down-to-earth capability to exercise her diplomacy skills when dealing with so many nations, each with its own background, resources and local national agenda.

Her challenge was to keep abreast of each country's affair and to remain politically mindful in her course of facilitating, mediating and negotiating issues with the countries, in their best interests. The spectrum of the issues was astronomically large and the gap between each country often wide. "That is what the UN is about, a culture of 193 nations in the world," she said.

Datuk Dr Mazlan is also one who values diversity. Having worked in the UN, she is grateful to have collaborated with different people from various backgrounds and cultures and who speak in their own distinct languages. Diversity is Malaysia's strength and she advocated that we celebrate our differences and be optimistic for the country because of our diversity as compared to other countries which are homogeneous. Our diversity is what drives the country forward and forms the fundamentals of our progress.

HER PASSION NOW

In 2017, Datuk Dr Mazlan became Director of the International Council for Science (ICSU) Regional Office for Asia and the Pacific (ROAP), an organisation that promotes the development of science in Asia Pacific and aids in strengthening the voices of scientists within the region. ROAP is involved in programmes which include supporting regional efforts on natural hazards and disaster risks, sustainable energy and health & well-being in the changing urban environment. Datuk Dr Mazlan is leveraging on her leadership role in integrating natural and social science to address the challenges. She will also use this platform to create awareness of the importance of science in formulating policies.

She is also a visiting professor at the Permata Pintar Genome-to-Space

Program since 2017, Emeritus Professor at UKM, adjunct faculty at UPM and Senior Fellow at ASM. All these are avenues for her to give back to society.

CONCLUSION

No words can further describe the achievements of Datuk Dr Mazlan, our very own scientist who has attained great stature in the world of science. She is indeed our shining star in the multiverse. ■

REFERENCES

[1] ANGKASA, Agensi Angkasa Negara [Online] available at http://www.angkasa.gov.my [accessed on 31 January, 2018].

[2] Community – PERMATA Pintar National Gifted Center [Online] available at http://www.ukm.my [accessed on 2 February, 2018].

Author's Biodata

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IEM DIARY OF EVENTS

Title: 1-Day Seminar on Electromagnetic Compatibility (Emc) and Functional Safety

23 April 2018

Organised by: Electrical Engineering Technical Division
Time : 8.30 a.m. - 5.30 p.m.
CPD/PDP : 7

Kindly note that the scheduled events are subject to change. Please visit the IEM website at www.myiem.org.my for more information on the upcoming events.