TEACHING & LEARNING

Nobel Laureates Alain Aspect and Yuan-Tseh Lee Discuss Quantum Physics, Interdisciplinary Research, and Global Scientific Challenges at NTU Forum

Distinguished Panel: Prof. Yuan-Tseh Lee (left), Prof. Alain Aspect (center), and Prof. Chiao-Hsuan Wang (right).

On October 15, 2024, Nobel laureates Prof. Alain Aspect and Prof. Yuan-Tseh Lee captivated the audiences at National Taiwan University (NTU) during a public lecture and forum held in the Shih-Liang Chen Lecture Hall. The event was aimed to foster Taiwanese-French cooperation in science and technology, sharing insights into the latest in quantum physics, interdisciplinary research, and today's pressing scientific challenges.

Prof. Yuan-Tseh Lee, a recipient of the Nobel Prize in Chemistry in 1986 for his pioneering research in reaction dynamics, reflected on his lifelong dedication

to science and his aspiration to address future global challenges. Joining him was Prof. Alain Aspect, a 2022 Nobel Laureate in Physics, celebrated for his groundbreaking experiments confirming quantum entanglement and Bell's inequalities. That discovery has been pivotal in advancing quantum mechanics, quantum computing, and communication technologies.

NTU President Wen-Chang Chen opened the event by acknowledging the laureates' contributions and reaffirming NTU's commitment to international scientific collaboration. Prof. Aspect then presented a science lecture titled *Two Quantum Revolutions: From Concepts to Applications*, offering an overview of quantum physics and illustrating how theoretical advancements have been translated into modern technological applications, especially in quantum communication and computing. He described the two quantum revolutions: the first one emerged in the early 20th century with foundational discoveries, leading to technologies like lasers and integrated circuits. The second one, the on-going revolution is marked by the manipulation of individual quantum objects, fueling advancements in quantum computing and communication.

After the lecture, the two laureates engaged in a forum moderated by Prof. Chiao-Hsuan Wang, on the synergy between academic and industrial research. They observed that while industry often benefits from substantial financial resources, academia provides the stability and long-term perspective essential for scientific inquiry. Addressing the role of Artificial Intelligence (AI) in research, they advocated taking a balanced approach, encouraging responsible use of AI alongside interdisciplinary collaboration. Prof. Lee emphasized the importance of transcending traditional academic boundaries, noting that all fields are interconnected. Prof. Aspect concurred, advising students to deeply explore their fields of interest while staying open to collaborative opportunities.

Both laureates urged the students to apply the scientific method in tackling urgent global issues, such as climate change, which demands collaborative efforts across fields from physics to sociology. In a lighthearted exchange, Prof. Lee invited Prof. Aspect to return to NTU, saying, "We hope to see you again, Prof. Aspect. Don't say it's impossible!" Their friendly banter underscored the event's theme of embracing scientific inquiry and collaboration to transform challenges into opportunities.

Prof. Alain Aspect presenting his book, *Einstein and the Quantum Revolution*, to Prof. Yuan-Tseh Lee (left) and NTU President Wen-Chang Chen (right).

The Joint Forum Participants, including NTU students and faculty, as well as students from Taipei European School who were invited by the French Office in Taipei.

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