



NTU HIGHLIGHTS

Special Report

City of Knowledge

Malaysia, Taiwan U Presidents' Forum

- Geoscientists Warn Bioeffects of Centennial Polarity Reversals
- Innovative Courses to Inspire Learning
- NTU, EU Educators Promote Higher Education Coalition

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Perspectives: Executive Vice President for Financial Affairs, Dr. Ruei-Hsiang Guo

Becoming one of the world's topmost universities has always been National Taiwan University's foremost vision; with that being said, the Office of Financial Affairs has devoted its energies into raising funds, managing those funds, and smartly investing the capital into other promising venues to ensure sustainable growth for NTU's resources.

Our goal is to cut costs and maximize profits for NTU's funds, naturally; and to that end, we move to "raise funds" by means of corporate contributions, small private donations, and alumni support. As for cutting costs, we would kick off a "fund management scheme" by setting up a sustainable money market fund so that professional planning and consultation are in place when demand arises to cover the expenses for monumental development projects.

NTU has a large reserve of alumni throughout the world and across the professional spectrum. Their support has proven to be one of the greatest assets for NTU over the years. Previously, NTU administrators divided "alumni engagement" and "fundraising in the alumni community" into two different outreach areas. We will work towards incorporating the two to meet three vision concertedly: engaging the alumni more extensively, keeping them in the loop about NTU's development goals, and informing the alumni of NTU's needs to raise funds and what the capital is used for.

NTU has pioneered the country in setting up a "sustainable fund" program ten years ago. Many schools throughout Taiwan started to follow suit after witnessing how effective the program became. The sustainable fund program works like this: capital raised goes into NTU's repository, and the interests incurred on the repository can support the school's development projects.

Expenditures allocated for NTU's schools and colleges are footed by public service budget - or funds - for special projects. Yet with government subsidies trickling out, we decided to divert the interests incurred on the funds raised, to cover the expenditures.

Indeed, education is NTU's overarching goal and with that, I want to wisely use the monetary resources we have to help nurture leaders of the future. Our professional experience is used to ensure NTU's prosperity, and we

hope to build a greater support network with our alumni community. Should the need arise, we will also keep the alumni posted so that a unified vision can be reached to scout out more funding, thus securing a vantage point globally for NTU's education and research efforts.



A Book-Lovers' Gathering: Tsung-Ming Tu Book Collection Donation Ceremony at NTU Library

August 25, 2018 marked the 125th anniversary of the birth of Dr. Tsung-Ming Tu (1893-1986), the first doctor of medicine in Taiwan, the first dean of the NTU College of Medicine, a former NTU Interim President, and the founder of Kaohsiung Medical College (later reorganized and renamed "Kaohsiung Medical University").

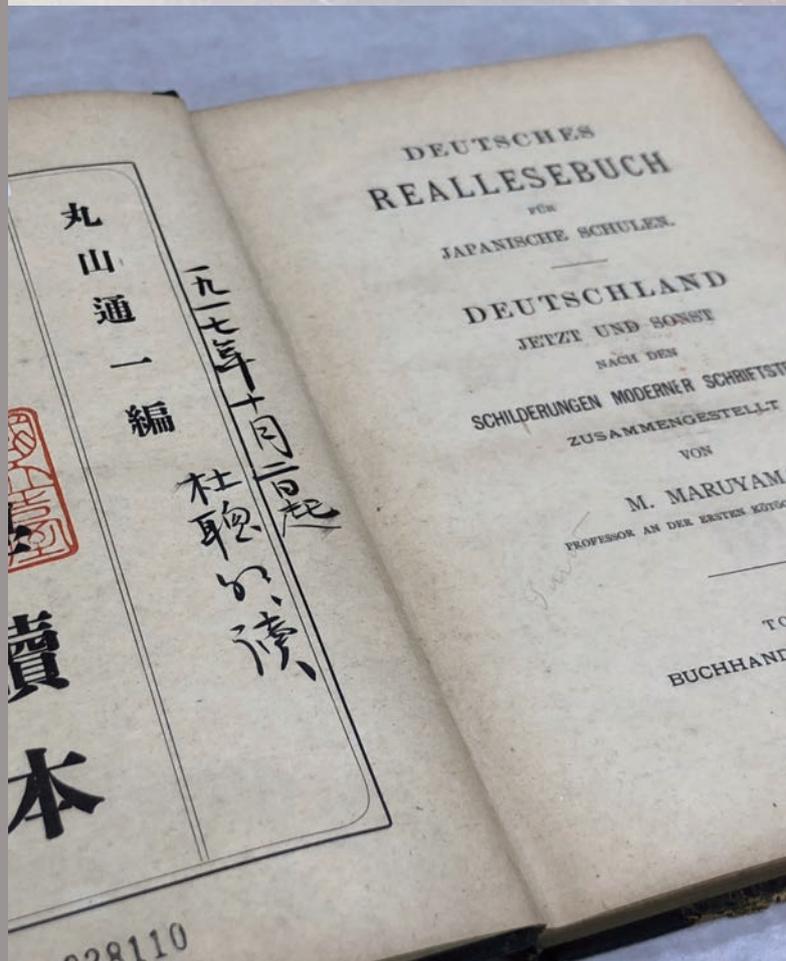
To commemorate this significant day, NTU Library held the Tsung-Ming Tu Book Collection Donation Ceremony on August 24, just the day before Dr. Tu's birthday.

Dr. Tsung-Ming Tu graduated from Taiwan Governor's Medical School (the predecessor of the NTU College of Medicine) in 1914 and received his doctorate of medicine from Kyoto Imperial University (now Kyoto University) in 1922. He was the first Taiwanese professor to teach at Taihoku Imperial University (now NTU) during the Japanese colonial rule. Dr. Tu was also a respectable contributor to medical education, research, and administration in Taiwan. Besides his pioneering research on pharmacology and toxicology, he also founded the Kaohsiung Medical College in 1954 and served as its first president for over a decade.

Dr. Tu's commitment to medical research and education is reflected in the abundance and richness of his book collection, which goes beyond the field of medicine, covering the breadth of humanities, medical education, the arts, and social welfare.

With the liaison support of Prof. Hsiu-Jung Chang, retired from NTU's Department of History, and Dr. Yung-Hsing Chen, a well-known psychiatrist and politician, the Library began reaching out to the Dr. Tsungming Tu Foundation in 2016. Following numerous talks and discussions, the Library finally earned the blessing of the Foundation, which consented to donate Dr. Tu's collection to the Library in July 2017.

In a gesture of appreciation to the generosity of the Dr. Tsungming Tu Foundation for donating this invaluable book collection, the University Librarian Prof. Kuang-Hua





Librarian in charge of the collection tells the guests about these rare books.

Chen unveiled the establishment of the “Tsung-Ming Tu Collection,” and presented a certificate of appreciation to Prof. Charles W. Tu, a grandson of Dr. Tu and Chairman of Dr. Tsungming Tu Foundation.

The event opened with the premiere performance of “Tribute to Dr. Tsung-Ming Tu,” written specifically by the celebrated composer Chien-Yu Huang. The piece consists of three movements: “Bygones,” “Tamsui,” and “Legacy,” complemented by five beautiful poems written by the late Dr. Tu. The poems were sung by noted soprano Chi-Chen Chiang, accompanied by a string quartet, led by Mr. Kai-Hung Teng from the Taipei Philharmonic Orchestra. Both the songs and the harmonic support provided the event with a fitting musical note that riveted the audience.

Chairman Tu recounted the details of the donation and expressed his gratitude that the collection would now be properly maintained and sustained for generations to come. With a digitization plan to initialize the collection, researchers and scholars in the future will be able to access the materials they want in the assemblage to enrich their studies, make fresh findings, and offer new contributions.

After the donation ceremony, library staff ushered the distinguished guests to the Tsung-Ming Tu Collection area in the Library, marking the highlight of the event.

The Tsung-Ming Tu Collection contains a total of over 8,000 items, including 5,840 books in Chinese, Japanese, and English, and 2,505 issues of 113 journals. The collection also includes many thread-bound ancient volumes on medicine, old medical books published during the Japanese Colonial Era and the early Republican period, as well as calligraphy copybooks and inscription rubbings, rivaling the worth of the world’s best rare-book collections.

The collection is lovingly housed in the Special Collection Area on the fifth floor of NTU Library. Some of the books are shelved in open stacks in a specific area for display, whereas rare books and special items are preserved in closed stacks for access by request only. NTU Library will continue to provide professional services and purpose-built environments to preserve this precious collection for future researchers and generations to come, to present new inspirations, scholastic gems, and insights from the anthology into their endeavors.

NTU & UKM Cohost First Malaysia-Taiwan University Presidents' Forum

Inaugural Malaysia-Taiwan University Presidents' Forum

In recognition of the establishment of the Taiwan Education Center in Malaysia last year, NTU initiated and cohosted the first Malaysia-Taiwan University Presidents' Forum with its partner university, the National University of Malaysia (UKM), on UKM Bangi Campus in Malaysia on July 26.

Delegates and representatives from many universities in Taiwan and Malaysia attended and presented talks at the Presidents' Forum.

The inaugural Malaysia-Taiwan University Presidents' Forum featured extensive discussions on four themes: (1) The Role of the University in the 21st Century; (2) Entrepreneurship and Industry Links; (3) Malaysia-Taiwan Collaboration: Pushing for the Southbound; and (4) Enhancing Mobility to Strengthen Regional Collaborations.

NTU Interim President Tei-Wei Kuo delivered a talk on "The Role of the University in the 21st Century." He redefined the university as an institution for "strengthening society's backbone, producing cutting-edge knowledge to meet global challenges, and engaging social issues and community actions." Dr. Kuo cited NTU as an

example and referred to several of its efforts and achievements in social responsibility, entrepreneurship, and innovation.

Education Fair, Exchange Forum, and Other Activities

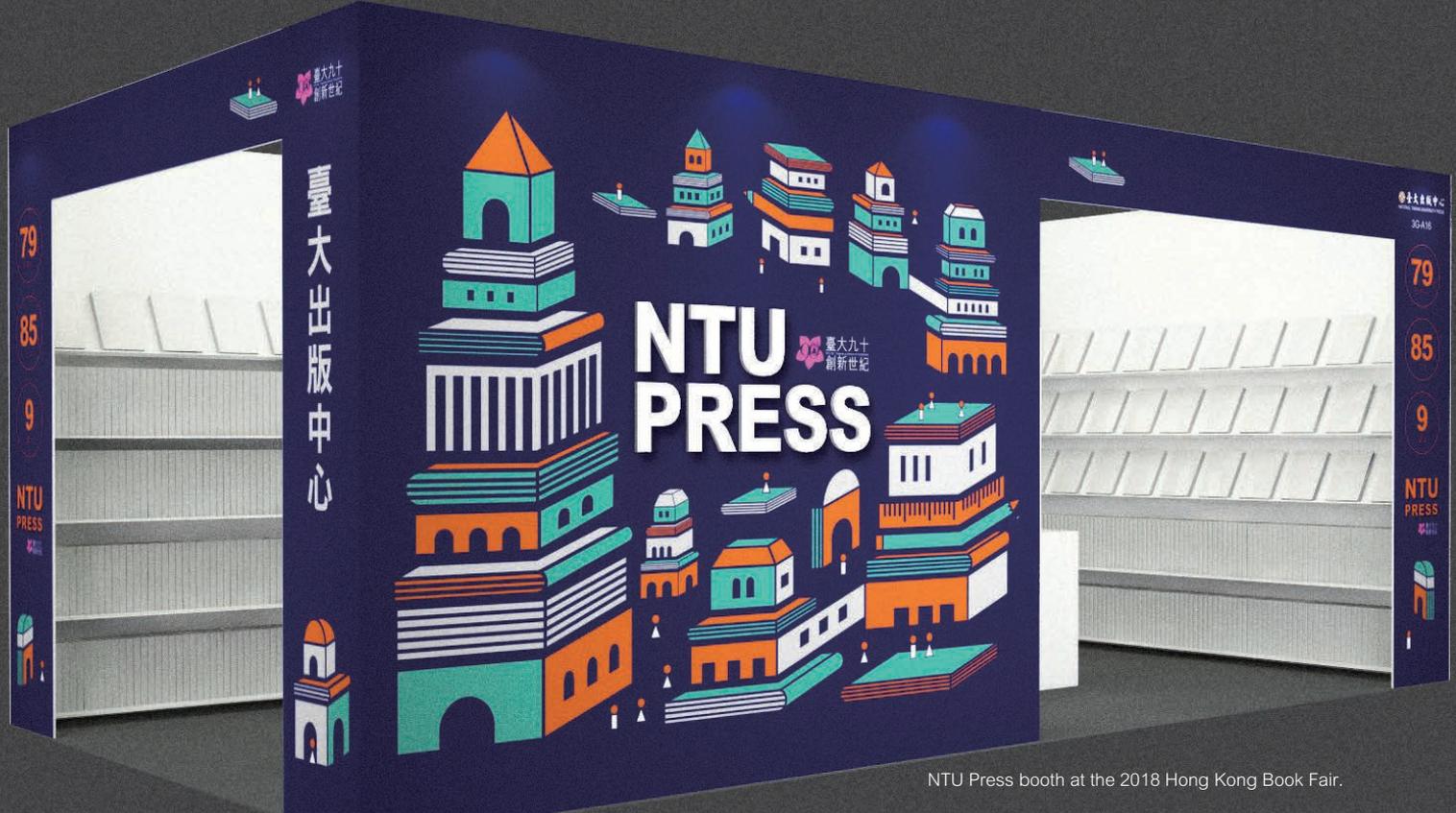
Besides the Presidents' Forum, the delegation from Taiwan also attended several other events to promote Malaysia-Taiwan higher education collaborations, the sharing of academic resources, and further studies in Taiwan.

On the day after the Presidents' Forum, NTU Vice President Luisa Shu-Ying Chang and several delegates from Taiwanese universities visited the United Chinese School Committees' Association of Malaysia (Dong Zong). During the visit, the delegation learned of the efforts by Dong Zong to promote Chinese-language education in Malaysia, as well as the shortage of teachers in local Chinese independent high schools. Dong Zong called for assistance in compiling and updating teaching materials from Taiwanese higher education institutions.

On July 28, the Federation of Alumni Associations of Taiwan Universities, Malaysia (FAATUM) held a forum on Taiwan-Malaysia higher education exchanges. The Taiwan delegation also joined the 44th FAATUM Mandarin Annual Dinner, a grand occasion where nearly a thousand alumni gathered. The event was highlighted by the unveiling of *The Years Back in Malaysia* (literally translated from "我們返馬這些年"), a newly published essay collection featuring 26 alumni's tales and misadventures in their career pursuits after completing higher education in Taiwan. The delegates gladly bought the digests, calling them a great keepsake.

Group photo at the 2018 Malaysia-Taiwan University Presidents' Forum.





NTU Press booth at the 2018 Hong Kong Book Fair.

Building a City of Knowledge: NTU Press at the 2018 HK Book Fair

We can't buy happiness, but we can buy books — and it's pretty much the same thing! The 2018 Hong Kong Book Fair, one of the highlights for the international Chinese-language publishing community, was held during July 18-24 at the Hong Kong Convention and Exhibition Center. NTU Press lit up the event with a bright display of its latest and most popular publications at its booth on the 3rd floor, which attracted throngs of readers.

As 2018 happens to be NTU's 90th anniversary, NTU Press inspired the readers with "Building a City of Knowledge" as its motif to highlight the academic breadth and depth that NTU Press has offered to readers for decades, and how the university has acted as an agent of change for progressive social development in the knowledge age, when knowledge and innovation are becoming the capstones to a better future.

During the fair, NTU Press literally "activated" its power to turn a solitary act into a shared vision for local readers. In the academic discipline of Taiwan studies, NTU Press presented *Taiwan's Imagined Geography: Chinese Colonial Travel Writing and Pictures, 1683-1895* by Prof. Emma

Jinhua Teng of the Massachusetts Institute of Technology; *Governance of the Indigenous Peoples in 20th-Century Taiwan: From the Empire of Japan to the KMT Regime* by Associate Prof. Tadasu Matsuoka from Japan's Dokkyo University; and *Sounds from 1922: Tanabe Hisao's Fieldwork in Colonial Taiwan and Amoy* by Prof. Ying-Fen Wang of NTU's Graduate Institute of Musicology. These three books encourage readers to wander through the historical and social landscapes of Taiwan from literary, administrative, and musicological points of view.

The NTU & HYI Academic Book Series continues to deliver high-quality investigative findings for overseas studies. It regaled the readers at the fair with two new publications: *Politics of Legitimacy: The State-Society Relations in Contemporary China* by Prof. Dingxin Zhao of the University of Chicago and *Transforming "Sacred Religion" into Daoism: Festival, Belief, and Culture in the Chinese Society of Malaysia* by Prof. Fong-Mao Lee of the Institute of Chinese Literature and Philosophy at Academia Sinica.

Fans of popular science could also find a treat in *The Universe That Rings: On Einstein's General Relativity and Gravitational Waves* by Dr. Mark Lee, a Chinese-American space mission scientist at NASA. The book guides readers on a fascinating journey through the mysteries of relativity in layperson-friendly language and reveals how the theory of relativity has changed humanity.



NTU team wins the Grand Prize at the 2018 Robot Competition.

NTU Team Wins Grand Prize at 2018 Robot Competition

Robots can be far more useful when working in tandem with people than when working by themselves, and NTU puts the “robot” back in robotics to elicit more future potentials. The 2018 Robot Competition was held at the Taipei Nangang Exhibition Center on Friday, August 31. The event was hosted jointly by the Industrial Development Bureau of the Ministry of Economic Affairs and the Precision Machinery Research & Development Center, in response to the government's campaign to promote the smart robot industry here.

The competition was fierce among the talented competitors from across Taiwan. In the end, the Grand Prize went to the team led by Prof. Ren-Chyuan Luo of NTU's Graduate Institute of Electrical Engineering. The unanimous favorite of the judges turned out to be a smart robot that was developed, designed, and assembled from scratch by the NTU team.

The Robot Competition was aimed to stimulate the students' expertise and creativity in designing and developing robots, by challenging the contestants to think creatively to come up with solutions to meet the needs of and overcome the problems faced by industry. At this year's event, the contestants' smart robots vied in dramatic settings and were tasked with problems in real-life scenarios. The student teams responded by giving free rein to their creativity in the race to design innovative, practical, and feasible robots.

The 2018 Robot Competition's jury consisted of top management from local industry — VP-level and above — as well as renowned university professors. The NTU team's success in beating the strong challenges of the strong teams and impressing the judges in the competition was commendable. Moreover, the competition opened the student participants' eyes to further possibilities and potentials of robotic applications that are poised to revolutionize human life.

A New Chapter for NTU's Overseas Summer Programs

Summer programs are one of the education highlights of NTU's Office of International Affairs, as it screens and sends 300 young scholars to NTU's partner universities around the world for a summer of inspiration and learning. These programs, which last 3-6 weeks, are aimed to boost students' language proficiency while exposing them to different cultures and learning environments. Meanwhile, the young scholars enjoy a memorable time with students from all corners of the world, an experience that will surely broaden their social horizons.

NTU's partner universities, spanning Europe, the Americas, and Asia, offer a variety of summer courses designed to meet the needs of different scholars. The courses include summer sessions, language and culture programs, and summer research programs.

UC Berkeley Summer Sessions in the United States and the UBC Vancouver Summer Program in Canada offer credit courses, which work like an exchange student program or a study-abroad internship. The experience is beneficial for students hoping to begin a long-term research career abroad.

Language and culture programs are available at the prestigious University of Pennsylvania, Stanford University, Heidelberg University, University of Hamburg,

Sciences Po in France, and Complutense University of Madrid in Spain. These well-established courses are known to enrich each participant's cultural experience, guaranteeing academic growth and extensive travel. Veterans of these programs sing their praises of the programs like modern-age "strolling minstrels."

NTU and Hertford College at the University of Oxford have joined hands to launch NTU-specific programs that are also open to freshmen. Besides improving the students' language skills, the programs also allow participating youth to make friends with people of different academic years and departments.

This year's summer research program welcomes the addition of "Particles, Strings & Cosmology," "Health Economics," and "Climate Change" by the University of Hamburg, which promise students not just an eye-opening experience but to show the way to a promising academic career.

As a part of its New Southbound policy, NTU has collaborated with Chulalongkorn University, the oldest institute of higher education in Thailand, to establish a new CU Summer Program in Thai Language and Culture. Outstanding students from NTU who are admitted into the program will participate in workshops, onsite visits, group-based studies, and intensive exchange activities with local students to explore the country's vibrant history, culture, and economy.

This pioneering program is aimed to strengthen the participating NTU students' appreciation of Thai culture and groom them to play vital roles in the developing bilateral relationship between Taiwan and Thailand.

Prof. Jittima of Chulalongkorn University engages NTU students in a lively discussion.



Inspiration, Growth, and Learning: NTU Builds Connections with France and Belgium through Forums

Higher education has been lauded as a means to motivate, educate, and inspire minds, and that is what the 2018 Taiwan-France Higher Education Forum and the 2018 Taiwan-Belgium Higher Education Leaders Forum are all about — to train leaders and impact communities.

During July 8-12, NTU delegates joined the Taiwan delegation to attend the two higher education forums, one held in Reims, France and the other in Brussels, Belgium.

Both forums were led and organized by the Foundation for International Cooperation in Higher Education of Taiwan (FICHET), a national agency for the promotion of higher education and international education mobility. Led by Ministry of Education (MOE)'s Department of International and Cross-strait Education Director General Cheu-An Bi, the Taiwan delegation which visited the French and Belgian host institutions was the largest of its kind ever to be dispatched to Europe.

A total of 34 representatives, including 8 presidents from 18 universities across the island, participated in the bilateral meetings. Vice President for International Affairs, Luisa Shu-Ying Chang, represented NTU in both forums with Linda Chang and Diana Liu from the NTU Office of International Affairs.

NTU's partnership with 46 institutions in France and 7 in Belgium has led to numerous long-lasting collaborations with educational programs in the two countries, including double degree programs, student and staff exchange programs, and EU research cooperation projects.

Supported by the MOE and the Ministry of Science and Technology, these bilateral frameworks have been crucial to NTU's efforts to advance research and innovation. Moreover, among the EU countries France sends the highest number of international students to Taiwan and places sixth for the greatest total of Taiwanese students received. Moreover, France's status as the number one study abroad destination for a non-English speaking country reaffirms the need to continue strengthening the partnership between France and Taiwan.

The first Taiwan-France Higher Education Forum was held in March 2017 within the agenda of the annual conference of the Asia-Pacific Association for International Educators (APAIE) held in Kaohsiung, Taiwan. This second installment held at the University of Reims Champagne-Ardenne was a joint effort between the FICHET and Campus France.



The forum drew over 170 participants, including 24 university presidents, from over 100 French institutions, which brought into focus the current trends in the Taiwanese and French education communities, especially the challenges arising from new legislatures, international partnerships, and opportunities offered by internationalization.

In the session titled “More Innovation in Higher Education,” Vice President for International Affairs Luisa Shu-Ying Chang delivered a talk on behalf of NTU Interim President Tei-Wei Kuo on “Innovative Programs to Activate Student Mobility between France and Taiwan.” The other speaker in the session was ENS Paris Saclay President, Prof. Pierre-Paul Zalió. Vice President Chang emphasized NTU’s continued effort in fostering and promoting specially tailored programs to help unlock potentials in students, faculty, and staff. The agenda also included site visits to 42 (a computer programming school), University Paris-Saclay, PSL Research University, Synchrotron SOLEIL, Neurospin (a research center for innovative cerebral imagery), Nano-Innov (an integration center), and more.

The delegation also attended the inaugural Taiwan-Belgium Higher Education Leaders Forum held at the Belgian Academy of Research and Higher Education (ARES) headquarters in Brussels during July 11-12, 2018. A total of 39 representatives from 26 institutions, including 6 rectors and vice-rectors, participated in the event. The forum began with a keynote speech delivered by Mr.

Giorgio Marinoni, Manager for Higher Education and Internationalization Policy at the International Association of Universities (IAU). Marinoni stressed that the term “globalization” should not be confused with “internationalization.” The latter refers to a multidimensional and intentional process to promote continuous international development. The main goal of higher education, therefore, should not be competing to attract the most international students, but instead addressing global challenges and local needs.

Internationalization is now a chain of education systems in which today’s students become tomorrow’s scholars who shall mentor the pupils of the future to redefine the possible. Globalization of higher education, on the other hand, underscores cross-border student mobility that makes the world ever more interconnected.

In addition, all the attendees participated in small group roundtable discussions focused on dual/double/joint degree programs, internationalization at home, and academia-industry cooperation. Taiwanese delegates later visited two of Belgium’s leading universities: Katholieke Universiteit Leuven (KU Leuven) and its French-speaking counterpart, Université Catholique de Louvain (UC Louvain). These visits allowed fruitful exchanges and thematic discussions between the Belgian and Taiwanese officials, lending impetus to movement building in higher learning and strengthening international community engagement.

Group photo.



A Feast of Summertime Memories: 2018 NTU Plus Academy Summer+ Programs Bring it On!

Every summer has its own stories to tell, and NTU always makes sure to spin an inspirational yarn and never leave a dull moment in its storybook.

NTU's Office of International Affairs (OIA) hit the ball out of the park by organizing the 2018 NTU Plus Academy Summer+ Programs, pooling the assistance of 120 instructors and professors from 11 colleges throughout the campus to mentor 253 students from 105 schools located in 25 countries around the world (including the University of California in the United States, Imperial College London in England, Chulalongkorn University in Thailand, the University of British Columbia in Canada, the University of Tokyo in Japan, Ewha Womans University in South Korea, the University of Sydney in Australia, Aalto University in Finland, and Heidelberg University in Germany, to name just a few).

The program was an extraordinary combination of professional learning and cultural experience that brought students up close to the kaleidoscopic facets of Taiwanese arts and history. The program offered 13 courses, covering Chinese language, research and lab courses, arts and culture, business management, technology and engineering, and natural and social sciences.

To make sure that the students got the most out of the programs that ran 4-6 weeks in duration, the OIA slotted a diversity of lectures, lab experiments, and onsite applications into course planning for the international students. Through the program, the students got more than just a superficial taste of Taiwan's colorful folk customs, ecological makeup, dietary philosophy, historic substance, and cultural capstones — becoming international storytellers of the “places and faces of Taiwan.”

During the program, the students left their footprints in the National Palace Museum, Taipei's Old Town area, the wharf in Tamsui, tea gardens in Maokong, the Shilin night market, the panoramic Lungshan Temple in Manka, the historic destinations in Dadaocheng, and Yilan. The internationally celebrated hospitality of the Taiwanese people was positively transformative for these foreign guests.

NTU's student advisors kick it up with University of Southern California's visiting young scholars.



While applying themselves to serious studies, the young foreign scholars also basked in their summer cheer in a style uniquely Taiwanese. Twelve student advisors from NTU worked as both tour guides and companions to help put Taiwan's best foot forward so that the foreign guests would have a full stock of memories to take when it was time to say goodbye. Laughter and impassioned conversations could be heard in the evenings at the Prince House, where the young scholars called home during their stay in Taiwan. They engaged in lively, thought-provoking talks about gender equality, transitional justice, and other social issues that stand front-and-center in Taiwan and the rest of the world. These starlit meetings of the mind were where Facebook, Instagram, and Twitter accounts were shared and followed.

The saying, "time flies when you're having fun," rang true as the program drew to an unforgettable close. The young scholars from afar expressed their fast-growing love for Taiwan in their own ways. A dozen or so students from the University of California boarded the shuttle bus to the airport, each holding his or her last tumbler of bubble tea before leaving Taiwan. Phone numbers and emails were exchanged and group photos were taken as the moment of goodbye drew near. UC students extended heartfelt invitations to their student advisors to visit the Golden State to bask in its warm and charming sun.

Students from Indonesia, South Korea, and Singapore made the most of their last night in Taiwan by hitting a karaoke bar with their advisors. As the students belted out hit songs and golden classics, they urged the advisors to visit their homes for a culinary tour. They raved about rendang, a signature Indonesian dish; Bak-kut-teh, a popular Singaporean soup dish; and kimchi, a staple in Korean cuisine. The boisterous bunch also discussed what it's like to take a stroll along the majestic Gardens by the Bay in Singapore, and pose before Gyeongbokgung Palace in Seoul in traditional Korean costumes.

Before the evening came to a perfect conclusion, all of the students, advisors, and OIA staff members made a pact to meet again, whether here or elsewhere in the world.

The 2018 NTU Plus Academy Summer+ Programs may have ended, but the NTU campus's endeavors toward internalization will not skip a beat. Its event calendar is quickly filling up with upcoming activities, including the Winter+ Program, Spring+ Program, and other specialized courses (such as the short-term program partnership with Kyung Hee University in South Korea, and EDGE-NEXT Program with the University of Tsukuba in Japan). As per the government's New Southbound Policy, NTU is also poised to reach out to outstanding students in Southeast Asian countries and encourage them to come to Taiwan on a quest for excellence and friendship.



Rapid Geomagnetic Oscillations and Centennial Polarity Reversals Identified

The intensity of the Earth's magnetic field varies continuously and has decreased by 10-15% over the past century, leading to suggestions of a possible impending reversal.

A geomagnetic reversal refers to change in a planet's magnetic field that involves an interchange of the positions of magnetic north and magnetic south. These reversals have been documented over the years and were first revealed in the early 20th century.

However, the transition time and detailed process of a reversal event have remained elusive even though the geomagnetic field has been well-known for over two thousand years and the geomagnetic reversals were discovered in igneous rocks a century ago.

The leader and corresponding author of the study, Dr. Chuan-Chou Shen, a distinguished professor of the NTU Department of Geosciences, published their latest research findings in the internationally renowned journal, *Proceedings of the National Academy of Sciences of the United States of America* (PNAS) on August 20, with his team of dedicated researchers.

Dr. Shen and his team presented a multidecadally resolved geomagnetic record of a stalagmite dating back to 107-91 thousand years ago, collected from Sanxing Cave in southern China.

The combined use of the front-end U-Th radioisotopic dating techniques, which boast precision down to a few decades, and high-sensitivity instrumental analysis on ultra-trace amounts of magnetic mineral from stalagmites from southern China, has generated results that reveal details of repeated asymmetric inter-hemispheric polarity oscillations on centennial-to-millennial timescales. One surprisingly abrupt centennial reversal transition 98 thousand years ago occurred in just 144 years, which is 10 times shorter than previously thought.

Scientists have fiercely debated the bioeffects caused by the reversals. If such an abrupt event should occur in the future, it could confuse animal navigation, disturb radio communications, and damage satellites, electronic power systems, and global internet systems, spelling many disasters for the human society. Hypotheses have been made on how these reversals could trigger mass extinctions. Many such arguments were grounded in an apparent periodicity in the rate of reversals, but more careful analyses show that the reversal record is not periodic.

Dr. Shen and his team published their findings in *PNAS* in a research article titled, "Multidecadally Resolved Polarity Oscillations during a Geomagnetic Excursion." DOI: 10.1073/pnas.1720404115.





Piddock Clams — Anything but Boring! An Evolutionary Journey from Salt to Fresh Water

As you potter happily along Taiwan's pebbly coastlines, you notice strangely holey rocks on tidal flats, and wonder, who or what in the world made all those holes? And you think you have genes for not being trypophobic...

Were these holes made by aliens testing what planet Earth is all about? Or by someone who has too much time on their hands? It's neither of those. The answer is: piddock clams.

These rock-boring organisms incise or bore hard substrates, especially carbonate rocks and calcareous structures (e.g., dead corals and shells), through mechanical disruption and/or chemical decomposition. At times they build a home in the wood hulls adrift at sea or manmade harbor facilities. Over time, the holey damage caused by the piddock clams could compromise the economy of coastal towns.

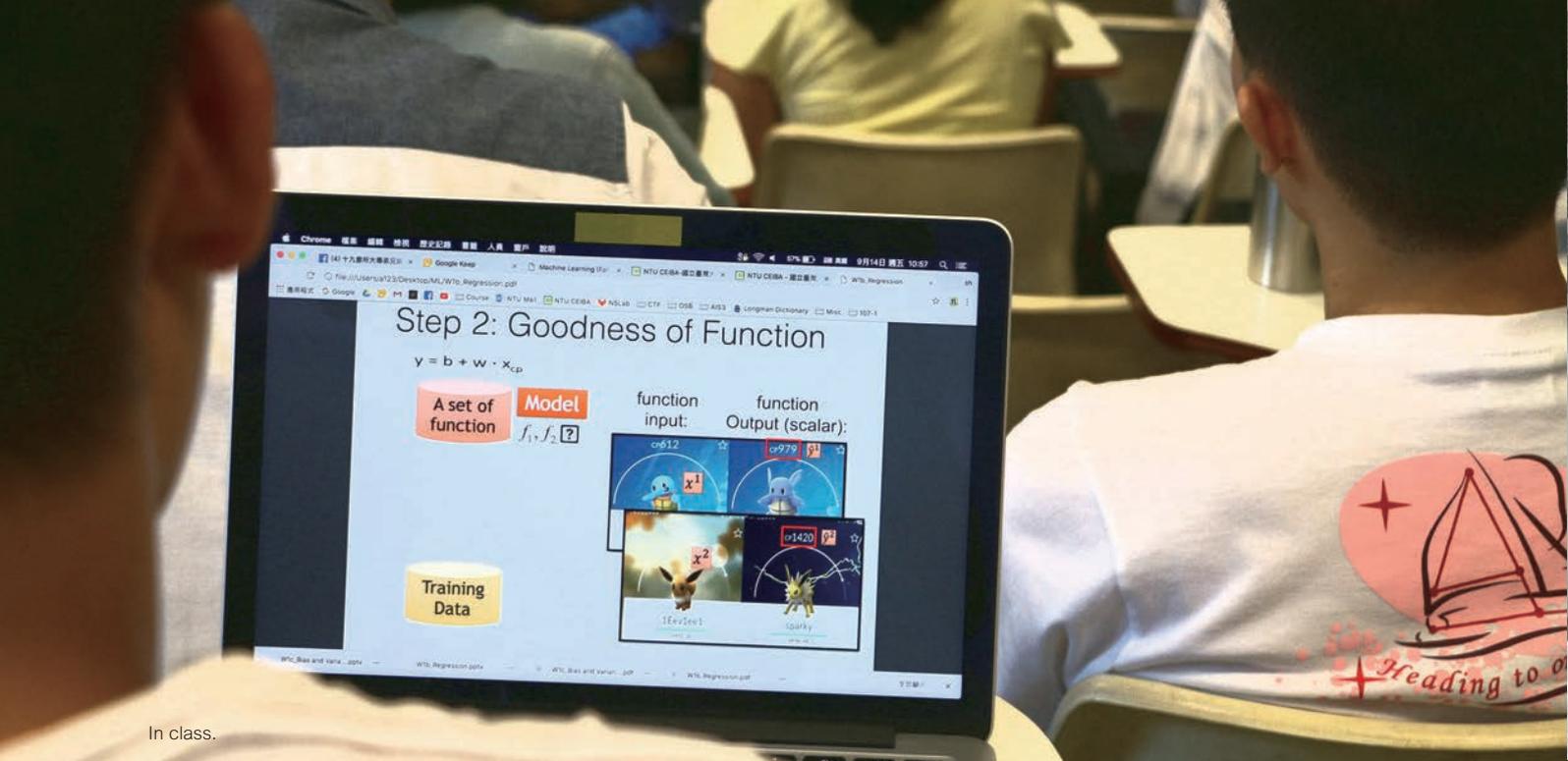
Nonetheless, with tidal influence of the oceans and tectonic plate movements shifting and changing over time, these tiny hole drillers along the coastal areas might also evolve and learn to adapt to new living environments. Does that suggest that the piddock clams could likely migrate to freshwater systems?

To get to the bottom of the truth, Assistant Prof. Yu Wang and Prof. J. Bruce H. Shyu of the NTU Department of Geosciences partnered with a number of scientists to curate the research results they gathered along Myanmar's western coast in the subduction zone, and the piddock clam specimens found in submerged siltstone rock outcrops in the Kaladan River in eastern Mizoram State of India, to establish a model that illustrates how the community of hole-boring (bioerosive) mollusks in freshwater habitats have learned to adapt from their saltwater homes.

Quite a few scholars contributed to the unique research findings. They are: Ivan N. Bolotov from Northern Arctic Federal University and researchers from Russia, Norway, Australia, Portugal, Thailand, Myanmar, and France. Their findings were published in *Nature Communications* on July 23, 2018, titled "Discovery of a Silicate Rock-Boring Organism and Macrobioerosion in Fresh Water," DOI: 10.1038/s41467-018-05133-4.

What is significant about this particular study, is that it brings into focus how interdisciplinary research efforts now seek to pool the research contributions of different specialists. In this way, each scientist contributes to a shared academic mission offering something individual, something unique.

Furthermore, the publication of this study attests to the long-term dedication of NTU's research team, a proud lineage that began its survey in Myanmar's coastal areas in 2006, when Wang and Shyu started their investigative undertaking on the neotectonic uplift movement there.



In class.

Innovative and Fun: Machine Learning Class Makes Waves!

Assistant Prof. Hung-Yi Lee of the Department of Electrical Engineering shakes his head and wryly says, “The number of students enrolled in this class continues to swell like a tsunami; the class size has increased by the hundreds over the past three years!”

The heavy coursework, including six laboratory practicums and three end-of-semester projects, fails to reduce the number of aspirants. Consequently, Prof. Lee decided to raise the enrollment standard by strictly limiting the number of “enrollment tickets” awarded to those who pass the qualification exam. Those who receive the tickets feel like they have been granted entry to an elite, password-guarded party.

An entry-level course, “Machine Learning” is open to undergraduates, graduate students, and PhD students alike. Besides introductory lectures that provide students with a systematic overview of machine learning, the course also sharpens the students’ skills with hands-on lab practice. In short, the course trains budding computer scientists to design and build learning-ready machines for a wide spectrum of applications.

The class assignments form a battlefield, and it is the machines designed and built by the students that fight the battles. The assignments are wide-ranging and intellectually stimulating. For example, the students are

asked to train machines that make weather forecasts. Later, they are tasked to train machines to estimate a person’s annual income by constructing a data model on his or her basic information. This application is called FinTech and can assist financial institutions to screen applicants applying for mortgages.

The versatility of machine learning can be extended to cover word processing, social media monitoring and analytics, making user-driven product recommendations, conducting un-supervised learning, and much more. Such student-trained machines have to be battle-ready on all fronts.

Students who are interested in taking this knowledge and skill set a step further can enroll in “Machine Learning and Having It Deep and Structured,” which focuses on “deep learning,” a field of great scientific and application promise.

Since deep learning and its applications is a dynamic and rapidly growing field, Prof. Lee’s course content has undergone several makeovers since the class was first launched in 2015. In other words, the course is evolving and students learn something new and different every school year.

Lee’s approach to teaching is another factor that makes the course such a draw. For instance, in the very first class, he cited the estimate forecasts for the individual values (IVs) in the Pokémon Go game as an icebreaker. It immediately grabbed the attention of his students! As Lee finds most textbook examples boring at best, he vows to never put his students through that; hence, there is never a dull moment in his class.



Group photo.

Leap Ahead: NTU IC Summer Camp Primes Students with IT Trends and Goals

The IC Summer Camp hosted by the Integrated Circuits and Systems (ICS) Division of NTU's Graduate Institute of Electronics Engineering (GIEE) provides a chance for students to show their capabilities. This year's event was held on August 13-14, with 18 labs provided for a series of presentations, speeches, lab tours, and visits to some of the biggest companies in the high-tech community.

Among this year's 126 hopefuls from 21 universities throughout Taiwan, 70 were accepted into the camp.

Prof. An-Yeu Wu, Director of GIEE, welcomed the students in the opening ceremony and briefed them on the upcoming program that featured themed group discussions. Besides encouraging them to learn more about digital and analog electronics, Prof. Wu also urged the trainees to reach out to fellow participants from other schools and brainstorm on innovative ideas for ICS development and applications.

The first themed speech was given by Prof. Tzi-Dar Chiueh on the trend of 5G mobile networks research. The speech was followed by a presentation by Prof. Tai-Cheng Lee on the ICS-Analog Group, and Prof. Shao-Yi Chien on the ICS-Digital Group, with their research focuses.

The afternoon session was led by Prof. Tsung-Hsien Lin, who broke down the discussion topic into two categories: applications and current events. The former deals with the applications of ICs in wearable technology, sports technology, Bitcoin, and cryptocurrency mining, prompting trainees to think about development possibilities in the field.

The lab tour was held in the Barry Lam Art Gallery in one of GIEE's buildings. The upperclassmen in each ICS lab gave detailed introductions to their research highlights. They also designed amusing tournaments and Q&As to help the trainees learn about the lab environment.

Ten booths were set up to exhibit GIEE's research achievements. The booths also displayed actual mechanical objects and provided games and quizzes to prime trainees with professional knowledge, industry trends, and program enrollment information. During the activity, the trainees were given a lot to think about as they prepared for group presentations for the next day.

On Day 2, Profs. An-Yeu Wu and Tsung-Te Liu took the students to visit Nanya Technology Corporation's headquarters in New Taipei City's Taishan District. The young scholars came face-to-face with the corporation management, and took a tour of the headquarters building, sports center, cafeteria, and other facilities.

The IC Summer Camp was a priceless experience that opened the students' eyes to the working environment in the semiconductor industry. The afternoon's themed presentations brought the camp to its climax as the trainees unleashed their creativity and applied their know-how.

Come Surf on My Turf: Joint Field Course Takes Students to Green Island and Fushan Botanical Garden

“Surf & Turf” is the buzzword for this year’s International Joint Field Course, which was hosted by NTU’s College of Life Science, Tunghai University’s Department of Life Science, and Academia Sinica’s Biodiversity Research Center, with NTU’s College of Life Science in charge of program planning.

The 10-day program, held from July 23 to August 1, was joined by a 36-member group, some of whom came from the University of the Ryukyus (Japan), Prince of Songkla University (Thailand), and Bogor Agricultural University (Indonesia).

The course was held on Green Island and Fushan Botanical Garden, where the 19 participants explored the ecosystem and biodiversity of the subtropics through lectures, field surveys, and discussions. The instructors encouraged the students to think about some main issues confronting environmental science, then divided them into small groups to identify possible solutions.

Meanwhile, the instructors from various prominent universities around the world discussed potential academic partnerships in the future.

In the evening of July 24, Prof. Shao-Lun (Allen) Liu of

Tunghai University hosted a simple opening ceremony at Academia Sinica’s Green Island Marine Research Station, followed by a briefing on the course plan and rocky intertidal transect surveys. Next, Prof. Dian-Han Kuo of NTU’s Department of Life Science gave a lecture on the evolutionary adaptation of marine organisms to a terrestrial habitat titled, “From the Ocean: Evolutionary Transitions in Animal Forms’ Colonization of Land.”

A rocky intertidal transect survey was conducted in the morning of July 25, followed by a tour around Green Island, during which the group discussed the area’s geological makeup of volcanic tholeiite, andesite, and explosive fragments. That evening, Prof. Hui-Chen Lin of Tunghai University presented a talk on “The Impact of Tourist Pressure on the Biodiversity in the Intertidal Pools.”

One of the highlights during their visit to Green Island was snorkeling in Chaikou Diving Area where the group was enchanted by the region’s coral reef colonies and rich marine biodiversity.

The events on July 29 began with a video clip introducing Fushan Botanical Garden’s diverse species and fauna. In the morning, Prof I-Min Tso of Tunghai University gave an arthropod-inspired speech titled, “Introductory Lecture on Spider Behavior and Ecology.” That afternoon, the group traveled to the natural forest in the botanical garden to view the subtropical plant species.

This program was a thought-provoking combination of discussion and practice that deepened students’ understanding of biodiversity in nature. Moreover, NTU recognized this summer program as a credit course for the first time. In other words, all the students who completed this course were granted credits accordingly and left the program with a bounty of knowledge and experience.



A visit to the Fushan Botanical Garden.



Rocky Intertidal Transect Survey.



At the forum.

Stay Architecturally Inspired and Informed: NTU 90th Anniversary Architectural Forums

Architecture contains revealing messages about the cultural and technological development of humanity, and that is the spirit of the four “NTU 90th Anniversary Architectural Forums” — a series hosted by NTU’s Graduate Institute of Art History with the assistance of several campus offices and organizations.

The first two forums drew inspirations from the architectural landmarks on NTU campus. The first forum, “Get to Know NTU Architecture: A Look at Taiwan and the World from NTU’s Perspectives,” was held on June 1. The second one, held just two weeks later, was themed, “Residential Architectural Legacy Gifted to Taiwan by Taihoku Imperial University Professors.” The other two forums will be held in November and December.

The first forum was chaired by the NTU Graduate Institute of Art History’s Prof. Takashi Sakai who opened the event by citing architectural examples on college campuses in colonized nations to review the building landmarks of NTU’s predecessor, Taihoku Imperial University. Associate Prof. Shih-Chuan Huang, Director of the Graduate Institute of Architecture and Cultural Heritage at the National Taipei University of the Arts, compared pre-WWII imperial

university campuses in Japan in detail to highlight NTU’s architectural trademarks against the historical context of East Asia.

The next presenter was Assistant Prof. Ya-Jung Jiang from Chung Yuan Christian University’s (CYCU) Department of Architecture. Dr. Jiang directed the audience’s attention to the modernist Bauhaus movement in Germany. By situating NTU’s unique architectural landmarks in the modern architectural history of the world, Dr. Jiang expounded their historical significance in the tumultuous decade of the 1960s. Prof. Kuang-Tsung Tseng, also of CYCU, turned to the 1980s to explore the major social and political changes that Taiwan had been undergoing since 1949, including the lifting of the martial law in 1987, the reform in higher education, and NTU’s leading role in orchestrating the first campus planning in Taiwan after WWII.

The Showacho Houses built by Taihoku Imperial University professors on Wenzhou Street near NTU were the focus of the second forum. Often ignored, the houses still have been a fixture of NTU’s campus community. Originally private residences, the Showacho Houses were taken over by NTU after WWII and made into dorms for the university faculty. CYCU Assistant Prof. Ya-Wen Kuo opened the forum by providing a panoramic history of the houses and their inhabitants, giving the audience a glimpse into their lives at NTU. Prof. Kenji Horigome then described his experience of living in Taiwan as a Japanese, revealing the implications of the Japanese residential culture that is vague but somewhat familiar to the Taiwanese audience.

New Book Realigns Cultural Legacies Abroad with Taiwanese Society

Sometimes, the echoes from our past can be best heard when they come from far away. The world-renowned British Museum happens to house about 370 pieces of cultural artefacts from early Taiwan. The collection consists largely of textiles, basketry, and accessories, and most of them belonged to the indigenous peoples.

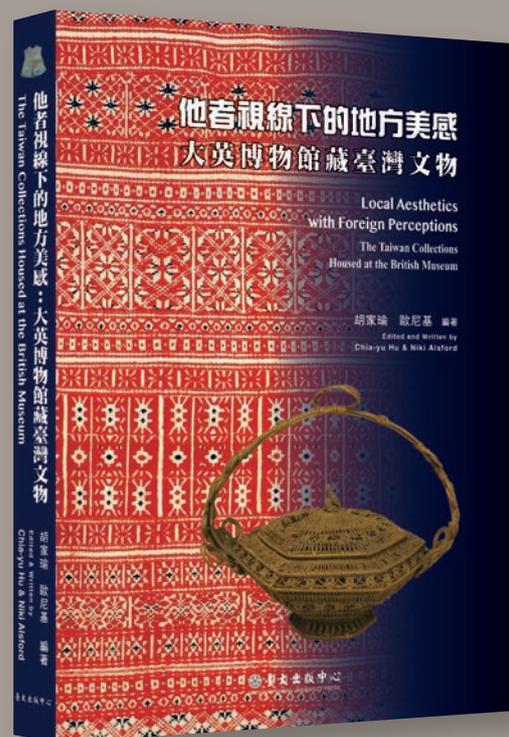
These artifacts reveal the material aspect of life in the indigenous communities, demonstrating their diverse skilled craftsmanship and aesthetic views while providing a glimpse into the brief contact between Taiwan and the West.

With support from the project “Digitization and International Information Exchange on Taiwanese Ethnological Collections in Overseas Museums,” Prof. Chia-Yu Hu of the NTU Department of Anthropology completed a study of the Taiwanese ethnographic collection at the British Museum. To reconnect these rare cultural heirlooms housed in faraway places with the Taiwanese audience, Prof. Hu selected 165 pieces in the collection to highlight their cultural significance in the original archives and constructed a web-based databank. Moreover, Prof. Hu co-authored a memorable volume with Dr. Niki Alford, *Local Aesthetics with Foreign Perceptions: The Taiwan Collections Housed at the British Museum*.

This book serves as an atlas to the simple grace of Taiwan’s cultural artifacts, guiding readers through the historic and aesthetic fiber of Taiwan’s indigenous peoples. It also helps readers tap into the wonderment

that Western explorers and missionaries experienced when they arrived in Taiwan after the opening of Chinese treaty ports in the mid-19th century.

Although they came to Taiwan generally for business, missionary work, anthropological explorations, or scientific investigations, some of the visitors had collected cultural specimens from Taiwan as souvenirs or material curiosities. Some of these early collections are housed in noted museums in Europe and the Americas, such as the British Museum, Canada Royal Ontario Museum, and the American Museum of Natural History. In compiling this book, the authors hope to inspire readers to consider how cultural artifacts can be integrated into community experience and reinvigorated in contemporary society.



The book provides a glimpse into Taiwan’s multifaceted cultural gems.



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