

時光 · 記憶

修復師

The Conservators:
Mending Memories,
Turning Back Time

有「修」無類
尖端醫療人才培育典範
剩食的美味饗宴
點亮智慧機械之都





立即成為粉絲

Taiwan

外交部官方粉絲團

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磺泉玉霧



Sulfur Spring Mists

圖／文・林格立 版面設計・王敬勛

北投地熱谷是北投溫泉的源頭之一，終年煙霧瀰漫，隨著天候、陽光、氣溫的改變，宛如神奇畫筆般，揮灑出一幅幅潑墨山水，身處其中如入夢幻之境。

Beitou Thermal Valley is the source that feeds many of Beitou's hot springs. All year round it is shrouded in vapors that change with the weather, the sunlight, and the temperature. Like a magical painter's brush, the shifting mists depict one landscape after another. To be among them is like entering a dreamland.

(photo and text by Jimmy Lin/tr. by Phil Newell)

延續古物生命的專家們

文·陳亮君

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台灣光華雜誌



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更正：

本刊107年2月號(國內版)
印度海外報導中，華教東香
「漢你畢語」應為「漢你中文」
特此更正說明。

古物修復，這是一門需要結合美術、歷史、科學之專業，更是需要經年累月的沉澱與累積，以及超乎常人的耐心與毅力，才能完成的志業。

本期《光華》帶您一窺斲琴、修琴大師林立正精湛的手藝，讓他談「琴」話當年。另深入紙類修復師吳哲韻的內心世界，聽他娓娓道來影響他深遠的幾個人生轉折點。更有從歐洲學成歸國的年輕修復師范定甫、賴志豪，分享如何運用國外所學，重現文物的精采風華。

台灣產業新創的能量，正如火如荼地展開。為了呼應世界工業4.0的浪潮，政府提出「5+2產業創新計畫」，其中智慧機械產業便是重點發展項目之一。從航太、製造，到產學合作，這一系列產業轉型與升級，奠定了台灣發展的利基。

如台灣首輛兼顧越野與賽道性能的電動超跑Miss R，擁有1,341匹馬力，就是運用台灣「少量、多樣化、高品質、高彈性」的製造優勢，再融合董陽孜的書法藝術，讓超跑與藝術跨界結合，展現出台灣豐沛的創造能量。

同樣令台灣引以為傲的，還包括長庚在2015年將既有的「臨床顯微重建手術研究

員」制度，轉型成結合臨床研究員與碩士學程的「長庚顯微手術國際碩士專班」，將台灣顯微手術的尖端醫療成就，透過前來就學的種子醫師，廣傳至全世界，也大大提升了台灣於國際上的能見度。

隱藏在台灣各個角落的感人故事，正一幕幕不斷地在上演。有來自越南的台灣媳婦曾女香，在家人、工作與志工服務中，找到了她人生的定位與希望；來自泰國的趙秀蘭，則用美食征服許多老饕的胃，也跨越了生活中所遭遇的種種困境。

而充分運用食品加工過程中所棄置的食材，變化出美味餐點的「剩食運動」，不但對環境更加友善，其影響力更擴及到友善耕作、食品安全、青年創業、老人關懷……等各個面向。

在小琉球，「海湧工作室」則為了保育海龜與環境而發起「海灘貨幣」活動，藉由獎勵民眾淨灘，減少一次性塑膠製品的使用。本期「影像對話」專欄，將帶讀者跟著攝影師時而潛入海中與海龜共游，時而漫步在蛤板灣沙灘觀浪、聽濤、賞夕陽，在欣賞小島風情的同時，一起來愛護海洋、守護海龜。

□

Saviors of Historic Artifacts

EDITOR'S NOTE

The conservation of historic artifacts is a profession that requires expertise in fine arts, history, and science, along with knowledge and skills accumulated over many years, and unusual patience and perseverance.

In this month's cover story we look at the craftsmanship of *guqin* maker and conservator Lin Li-cheng, and explore the world of paper restorer Wu Jer-ruey. We also hear from young conservators Fan Ting-fu and Lai Chih Hao, who have returned to Taiwan after completing studies abroad. They share how they apply what they have learned to bring back the magnificence of cultural artifacts.

The innovative capabilities of Taiwanese industry are unfolding at a rapid pace. In response to the world trend toward "Industry 4.0," the government has proposed the "5+2 Industrial Innovation Plan," in which smart machinery is a key focus of development. From aerospace to manufacturing to industry-academia cooperation, this wave of industrial transformation will lay the foundations for Taiwan's future prosperity.

For example, the electric supercar "Miss R" has both off-road and racetrack capabilities and boasts drive motors that can deliver over 1,300 horsepower. It uses Taiwan's manufacturing advantages of "small volume, diversity, quality, and flexibility," and also integrates art in the form of calligraphy by Tong Yang-tze, demonstrating Taiwan's abundant creativity.

Another thing for Taiwan to be proud of is Chang Gung University's International

Master of Science Program in Reconstructive Microsurgery. The overseas doctors who come to train and study at Chang Gung Memorial Hospital spread its cutting-edge achievements in microsurgery throughout the world, greatly raising Taiwan's international visibility.

Moving stories are played out in every corner of Taiwan. Tang Nu Huong, a Vietnamese woman who married into a Taiwanese home, has found her place in society and hope in her life through family, work, and volunteer service. Meanwhile Zhao Xiulan, from Thailand, has used cuisine to charm the palates of many epicures and to overcome all manner of difficulties in life.

The movement against food waste includes a drive to turn foodstuffs discarded during food processing into delicious dishes. These efforts are not only environmentally friendly, but impact areas including eco-friendly cultivation, food safety, youth entrepreneurship, and concern for the elderly.

On the little island of Xiaoliuqiu off the coast of Pingtung County, the "beach currency" launched by HiiN Studio to help protect sea turtles and the environment rewards people for cleaning beaches and avoiding single-use plastic products. Our Photo Essay this month takes us swimming with Xiaoliuqiu's sea turtles and strolling along Clam Bay Beach. As we listen to the waves and admire the sunset, let us come together to take care of the ocean and protect the turtles. □

(Ivan Chen/tr. by Phil Newell)

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封面說明：
修復師的手成了橋樑，修復存在的形體，
連結無形的記憶、情感、歷史與文化。(莊坤儒攝)
Cover: The conservator's hands are a bridge that links
the tangible artifact with the memories, emotions, history
and culture of the past. (photo by Chuang Kung-ju)

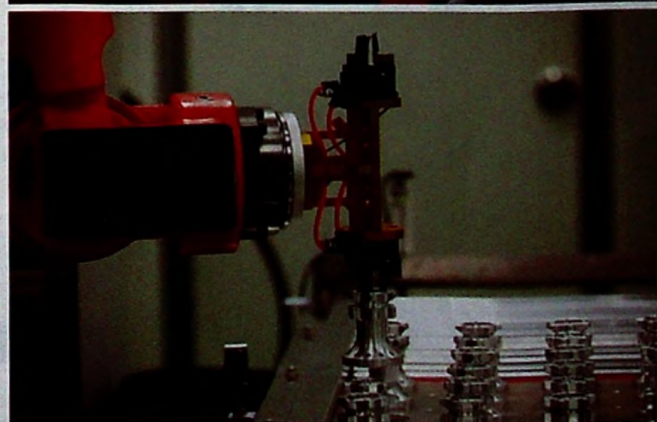
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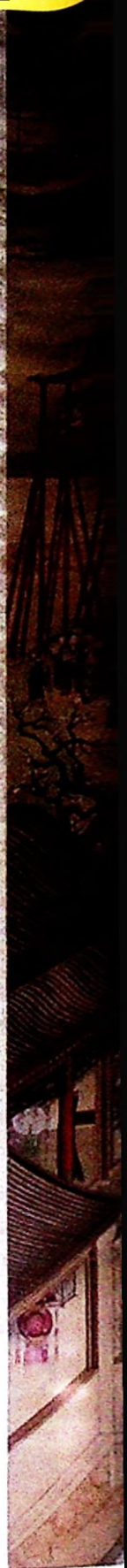
封面故事
COVER
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時光

記憶

修復師

The
Conservators:
Mending Memories,
Turning Back Time





莊坤儒攝 photo by Chuang Kung-ju

1888

德國柏林州立博物館成立保存科學實驗室，為全球首間聘請科技人才進駐的博物館。

The Berlin State Museums found a laboratory for conservation sciences, the first time any museum has hired scientific personnel.

1871

日本頒布《古器舊物保存方》，為日本文化財保護之濫觴。

Japan announces the Edict for Preservation of Antiquities, beginning conservation of cultural assets in Japan.



1920

英國大英博物館成立科學實驗室。

The British Museum founds a Research Laboratory.

1950

倫敦大學開設完整專業的修復課程。
日本公佈實施《文化財保護法》。

The University of London establishes a specialist course in conservation.
Japan promulgates its Law for the Protection of Cultural Properties.

1964

《威尼斯憲章》提出當代修復基本準則。

The Venice Charter for the Conservation and Restoration of Monuments and Sites proposes basic principles for modern conservation work.

他們是停住時光的魔手，
巧手修復文物
在時間侵蝕下的滄桑。
只有他們
讀懂文物在歲月中的遭遇，
並以記憶為經，
以技藝為緯，
延續文物的生命。

修，修補破損的、受創的傷處。
復，復原文化的、記憶的情感。

他們
是一群名為修復師的藝術家。□

1970

國立故宮博物院科技室成立，
乃國內文化保存發展的濫觴。
2003年改制為登錄保存處。

The National Palace Museum sets up a Conservation Division, beginning cultural conservation in Taiwan. In 2003 the division is reorganized as the Department of Registration and Conservation.



文・鄧慧純

圖・莊坤儒 / 林格立 / 林旻萱 設計・王敬勛

photos: Chuang Kung-ju, Jimmy Lin, Lin Min-hsuan / design: Henry Wang

2011

文化部文化資產局建置台灣文化資產氣候風險地圖，重視氣候變遷的預防性維護研究。

The Bureau of Cultural Heritage creates heritage risk maps, stressing preventive conservation in Taiwan.

They are magicians who make time stand still, deftly repairing and restoring cultural artifacts that have been eroded by time. Only they can interpret the impact of time on these artifacts, and apply memory and skill to extend their lives.

By repairing the places that have suffered damage, they restore the sentiments of culture and memory.

They are the artists known as "conservators." □

(Cathy Teng/tr. by Phil Newell)

1999

國立臺南藝術學院古物維護研究所成立。同年，因921大地震，文化資產毀損嚴重，台灣更積極推動文資危機管理與預防性保存。

The Graduate Institute of Conservation of Cultural Relics and Museology is set up at Tainan National University of the Arts. The September 21 Earthquake damages numerous cultural assets, and Taiwan more actively promotes crisis management and preventive conservation.

1997

台灣「國立文化資產保存研究中心」籌備處成立，後改制隸屬於文化部文化資產局。

The Preparatory Office for the National Cultural Heritage Preservation Research Center is set up; later the center is attached to the Bureau of Cultural Heritage of the Ministry of Culture.

1972

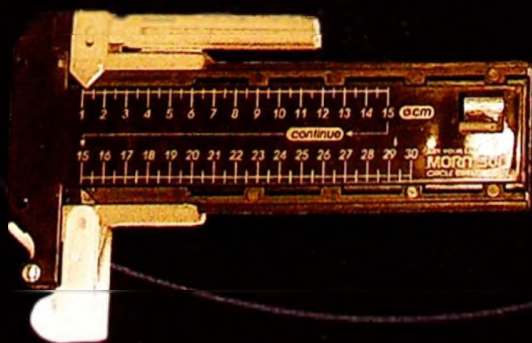
美國文物保存學會成立。
《世界遺產公約》制定。

The American Institute for Conservation of Historic and Artistic Works is founded. UNESCO adopts the World Heritage Convention.

1982

台灣《文化資產保存法》制定，為國內文化資產保存的最高準則。又歷2005年、2016年兩次修法。

Taiwan enacts the Cultural Heritage Preservation Act as its highest set of norms for the conservation of cultural assets. It is amended in 2005 and 2016.



只識琴中趣，留連古琴音

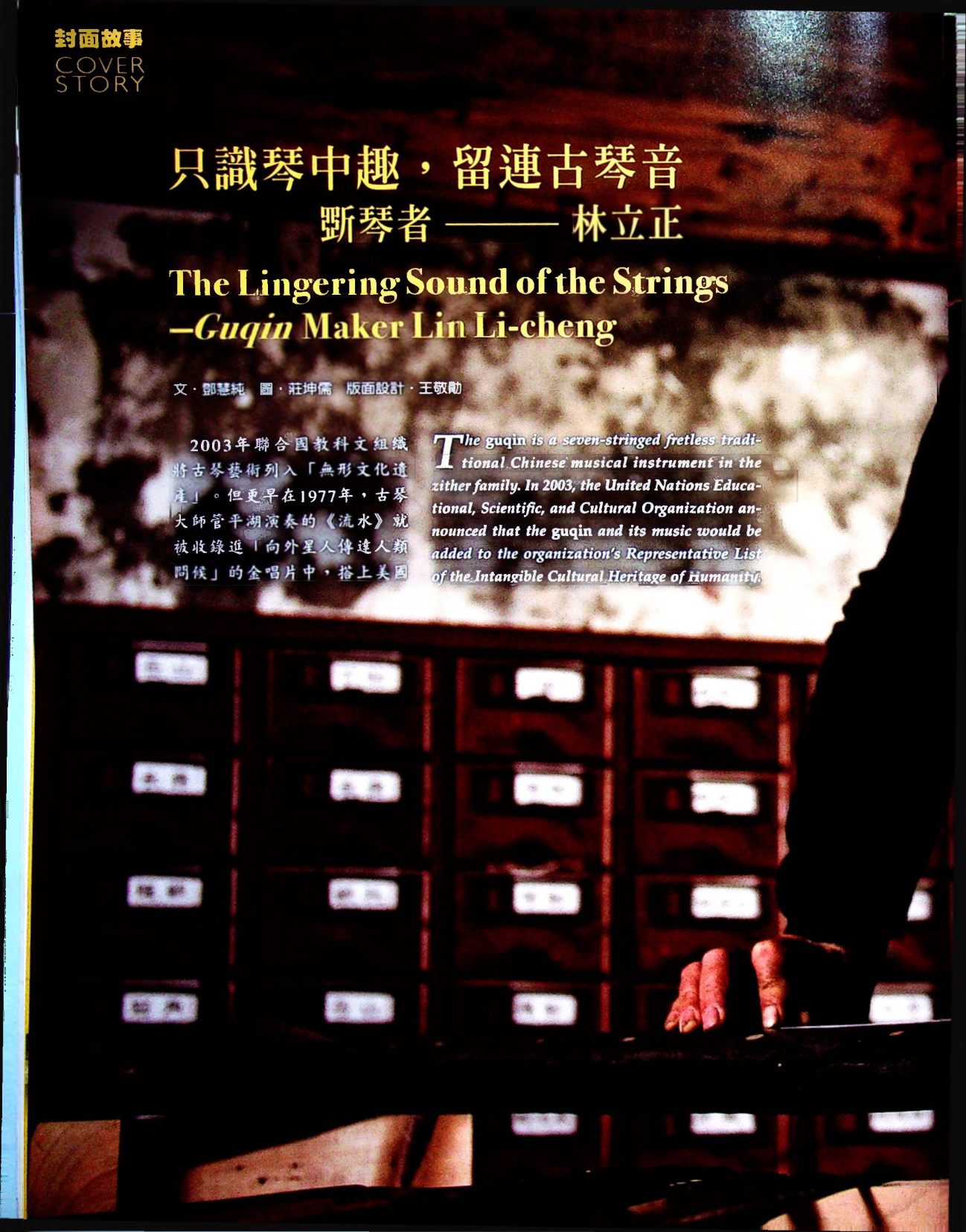
斲琴者——林立正

The Lingering Sound of the Strings —*Guqin* Maker Lin Li-cheng

文·鄧慧純 圖·莊坤儒 版面設計·王敬勛

2003年聯合國教科文組織將古琴藝術列入「無形文化遺產」。但更早在1977年，古琴大師管平湖演奏的《流水》就被收錄進「向外星人傳達人類問候」的金唱片中，搭上美國

The guqin is a seven-stringed fretless traditional Chinese musical instrument in the zither family. In 2003, the United Nations Educational, Scientific, and Cultural Organization announced that the guqin and its music would be added to the organization's Representative List of the Intangible Cultural Heritage of Humanity.





榎
鳩
坊

國家航空暨太空總署的探險家太空船到外太空。

我們不知至今外星人是否聽到《流水》了，但是林立正卻被這有著悠久歷史的樂器古琴所演奏的《流水》而撼動，自此開啓他斲琴（指製作古琴之技術）、修復古琴的生涯。

曾是遠洋漁業船長的林立正，跑遍的地方已族繁不及備載。長年生活在海上，林立正說他聽這曲《流水》很多回了，卻在某一天，在古琴的旋律中感受到流水的磅礴，琴音勾起他的船旅生涯中的回憶，遭遇風浪時一切操之在天的無助、恐懼，及對大自然萌生的敬畏。

當時被古琴的音色吸引，而動手製琴則是受朋友請託。古琴的形制自唐以下無大更變，上下兩片板子，刨空內部形成共鳴空間，再配上7根弦。有木工、漆工底子的林立正自覺做得來，就著古書便開始鑽研，途中又拜古琴大師孫毓芹為師，林立正解釋，孫毓芹以演奏見長，非以製琴著稱，但在觀念上提點他，往好的方向邁進。

現已八十多歲的林立正，大半輩子都在斲琴、修琴。2009年他獲選為「台北市文化資產保存技術保存者」，是斲琴藝術受官方肯定的第一人。

擇良木，求美音

古琴的音色取決於木頭，老木料尤佳。從老房子、寺廟上換下來的木頭都是林立正的最愛。為擇良材，年輕時的他在跑船之餘，常常一上陸就往山裡鑽，

一待就一個多月，沿著溪谷，找倒木。林立正解釋，水能把木材處理的最好，倒在水裡的木頭，枝幹中的樹脂、蛋白質和醣類都被水沖刷掉，木材細胞的空隙大了，更利於共鳴。

早年，他曾溯立霧溪而上，忽在溪水中發現一段枯幹，是製琴的良材。拿著鋸子潛下水，林立正在水中與急流、阻力奮戰，千辛萬苦鋸下一小截木頭。這段木料後來做了兩床琴，一床就是他至今最滿意的作品「古澗泉」。

「古澗泉」三字是古琴大師孫毓芹在琴裡落款，寫下「此材由林君立正取自深山古澗泉中」，爰以「古澗泉」命名。「古澗泉」轉手後，聽說去了美國，後來又回台灣，但林立正始終沒機會再看過它。林立正有個心願：「從前做的外型和漆藝都不行，我始終希望（古澗泉）能夠回來，我再幫它完善一點。」

年紀漸長，身體已不堪屢入山林的操勞。兩岸開放後，林立正改從中國大陸找老木材。他說適才適所，別人不愛的材料，在他眼中卻是寶，林立正拿到木料就知道做出來的琴會是什麼音色、什麼等級，把別人看不上眼的木頭，經過自己巧手改造，成為名琴的過程，是製琴讓人著迷之處。

慢工細活，斲好琴

製琴的步驟工序，林立正多從古書中學來。他表示，古代傳承的技法至今改變有限，可是透過鑽研，他理解每一道工序所謂何來，再精進改良。如琴面的木料多用質材較為鬆軟的梧桐或杉木類；琴底則是軟、硬木皆可，這是他累積四十多年的經驗法則。

而古書記載要把琴體上灰，他也實際操作，從中藥行買來鹿角，表面的動物性蛋白和蠟





But more than two decades earlier, in 1977, a performance by guqin master Guan Pinghu of the piece "Flowing Water" was included on the two gold-plated phonograph records carried into outer space by NASA's Voyager space probes, to convey mankind's greetings to any intelligent extraterrestrial life forms that may find them.

We don't know if any extraterrestrials have listened to "Flowing Water" as yet, but Lin Li-cheng was so moved by hearing the piece played on this ancient instrument that he embarked on a new career devoted to making, repairing and restoring guqin.

Lin Li-cheng was formerly captain of a high-seas fishing vessel. In his long years at sea, Lin had heard the song "Flowing Water" many times. But one day he heard the melody played on a guqin, and from it he

林立正工作室裡掛著許多床等著被完成的古琴。

Numerous partly finished guqin hang in Lin Li-cheng's workshop, awaiting completion.

felt the majesty of flowing water. The sound of the instrument evoked memories of his life at sea, and his feelings of helplessness, terror and awe when buffeted by wind and waves, at the mercy of fate.

He was attracted to the sound of the guqin back then, but he only turned his hand to making the instruments because of a request from a friend. There has not been much change in the shape of the guqin since the Tang Dynasty (618-907): it consists of two pieces of wood, one forming the top soundboard and the other the base, with the space between them acting as a resonance chamber; and it has seven strings. Lin, who had a foundation in wood-working and lacquerware, felt that he should be able to make a guqin, so

he began studying ancient texts on the subject.

Lin, now in his 80s, has devoted most of his life to "hewing" guqin, as his craft is termed in Chinese. In 2009, he was named a "Taipei City cultural heritage skills preservationist," becoming the first hewer of guqin to be officially recognized.

Good wood makes for good tone

The tone of a guqin is determined by the wood, and old wood is the best. To find good material, when he was young and had time off from fishing, Lin would often go deep into the mountains, following rivers in search of fallen trees. He explains that when wood lies in water the resins, proteins and saccharides are washed away, leaving large gaps in the wood cells, which makes for better resonance.



菌需經數次水煮，才能去味。經夏日陽光曝曬，再把中心的髓挖掉，研磨成粉後，混合生漆成為鹿角灰。林立正說明，鹿角磨成粉後，在顯微鏡下觀察，顆粒類似雪的結晶，中間有許多空隙，再調入生漆敷在琴體上，就等於每一個分子都輔助古琴傳音和共鳴。

在琴體表面鋪上鹿角灰，還有類似補土的作用。木材因夏冬生長速度不同，冬天長得結實且密，夏天則質地鬆軟，因此木材表面久了一定會凹凸不平。鹿角灰能阻絕木料接觸空氣，減少變形風化的速度，能維持古琴表面的平整。

在程序上，將琴體均勻刷上鹿角灰後，把琴掛起陰乾，靜置20~30日，待鹿角灰乾透，再以磨石沾水將琴面打磨平整，上灰加上水磨的工序要循環三次。做一床琴至少一年半，半點投機不成。

這些理解、技法和態度，他都一步步傳承給兒子林法和學生。林立正從1996年成立「造琴技藝研究班」，開班授課，1998年更名為「梓作坊」。從1974年完成第一床琴，已經過了22個年頭，他自覺技術圓熟了，才敢開班收徒弟。如今徒弟有六十多人，還有遠從香港來學斲琴的。斲琴班每隔兩三年辦一次斲琴展，向大眾推廣古琴藝術。

巧手修琴，復古音

林立正製琴的名聲漸在古琴界傳開，開始有人找他修琴。他修過不少舉世名琴，國立故宮博物院的元琴「雪夜冰」、古琴名家張清治收藏的唐琴「桐雅」、畫家蔡本烈的宋琴「松風致和」、香港唐建垣的元琴「青山」和孫毓芹之明琴「鏗韶」，還有宋琴「玉壺冰」，都經他急救後能再發聲。

從古琴的用料、配件到製作工序，

林立正都親力親為、不假他人。

From choosing materials and parts to the process of constructing the *guqin*, Lin Li-cheng does everything personally, without farming out the work to anyone else.



Once, while following Hualien's Liwu River upstream, he came upon a withered tree trunk lying in the river, that he thought would be ideal material for making *guqin*. Saw in hand, he plunged under the water. After many days' effort, struggling against the rapid current and the resistance of the water, he finally succeeded in sawing off a length of the wood. He eventually made two *guqin* out of this wood, one of which became the instrument he is most satisfied with to this day. He named it "Gujianquan," which means "spring of an ancient mountain stream." Since Gujianquan changed hands, Lin has never had the chance to see it again, but he has a wish: "My shaping and lacquering skills at that time weren't good enough. I've always hoped that Gujianquan might come back to me, so that I could make it a little better."

As Lin grew older, his body was no longer able to take the strain of

going into the mountains. After the opening up of relations between Taiwan and mainland China, Lin switched to getting old wood from the mainland. He says that materials that do not appeal to others can be treasures in his eyes, and that taking wood that others have rejected, and using one's skills to transform it into a *guqin* of exquisite quality, is the most fascinating part of his craft.

Slow and painstaking work

Lin learned most of the steps in the process of making *guqin* from ancient texts. He says that the techniques passed down from ancient times have undergone little change, but by researching them he understands where every step in the process comes from, and from there he can improve them. For example, the soundboard of the *guqin* is usually made from the wood of the Chinese parasol tree (*Firmiana simplex*) or the Chinese fir (*Cunninghamia lanceolata*),

林立正指導從香港來學斲琴的弟子，他的技藝已揚名海外。

Lin Li-cheng instructs a student from Hong Kong in "hewing *guqin*." His reputation for craftsmanship has spread abroad.

because these are relatively soft and flexible; for the base, on the other hand, almost any softwood or hardwood will do.

The ancient texts record that you must apply a finish to a *guqin*, and Lin does this in practice. He buys deer antler from a Chinese medicine shop; after grinding it into a powder, he mixes it with raw lacquer to make deer-antler varnish. Lin explains that if you look at particles of deer antler under a microscope, you will see that they have a structure like snowflakes, with many gaps inside them. When they are mixed into lacquer and applied to the body of a *guqin*, each particle assists the acoustics and resonance of the instrument.

受故宮委託修復的「雪夜冰」，推測是元朝製琴家朱致遠製造。林立正曾為此寫下一篇〈修琴記〉，記錄如何以高壓蒸氣和冷空氣交替吹入琴腹內，去除琴體的灰塵、腐爛木屑及霉味，再把外觀修整完成。原初故宮只要求保持古物的完整即可，但林立正覺得「琴是有生命、有聲音的活體」，故不只修復表面，更願意大費周章地把琴修復到能夠彈奏，並發揮其蘊藏的音色。

林立正回憶，經手修復的古琴中，最慘烈的該是唐琴「桐雅」。骨架還在，但內部木材

被蟲蛀蝕；琴面剝裂、斷紋皆是，他形容像初春剛破冰的海面，讓人不難想像是如何地肝腸寸斷。更有甚者，這床名琴有許多名人在琴面落款，更加深修復的難度。

百廢待興，怎麼下手？林立正說明，琴腹的木材被蟲蛀掉了，見不著內部的情況，就只能拿著鐵絲從破損處鑽入，探測木頭被蟲吃掉的狀況，再用削成細細的竹籤，沾上生漆跟鹿角灰，探進破損處，一點一滴地把被吃掉的木頭填實，鞏固木材。琴面的狀況要先拍照記錄，才能依原樣修補。已剝離的漆皮還能使用的就

用生漆再黏回原處；遇到缺損的情況，只能另作新的漆皮，且要依著破損的形狀，一片片裁剪切割後再貼回。林立正補充說，因為漆皮在空氣中很脆弱，要放到水中施作方可減輕阻力，但這又增加修復的難度。

鑲嵌於古琴尾端的冠角已脫落，林立正拿起鑿子細細修整，林法幫忙壓著，以前林法就是這樣坐在琴上長大。

The inlaid corner ornaments at the end of this guqin have fallen off. Lin Li-cheng takes up his chisel to carefully repair the instrument, while his son Lin Fa helps by pressing down on it to hold it steady. Lin Fa grew up in just this way—sitting on guqin to press them down.



The varnish also seals the wood surface against contact with the air, thereby slowing down any warping or weathering of the wood and so maintaining the smoothness of the soundboard.

After the deer-antler varnish is applied evenly to its body, the *guqin* must be hung up to dry in a dark place for 20–30 days, until the varnish is completely dry. Then the surface is polished smooth using a wetted whetstone. This process of varnishing and wet polishing is carried out three times. It takes a year and a half to make a high-quality *guqin*, and cutting any corners is not an option.

Step by step, Lin Li-cheng has passed on these insights, techniques and attitudes to his son Lin Fa and his students. From the time Lin completed his first *guqin* in 1974, 22 years passed before he felt his technique was mature enough to offer classes, which he started doing in 1996. To date he has had more than 60 apprentices, including some from as far away as Hong Kong, who have come to learn to “hew *guqin*.”

Restoring ancient sounds

As Lin’s reputation as an instrument maker spread in the *guqin* community, people began seeking him out to repair and restore *guqin*. He has restored many world-

famous instruments, including the Yuan-Dynasty *guqin* “Xueyebing,” in the collection of the National Palace Museum; the Tang-Dynasty instrument “Tongya,” belonging to famous *guqin* player Zhang Qingzhi; the Song-Dynasty “Songfeng Zhihe,” owned by painter Cai Benlie; the Yuan-Dynasty “Qingshan,” belonging to Hong Kong *guqin* master Tong Kin Woon; the Ming-Dynasty “Kengshao,” owned by *guqin* master Sun Yu-chin; and his own Song-Dynasty instrument “Yuhubing.” All have been restored to playable condition thanks to the “emergency care” given by Lin.

For Xueyebing, which he was commissioned to restore by the National Palace Museum, Lin first alternately blew high-pressure steam and cold air into the guts of the *guqin* to remove dust, rotted wood fragments, and the moldy smell, and then carried out repairs on the exterior. Originally the NPM had only requested that he conserve the integrity of this antique, but Lin, feeling that “*guqin* have life—they are living organisms with a voice,” went to great pains to restore the instrument to playing condition and to release its untapped sounds.

Lin recalls that of all the *guqin* that have passed through his hands to be repaired or restored, the most difficult was the Tang-Dynasty instrument Tongya. The framework was still there, but on the inside the wood had been bored away by insects. Moreover, the surface was cracked and peeling, like a frozen pond when the ice begins to break up in early spring. Also, there were inscriptions from many famous people on the surface, making restoration that much more difficult.

Lin says that, unable to see the conditions inside, all he could do was use some steel wire to explore the insect damage. Then he took thinly cut strips of bamboo,



晚近修復的宋琴「玉壺冰」，則是林立正在中國大陸的流動攤上尋著的。他說：「這琴當初損爛到從外觀根本看不出是床古琴，要內行人才能一眼辨識出來。」這回他大刀一剖，分解琴面和琴底，把損壞的木頭刨除後，填補的木料另有講究，宋朝的琴他用漢朝的木頭修補。這樣音色才能相近。其餘就依著製琴的工序一道道施作，這床琴修復花了兩年多，不但音色極佳，也成了兒子林法的御用琴。

坐在琴上的傳人

去年年中，林立正開了斲琴體驗班，從選料、製作粗胚、刨刮成形、上灰、上漆、定徽、上弦逐個步驟把手教。一對十三，他直言：「累死我這頭老牛。」所幸有兒子林法和一群師兄、師姐當助教，幫著張羅、指導。

林法，是林立正的二兒子，四個兄弟中，只有他繼承家業。林立正說，林法從小跟著他工作、打雜，製琴他學得最紮實。以前製琴沒有夾具，要有人幫忙壓著，就叫孩子坐著壓，林法就是這樣坐著琴長大。

林立正想著兒子未來終究要接他的衣鉢製琴，怕他不曾彈琴被外界批評，就哄著、騙著兒子去學琴。未料到林法居然學出興趣來，在北京中央音樂學院古琴演奏專業畢業，又回台灣在國立臺

dipped them into raw lacquer or deer-antler varnish, and used them to apply the lacquer or varnish to the damaged places drop by drop, to reinforce and stabilize the wood. As for the peeled lacquer on the surface, in places where the original lacquer could still be used he applied raw lacquer to reattach it to its original location, and where parts of the lacquer were missing he repaired the surface of the *guqin* by making a "skin" of lacquer on another surface, then cutting out pieces one by one to fit the damaged areas and applying them to the surface of the instrument.

The recently restored Song-Dynasty *guqin* Yuhubing was acquired by Lin from an itinerant vendor in mainland China. This time he went for the big cut, separating the soundboard from the base. After planing off the damaged wood he carefully selected the replacement material, using wood from the Han Dynasty for the repair, for only in this way would the tone be consistent. He spent more than two years restoring this *guqin*. Its tone is excellent, and it has become the instrument used by his son Lin Fa.

An heir who sat on *guqin*

In the middle of last year, Lin Li-cheng started to teach a "*guqin* hewing experience class." He demonstrates every step in the process of making a *guqin*, from selecting the materials, cutting out the rough components, and planing them into shape, to applying the varnish and



收集了一整屋的老木頭，
就為了斲好琴，求美音。

Lin has collected a roomful
of old wood for the purpose
of "hewing" good *guqin* and
seeking beautiful tone.

林法從小跟著父親斷簫，
是幫手，是知音，更是傳人。
Lin Fa has followed Lin Li-cheng
in making guqin since he was a
child. He is his father's helper, his
soulmate, and the heir to his craft.

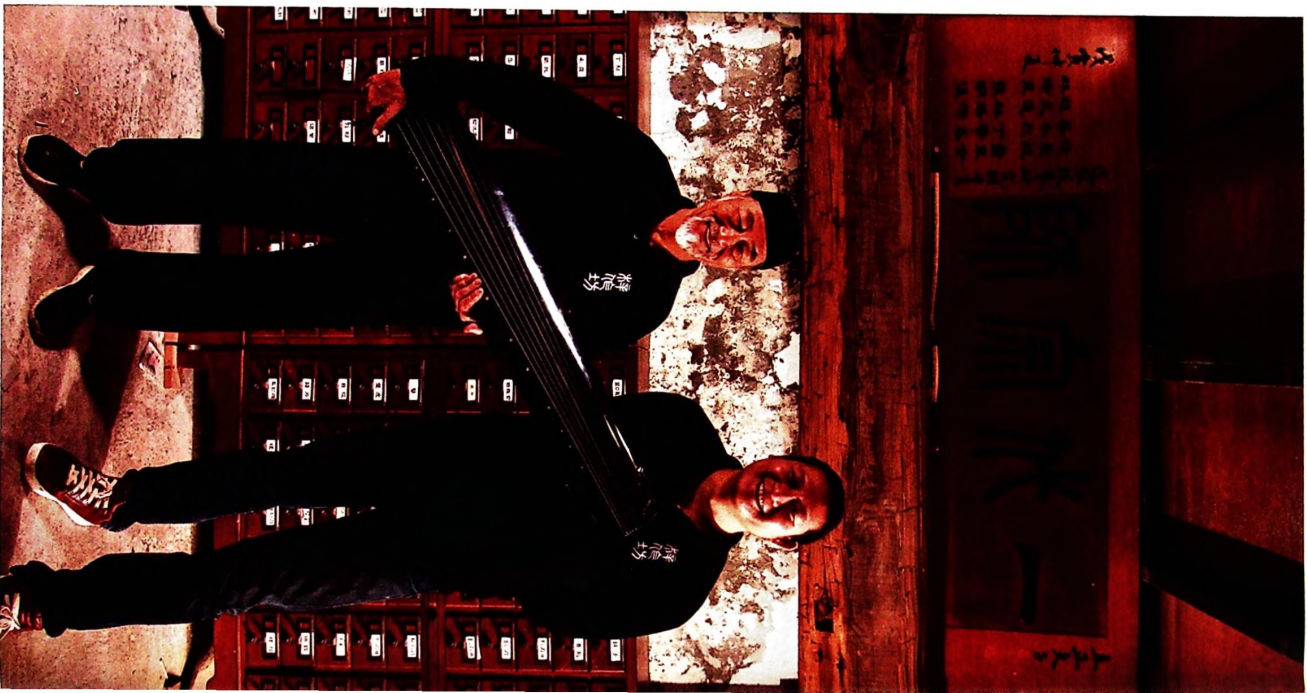
北藝術大學傳統音樂學系深造。
現在是專業的古琴演奏者，走出
了自己的路。

採訪途中，有個徒弟拿了兩床
琴來試音。這步驟是在合琴前先
以工具模擬，假裝上弦，先聽木
胚的音色如何，若有不妥還可補
救修正。

只見林法俐落的裝上試音工
具，手指快速的在琴面壓弦、撥
弦、聽音。然後翻過琴面，用
筆圈出數個部位，告訴他槽腹
要再修薄一點，音色才好。而
林立正在一旁跟我說明：「現
在要試音，都交給他。要聽音
色，沒有人能比他更強。從小
聽到大，又正式去學演奏，學
院派的教授都沒接觸過製琴這
一塊，所以沒有人像他感觸那
麼深。」他語間透露了對兒子的
驕傲和一生志業得以傳續的
喜悅。

剛辦完斲琴展的梓作坊，工作
室內還一片凌亂，林立正不知從
何處翻出了一把古琴，說明這是
他當年在中國大陸收到的清朝古
琴。琴體雅致，卻只修了一半，
擱著就忘了。林立正說：「這床
琴修好後，聲音會不得了。」徒
兒們聞言雀躍不已，三言兩語地
討論，纏著林立正說：「師傅，
修吧！修吧！我們一起修。」

面對著一群興致高昂的子
弟，只見林立正帶著笑意說：
「好，一起修。」 □



lacquer, inlaying the harmonic position markers, and stringing the instrument. The class is one on 13, and Lin admits, "It's exhausting for this old codger." Fortunately he has Lin Fa and a group of apprentices as his teaching assistants, helping to guide the students and attend to their needs.

Lin Fa, Lin Li-cheng's second son, is the only one of four brothers to go into the family business. Lin Li-cheng says that from the time when Lin Fa was small he followed his father around while he was working and did odd jobs for him, and he has acquired a solid grasp of *guqin* making. In the past, Lin Li-cheng had no clamps for making *guqin*, so he would tell his son to sit on the instruments to press the parts together. Lin Fa grew up this way—sitting on *guqin*.

Lin figured that his son would end up making *guqin* for a living, and, afraid that Lin Fa would be disparaged if he was not able to play the instrument himself, coaxed and tricked him into going for lessons. Little did he expect that Lin Fa would develop a genuine interest as he learned, and he eventually graduated from the Central Conservatory of Music in Beijing with a major in *guqin* performance, followed by further study in the Department of Traditional Music at Taipei National University of the Arts. He is now a professional *guqin* performer.



琴面槽腹裡，林立正的落款，是名琴的印記。
Lin's inscription and stamp on the inside face of the soundboard are the marks of a high-quality *guqin*.

During our visit to Lin's workshop, one of his apprentices takes out wood for two *guqin* to test the sound. This step, coming before the parts are assembled, uses a tool to simulate the situation after the instrument is strung, to listen to the tone of the wood. If there is anything wrong, it can still be corrected.

We watch as Lin Fa deftly attaches the sound testing tool and his fingers rapidly press and pluck the strings as he listens to the tone. Afterwards he flips the piece of wood over and, with a felt-tip pen, marks several locations that need to be shaved a little thinner to get better tone. Standing off to one side, Lin Li-cheng explains: "Now we are testing the sound, which I leave completely in his

hands. No one is better than him at judging tone. He has been listening since he was small, and has formally studied performance. Academic professors have no contact with the making of *guqin*, so no-one has as deep an appreciation as he does." These remarks reveal Lin's pride in his son and his joy that the craft to which he has dedicated his life is being passed on.

Lin's Zizuofang workshop, where they have just completed an exhibition on *guqin* making, is a mess. Lin pulls out a *guqin* from who knows where; this is a Qing-Dynasty instrument that he received in mainland China back in the day. Lin says, "When this *guqin* is repaired, the sound will be amazing." Hearing this, his apprentices are thrilled, and succinctly discuss the matter, after which they surround Lin and say, "Master, let's repair it! Let's repair it together!"

Facing a group of excited apprentices, Lin Li-cheng, his face wreathed in smiles, says, "OK, let's repair it together." □

(Cathy Teng/photos by
Chuang Kung-ju/
tr. by Phil Newell)

有「修」無類

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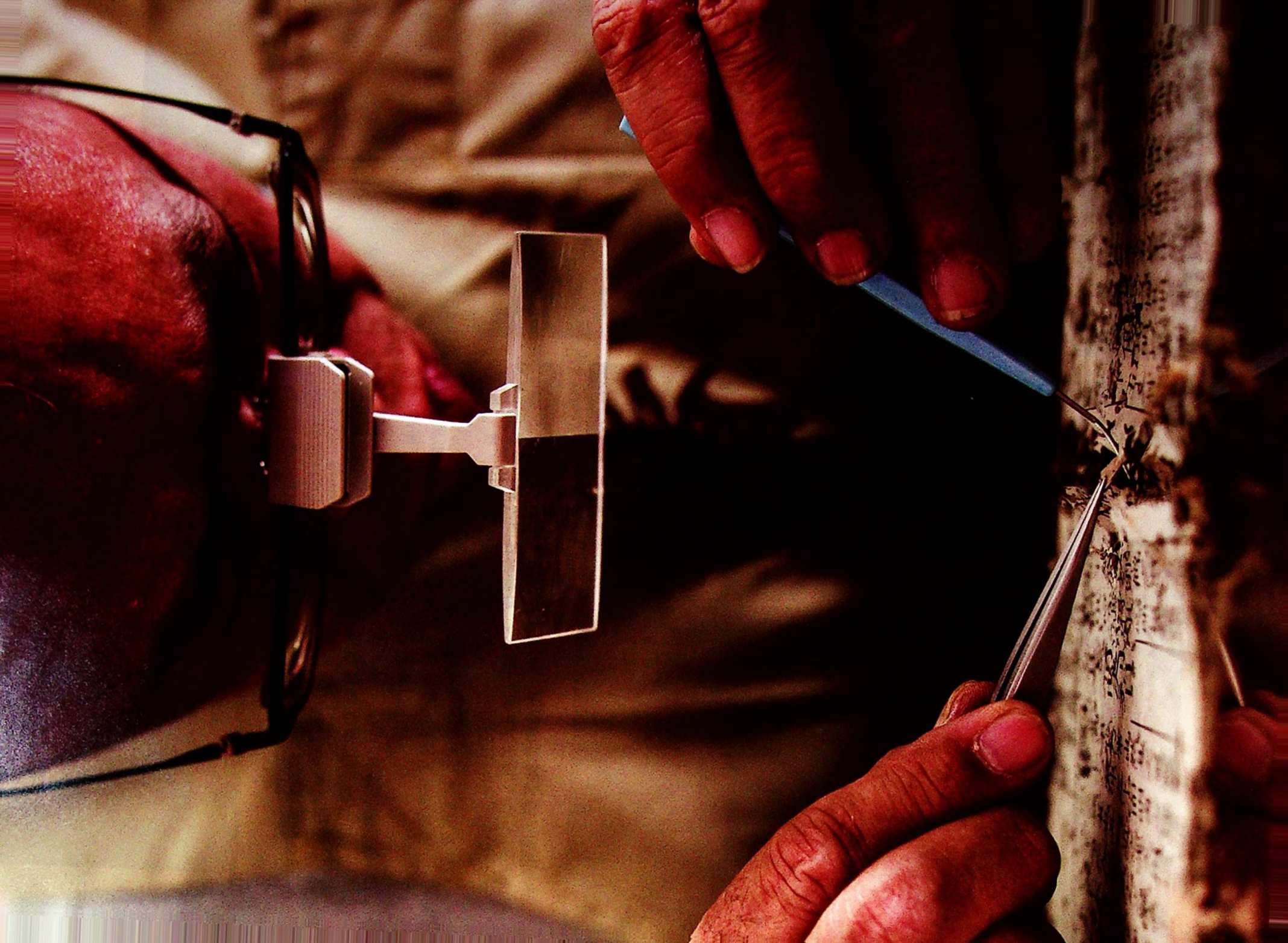
文・陳亮君 圖・莊坤儒 版面設計・胡如瑜

「蠹魚是吃書的，你書要夠多就會來吃，書多了以後，我不是主人，我要侍奉這些書，每天看每天整理，所以我是蠹樓僕人。」吳哲叡認為，光有修復的技術還不夠，必須不斷地閱讀與研究來延伸學習，並透過團隊無私的分享，讓創意加成，將技術傳承下去。

走進大師的工作室，牆上有他獨創的永久春聯，「這永遠不會壞，後面是油畫布，油畫布上面刷壓克力顏料……」吳哲叡興奮地介紹他的創作。環顧四周，有字畫、有手作的復刻手卷，甚至是拓片，可見他涉獵之廣，已超過一般裱褙師傅的興趣範圍。現任台北市文獻會顧問的他，是怎麼樣的機緣，讓他一頭栽進裱褙與修復的世界，這要從他小時候說起。

“Silverfish eat books,” explains Wu Jer-ruey. “If you’ve got enough books, they will come and gorge on them. Once that happens you are no longer your own master. You become the servant of the books, needing to look after them every day. In a sense, you become a servant of bugs.” Wu believes that when you are a paper conservator, simply having repair skills is not enough—you’ve got to continually read and research to extend your knowledge. Then you need to selflessly share that knowledge with your team and encourage innovation, so that your skills are passed down.

The chain of events that propelled Wu, currently serving as a consultant to the Taipei City Archives, to enter the realm of art mounting, bookbinding and restoration, stretches back to his childhood.



衣魚、菸甲蟲、節囊蟲、書蝨……等，修復紙張前，要先知識各種紙質害蟲的類型與屬性。

Silverfish, cigarette beetles, moths, booklice..... Before restoring paper artifacts, you must first understand the types and attributes of the various bugs that damage paper.

耳濡目染下的身教

鮮少人知道，吳哲淑的爺爺是台灣早期歌仔冊的知名作家梁松林，梁氏是台北萬華人，編寫歌仔冊數量為全台之冠，最著名的是1936年前後，由台北周協隆書局連續發行的《三伯英臺歌集》（共55本，各本另編歌名）。因為他是入贅，所以生的第一胎要跟太太姓吳，也就是吳哲淑的父親，全盛時期在萬華西園路一帶，至少有20間房子。

但擁有一個才氣縱橫的爺爺對他們家並沒有多大的幫助，因為梁松林後來沉迷於賭博與抽鴉片，敗光了家產，晚年窮困潦倒。因此，吳哲淑的父親從小就告誡他：「你看看你爺爺，賺了那麼多錢，到後來也是沒有。你是我的小孩，我選擇不貪污，那你們就窮一點，跟著我這樣過。」

服務於中央魚市場的吳爸爸，每天清晨1時就要去上班，到10點多回家休息，一有空就看書、寫字，他常跟吳哲淑說：「做你喜歡做的事，做到鞠躬盡瘁，全力以赴後還沒有成功，那就認了。」當時吳媽媽在家幫人訂做女裝，他從旁看著媽媽幫人打版、縫紉，訂做衣服。從小功課不好的他，在當時萬華龍蛇混雜的生長環境，如果說沒有學壞，很大一部分要歸功於父親的正直



與勤勉，而他的好手藝，則是傳承自媽媽的一雙巧手。

凡走過必留下痕跡

吳哲淑進入格致中學就讀後，上課以外的時間，就跟著在復興美工念書的好友，一起製作當天的作業。當天老師上什麼，朋友就會回來跟他分享，而且常常是做到半夜2~3點才結束。吳哲淑

笑說他朋友在學校術科成績非常優秀，一半要歸功於他的協助。但是對他來說，這段期間的學習，奠定了他日後對於調色與色彩運用的基礎。

畢業後，喜愛文具的他，去文具行幫忙送貨，直到入伍當兵為止。沒想到一退伍，文具經銷的老闆叫他回去上班，但這次不是送貨，而是請他當業務。原來吳



Parental role models

Few people know that Wu's grandfather was Liang Songlin, a famous writer of Taiwanese ballads during the Japanese era. Liang lived in the Wanhua neighborhood of Taipei, and his output of songs was unrivaled. His most famous work was "The Sanbo and Yingtai Song Collection." Because he married according to the custom of *ruzhui*, whereby the groom goes to live with the bride's family to carry on the line of a sonless family, Liang's first son, Wu Jer-ruey's father, took his wife's surname. At the peak of his wealth, Liang owned at least 20 houses.

But having a talented grandfather wasn't much help to Wu, because

Liang would end up squandering his fortune through gambling and opium. His later years were spent in poverty. Consequently, Wu Jer-ruey's father told him from a young age: "Look at your grandfather: He made so much money and ended up losing it all. You are my child. I have chosen not to be corrupt, so you will have to be poor with me."

Wu's father worked at the Central Fish Market in Wanhua. He'd get up at 1 a.m. and get off work after 10 a.m. Whenever he had spare time, he would read and write. Wu's mother earned money by working at home as a seamstress, making women's clothes to order. Wu would watch her cutting out patterns and sewing the garments together. He was never a particularly good student, and Wanhua back then offered many paths to go astray. His father's diligence and honesty deserve much of the credit for Wu's hewing to the straight and narrow. But he inherited his dexterous hands from his mother.

The tracks of time

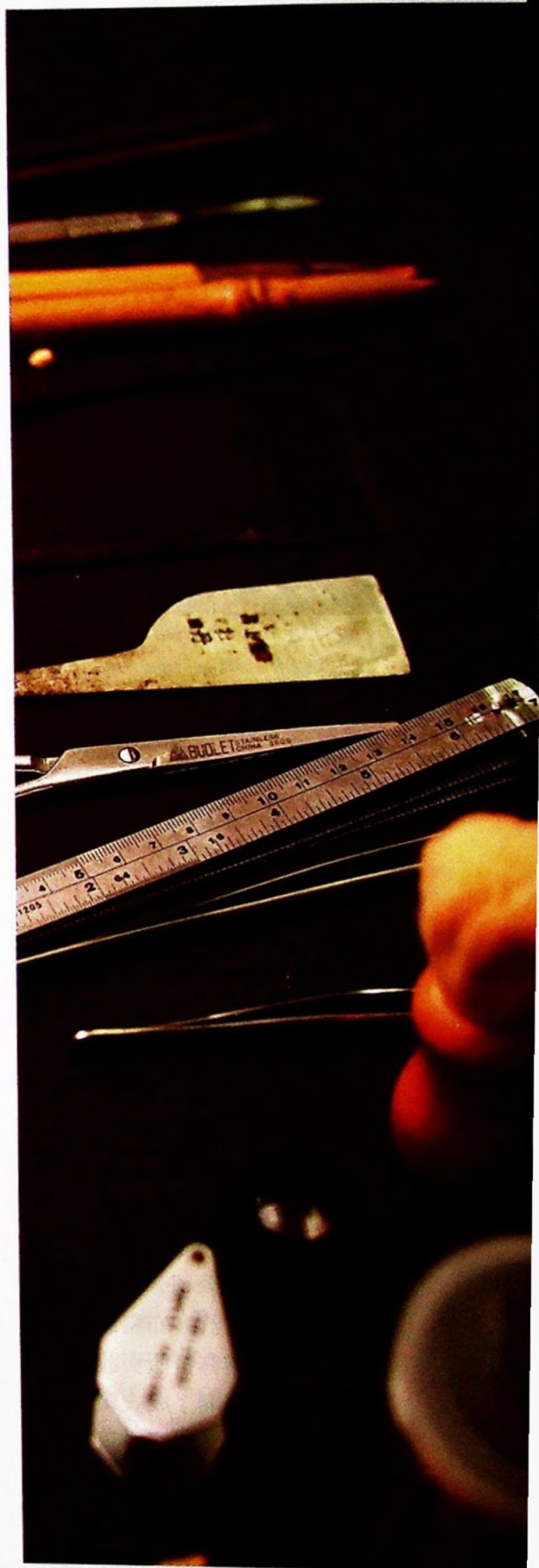
Wu attended Ger-jyh Senior High School in Sanchong, Taipei County (now New Taipei City). After school he would do his homework with a good friend who attended the

自許蠶樓僕人的吳哲毅，其涉獵之廣，已超過一般裱褙師傅的興趣範圍。

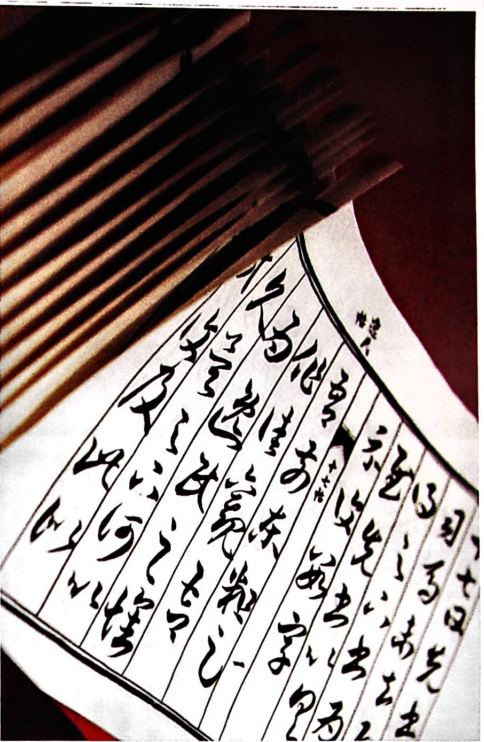
A self-described servant to book-eating bugs, Wu has interests far broader than those of a typical conservator.

小剪刀、尺規、鑷子、毛刷等修復工具一字排開，也開啓了保存紙張文物的使命。

The scissors, rulers, tweezers, brushes and other tools of a conservator's trade are laid out neatly, each serving its purpose in the mission to preserve old paper documents.



吳哲叔親手仍製出中國古代的「龍麟裝」，舒服時，各頁疊積如鱗狀。
Wu Jer-ruey personally made this replica of an ancient dragon-scale binding. When unfurled, its page edges overlap like a series of scales.



緒需求後，發現這行真沒那麼簡單，於是就開始他們的拜師之路。

吳哲叔印象中，有一次爲了要學一種叫「冊頁」的裱褙技巧，交了2萬元請老師指導。因爲之前他在書上已看過冊頁裱褙的整個過程，第一天上課就問了4個問題，可是那老師沒有一個回答得出來，「他說你愛學不學，我說好，你講這樣子，我一輩子會記得你。」吳哲叔當機立斷說那2萬元他也不拿回來了，因爲人可失去金錢，但時間是什麼都換不來的。在台灣社會裡，很多師傅不敢教，他會擔心教了後，你要出去自立門戶，就會跟他打對台，所以要不是不教，不然就是亂教，那怎麼辦呢？

山不轉路轉，既然無法直接從師傅那學到裱褙技巧，他就去買裱褙材料，並選了當時最大的和泰裱褙材料公司，應徵營業務。也是那麼湊巧，那家公司的老闆因爲癌症末期，找了他的乾女兒回來當會計做帳，並準備結束營業。「我說我好不容易找到你們，你們再收掉，台灣就沒有幾家了。」那會計回他說老闆已過世，沒有人可跑業務。吳哲叔就自告奮勇，接下這已經營二十多年的業務重擔，再成功說服老闆的乾女兒向乾媽頂下這家公司。因爲乾媽對於先生所留下的不動產不知該怎麼處理，既然自己乾女兒要承讓，自然樂見其成。

哲叔在送貨時，不只是貨送到客戶就走，還會主動跟店家聊天，觀察是否還缺什麼，有時還會寫訂單回來。這讓老闆很訝異，因爲從來沒有送貨員還寫訂單回來的。吳爸爸跟他說：「你天生就是做業務的，這是遺傳到爺爺八而玲瓏的個性，所以才有辦法打下一片天。」

做了文具業務2年後，發現自己還是比較喜歡做衣服。一開始不知該如何做起，就先從賣服裝雜誌開始。用賣服裝雜誌給服飾店的機會，趁機摸熟了各店家的特色。最後選擇了三重一家專門做外銷的服飾公司，擔任裁剪的工作，學到了許多布料的知識。之後又陸續進修打版與設計，甚至與朋友合夥開了成衣廠，直到要增資時，因爲沒錢投資，而被迫離開。

學習裁剪、打板、設計的這些年，除了上班外，吳哲叔一有閒

暇，就去進修相關知識與技巧。現在回想起來，這種勤學的個性，實是受到父親的影響，「我爸爸一直給我講一個觀念，你學東西不能只學一樣，你最好是一整個環節都要會。」之後又陸續繼續做了洗皮衣、訂做飯店客戶襯衫等工作，在這時終於迎來了他人生當中的第一個轉機。

因緣際會下的邂逅

吳哲叔在幫外國人訂做襯衫時，常需要繡英文名，而當時會繡的人不多，於是he到台北市職訓局去學電繡，「我們不是只有繡英文，還有繡花鳥、山水，繡完後很皺，就需要裱褙。」沒想到當他一接觸到裱褙，竟發現怎麼那麼好玩。加上吳爸爸長年在寫書法，一個寫得很快樂，另一個則是裱褙得很快樂。學完以後，就想說自己開業。但問題來了，在實際接觸客戶各式各樣的裱



加入黃蘗的糰糊，所用原料需為天然，才能用於修復。

A flour paste containing cork-tree (*Phellodendron*) bark extract. Only if all ingredients are natural may a paste be used for restoration work.

Fu-Hsin Trade and Arts School. That friend would share what his teachers had taught that day. The two would often work together until 2 or 3 a.m. He regards that period as building a foundation for his later skills in color toning and applications.

A lover of stationery and writing implements, he worked as a delivery man for a stationery supply firm after he graduated and before he performed his military service. Upon his leaving the military, his old boss at the stationery firm, much to Wu's surprise, asked him to come back to work, but this time in sales. It turns out that when delivering supplies, Wu had not only unloaded goods and asked for signatures but had also chatted with stationery store propri-

etors, seeing if they lacked anything and occasionally coming back with orders.

After working at the firm for two years, Wu determined that he preferred to make clothes. At first he didn't know where to begin, so he started by selling fashion magazines to clothing shops. That gave him an opportunity to become acquainted with the individual style of each shop. Eventually he ended up choosing to work as a cutter for a company in Sanchong which made clothing for export. He learned a lot about fabrics there. Later he went on successively to study pattern making and design, and he eventually opened a finished garment factory with friends as partners. But when they needed to add more investment capital, he was forced to pull out because he lacked extra money to invest.

Whenever he had time apart from work, Wu took advantage of opportunities to advance his skills and understanding of cutting, pattern making and design. Looking back now, he believes that his thirst for learning came from his father. He would go on to work at various jobs, including cleaning leather and making clothes to order for guests at hotels. It was in this period that he welcomed his life's first big turn for the better.

A life-changing encounter

When Wu Jer-ruey was tailoring shirts for foreign guests of hotels, he was often required to embroider English names. Back then few locals were up to the task, so he went to the Taipei Vocational Training Bureau to learn machine embroidery. The course included instruction on how to prevent puckering, including by mounting embroideries on cloth backings.

The process caught Wu's interest and prompted him to take another course on the mounting and framing of artworks. Afterwards, he decided to open his own mounting and framing business. But upon encountering the requirements of individual clients, he discovered that it wasn't an easy business after all, so he began a journey of studying under masters.

To learn the techniques for making "album leaves" (*ceye*), wherein illustrations are mounted and bound in book form, Wu recounts how he paid NT\$20,000 to be instructed by a master. Because he had previously already viewed the entire process, on the first day he asked the master four questions, but the master couldn't answer any of them, so Wu walked out. Wu says that losing that NT\$20,000 was no big deal, because money is for spending, but if he had carried on he could never have got the time back.

If he couldn't learn the craft from a master, he decided, he would go into selling art mounting materials, so he applied for a sales job at what was then the largest company in the mounting materials trade, Hetai. But as it turned out, the company's boss had recently died of cancer, and before he died had asked his god-daughter to return as bookkeeper in preparation for closing the company.

"I told them how disappointing it was to find them only to learn that they were closing. If they shut down, there would hardly be any such companies left in Taiwan." The bookkeeper explained that there was no one to handle sales now that the owner had died. Wu volunteered to take on the responsibility of sales for the company, which had been around for more than 20 years, and he later

在吳哲毅的團隊裡絕不藏私，唯有如此，大家才能貢獻所長，讓創意延續。圖（左）為正接受指導的越南籍學生裴進福。

Wu keeps no secrets from the teams he works with, believing that innovations will only come with openness. Here he instructs Vietnamese student Bui Tien Phuc (left).

此後，吳哲毅在送貨之餘，也一邊在觀摩店家的技法，「因為我有學過，我知道這個人手法好不好，他做到一半不能停啊，那我就可以看。」有時也會幫忙拉個紙、擦擦桌子。因為是各個裱褙店的上游廠商，又跟各家老闆成為好朋友，時常在一個店家就待上許久，而忘了送貨。

一整天送貨兼觀摩結束後，就趕緊回家嘗試今天見識到的技巧。練習時發現問題，下一次就找個藉口，就算對方沒訂貨也要過去。就這樣不斷地觀摩與學習，吳哲毅後來的三十幾個師傅都是沒有在拜師的，「這些師傅也都跟我很熟，他說原來你一直在那邊，就是在學東西。」吳哲毅笑說。而因緣際會下邂逅的不只是遇上裱褙這件事，當初老闆的乾女兒，最終也成為了他的太太。

人生第二個轉捩點

機會總是會留給準備好的人，吳哲毅迎來了人生中的第二個轉捩點。台北市兒童育樂中心每年歲末時都會舉辦一個傳統回廊展，有做風箏的，也有賣糖葫蘆的，而他就在現場做一些裱褙的推廣教學。

剛好有一位母親帶著女兒前來逛展，因為接近收攤的時間，其他攤位都已收得差不多了，



「她說別家都收了沒得看，有點可惜，我說沒關係，妹妹喜歡，重新收完的東西又拿出來，開始裱畫給她們看。」也由於這個機緣，讓他與時任台大圖書館特藏組組長洪淑芬互換名片，才有後來歷時8年，與其他7位夥伴一同修復完成的《淡新檔案》歷史文獻。而《淡新檔案》的修復，讓這橫跨清乾隆41年（1776）至光緒21年（1895）之淡水廳、台北府城，以及新竹縣的行政司法檔案，共約1萬9000件，得以恢復往昔風貌。

緊接著，日本帝國大學線裝書的挑戰隨之而來，也在台大圖書館的引領下，跟國家圖書館裡的師傅學習線裝書的修復技法。從字畫跨到檔案，再到書籍的修復，目前國內能精通這三樣的師傅寥寥可數，他回憶起當時的情景說：「我的工作是一天18個小

時，到現在還是一樣。我在台大上班的時候，白天上班，人家叫的貨，我太太整理好，晚上我們就車開著，連同小孩，一起去送貨，我們就這樣過了7~8年。」

不斷地創新與傳承

紙張放久了會老化，老化就變色，要找原紙找不到，就要用新的去染。「有花椒、黃蘗、紅茶與墨，像這個是4種顏料去混的，這張又不一樣了。」吳哲毅翻出他所研發的各種彩紙，可當修復時的工具，也可當藝術家揮毫時的特殊用紙。有一款取名叫「夏風」的紙，是在一次偶然機會下發掘出來的，當時房子淹水，清完水後發現有些立在地上的紙，因著水線呈現出獨特的紋路，很漂亮。後來根據水的量和紙的鬆緊度，在不斷地研發改良下，才產生出這紋路特殊的紙張。

convinced the bookkeeper to buy the company from her godmother, the late owner's widow.

Afterwards, when he delivered goods, Wu would also observe the techniques of the companies that received them.

After spending all day delivering and observing, he would quickly return home to try out the techniques he had witnessed. If he encountered an issue doing it himself, he would find an excuse to go back even if the client hadn't placed a new order. In this manner Wu would observe, study and gain mastery, so that later, when he employed 30-some-odd craftsmen, none of them needed to seek outside training. And as fate

would have it, the move to Hetai was more than just a professional turning point: Wu would end up marrying the late owner's goddaughter.

A second turning point

Opportunities come to those who prepare for them, and Wu Jer-ruey would enjoy a second fortuitous twist of fate. The Taipei Children's Recreation Center holds an exhibition of traditional arts and crafts at the end of each year, where Wu would teach art mounting in order to promote the craft.

One year, a mother had brought her daughter to see the exhibition, and because it was near closing time, most of the stalls had already shut up. "She said that it was too bad the

other stalls had closed and couldn't be seen, but I said that I could at least unpack my half-packed stall and give them a look." It led to an exchange of name cards with the girl's mother—Hung Shu-fen, head of the Special Collections Division at National Taiwan University Library. It was through that connection that Wu would end up working for eight years with seven others on the restoration of the "Dan Xin Archives." The

去除命紙、留畫心，是維修畫作的重要步驟之一。

Separating the actual artwork from the backing paper is one of the most important steps in restoring old paper paintings and calligraphies.



「我在榮格路上，走了幾
多冤枉路，也遇到很多不好的老師。」吳雪琴教授很多不良的
經驗，在他的團隊裡不會藏私，
因為唯有這樣，大家才能貢獻出
自己所研發出的成果，也才會有
源源不絕的創意與動力，而他的
責任就在於引導每位學員的獨
特性與潛能。

目前正跟著他學習的越南籍學
生葉進福，在越南漢喃古籍研究
中心時，就已在做古籍的蒐集與
整理。後來來到台灣就讀佛光大
學文化資產與創意學系碩士班，

另一位畢業生說，不會說，不會說，不會說。之前就查過發

國家則是單單辦的，就在「那裡接觸到他說：『我感覺觸到這種修復技術，老師。而一陣子，老師。越南所授古藤修自台北科技大學維修，本身就對修，她覺得學習教一定有關詣教一定私，她說：『我來』多相關資訊，做的

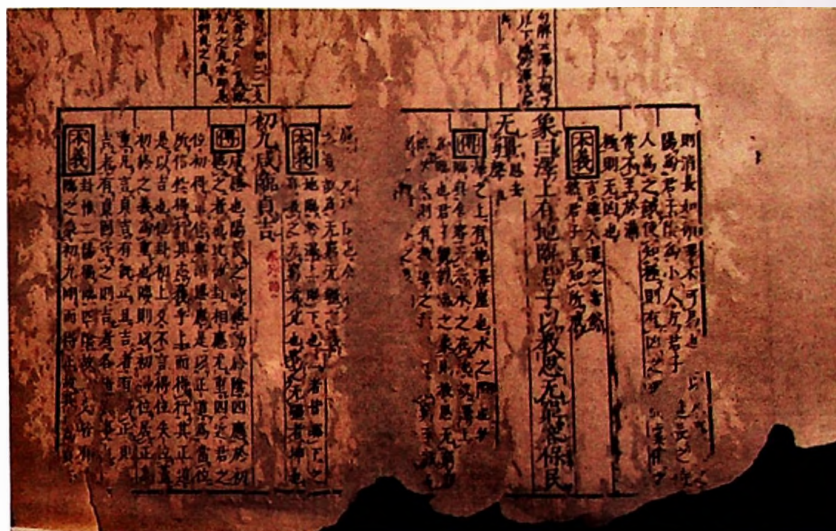
東西跟我想的沒有落差很大，確實是我想要追求的。」

吳哲思認為修復古物有一定的歷史責任，有人拿家裡傳的南管手抄樂譜前來修復，他說可不收錢，但希望能掃描成影像檔，給台北文獻館收藏。因為這三百多年的曲譜，很多已失傳，經修復後，這樂曲可能又有機會重新演奏出來。未來，吳哲思希望能夠修復出土的紙本文物，是否能這樣的機緣很難說，因為他一路走來的歷程，又何嘗不是一次又一次的驚喜與邂逅呢。□



(左圖) 天性爽朗的吳哲叡，遺傳自爺爺八面玲瓏的性格。
(facing page) The good-natured Wu Jer-ruey has inherited his grandfather's personable character.

(右圖) 經吳哲叡修復後之漢和刻本。
(right) A block-printed book restored by Wu Jer-ruey.



archives comprise some 19,000 Qing-Dynasty official documents dating from between 1776 and 1895, from the Danshui Sub-Prefecture, the Taipei Prefecture and Hsinchu County.

Shortly thereafter, there came new challenges with a University of Tokyo project to restore stitch-bound books. On the recommendation of National Taiwan University Library, Wu worked with National Central Library experts to learn techniques for repairing stitch-bound books. He has thus become one of the rare experts in Taiwan with experience in restoring not only calligraphies and paintings, but also historical documents and old books.

Passing on a legacy

Wu flips through some of the colored papers he has developed, which he uses in his restorations. These are also suitable for use by artists for special purposes. One of his papers, "Summer Wind," was created by accident. His house had been flooded, and after the water was removed, they discovered that some packs of paper that had been standing on the floor

had acquired a unique pattern of lines that was quite pretty. Afterwards, he conducted tests with various quantities of water and consistencies of paper, making a series of adjustments before finally creating a type of paper with a distinctive pattern.

Wu has a special approach to teaching apprentices. He is completely open with his team, and holds back none of his expertise and techniques. He believes that only when everyone is openly contributing what they have developed can innovations occur and advances continue. It is his responsibility to foster each student's special qualities and potential.

Currently, he's working with a Vietnamese student named Bui Tien Phuc, who says: "I think that Vietnam needs these kinds of restoration techniques. Our teacher has a great sense of humor, and he is both good at his craft and good at teaching it. Not long ago, he went to Malaysia and Vietnam to teach about restoring old books."

Another student of Wu's is Chou Wei Hsiu, a graduate of the master's program in innovation and design

at National Taipei University of Technology. "Before coming to study with Wu, I did a lot of research," notes Chou, "and what I've ended up learning with him has truly met my expectations."

Wu sincerely believes that there is a duty toward history involved in restoring old things. One couple brought Wu an antique collection of *nanguan* musical scores to restore. Wu refused payment, but he hopes to have the restored work scanned as an image file and placed in the collection of the Taipei City Archives. Many of the musical pieces in this 300-year-old collection have been lost from the *nanguan* tradition, but after restoration there is a chance that they can be performed again. Regarding his own future, Wu hopes he will have the opportunity to restore paper documents found in archeological excavations. Whether he actually will is hard to say—because his life so far has consisted of one surprise after another. □

(Ivan Chen/photos by
Chuang Kung-ju/
tr. by Jonathan Barnard)





以修復為行動藝術

東方書畫修復師 —— 范定甫

Restoration as “Action Art”
—Oriental Art Conservator Fan Ting-fu

文·鄧慧純 圖·林旻萱 版面設計·王敬勛

位在台北關渡的「三間工作室」，門面低調不張揚，跨入室內，白色空間給人安靜沉穩之感。工作室的人總是輕聲細語、輕手輕腳的，因為這邊主要的「客人」，多是年歲上百的珍貴文物，得小心呵護，細細款待。

SI Art and Conservation's Guandu, Taipei workshop exudes quiet, its calming atmosphere reinforced by its white interior and by the gentle movements and whispers of staff members, who are busily restoring precious cultural artifacts.

三間的主人范定甫，說話小小聲又快，要接近才能聽清楚。舉止間，他像是個沉醉在藝術世界裡樂不思蜀的大男孩；但看他拿起鑷子，細心進行修復的工序，他可是台灣首位在大英博物館工作的修復師。

從藝術家身分轉成修復師，范定甫說是「生命中湊巧的機緣」。大學時期從事現代水墨創作，為探究藝術的呈現形式，跨進裝裱領域，又從裝裱中認識了許多修復的知識與技巧，啓發他走上文物修復的旅程。

修物也修心

「我是為了創作而去學裝裱的。」范定甫開門見山的說。

一直以來，畫家作品完成後，後續的工序多直接委請裝裱師傅完成，創作和裝裱分屬不同的專業；但追求自由創新的范定甫卻希望自己的作品，從內容到最終呈現的形式都能獨力完成。不僅內容、思想概念的翻新，甚或形式上如何讓畫作與觀者的互動、表現作品與空間的連結，都是他躍躍欲試的突破，比如他曾把水墨畫裝裱在魔術方塊上，或用立體形式展示水墨畫，都是身為藝術家的范定甫做過的嘗試。也因此，了解傳統裝裱的技藝成為他必經的途徑，也開啓他初探修復的大門。

大學畢業後，范定甫進入國立臺南藝術學院（現國立臺南藝術大學）古物維護研究所（現博物館學與古物維護研究所），這是國內第一所培養文物修復專業人員的學術系所，正式踏入文



物修復領域，他說：「學習傳統裝裱技術跟修復很有趣，可以學到很多細節的思考和材料、技術的知識，是當藝術家時不會考慮的。」只是修復文物時，需長時間坐在案前，或跪坐在榻榻米上，不管是清除灰塵、補洞、補色，作業的樣態從外表看來幾乎一動也不動。在那血氣方剛的年紀，熱愛戶外活動的范定甫，十分不適應，也讓他一度有了休學的念頭。

刷子是書畫裝裱、修復的重要工具，刷子功是修復師得經年鍛鍊的手頭功夫。Conservators spend years honing their skills with brushes, which are indispensable when mounting and restoring paintings and calligraphy.

再加上修復並非創作，必須壓抑藝術家奔放的創作慾望，范定甫以「全色」（用與底色相近的顏料填補）為例說明，依修復原則的可辨識性，修復的痕跡需與原作區別，遇到文物破損需要填補色調時，修復時的全色只能

The way that Fan Ting-fu, SJ's owner and chief conservator, gushes (quietly) about his work, you might mistake him for a kid gloriously intoxicated by the arts. But once you observe the great care with which he approaches restoration, it's easy to see how he became the first Taiwanese conservator to work at the British Museum.

SJ Art and Conservation owner Fan Ting-fu was a modern ink painter in university before his interest in how art is displayed led him to *zhuangbiao*, the traditional art of mounting paintings and calligraphy on rice paper and fabric. His study of *zhuangbiao* also taught him a great deal about restoration, introducing him to what has become a career in conservation.

Adjusting one's outlook

"I began studying *zhuangbiao* to further my own art," admits Fan.

Fan explains that when artists finish a work, they usually hand it over to craftsmen for mounting. But he

was seeking greater creative freedom: he wanted to control the presentation of his works as well as their content. He therefore began studying *zhuangbiao*, which led him on to restoration.

After graduating from university, Fan made his formal entry into the restoration field by enrolling in Taiwan's first academic program aimed at training professional conservators, the Tainan National College of the Arts' graduate program in the conservation of cultural relics. "I loved learning about restoration and traditional *zhuangbiao*," says Fan. "There were so many details to consider, so much to learn about materials and techniques. I didn't think about that stuff when I was an artist." But the amount of time-consuming work that goes into restoring cultural artifacts, whether it be removing dust, patching holes, or retouching colors, makes the field seem less than ideal

for someone who loves the outdoors as much as Fan.

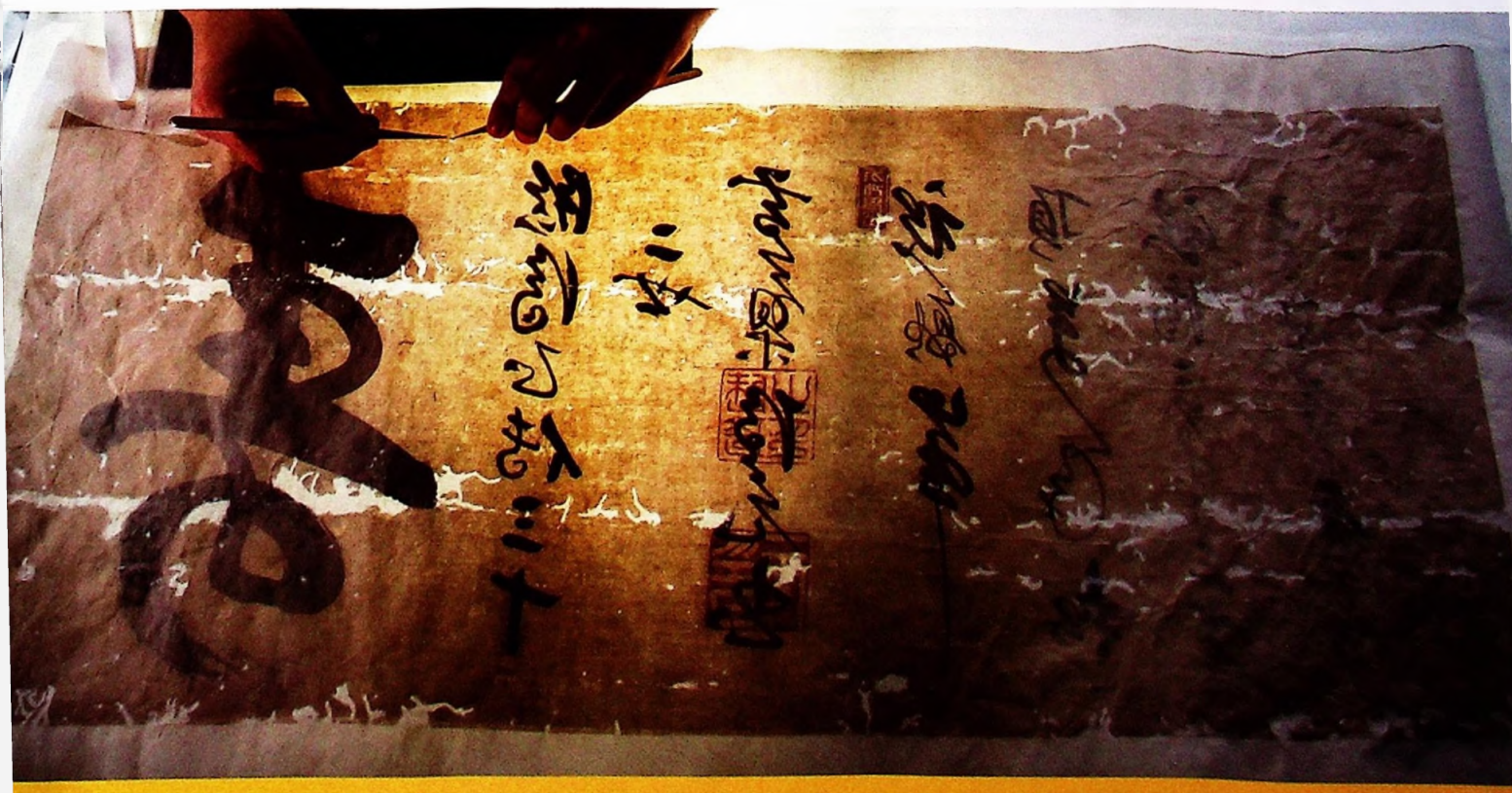
Moreover, restoration isn't creation. In fact, it requires artists to repress their desire to create. Fan explains using color touch-ups as an example. The restoration principle of "perceptibility" requires that interventions made in the restoration of a work be clearly distinguishable from the original work, so when a conservator must retouch a spot, the color used should only approximate that of the original. All of the planning and details are frustrating to artists passionate about unconstrained creativity, and Fan admits that it took him more than two years to adjust his attitude enough to be comfortable doing restorations.

New ideas

While most discussions of restoration today are based on the traditions and practices of Western

補洞・修補畫心破損的地方・對眼力是極大的挑戰・

Repairing damage to calligraphic works puts even keen eyes to the test.





點測，在放大鏡下觀看溶劑對文物的反應。
Spot-checking an artwork's response to a solvent, with the help of a magnifying glass.

做到與真跡近似。種種的細節、規範都讓先前熱愛自由的藝術家性格吃足苦頭，可是修復就是一門要求靜心的工作。范定甫坦言他前後花了兩年多的時間調適修心，才在修復的路上靜下心。

修復概念與時俱進

現今談到修復，一般多追溯到西方的博物館學傳統。但范定甫解釋，東方的書畫本有自成的系統，古時候的東西怎麼修復，就要從裝裱的概念來看。唐朝張彥遠著《歷代名畫記》，設有「論裝背裱軸」一章，論述裝裱事項。北宋米芾除了是畫家外，本身也是很厲害的裝裱師跟修復師，在他的著作《畫史》、《書史》裡，曾提到書畫裝裱修復的概念。明周嘉胄的《裝潢志》和清周二學《賞延素心錄》都是中國裝裱修復最重要的著作。

其實，傳統社會存有許多與「修復」相關的行業，惟其「修復」多是指「修理」，把物件修繕到實用的、可用的程度，但現代的修復概念則大不同，范定甫解釋說：「中國的裝裱修復一直都有，只是它的概念偏向把東西單純地恢復成可被使用的狀態。而現代的修復概念，除了保持文件的物質狀態外，其歷史背景、美學價值，甚至原本存在的價值跟觀點都需要被同時保存。」

傳統的修復師只要把裝裱功夫練好，可以補紙、全色即可，但現代修復更要求修復師具備歷史學、美學、美術史、化學等多方面的背景知識，以便考究材

museums, Fan notes that East Asian painting and calligraphy have their own system, one shaped long ago by the techniques of *zhuangbiao*.

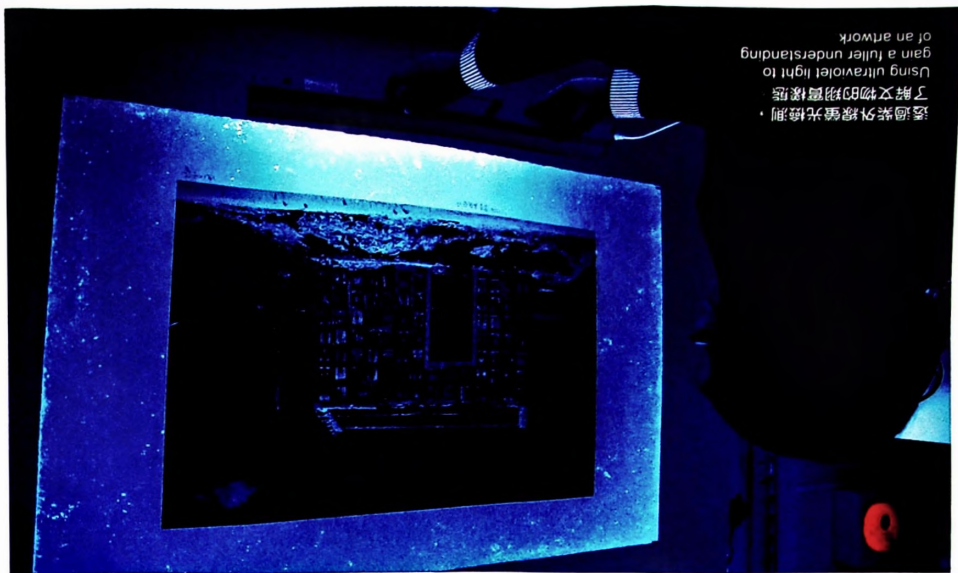
Fan says: "China has had *zhuangbiao* restorations all along, but their goal is to restore things to a functional condition, whereas the idea in modern restoration is to preserve the physical condition of the item while also preserving its historical background, aesthetic value, and even its original existential value and perspective."

Modern conservation and restoration require conservators to have knowledge of a variety of fields, including history, fine arts, art history and chemistry. Conservators must also adhere to the principals of "reversibility" (all added materials and techniques must be removable to facilitate the return of the item to its condition prior to restoration), "perceptibility" (interventions must harmonize with the original, but must also be distinguishable from it), "authenticity" and "minimal intervention."

Modern conservation strongly emphasizes surveying records and developing a restoration plan before starting work. When a conservator agrees to take on a conservation-restoration project, he or she begins by writing up the results of a technical examination of the object. Fan says this resembles "diagnostic data." The conservator also tests a variety of solvents before drafting an individualized conservation-restoration plan.

Clean, unmount, repair, retouch

What's involved in the restoration of calligraphy and painting?



• 工(重)工

錄與修復計畫的制定。接上文
修復的委託後，要先撰寫「藏品
狀況檢視記錄表」，界定需保護
狀態「文物的病徵資料」，材質
的記錄文件的情況，包括材料、
尺寸、形制及劣化狀況，如是否
有鐵斑、銹點、油污、褪色、破
損、脆化、剝落等情事，在進行
各項落網檢測的結果後，最終才
為文物撰寫修復建議計畫。而且
每件文物均須與藏家溝通了解修
復目的、說明修復計畫後，才正

程度介入等的修復倫理。當代修復更重視事前的

料使用及一切細節的所謂何來。此外，還需遵守「可逆性」（任何新添的材料與技術必須是可移除，以便能回復修復前樣態）、「可辨識性」（修復的痕迹與原作品整體保持和諧一致，但又需區別於原作）、「真實性」及最低

洗、擦、刷、全

畫修復怎麼做呢？得先從裝裱形式先理解，范定甫說：「裝裱」從名詞上解釋就是「加襯」和「裝裱」，意即畫心（畫作）托襯、再做裝裱。」因此進行修復時，附屬的材料都要移除，恢復成單張的畫心。畫面上有污跡、灰塵就先需清洗，接著把畫心從舊有結構中移出，畫心有破損就填補，色澤有缺損則全色。這樣的工序歸結來說就是「洗、揭、補、全」，范定甫只花三秒鐘說完的「四字訣」，但實際操作少說有近百道工序，每道工序至少要花上三個月到一年以上的時間才能完成。

千年來，裝裱修復的傳統工序變化不大，但在概念上，隨著年輕一代修復師導入西方修復的觀念，亦補充東方書畫的特色而

因地利宜。舉例來說，修復佛
座中的「可辨識性」，是為了
讓未來的修復者日後維護時能
輕易分辨原跡與修復痕跡，但
又不減損其整體與美觀價值。
在西方壁畫與油畫中有一種以
細線色色的畫法，使其遠觀時
不易分辨，但是近看可以區別
出原作和補筆的不同，但此法
在東方畫畫中未必可行。范甯
市解釋，東西方畫作的觀看經
驗與審美意識不同，西方壁畫
與觀者有時有十幾尺的距離，
但東方的畫畫與不與觀者皆是
近距離的接觸，若採用這樣的
補色方法，這些線條會更顯得
突兀。因此晚近在台灣、日本
等國的做法則是「全色不接
筆」，在不影響畫作整體認知
的情況下，遇到畫作或文件有
缺損的情況，修復師只細部填
入相近的色調（全色），而不

因地利宜。舉例來說，修復佛
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入相近的色調（全色），而不

專注凝神，

修復師用自己的人生延續文物的生命。
Conservators spend their lives extending
the lives of cultural relics.

Conservators first study the mounting. Fan says: “*Zhuangbiao* is literally a process of ‘dressing up’ and ‘decorating,’ meaning that you first mount the work and then decorate.” So restoring a painting requires removing all the accessories, returning the work to its original naked state. Conservators first clean off any dust or stains, then remove the artwork from its mounting, repair any damage, and fill in any color defects with a similar background color. The complex process is abbreviated in the short phrase: “clean, demount, repair, retouch.”

The *zhuangbiao* restoration tradition has changed little in the last thousand years. But the current generation of conservators has been bringing in new ideas from Western restoration, and trying to implement them in a way that accounts for the uniqueness of Asian painting and calligraphy. For example, the idea behind the principle of perceptibility is that it enables conservators to easily distinguish between the original work and later interventions when carrying out future conservation work, without impairing the aesthetic value of the original. When restoring oil paintings and murals, the Western tradition is to use fine lines to retouch the color. When viewed from a distance, the retouches are difficult to distinguish, but they are easily perceptible when seen up close. But this technique isn’t necessarily feasible when working on Asian painting and calligraphy. Fan says that such



works are usually displayed near the viewer. If Western methods of retouching were used, the lines would be too readily apparent. Taiwanese and Japanese conservators have therefore adapted the method to local needs: retouching damaged colors in a similar but not identical color, and refraining from redrawing lines over the retouched areas.

Cultural interpretation

After finishing graduate school, Fan took an internship at the Shang-

hai Museum. He went on to work in the art mounting office of the Department of Painting and Calligraphy at the National Palace Museum in Taipei and in the British Museum’s Hirayama Studio, which specializes in the conservation of Asian pictorial art. Fan says that his training in Shanghai resembled an apprenticeship and made him appreciate that *zhuangbiao* restoration is more than simply a craft, that a whole culture underlies its “clean, demount, repair,

將缺損處線條填實補續（不接筆），就是一種因地制宜。

「修復」就是一種文化詮釋

研究所畢業後，范定甫到中國上海博物館實習，之後又進到國立故宮博物院書畫處裱畫室和大英博物館保存維護部門平山郁夫工作室服務。范定甫說，上海博物館的訓練偏向師徒制的傳承，老師總是諄諄告誡他，現在示範與教導的工序是師承當年他的師傅一步步交給他的，讓他體悟到其實裝裱修復不只是一種技藝，這些「洗、揭、補、全」工序背後其實承載著文化積累。「身為修復師的每一天，就是接續著自己老師的每一天，是歷

史，也是挑戰。」在這樣的文化脈絡裡，他覺得修復師更該擔當、傳承這樣的文化。裝裱修復不只是技術，而是一群人所共有的文化記憶。

而在大英博物館的工作經歷，更給了他全然不同的思考。博物館裡來自不同國家、文化脈絡及科學、修復專業的同仁，他們會從不同角度提供文物修復意見。這讓他體悟到修復不僅只是客觀地物質復原，它牽涉到館方如何詮釋文物的文化政策。修復人員最終要面臨跟抉擇的不是修復技術，「文化詮釋」才是其關鍵。



因此范定甫說：「其實修復就是一種文化詮釋。」在英國體驗的文化包容，讓他確認修復沒有正確答案，惟有透過多元討論的思辯，從文化發展、操作技術等各方面思慮保存的目的，才是一個合理的修復。

范定甫回國後，仍積極參與許多國際活動並推廣專案合作，他認為台灣的書畫修復在國際間具有特殊性，為此他努力參與如「國際文物修復學會」（IIC）、「美國文物維護協會」（AIC）等國際組織會議，想讓

台灣在國際社會發聲，也開設「三間」，希望把博物館的專業服務帶到民間，讓更多民眾了解修復的意義與價值。

始終很想回任藝術家的范定甫覺得創作和修復兩者都需要「創意」，只是發揮的地方不一樣。修復沒有標準答案，也因此每次面對文物時，都是一場新的挑戰，這樣的過程，范定甫自言：「我覺得自己在做一件行動藝術。」始終堅持在藝術的道路上，他是一位以修復為行動藝術的文物修復師。 □



范定甫成立的「三間工作室」，
指的是：藝術一間，修復一間，生活一間。
Fan Ting-fu (center) and his staff at
SJ Art and Conservation.

retouch" process. "Being a conservator means that you follow in the footsteps of the master with whom you trained." To Fan, this makes *zhuangbiao* restoration not just a set of techniques, but the collective cultural memory of a group of people, one that the conservator is obliged to absorb and pass on.

Fan's time at the British Museum provided him with a completely different view on conservation-restoration. The people working there came from a variety of nations, cultures and fields, and offered opinions on restoration rooted in those differ-

ent perspectives. There, he came to view conservation as not just a material restoration, but as a process that is also affected by how government cultural policies interpret cultural relics. Fan says that restoration is itself a kind of cultural interpretation, and as such doesn't provide cut-and-dried answers. Managing a reasonable restoration involves discussion and debate on a variety of issues, including the objectives of the conservation project and the techniques available.

Fan believes that Taiwan's painting and calligraphy restoration techniques are distinctive in the international arena, and hopes that his participation in conferences of global organizations such as the International Institute for the Conservation of Historic and Artistic Works (IIC) and the American Institute for Conservation of Historic and Artistic Works (AIC) will give Taiwan more of a voice in the international community. Here in Taiwan, he uses his SJ Art and Conservation business to bring museum-caliber restoration services to the general public and raise awareness of the value and significance of conservation and restoration.

While Fan would love to go back to making his own art, he argues that restoration requires its own kind of creativity. Every restoration project is unique, presenting challenges and undertaken for purposes that resist rote answers. Fan may no longer be a painter, but he and his fellow conservators have been transformed by the demands of their field into "action artists" who, through the process of restoration, forge works of "action art." □

(Cathy Teng/photos by Lin Min-hsuan/
tr. by Scott Williams)

畫作的急診醫生

油畫修復師 —— 賴志豪

Emergency Care for Ailing Art —Oil Painting Conservator Lai Chih Hao

文・鄧慧純 圖・林格立 版面設計・王敬勛

「和歐洲動輒三、四百年的作品歷史相較，台灣的油畫作品其實都非常年輕，面對這些幼兒或新生兒，醫生給藥的劑量就要抓得非常小心。」賴志豪以修復師比作醫生，將待修復的作品比作患者。文物是不會說話的病人，必須小心地檢測，並考量後續保存環境，對症下藥，這才是修復師的責任。

賴志豪從義大利學成歸國已經七年多了，從史賓內利宮修復學院油畫修復組畢業，並在S. Felice degli Artigianelli修復工坊實習、工作一年多。他將在修復重鎮佛羅倫斯學到的修復倫理及實務經驗，實踐在他的修復生涯中，也努力推展修復概念，希望建立台灣社會對文物修復正確的觀念與認識。

Lai Chih Hao likes to compare art restorers to doctors—and paintings in need of restoration to patients. Paintings, however, are silent patients unable to describe what ails them. It is the conservator's job to examine them with the greatest care and prescribe the most efficacious treatment. "Compared with oil paintings in Europe, which are often three or four centuries old if not older, Taiwanese oil paintings are still very young," Lai says. "When prescribing medicine to newborns or infants, a doctor must be very careful indeed."

It has been seven years since Lai returned from Italy, where he completed an oil painting restoration course at the Palazzo Spinelli Institute for Art and Restoration in Florence and apprenticed for over a year at the San Felice degli Artigianelli restoration workshop. The techniques he learned in Florence inform Lai's own approach to restoration, and he has been striving to raise awareness of conservation efforts in Taiwan, where he hopes appropriate measures will be adopted to preserve local cultural heritage.





義大利，來對了

1966年11月，連日大雨造成橫貫佛羅倫斯的亞諾河暴漲，大水從河岸潰堤，蔓延到城市各個角落，使這文藝復興的發源地遭逢前所未有的浩劫，難以計數的藝術品及文化資產受大水侵蝕，受損嚴重。大水消退後，來自各地的自願者集結搶救文物，因而積累了驚人的修復經驗，亦使佛羅倫斯成為孕育文物保存研究機構及修復學院的基地。

賴志豪還記得他在史賓內利宮修復學院的第一堂課，教室兩旁堆的都是歷史超過兩百年以上待修復的畫作。「真是來對地方了。」他心想。

學習修復最擔心沒有案例可供練習，當年因洪水而受損的藝術品至今還沒能修完，當地的修復需求能讓學習者大量累積經驗，獲取養分。

在義大利，他更見識到了「處處皆修復」的精神。剛到義大利

時，碰到世界聞名的聖母百花大教堂剛搭起鷹架，正在進行外牆清洗修復，三年半後，他將返國之際，方完成一側的清洗。他也觀察到，路旁一個不知名的壁畫被加裝了框和鎖，避免遊客、鳥類接觸而受損。教堂中更常見受損文物上貼了一張白紙，賴志豪解釋，那是做暫時性的加固，紙上沾附有點著劑，讓原本快剝落的顏料層不要繼續掉落。

在義大利，生活隨時與藝術、修復相伴，他想著，如果自己不成才、學不成，至少可飽覽文藝復興以來大師的原作，一償宿願，賴志豪說著當年選擇到義大利學修復的原因。

最重要的修復事

修復的工序包括檢測、清潔、肌理重建、全色等多道步驟，又視文物的情況調整技法。

修復師必須先了解畫作受損的情況，並採樣做分析，取一小塊顏料，分析其材料跟成分，確

認與使用的溶劑是否相容，才不會對畫作造成傷害。清潔是以棉球沾上溶劑去除表面髒污，但也是工序中最不可逆的操作，即便經驗豐富的修復師也要小心調製溶劑及預先測試。遇畫作表面有缺損、不平整，要以漿料填補，並依著畫布經緯交錯的紋理，重建肌理，務求與周邊完全連結。接續就是全色的工序，以點或細線的方式修補畫作缺損處，恢復畫作的完整與美觀。「修復的過程其實是很沉悶無聊的，大概要等修復完的那一刻才會覺得有

畫中男孩帽沿左側的刮損（左），經可辨識補色法全色後，右圖為遠距離觀看的效果，近距離則可看見修復補筆的痕跡（中）。（賴志豪提供）
Damage is visible in this detail of the brim of a boy's hat (left). After restoration using the *tratteggio* technique, which does not attempt to blend the restored color into the original brush strokes, the hat brim looks natural from a distance (right), but on closer inspection (center) the restored portion remains distinct from the original. (courtesy of Lai Chih Hao)



"I sure came to the right place!"

In November 1966, successive days of torrential rain caused the rapid rise of the Arno, the river that bisects Florence. When the Arno burst its banks and flooded the city, the water caused untold damage to the artistic and cultural treasures of the city, the birthplace of the Renaissance. Volunteers poured in from all over to rescue the cultural relics, and in the process acquired considerable expertise in their restoration. As a result, Florence became a center for research organizations and training programs in the field of cultural preservation and restoration.

During his first class at the Insti-

tute for Art and Restoration, Lai recalls seeing paintings over 200 years old lining both sides of the classroom, waiting for the attention of the restorers. "I sure came to the right place," he remembers thinking.

In learning conservation and restoration techniques, students often worry that they won't have real artworks to practice on. But many of the works of art damaged by the 1966 flood have yet to be restored, ensuring plenty of hands-on experience for students.

In Italy Lai came to understand the urge to preserve cultural heritage wherever it might be found. He observed roadside murals that were far

from famous but still covered with locked viewing cases to protect them from being damaged by tourists or birds. He also noticed the prevalence of white tape affixed to damaged cultural relics in churches. Lai explains that the adhesive provides a temporary fix for peeling layers of pigment.

Lai says that art and restoration are constant companions in Italian life. In explaining why he chose Italy, Lai points out that even if his studies were a flop he would at least have had the chance to become familiar with the great artists of the Renaissance.

The ABCs of restoration

The restoration process includes the initial examination, cleaning, the reconstruction of texture, and retouching, though the actual steps needed depend on the condition of the painting.

A conservator must first assess the extent of the damage to a painting and take samples for analysis to determine whether it is compatible with the solvents used in restoration, so as to avoid damaging the artwork. Cotton swabs are then used to remove surface stains, a delicate and irreversible part of the restoration process. If the surface is damaged or uneven, it must be filled in with size in keeping with the texture of the canvas so that it blends seamlessly with the surrounding areas. The conservator then restores the painting's original beauty by inpainting, a process that involves adding color with tiny dots or fine lines to damaged areas. The repetitive nature of restoration work requires intense concentration and a high degree of patience and perseverance. But this is just a day in the life of the conservator.

Lai has been studying drawing





趣。」賴志豪說。一直進行著重複的工作，必須聚精會神，需要極度的耐心與毅力，但這就是修復師的日常。

惟從小學畫、曾有油畫創作背景，賴志豪卻能很快上手。他記得，學院裡的補色練習，老師會在畫冊的畫作上挖兩個大洞，要求學生把顏色補回去，如果補到看不出痕跡，就代表基本功已經過關了，而當時他的習作就讓老師驚艷。

賴志豪解釋，十多年的油畫創作經驗，使他能夠迅速了解原作者的意圖、使用的技法及用色的特點，甚至在補色時，他可以不經分析就輕易猜到畫作的色澤怎麼調。舉例說，以前顏料色彩不如今日豐富，如果畫家想製造紫色的效果，他們會在底層先畫上藍色，上面再薄薄地罩上一層透明的紅色，當兩種顏色交疊，就會產生紫色的效果，這種方式稱為「罩染」，能呈現多重色層及透明的效果。原先創作的經驗

幫助賴志豪理解「罩染」的技法跟效果，他也視情況在修復中使用，讓修復的畫作更逼近自然。

賴志豪參與擔任烏菲茲美術館藏品與教學計畫講師，向當地高中生介紹修復的內容。（賴志豪提供）
Lai Chih Hao has served as a lecturer in the Uffizi Gallery's teaching program, where he introduced local high-school students to art conservation. (courtesy of Lai Chih Hao)

用細線修復較大區塊的補色方法也考不倒賴志豪。細線法是當前國際公認的可視性補色方式。依修復原則所示，修復師的修復必須要能與原作區別，並可辨識。在缺損處以不交疊、不交叉的細線補色，除了可區別原作的筆觸外，亦補全畫作的美感，但這種補色法相當耗費時間與精力，考驗修復師的功力，可是賴志豪卻能補得又快又好，常被修復工坊的老闆委以重任，他說那時候他才確定自己可以勝任修復工作。

修復過程中，亦可能發現新的證據，進而改變一幅畫作的命運。賴志豪說起在義大利時的難

忘經驗，他曾進行一幅聖像的清潔工序時，發現圖層下可能藏了耶穌的荊棘冠冕，推測是先前的修復師在修復時把它塗掉了。發現這個新證據，工作坊的老闆馬上停工，並向修復案的監督人員報告，當地的紅衣主教也親赴工作坊關心。因為這項重大的發現，必須好好審議討論。這件畫作的修復先暫停了，但也讓賴志豪見識了國外對文物修復的謹慎態度。

建立文物急救觀念

回國執業後，他發現台灣的修復案件中有許多似是而非的操作，大眾對修復更是一知半解。賴志豪曾碰過許多前輩畫家的作品有被重繪過的痕跡，或是寺廟裡以強力水柱噴洗壁畫上的

since elementary school and trained as an oil painter, and when it came to the restoration process, he found himself to be a quick study.

Lai explains that his decade-plus experience with oil painting enables him to grasp an artist's original intentions, practical techniques and use of color. In the past, for example, the range of pigments was considerably more limited. If artists wanted to create purple, they would first apply a layer of blue and then cover it with a thin, transparent layer of red. Combined, the two colors produced the appearance of purple. The technique, known as layering or glazing, can produce a multilayered, limpid effect. Lai's background in oil painting taught him the techniques of glazing and the effects it produces. He uses it where appropriate in his restorations, to return the painting as closely as possible to its original state.

Lai has also mastered restoring color on larger areas of a painting using a delicate line technique known as *tratteggio*, which is considered the international standard for the restoration of color. The process uses fine lines of color that do not intersect or overlap. In this way, the painting's overall beauty is restored, but the original brushstrokes are distinguishable from the added color. The work takes time and patience and tests the skills of the restorer. Lai, who is skilled at the technique and works rapidly, was often entrusted with carrying out this task on more challenging works by the owner of the restoration workshop in Florence.

During the restoration process, new factors are sometimes discovered that alter the fate of the painting. Lai had such a memorable



experience while restoring a painting in Italy. As he was cleaning a religious painting, he discovered that Christ's crown of thorns was possibly obscured beneath a layer of paint, and he speculated that it might have been covered over during a past restoration attempt. As soon as this was discovered, the owner of the studio reported it to the inspector in charge of the project. Word even reached the local cardinal, who visited the workshop to see the important discovery for himself. The discovery prompted much debate, and restoration work was suspended. The experience taught Lai how seriously restoration work is taken in Italy.

修復師的日常需要極度的耐心與毅力。
The work of a conservator requires
extraordinary patience and perseverance.

Cultivating support for restoration

After returning from Italy and taking up work as a conservator in Taiwan, Lai discovered many cases in which artworks had been subjected to aberrant restoration procedures. He encountered paintings by older artists that showed signs of untreated damage or unprofessional touchups. He explains that the results of such improper restoration techniques are



賴志豪用義大利傳統的壁畫擷取技術 (lo strappo)，把壁體上的壁畫擷取下來。(賴志豪提供)

Lai Chih Hao employs a traditional Italian technique, known as strappo, for removing a fresco from a wall. (courtesy of Lai Chih Hao)



油漬，或是放任文物損壞，卻不加以任何急救措施等等；賴志豪解釋，這些施作都是不可逆的，一旦發生了，就難以搶救挽回，文物原本的樣貌就此消失，再也看不見。但這些文物都是我們文化的根源，若不加緊保護的話，文化的土壤就會一點一滴流失，這看在賴志豪眼裡，有焦慮，也有不捨。

保存原件是最要緊的，賴志豪一再強調。他曾接過來自馬來西亞的求救電話，畫作的顏料大量剝落，求助於他該如何處理，賴志豪請對方盡可能地把剝落的色塊都收集起來，等到他趕到現場時，再把剝落的色塊一片片黏

回。這件作品因為妥善地保留原作的真跡，至少有90%都是用原來的顏料黏合回去，使作品的價值被大大保存。

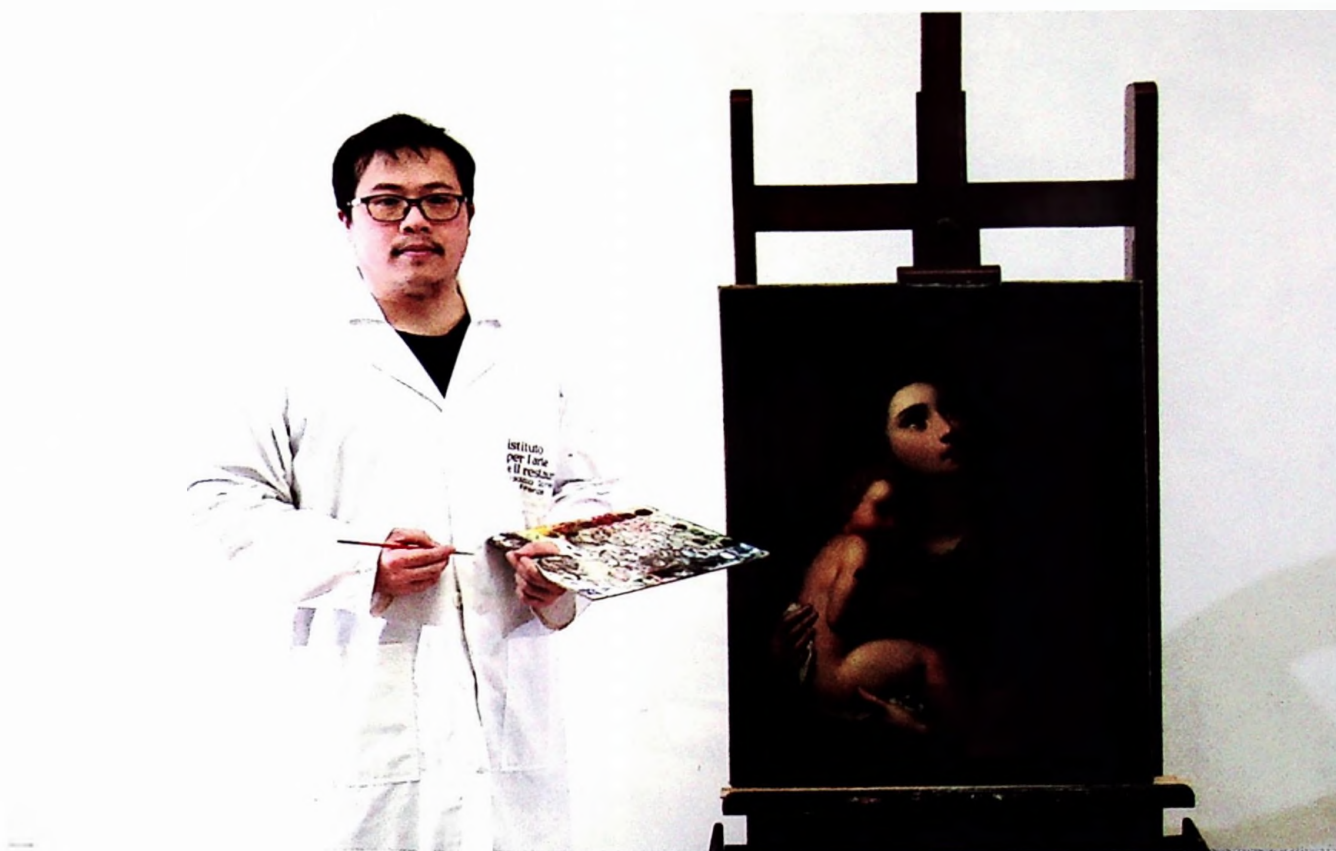
但像這類急救觀念在台灣卻十分不足。常見珍貴的文物已瀕臨損毀，卻未見採取任何急救措施。大家都以為等醫生（修復師）來就好了，但常常醫生來了，病人也回天乏術。因此他覺得台灣文物急救的觀念一定要先建立，遇到文物受損時，要盡可能保存原作掉落的碎片，後續的專業就交給修復師來發揮。「修復師不是魔術師，文物受傷了，修復師雖然可以像醫美一樣，讓他完全看不出疤痕來，但我們還

是希望文物不要受傷是最好的，能做最小干預的修復。」

國內修復師從業人員不多，因此賴志豪除了修復油畫，亦有許多廟宇彩繪的修復來徵詢他的意見，他也參與許多傳統廟宇文物的搶救保護工作。他曾經用義大利傳統的壁畫擷取技術 (lo strappo)，把壁體上的壁畫擷取下來，而不用大費周章的切割。這些經驗他都希望能跟傳統匠師交流，新舊兩個世代的知識能藉由合作，互見各自的所長，共同把台灣珍貴的文化資產保存下來。

賴志豪最初學修復是因為自己的畫作受損，卻不知該如何處理。但學完修復，他沒有選擇繼續創作，而以修復為主業。他說：「修復的技藝就像是把刀子，必須每天磨每天用，才會銳利。修復師是『師』而不是修復『家』，因為他的性質比較像職人，需要經年累月的訓練跟操作，出師前要經過長時間的磨練，才能做到精萃。」

修復師的熟成之路，賴志豪還在積累醞釀中。剛回國時，曾有校方邀請他進學校任教，但他請對方再多等他幾年的時間，他還想多多累積自己的實戰經驗。他願繼續在台灣的文物修復路上磨練，貢獻自己所長。 □



irreversible and that the original appearance of the cultural artifact is lost for good. Lai finds this disheartening in the extreme.

Lai repeatedly stresses that the most important job of the restorer is to preserve the original artwork. He once got an urgent call from Malaysia about a painting that was peeling, with flakes of the original paint coming off in alarming quantities. Lai asked the caller to carefully collect all the paint flakes and arranged to travel to Malaysia where he reattached them one by one. By restoring the original surface of the painting, Lai was also able to preserve its value.

A sense of urgency in saving cultural relics is not widely shared in Taiwan, where no emergency treatment is being delivered to artworks on the verge of being lost.

Many think that once the doctor (the conservator) arrives the patient will make a full recovery, but even with the doctor's best efforts the patient is often beyond saving. Lai feels that a sense of urgency about restoration must be cultivated in Taiwan. When a cultural artifact is damaged, the original materials must be collected so that professional restorers can work their magic.

Because there is a shortage of conservators in Taiwan, Lai has been called upon to help preserve temple relics as well as oil paintings. He once had the opportunity to employ the traditional Italian technique (known as *strappo*) of removing a fresco from a wall without the trouble of having to cut it out of the wall. He hopes to share such experiences with traditional craftsmen in Taiwan, combining skills both old and new,

and together working to preserve Taiwan's cultural heritage.

Lai first became interested in studying art restoration when he discovered damage to one of his own artworks and was unsure how to fix it. After studying conservation, however, he decided to make a career of it. "The restorer's art is like a knife—it must be honed and used daily to remain sharp," he says. "And a conservator shares much in common with an apprentice, who can only master his craft through years of training and practice."

Lai is still traveling the long road to mastering the conservator's art. And he plans to continue honing his skills and offering his considerable talents in his quest to preserve Taiwan's cultural heritage. □

(Cathy Teng/photos by Jimmy Lin/
tr. by Robert Green)

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陌生的自己

◎ 黃博煒

推薦序：生命無價，勦力前行

陽光基金會董事長 馬海霞

常忙於進出陽光基金會，與執行團隊一起審視服務狀況，有機會與博煒相熟，也看到博煒的勦力和努力，不向命運妥協。回想陽光基金會在燒傷意外中的社會責任「八一氣爆」，傷者已經回到生活軌道，八仙塵燃事件，兩年半了，陽光仍在積極推動這些年輕傷友們所需要的多元化發展方案，看著大家與傷友們並肩努力，讓傷友們逐漸找回笑容、重新啓動他們的人生，這種滋味……好難形容，應該就是感動吧！就覺得陽光同仁再怎樣的辛苦，都是值得的！

細讀博煒寫的文稿，看他細細描寫〈跑！快跑啊！〉：在塵燃意外事故現場的種種……無法預知意外已悄然四伏、火光四起時的驚恐與鎮定、等待救援時的分秒煎熬、直到終於奔向醫院的救治路程……他的文字把現場的聲、光、氣味等等，描述得宛如重回情境，歷歷在目……把我的記憶一下拉回二〇一五年六月二十七日的當晚！那一夜，肯定是許許多多人難熬的一晚……包括陽光基金會的董事會、執行團隊，傷友們在醫院中與死神搏鬥，我們則與政府部門密切聯繫，共同承擔責任。在急性醫療

結束之後，陽光基金會接棒，提供生活重建服務，只是必須同時服務三百多位大面積的燒傷者，這真的是很艱難的工程！這一棒雖然很重，陽光卻接得很穩！很牢！

在博煒的文章中，〈困在醫院的212天〉，即使它簡化了在複雜的醫療過程中，種種困難的生死關卡與搏鬥，卻很鮮明的描述自身的感受、思維，有著艱難的處境、生存壓力，以及不知道究竟是奇蹟先來？還是死亡先到？未來，究竟到不到得了……但同時，他對生命「就是想活」的執著，卻從未質疑，家人每天的探望、尊重、展現最深摯的愛，是博煒最重要的支持力！在大哭之後，帶著他直接面對他的「截後人生」！

沒有了四肢（畢竟左手傷後功能大受限制），生活中的點點滴滴都要從頭學習！基金會會無旁貸的承擔訓練的角色，〈不一樣的人生〉敘述他在臺北重建中心、以及陽光之家的點滴生活。陽光以「生活重建」為目標，與博煒一起開展他新的生活！在他的文章中，娓娓道來這兩年的歷程……從需要看護照顧，到越來越多樣的獨立自主；中心找了

專家研討，意外發現左手還有部分神經傳導的功能存留，於是運用生活輔具，幫助他握住觸控筆，回到網路世界——對一個以資訊為業的工程師來說，這是他過去生活中最重要的區塊呢！然後，他勤奮的練習以右手簽名，找回了能自己行使同意權的尊嚴！隨著服務提供，博煒參加各類活動，例如到交通不便、生活不便的營地，執行自立生活訓練，與其他傷友一起參加「飢餓30」活動，他的視野被擴大：即使肢體缺損，仍然可以有用！仍然能夠助人！仍然對社會具有價值！他的心靈更豐盛、更開闊了！在使用電動輪椅之後，博煒

的自主自由度更大了，舉凡搭乘捷運、重返校園，即使與過往有些許不同，但一想到曾經在生死間的徘徊，對於如此得來不易的「活著」，他格外珍惜！而自行如廁，更是他的重大突破！不再需要他人隨時地照顧，對於素來獨立生活與作息的他，有著重新掌握自己節奏的痛快感受！博煒細細的記錄著每一次的挑戰和突破，這也回應了這兩年來陽光的用心，和細緻性的個別化服務歷程！

在博煒重新開啓的生活步調中，他勇於挑戰，也常讓我們驚豔不已！例如接受邀約，開啓生命講師的分享：積極參與陽光為

燒傷青年提出的發展性方案：參加卡內基課程，不斷向內檢視、重整自己的生命歷程；在八仙塵爆事件兩年之後，挑戰登合歡，即使是暫時性的義肢，仍要自己用雙腳走上主峰！無論大大小小的挑戰，其實都需要整個團隊在背後多次討論、訓練，以及博煒自主練習，才能累積成果：看他一次又一次的超越他自己，是一件既開心又感動的事！能如此深刻的陪伴傷友，與他們一同看見生命價值，見證他們的生命韌性，這是陽光的責任，更是陽光的榮幸和驕傲！

祝福博煒，截後人生越活越精彩！

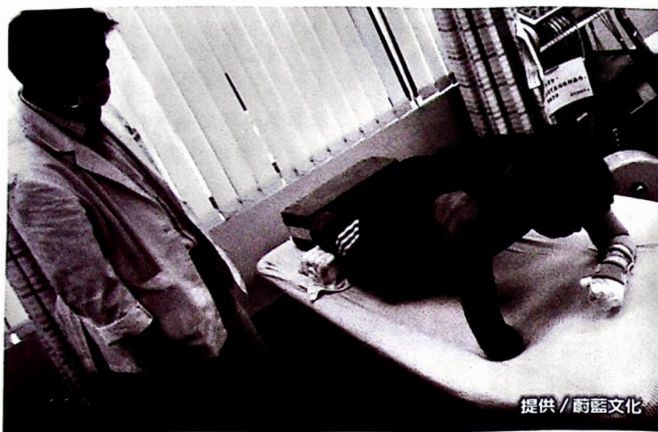
出院了，歷經兩百一十二天的日子，我終於邁入人生的新開始。

我的未來一切是未知，雙腳膝離斷截肢、右手手肘僅剩一點點，左手的手指功能微乎其微，這是一個陌生的自己。坐著無障礙計程車返家的路上，我看著外面熟悉的景色，心裡不禁有些感慨，外頭的世界還是一樣，但我卻再也不是從前的我了。悲傷的情緒一時湧現，但是並沒有持續太久，很快的就消失，因為我正在享受著回家的這趟路程。從台大醫院回家的路我完全都知道，甚至可以在腦海裡模擬出來，可是很奇妙的是，我明明知道下一個街口是什麼景色，心

裡依舊充滿著期待，就像遊歷在外的浪子，多年後歸來一樣，看著熟悉的一切，勾起心中那曾經的回憶，「我的家，我回來了！」

我的家是一般的老舊公寓，沒有電梯，所以我上下樓必須使用爬梯機，無法直接用抱的是因為身體的皮膚都還很脆弱，就像新生兒的皮膚一樣很嫩，甚至更需要被保護，一個小動作的摩擦就會起水泡破皮，所以完全需要依靠爬梯機。但是在出院前，我的復健科主治醫師就曾經帶著醫療團隊與輔具中心主任及陽光之家的教保員，一同討論如何讓我順利回到家中，及規劃家裡的無障礙環





境，並且在出院前就利用一個下午的時間，安排讓我回到家中。那一次的經驗，使得這一次回家真的安心許多，不會一直擔心被弄破皮或者受傷。

回到家中的那一刻，沒有大家想像中的喜極而泣，反而是一種很平靜的感覺，我讓看護阿雅推我到書房，我坐在書桌前打開一格又一格的抽屜，隨意的翻弄著，看著書架上的相簿與畢業紀念冊，一頁一頁的回憶著，一邊嘻笑一邊與旁人訴說著曾經的故事，曾經的自己，心裡的感覺是很奇妙愉悅的。以前畢業紀念冊放在那好幾年我不曾翻過，相簿裡的故事別人問我，我根本也懶得說，可是現在我卻很開心的分享著，大概是因為我差一點就沒有機會翻看這些東西了吧！

打開我的衣櫃，衣服全部整理得整齊，鞋櫃的鞋子也都乾乾淨淨的，我不禁想起哥哥曾經在

醫院跟我說的一些話。

哥哥：「黃博煒你知道嗎？那時候我在軍中一接到消息，整個人就大哭了，馬上向長官請假趕回台北，我完全不敢相信你要走了。那種感覺我真的說不上來，記憶是停留在上一次看到你的時候，明明一切是那樣的平常，現在卻突然有人跟我說你要掛了，真的沒辦法相信，心情很複雜。你病危的那時候，連葬儀社都已經聯絡好安排了，爸爸媽媽要我回家享你最愛的衣服褲子，做壽衣的準備，因為希望你走的時候是體面的。我也才二十幾歲而已，卻要面對這樣的事情，我好好的站在這裡，卻無法想像小我一歲的你即將離去，我回到家裡一直在回想著你原本的樣子，平常看到你的時候都沒有特別注意你愛穿什麼款式跟顏色，甚至看到也不會特別記起來，可是現在那些畫面卻一一浮現。」

家人的感受是我沒辦法體會到

的，我不知道他們在當下的情緒究竟多麼的悲痛，可是那些都過去了，慶幸哥哥準備的衣服沒有派上用場，鞋子我也在後來全部直接送人了，畢竟短期我用不到，倒是省了不少錢。

回家的時間很短暫，那時候剛好是過年期間所以暫居家裡，可是出院不代表就痊癒了，燒傷的傷口照護與復健才是真正的開始。陽光之家是陽光基金會提供給有需求的傷友入住的住宿機構。坦白說我一開始聽到「陽光之家」的時候，我心想：「天啊！我這麼年輕就要被送到養老院嗎？不！」

我對它的想像就像一些印象中的療養院一樣，很多病床，一個工作人員同時要照顧七八個傷友，會常常被丟著沒人照顧，日子很無聊吃飽睡，睡飽吃，像被人遺棄了一樣。可是實際上當我到陽光之家的時候，我發現跟我所見過與想像中的養護機構都不一樣，進門看到的是一般的客廳，可以看到傷友自己在吃飯、看電視，甚至復健，房間的規劃也很溫馨，就像住大學的宿舍一樣。我的床一開始吵了很久，因為住院期間臥床太久，導致身體部分肌肉萎縮無力，不太有辦法自己坐起來，所以出院前就要求陽光之家準備一張病床，因為病床才可以升降，協助我坐起來等等的動作。可是陽光之家並不同意，而這與陽光之家的初衷有關。

「陽光之家只是傷友人生中的一個暫時居所，入住之家是為了協助讓傷友儘早回歸到社會上，而不是越來越失能。」

工作人員不希望我出院後只是從一張病床換到另一張病床，這樣我距離「生活」還是太遙遠，大家能做的就是幫你找辦法解決，一起努力看看有什麼方式可以讓妳適應。起先我心裡是不好受的，因為對於未知的恐懼讓我有點不想妥協，可是當幾天過後，我居然自己找到方法翻身跟坐起來了！那就是利用身體的擺盪，你們可以試著平躺在床上，手不撐及腳不用的狀況下，只有上半身使力試著讓自己坐起來，是不是有些吃力，肚子要出很多力呢？同樣的我也是一樣，甚至因為沒有了前肢所以腳重更輕，手因為無力無法撐，讓我在坐起來的動作變得十分困難，而我找出的方法就像是鐘擺一樣，前後搖擺個幾次成功的讓自己坐了起來。

這樣的動作對老人家或者脊椎損傷的患者是危險的，但是對我倒是小心一些即可。這只是生活中的一些縮影，慢慢的我開始嘗試許多新的事物。陽光之家很不一樣的，就是「不出手」，對工作人員而言只要是傷友能夠自己做的，她們從來不出手，即使要花很長的時間，也會耐心的等待傷友自己完成，如果做不到的就會記錄下來，再一起與治療師討論解決方法。

「你要學會接受自己現在做這件事情就是需要這麼長的時間，我們幫了你就永遠學不會，也永遠接受不了現在的自己。」

這是工作人員一直給我們的觀念，他們大可以幫我們做大部分的事情，讓自己工作方便順利就好，幹嘛吃力不討好的找罪受，可是他們並沒有，而是真的為了讓傷友恢復生活自理能力，每一星期都訂定許多生活訓練的計畫，一步一步陪著我們前進。

平日星期一到星期五的白天，所有人都是需要出門去重建中心復健，晚上才會回到陽光之家做生活訓練。我的復健前期除了疤痕外，更著重於身體的肌力訓練，臥床導致我身體的無力，所以讓自己找回軀幹的力量是當務之急。每天配合著治療師所訂定的計畫，仰臥起坐、手腳都綁沙包、彈力繩等等，白天做晚上有空閒再做，我可以說真的很努力，因為我看到其他八仙傷友，心裡總會覺得我晚了人家好多，他們都出院復健好幾個月了，「不行！我要追上他們。」不斷的復健，甚至都超過治療師所訂下的功課。

可以用瘋狂來形容，好幾次老師告誡我要適度的休息，不然可能會二次傷害，我總是笑著說：「不會啦！」我心想，我以前運動細胞這麼好，怕什麼！以前練球、練田徑更操，現在根本不算什麼。所以起先的三個多月，我不斷的給自己加

強訓練，成效是顯著的，我的身體變得很有力，上下輪椅完全可以自己移位，甚至有高低差的床直接用兩邊手肘一撐就上去了。但是，我畢竟不再是從前的自己了，過度的操身體，終究出現了問題，肩膀、腰等等都開始受傷，不正常的痠痛，尤其是肩膀，痛得好幾天都睡不著，可是肩膀是唯一沒有燒傷的地方，表示是完好的，但是卻被我使用過度，操過頭了，復健直接大幅減量，甚至被嚴重警告不可以再這樣下去。「吃快弄破碗」，原先的一些計畫反而因為二度傷害的關係所以往後推了，原本治療師跟我說要我注意的時候，我仗著年輕根本不聽勸，結果就自食惡果了。

有時候覺得自己也挺不聽話的，傷後常常去嘗試許多的事情，這樣的精神是好的，對老師與工作人員來說這樣的態度是他們樂見的，至少我不是把自己封閉起來，像有一些比較沒有傷那麼嚴重的傷友，要叫他們做常常都叫不動，不願意做嘗試，把自己關在角落裡，相較起來，他們當然是鼓勵我多勇於嘗試，挑戰生活上的所有事物。可是前提是「安全」，我總是做一些匪夷所思的事情讓他們心跳加速，當然，我也不是無腦的蠻幹，受傷之後，我很珍惜自己可以活下來的機會，自然不會讓自己陷入危險之中，只不過因為我的樣貌實在是太少見了，所以導致做什麼事情在他人眼裡，都是那麼的新奇。

漫遊海龜島

琉球嶼

Roaming Xiaoliuqiu,
"Sea Turtle Isle"

圖／文・林旻萱 版面設計・蕭郢岑







在小琉球這座珊瑚島上，沿著環島公路就能欣賞獨特的礁岩地形，尤其在神話傳說故事的引領下，漫步於美人洞、山豬溝等著名景點，觀賞礁石與自然生態相互交錯的奇幻風光，更增添神祕的氣息。

潛入海中與海龜一起共游，是來到小琉球絕對要體驗的事。在深藍的海底世界，有的海龜會靜靜地在礁台上覓食，有的海龜會好奇地游向潛客。看著牠們揮展前肢與熱帶魚一同優游在美麗的珊瑚礁中，如此夢幻迷人的景象，讓人一眼就會愛上這座海龜島。

經過各方努力保育，
在小琉球看見海龜是件稀鬆平常的事，
但這樣珍貴的動物卻因為無法分辨垃圾與食物的差別，
時常誤食載浮於水中的塑膠垃圾而導致死亡。
因此，
海湧工作室在小琉球推出實際可在店家消費的「海灘貨幣」，
就是藉著獎勵民衆的淨灘行動，
順便推廣減少使用一次性塑膠製品的觀念，
讓來到這裡的遊客，在享受小島風情的同時，
一起愛護海洋、守護海龜。□



On the coral isle of Xiaoliuqiu off the coast of Pingtung County, follow the island's perimeter road and you can admire the distinctive, jagged reef terrain. Drawn by legend, you stroll through renowned attractions such as Beauty's Cave and Wild Boar Ditch, observing the fantastical scenery of the reefs set in a habitat teeming with life, which steepens the island in a mysterious ambience.

Should you visit Xiaoliuqiu, diving with the sea turtles is an experience absolutely not to be missed. In the deep blue underwater world, some turtles tranquilly forage on a table reef; out of curiosity, others may swim toward a diver. Their front flippers propelling them elegantly forward, side by side with tropical fish amongst the delightful coral, they form an enchanting, dream-like tableau that makes one fall in love with this sea-turtle isle at first sight.

Thanks to efforts by many parties to preserve them, it is commonplace to sight sea turtles around Xiaoliuqiu. But because these precious creatures cannot distinguish between rubbish and foodstuffs, they often die as the result of mistakenly ingesting plastic waste that floats in the water. HiiN Studio, a Taiwan-based NGO dedicated to raising awareness for protecting the marine environment ("HiiN" stands for *hai-ing*, meaning "ocean waves" in Taiwanese), has launched a "beach currency" that can actually be used to purchase goods at stores on the island. The intent: to encourage beach cleanup campaigns, popularize the idea of reduced reliance on "single-use" plastic bags, and remind visitors that while enjoying the island scenery, they should also cherish the ocean and help protect the sea turtles. □

(photos and text by Lin Min-hsuan/
tr. by Bruce Humes)

漫步在蛤板灣沙灘觀浪、聽濤、賞夕陽，十分愜意。

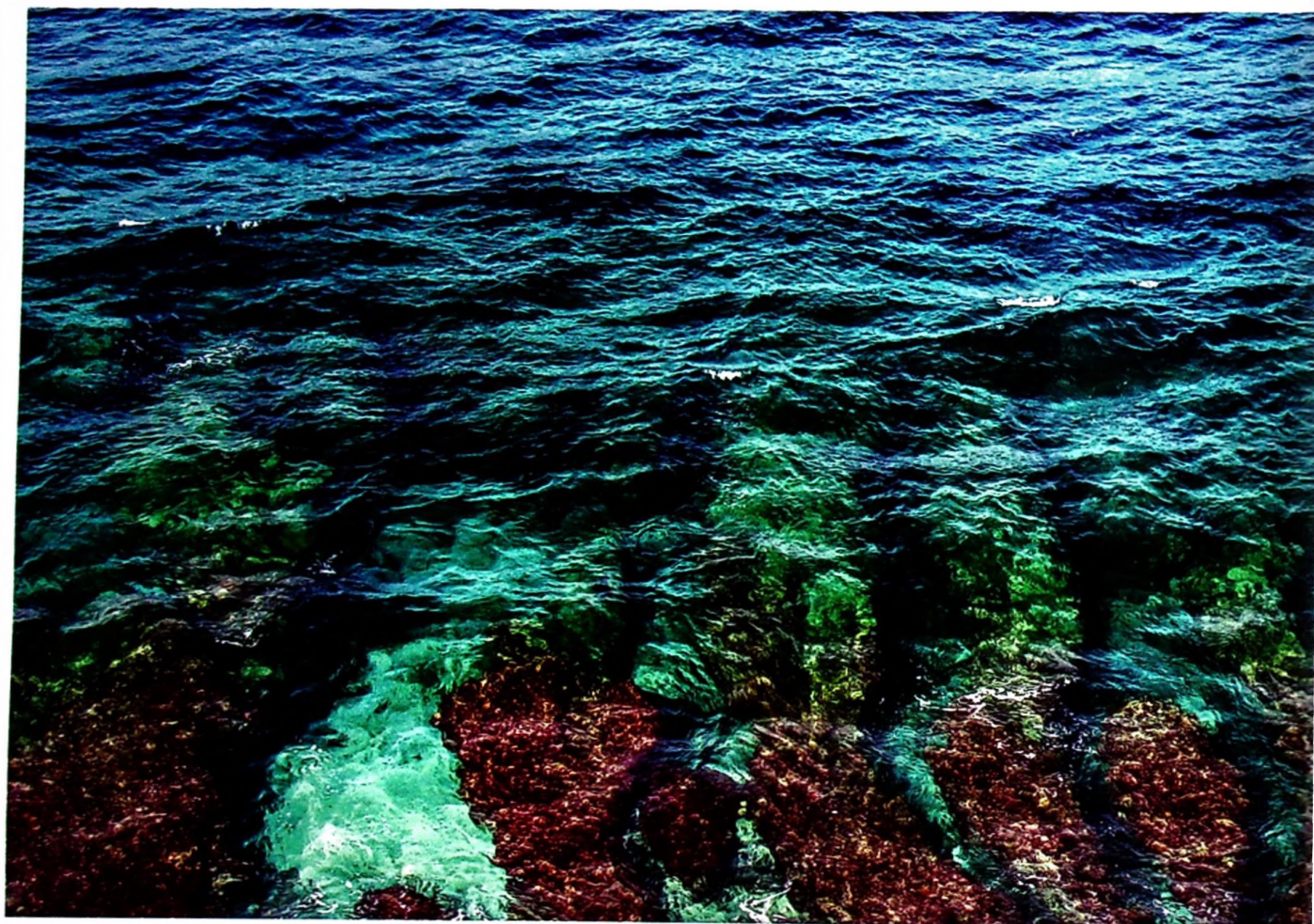
Strolling along Clam Bay Beach,
observing and listening to the waves as the sun sets,
is a serene experience.

頂著綠色植物的花瓶石矗立岸邊。

Topped with greenery,
Vase Rock stands tall by the seashore.

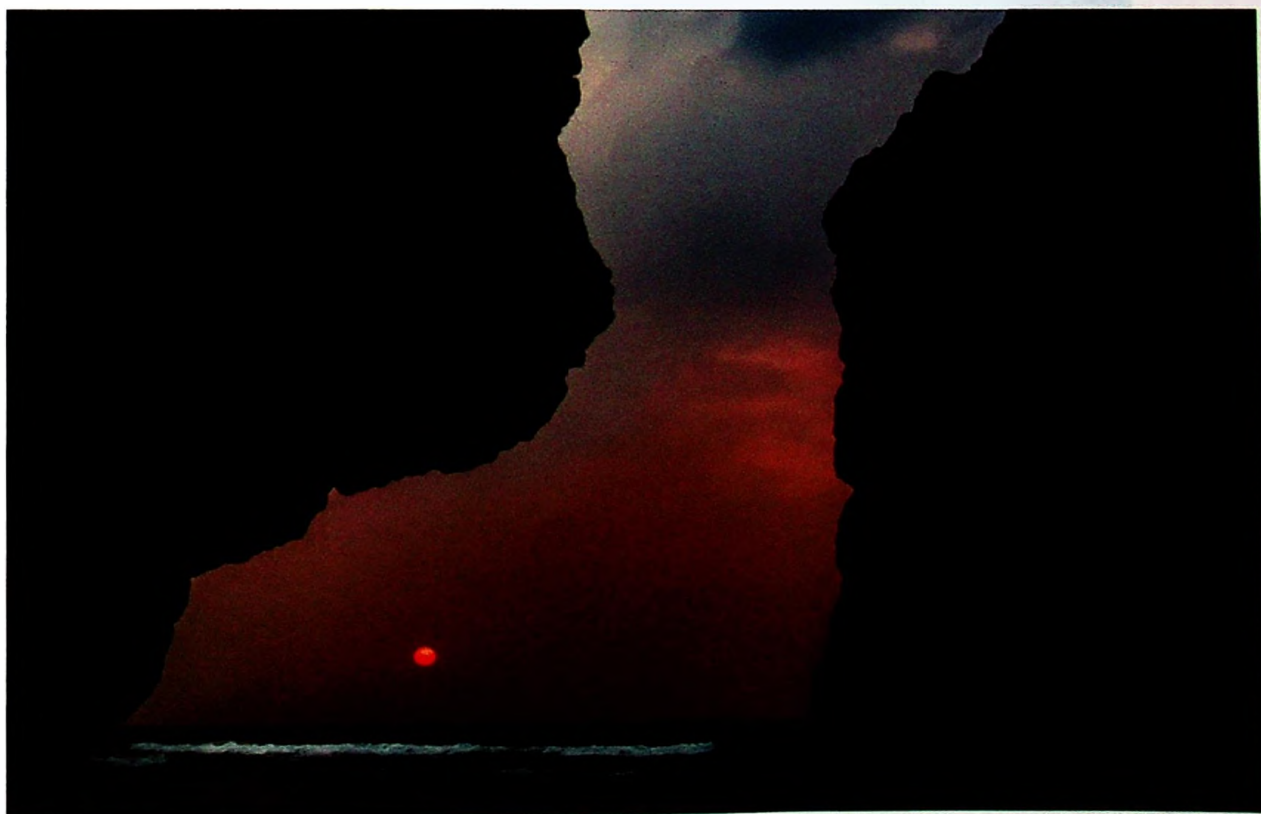




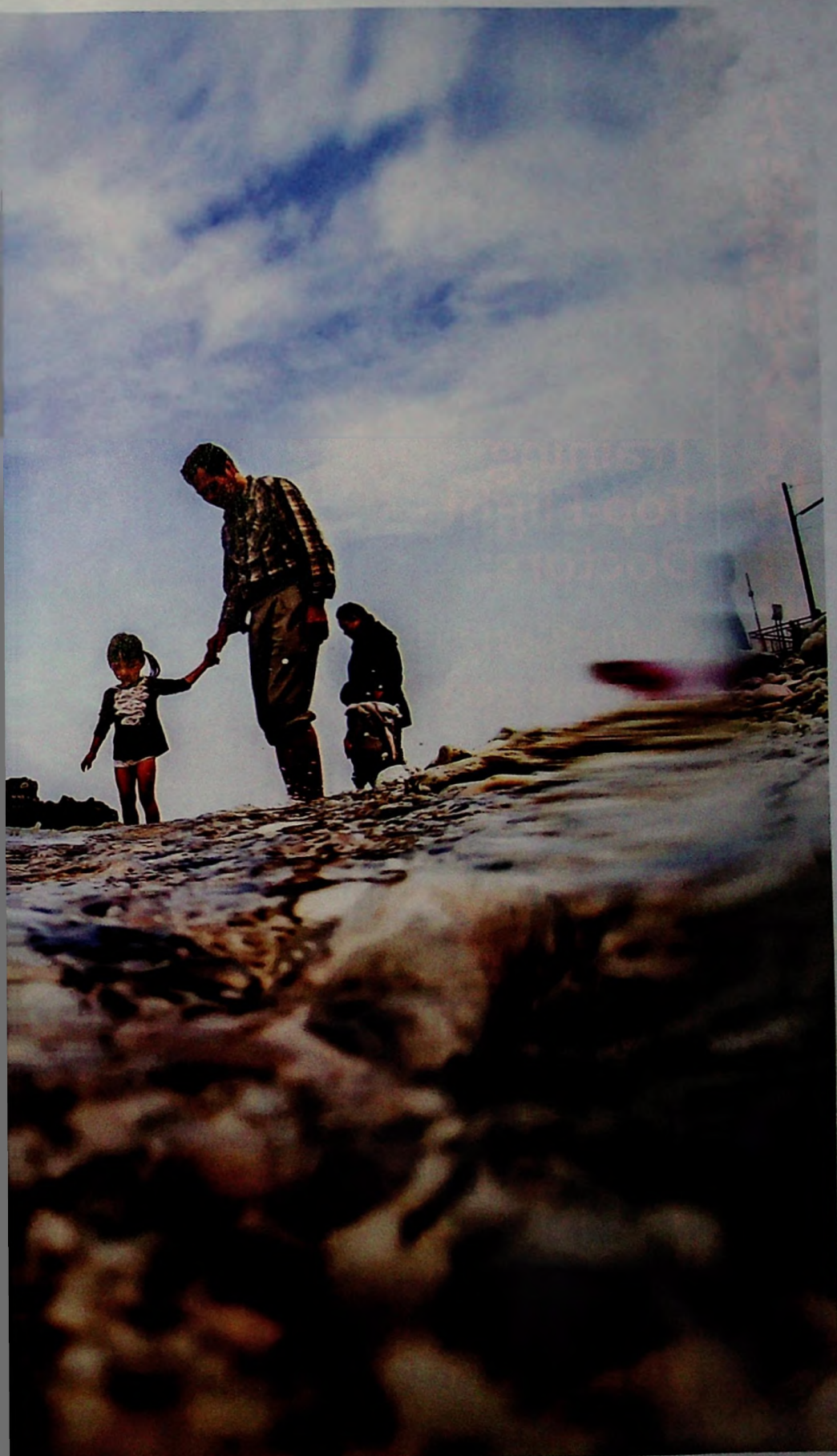


在望海亭可以欣賞特殊的珊瑚裙礁海岸。
A splendid view of the "fringing reef" that surrounds the isle.

夕陽下的小琉球美景，
讓人流連忘返。
The spellbinding beauty of
Xiaoliuqiu at sunset.







氣候四季皆宜的小琉球適合
全家一同出遊。

Xiaoliuqu's mild climate renders
it suitable for family visits
year-round.

尖端醫療人才培育典範
長庚顯微手術國際碩士專班

Training
Top-Flight
Doctors:

Chang Gung Hospital's
Microsurgery Program

早上7時不到，長庚整形外科會議室裡已坐滿準備參加顯微手術研討的醫師們，來自不同國度的研究員們，彼此分享在顯微手術上的經驗與成果。是什麼樣的吸引力能讓世界各地的醫師學員們，不遠千里來到台灣學習，又是透過怎麼樣的方式，讓台灣的國際能見度大大提升，並傳播至世界上的各個角落。這一切的起點要從我國顯微手術的巨擘——魏福全院士說起。

「我起先沒什麼很大的想法，就是羅慧夫老師叫我去學一些當時還沒有的技術，然後回來照顧我們的病患。」1979年魏福全被當時長庚醫院創院院長羅慧夫派至加拿大多倫多大學附設醫院進修，在那接觸到顯微重建手術，成為他日後開啓國內顯微手術醫療的濫觴。

站在時代浪頭上

1981年學成歸國的魏福全，秉持著恩師無私助人的理念，日復一日地將所學應用在病人身上。3年後的某一天，羅老師叫他出國去參加一個顯微手術的學術研討會，「那時是我第一次參加國際會議，跟我所景仰的來自新加坡、香港、泰國的前輩們一起發表論文，感覺很开心。」在發表結束後，讓他首次體認到國內顯微手術的技術，並不輸給其他國家。此後，只要一有顯微手術的國際會議，他都會去參加，並發表最新的研究發現，藉以證明台灣的顯微手術技術，不但不輸人，甚至已超越其他國家。

It is not yet 7 a.m., but already the conference room of the Plastic Surgery Department at Chang Gung Memorial Hospital is filled with doctors preparing to take part in a morning microsurgery discussion meeting. They include surgeons from many different countries, who share their experiences and achievements in microsurgery. What is it that attracts doctors from all over the world to come to Taiwan for advanced training? And how is Taiwan's international visibility being raised and its influence spread to all corners of the globe? To answer these questions, we should start by talking about Taiwan's leading authority on microsurgery—Professor Wei Fu-chan.

In 1979 Dr. Samuel Noordhoff, the first superintendent of Chang Gung Memorial Hospital, sent Dr. Wei Fu-chan to the University of Toronto for advanced study as a clinical fellow in microvascular and plastic surgery. There he came into contact with the field of reconstructive microsurgery, laying the foundations for his later launching of microsurgical treatment in Taiwan.

On the cutting edge

Returning home in 1981 after completing his studies, Dr. Wei began to apply what he had learned to patients, holding fast to the selfless ideals of his teacher, Dr. Noordhoff. Three years later, Noordhoff asked him to attend an academic conference on microsurgery. "That was the first time I had taken part in an international conference. To be able to present a paper alongside senior colleagues from Singapore, Hong Kong and Thailand whom I had long admired made me very happy." It was also the first time that he recognized that

漸漸地，魏福全開始被其他國家的大學或醫學中心邀請去擔任客座教授，「當時在想，我們的顯微手術一開始也是向別人學的，而現在該是換我們思考，怎麼來回饋國際社會了。」羅老師無私奉獻的精神，持續在他心中發酵，讓這位後來榮獲等同世界顯微重建外科界諾貝爾獎的「龐克獎」（Harry J. Buncke Award）得主，一步步發展出這屬於台灣獨一無二的顯微手術教學體制。

魏福全認為顯微手術能幫助到的，不僅是生命，也是對身體功能、外觀的恢復，而這對於一個人的尊嚴，扮演著非常重要的角色。加上台灣的全民健保制度，適時提供了這項手術最好的發展立基，讓病患得以不用額外負擔昂貴的醫療費用就可進行。再者，顯微手術應用的兩個領域，一個是外傷，另一個就是癌症的治療。例如舌癌，切掉一半的舌頭病灶後，如果沒有顯微手術的技術，就無法開刀修復，而化學與放射線治療對這癌症的效果不大，花費也更多。

於是，魏福全率領其醫療團隊，經多年的努力，逐漸發展出顯微手術之血管、神經、淋巴、管狀構造……等各個次領域的重建項目，而世界上還沒有一個地方能有如此完整的顯微醫療技術，同時也締造了許多世界第一的榮耀，包括：研創最多手術技術、擁有最多國際聞名權威醫師、世界最大顯微重建加護病房、單一醫學中心最多病例數，以及最多論文發表……等領先國際的亮點，讓國際專家學者競相前來造訪與進修。

「我覺得目前世界上能夠做顯微手術的人與地方太少，所以我有一個心願，如何讓這樣好的技術，用最有效的方法，擴展至最大。」魏福全認為，最有效的方法，莫過於訓練種子教師，再由這些教師，傳承給世界上所有需要的地方，就是「Train the trainers」的概念。於是，魏福全為了闡述其理念，往返奔走於長庚大學與教育部，終於順利在2015年將既有的「臨床顯微重建手術研究員」制度，轉型成結合臨床研究員與碩士學程的「長庚顯微手術國際碩士專班」，像這樣兼具理論、實驗與臨床經驗的碩士學程，在世界上也同樣是創舉。

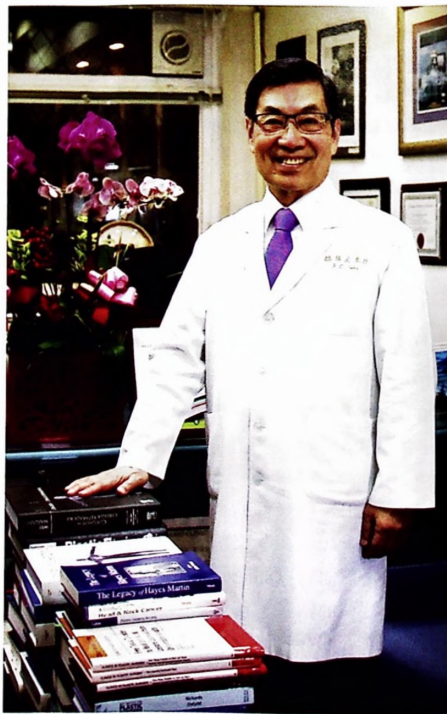
從顯微重建中心到國際碩士專班的成立，至今已逾37個年頭，培育了來自世界83個國家，150位

至少一年期以上的「研究員」，以及近2,000位不同研習時程的「訪問學者」，也因為這些訓練經驗的累積，發展出了一套獨特的教學體制及思維。

來自課堂的驚喜

在這顯微手術的課堂，跟其他大學碩士班上課很不同，一個星期大約有3~4天，早上7時開始就有「晨會」的討論。有醫師學員的研究報告，也有教授的隨堂講解，結束後，資深的主治醫師就會帶著各自的學員，去開刀房或看門診或在實驗室研習，而學習就發生在這些討論與臨床實作當中。提起與學員間的互動，魏福全說到：「有

醫學著作等身的魏福全院士，希望將顯微手術的技術，透過種子醫師，廣傳至世界上需要的地方。
Professor Wei Fu-chan, who is an academician of the Academia Sinica and a prolific author of medical writings, hopes that seed doctors can carry the techniques of microsurgery to all places in the world where they are needed.



microsurgical skills in Taiwan were not lagging behind those in other countries. Thereafter, he attended every international microsurgery conference he could and presented the discoveries of his latest research, thereby demonstrating that microsurgical techniques in Taiwan had even surpassed those in other countries.

Over time, Wei began to be invited by universities and medical centers in other countries to serve as a visiting professor. "I thought that as we had learned our microsurgery from others, now it was up to us to think about how to give something back to the international community." As he continued to reflect on Noordhoff's spirit of selfless contribution, Wei, who would later receive a Harry J. Buncke Lecturer Award (considered the "Nobel Prize" of reconstructive microsurgery) from the American Society for Reconstructive Microsurgery, began step by step to develop a unique microsurgery teaching system for Taiwan.

Wei explains that microsurgery can help not only in saving lives, but also in the restoration of bodily functions and appearance, which play a key role in an individual's dignity. Moreover, Taiwan's National Health Insurance system provides an excellent basis for the

development of this type of surgery, because it enables patients to undergo treatment without having to bear the burden of expensive medical bills.

Microsurgery is applied in two areas: trauma, and cancer treatment. For example, in cases of tongue cancer, after a large part of the tongue is cut out, reconstructive surgery would be impossible without microsurgical techniques. Chemotherapy and radiation therapy are not very effective with this type of cancer, and they are more expensive.

Therefore, through many years of effort Wei has led his medical team in gradually developing reconstructive techniques in a wide range of subfields that include vascular, neural, lymphatic, and tubular structure microsurgery. There is nowhere else in the world that offers such a comprehensive set of microsurgical

藉由門診實際病例的解說，讓顯微手術碩士專班的研究員們深入了解病患的需求，圖為腳趾移植至手指重建個案回診。

Through explanations of real cases, the fellows in the microsurgery master's program gain a deep understanding of patients' needs. The photo shows a follow-up visit in a case of toe-to-hand reconstructive surgery.



些來自先進國家的研究員，你教他這是怎麼樣的道理，他會舉一反三，你會覺得你教他，其實他也教你。」在互動的實作課程中，教授與學員間時常會有「新發現」的驚喜與感動。

而這些來台學習的研究員，也很驚嘆在這所學習到的知識，是別的地方無法獲得的。有很多的研究方向與題目，更是從師徒互相的腦力激盪中所產生。有位來自以色列的Jhonatan Elia，立志要當這領域裡最好的醫師。在他還沒來台灣前，就常閱讀這裡的醫學專書，也常聽聞以色列顯微手術的前輩，述說在此學習的種種故事，他覺得：「現在終於有機會能來到這裡，就像做夢一樣。」

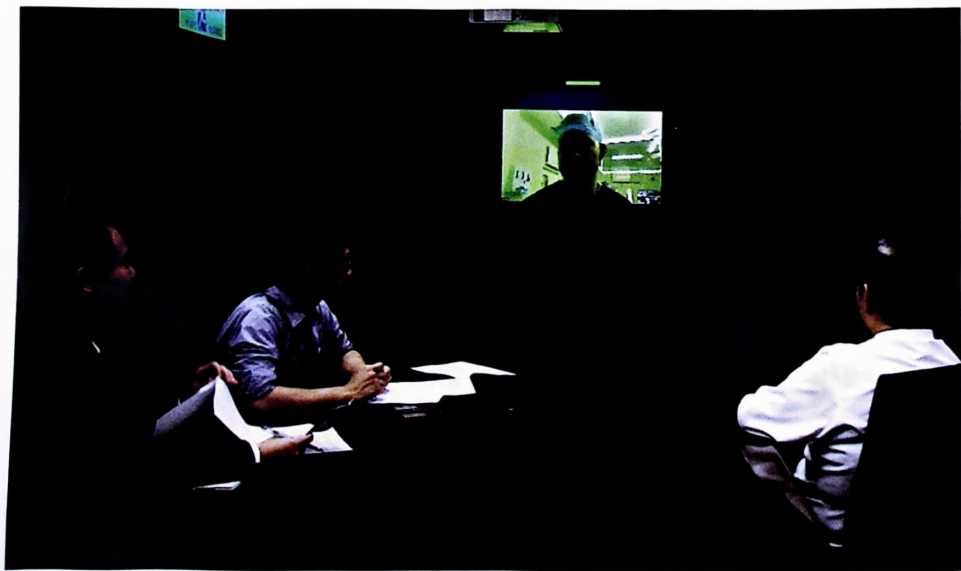
從醫已17年的他，認為長庚的顯微手術學程是世界上唯一合併臨床研究員與國際碩士學位的地方，「我來這裡不只是學到技術性跟臨床性的東西，也學到了批判性思維的能力，這是魏老師一直在強調的。」Jhonatan看到這裡的醫生對待病人的親切與專業，以及指導學員的熱忱，除了讓他想將所學照顧病人外，也希望分享給其他需要學習的醫師們。

此外，當初他過來時，是帶著太太和3個年幼的小孩一起來的，「我很驚訝在台灣，連陌生人

也願意幫助別人，這是在我們國家不會發生的事。」他和太太很喜歡台灣的食物，尤其是餃子和裝滿青菜的火鍋。現在他的孩子在讀雙語學校，他開玩笑地說：「我現在有時候都不知道他們在說什麼？」他覺得要讓人不喜歡台灣真的很難，「我以後回頭看在這裡的時光，一定會是我們生命中的美好回憶。」

另一位來自英國的Charles Anton Fries，在台灣學成歸國後，立刻就被延攬至牛津大學醫學院工作，他憶起當初參加晨會的情形：「第一次參加晨會，介紹我的研究案例，我很緊張也很興奮，但現在回想起來，這一切都非常值得。」Anton提到魏老師是一位很棒的外科醫生與教授，讓他了解如何在這個領域出類拔萃。他未來將承襲魏老師的精神，把顯微手術的技術傳承下去，也會持續做研究，就像在台灣時所學、所做的一樣。

來自英國的Anton，在台灣學成歸國後，立刻就被延攬至牛津大學醫學院工作，圖為視訊專訪過程。Charles Anton Fries, from the UK, was recruited to work in the University of Oxford Medical School immediately after returning from his studies in Taiwan. The photo was taken during our videoconferencing interview with him.





來自以色列的Jhonatan，覺得來長庚不只學到技術性跟臨床性的知識，也學到了批判性思維的能力。Jhonatan Elia, who is from Israel, says he came to Chang Gung not only to acquire technical and clinical knowledge, but also to develop his capacity for critical thinking.

techniques. Chang Gung's Reconstructive Microsurgery Center can boast many other world-beating achievements too, such as having created the largest number of innovative surgical procedures, having the largest number of doctors who are internationally recognized authorities, having the largest intensive care unit for reconstructive microsurgery, having treated the largest number of microsurgery cases of any medical center, and having the most publications. These areas in which Chang Gung leads the world attract practitioners and researchers from around the globe to come to Taiwan to visit and to undertake advanced study.

"I felt that there are too few people and places in the world that are able to perform microsurgery, so I had a thought: How can I spread these techniques as widely as possible?" Wei believed that the most effective way was to train seed teachers who would convey microsurgery to all places in the world where it is needed. This is the concept of "training the trainers." To this end Wei persistently lobbied Chang Gung University and the Ministry of Education, until in 2015 he was finally able to transform CGMH's existing system of clinical

research fellowships in reconstructive microsurgery into the International Master of Science Program in Reconstructive Microsurgery, which combines clinical research with a master's degree curriculum. This is the first master's program of its type in the world, combining theory, experimentation, and clinical experience.

Thirty-seven years have passed since the founding of the Reconstructive Microsurgery Center, and in that time Chang Gung has trained more than 150 "fellows" (who spend at least one year at the hospital) and nearly 2000 "visiting scholars" (who come for varying periods of time), from 83 countries. Thanks to the accumulated experience of this training, Chang Gung has developed an instructional system and philosophy that are unique.

Surprises from the classroom

Speaking of his interactions with students, Wei notes: "Some of the research fellows from advanced countries, when you explain something to them, will extrapolate from it and come up with new ideas. You feel like you are teaching them, but in fact they are teaching you too." During interactive practical courses, both professors and fellows often experience the surprise and joy of making "new discoveries."

These surgeons who come to train in Taiwan are thrilled to be acquiring knowledge that is available nowhere else. Moreover, many research directions and topics are produced by interactive brainstorming between teachers and fellows. Jhonatan Elia from Israel, who has been practicing medicine for 17 years, says that Chang Gung's microsurgery program is the only course in the world that combines a clinical research fellowship with an international master's degree. "I came here not only to learn technical and clinical skills, but also to develop my capacity for critical thinking. This is something that Professor Wei is always emphasizing." Seeing the kindness and professionalism with which doctors here treat patients, as well as their care when guiding students, Dr. Elia not only wants to use what he has learned here to treat patients, but also hopes to share this knowledge with other doctors who wish to learn.



教學現場：晨會

Hubert B. Shih在晨會結束後接受專訪，在美國舊金山灣區長大的他，爸媽來自台灣，大學念史丹佛大學的數學系，後來就讀加州大學洛杉磯分校醫學院，畢業後在史丹佛擔任6年的住院醫師。由於Hubert想更進一步鑽研顯微手術領域的技術，加上他在史丹佛的指導教授Dung Nguyen與Derrick Wan，以前也是魏老師的學生，所以推薦他來長庚進修。

Hubert提到晨會時所討論的案例，都是很實作經驗的例子。這裡案例的多樣性與豐富度，是在史丹佛比較缺乏的，譬如說口腔癌、上肢或下肢的復原手術……等，還有一些是從腳趾關節移植到手指的手術，全世界沒有幾個主治醫師可以把這種手術做得很成功。

他提到自己之前雖然已在美國學過皮瓣移植手術，但在看過魏老師親身示範與講解後，才發覺自己其實對這手術沒有了解得很透徹。此外，他也很景仰魏老師，能夠把長庚的顯微手術發展到這麼細緻，而且是世界級的程度，真是一件很不可思議的事情。

來自世界各國的研究員及訪問學者，參加長庚整形外科的晨會研討。（長庚醫院整形外科提供）
Fellows and scholars from around the world take part in discussions at the Plastic Surgery Department's morning meetings. (courtesy of the Plastic Surgery Department, CGMH)

教學現場：手術房

在另一頭的手術房，來自敘利亞的Nidai Al Deek，以及來自美國的Nicholas Do，正積極參與魏老師手術前的討論。Nidai在接受專訪時說：「對我來說，顯微手術是很重要的技術，因為我的國家正在打戰。」因為戰爭的原因，在Nidai的家鄉，很多基礎建設與醫院都被破壞，醫師們也因為戰爭而離開。所以他希望在顯微手術很領先的台灣學習過後，可以回到母國幫助有需要的人。

Nidai也提到他很敬佩魏老師，對於這樣一位在世界上獲得無數獎項、榮譽和認可的人，還能常保好奇心，並不斷地提高自己的技能，這樣的精神對年輕一輩來說真是學習的榜樣。此外，他覺得魏老師跟學員間，有一種父子般的關係，不但

When Elia came to Taiwan he brought his wife and three young children with him. He found himself "amazed at how even strangers here are willing to help others; this wouldn't happen in our own country." He and his wife are very fond of the food in Taiwan, especially *jiaozi* (boiled filled dumplings) and hotpot packed with green vegetables. He says it would be hard to dislike Taiwan, and that "in the future when I look back on our time here, it will surely be one of the most beautiful memories of my life."

When military surgeon Charles Anton Fries returned home to the UK after completing a fellowship in Taiwan, he was immediately recruited to the University of Oxford's Medical School. He recalls the first time he took part in a morning meeting at Chang Gung: "Introducing my case studies at my first morning meeting, I was very nervous but also very excited. But now, looking back, it was all very much worth it." Fries describes Wei Fu-chan as a terrific surgeon and teacher, who helped him to understand how to become prominent in this field. In the future he will carry on in the spirit of Professor Wei, passing along microsurgical techniques while continuing to conduct research, just as he did in Taiwan.

Morning meetings

We interview Hubert B. Shih, who grew up in the San Francisco Bay Area and was a resident at Stanford University, just after a morning meeting. He says the case studies discussed in the morning meetings are all very practical, and there is a greater diversity and richness of cases than he had seen at Stanford, such as reconstructive surgery of the mouth following oral cancer, and of the upper and lower limbs. There are also some cases of toe-to-hand transfer surgery, which only a few doctors in the world can perform successfully.

Shih notes that although he had previously studied flap transfer surgery in the US, it was only after seeing a personal demonstration by Wei Fu-chan and hearing Wei's explanations that he realized that in fact he didn't thoroughly grasp this type of surgery. He also admires Wei for having developed microsurgery at Chang Gung to a world-class level, a feat he finds to be amazing.

來自美國的Hubert，認為長庚顯微手術案例的多樣性與豐富度，是世界上其他地方無法比擬的。

Hubert Shih, from the US, says that nowhere else in the world compares with Chang Gung for the diversity and complexity of microsurgical cases.

In the operating theater

Meanwhile, in the operating theater, Nidal Al Deek from Syria and Nicholas Do from the US both actively engage in Wei's pre-surgery discussions. When we interview Al Deek, he tells us, "For me, microsurgery is a very important technique, because my country is at war." The war has destroyed much infrastructure and many hospitals in his homeland, and doctors have fled the country. For this reason he hopes that after he finishes studying in Taiwan, where microsurgery is very advanced, he can return to his country and help people in need.

Al Deek also mentions that he admires Wei because, despite having won countless awards and honors and received much recognition, he is still able to maintain his curiosity and continually upgrade his skills. This spirit sets a sterling example for the younger generation. Moreover, Al Deek feels that Wei has a fatherly relationship with his clinical research fellows. He not only tries to fairly divide responsibilities with them, he also strives to resolve cultural differences, so that fellows here can focus on learning. This also makes him a role model for those who wish to lead their own medical teams.



會試圖與他們公平分工，也很努力去解決文化上的差異，使學員在此能專心學習，而這也是想成為團體領導人的榜樣。

Nicholas則認為：「這裡的顯微手術還分成4個次領域的小組，這在美國都很少看得到。」他認為魏老師很重視臨床和基礎科學研究，每個月的會議都會鼓勵學員們來做報告。他覺得來到這裡學習，不但符合、甚至已超過了他原本的期望。

教學現場：實驗室

在實驗室的一隅，來自哥倫比亞的Esteban Cardona正專心的在做小鼠異體移植的實驗。Esteban在接受專訪時提及，他想跟這裡的老師們學習如何貼近病患的需求，以及用顯微手術來解決問題。他覺得魏老師不但是一位優秀的教授、

外科醫生，也是一位大家想追隨的人。不只是在手術室，你也可以在他身上學習如何做研究和領導團隊。

Esteban的指導老師王燕玲博士說明實驗室方面的基礎研究，「有大鼠、小鼠，或豬，像Esteban的話，是做小鼠的腳移植，以及如何降低排斥反應，來減少免疫試劑的藥。」像這小鼠手術是領先世界其他地方的，因為這種移植需要非常高的技術，不只是縫合0.4mm左右的血管，還需要縫合神經，因此需要更高端的顯微技術訓練。王燕玲補充說：「來這學習的研究員，第一年是在實驗室以動物實驗為主，第二年才是臨床。」而且魏老師有要求，最少要有一篇第一作者的文章發表才能畢業。

「隱形」外交冠軍

許多國家的醫學院學生是用學貸的方式來支付昂貴的學費，畢業後還需接受6年的住院醫師訓練。住院醫師期間的薪水不高，通常也無法還清之前的學貸，一直要到當上主治醫師後，薪水才

來自哥倫比亞的Esteban（右），
在實驗室裡接受教授的指導。
While working in the laboratory, Esteban Cardona (seated),
from Columbia, receives guidance from a professor.



Nicholas Do comments, "At Chang Gung, there are microsurgical teams specializing in four different sub-fields. This is something rarely seen in the US." He says that Wei places great emphasis on clinical practice and basic scientific research, and encourages students to present reports at each monthly meeting. Do feels that coming to study here has not only met his original expectations, but has exceeded them.

In the laboratory

In one corner of the microsurgery center's laboratory, Esteban Cardona from Columbia is concentrating on experiments in allotransplantation in mice. During our interview, Cardona mentions that he wants to learn from the teachers here how to closely match patients' needs, and use microsurgery to solve their problems. He feels that Wei is not only an outstanding professor and sur-

geon, he is also a person that others want to follow. Cardona says that he can learn from Wei not only surgery but also how to conduct research and lead a team.

Cardona's instructor, Dr. Wang Yen-ling, explains that in basic research in the laboratory, "we use rats, mice, and pigs. Esteban is doing research on foot transplantation in mice and how to lower rejection and so reduce the use of immunosuppressive drugs." Chang Gung is ahead of other centers in transplantation surgery on mice, which requires outstanding skills. Not only do surgeons have to suture blood vessels that are roughly 0.4 millimeters in diameter, they also have to sew together nerves, and therefore need even higher levels of microsurgical training. Wang adds, "The research fellows who come to study here are mainly in the laboratory doing animal experiments for the first year. They only begin doing clinical work in the second year." Moreover, Wei further demands that students get at least one article published in a journal as the first author in order to graduate.

Champion of low-key diplomacy

In many countries medical students often pay their expensive tuition fees by means of student loans, and then need to undergo six years of residency after graduation. Considering the low salary during residency, it is usually not possible for them to pay the student loans off quickly. It is only when students become attending physicians that their salaries sharply increase. Many of the students who come to Chang Gung to train in microsurgery have just completed their residencies.

Therefore it is very important to provide these international students with scholarships so that they can focus on their studies without any worries. Moreover, the students will in the future be professors, department heads, and leaders in the field of microsurgery in their respective countries, and will feel grateful to the organization that assisted them when they were first starting out. For example, on September 22, 2017, a thank-you dinner for Professor Wei was held in Glasgow, Scotland by former clinical research fellows. They also invited former ROC foreign affairs minister David Y.L. Lin,



**兼具理論、實驗與臨床經驗的顯微手術碩士學程，
在世界上是創舉。**

The microsurgery master's program, which combines theory, experiment, and clinical experience, is the first of its kind in the world.

長庚整形外科「晨會」的討論，有醫師學員的研究報告，也有教授的隨堂講解。During "morning meetings" in the Plastic Surgery Department at Chang Gung Memorial Hospital, some research fellows present reports on their work, while professors make on-the-spot explanations.



會翻倍的成長。而來長庚學習顯微手術的學員，很多是在住院醫師才剛完成的階段，也就是在他職業生涯中最窮、也最需要幫助的時候，再加上如果是全家一起過來的話，經濟壓力更為沉重。

因此，提供他們獎助學金，讓這些國際學員無後顧之憂地專心投入研究是很重要的。而這些國際學員，之後將會是該國顯微醫療領域的教授、部門主任或領導者，也會反過來感念當初資助他的單位。如2017年9月22日在英國蘇格蘭的格拉斯哥（Glasgow），由魏老師的學生所發起的感謝晚宴，邀請了前外交部長、目前是台灣駐英代表林永樂參加，宴會中除感謝魏老師的指導外，還特別感謝台灣外交部所提供的獎助學金。其中一位接受資助的醫師Chris Wallace提到：「如果當時沒有獎助學金，我想我在台灣的那段日子就沒有辦法專心學習，至今我依然覺得非常感激。」

此外，外交部自2011年起補助來自歐洲、北美洲、南美洲、中東等地區之醫師至長庚接受訓練。這些醫師回到母國後，又陸續訓練了多名其他國家醫師，不但有助提升我國知名度與影響力，對全球各國醫師素質的提升也有助益。而這些行動更呼應了我國於2016年第69屆世界衛生組織大會所宣布之「為響應WHA與Lancet

Commission所倡議之Global Surgery，我國願意在未來5年內提供世界各國50名外科種子醫師訓練機會」的承諾。

不同國籍與地域，台灣所訓練出的顯微手術種子，正廣傳到世界的各個角落。如之前尼泊爾大地震，長庚就有收來自尼泊爾的學員，讓顯微手術的技術能幫助到在地的傷患。目前，每年更會安排外籍醫師，前往新南向國家舉辦醫學教育研討會或進行手術示範教學等志工活動。「Train the trainers」魏福全的心願正一步一步地落實當中，未來，他希望這學程能取得歐洲醫師訓練機構的認證，再結合與幾個知名大學如牛津大學、倫敦大學等雙聯學位的合作，由碩士班逐漸擴展至博士班，建構起台灣於世界顯微手術的大網絡。

長庚大學副校長陳君侃提及：「長庚大學本身經過10年的努力，全校26個研究所，從原本個位數的外籍生，到目前已佔全校學生的2.75%左右，幾近200位。其中顯微手術專班的學程，每年約有來自世界70~80位的申請者，積極爭取這8~10位名額，可謂競爭激烈。」因為在這裡，他們除了可學習到最完整的顯微手術技術外，還要做研究、發表論文與學習帶領團隊。在他們學成歸國後，不僅可以服務病人，更能透過傳承，將台灣的醫療能量，廣傳至全世界。 □



長庚研究員俱樂部於2017世界顯微重建外科醫學會議後和樂團聚。(長庚醫院整形外科提供)

The "Fu-Chan Wei Club" holds a happy gathering after the 2017 Congress of the World Society for Reconstructive Microsurgery. (courtesy of the Plastic Surgery Department, CGMH)

currently Taiwan's representative in the UK, and in addition to expressing their gratitude to Wei for his guidance, they specially thanked the Ministry of Foreign Affairs (MOFA) for the scholarships it provided.

Since 2011, MOFA has also been subsidizing doctors to come to Chang Gung for training from regions including Europe, North America, South America, and the Middle East. When these doctors return home, they will in turn train physicians from their own and many other countries. This is not only helpful for enhancing Taiwan's visibility and influence, it is also very beneficial for raising the quality of doctors in countries worldwide. These actions echo Taiwan's commitment, announced at the 69th World Health Assembly in 2016, to provide training opportunities for 50 seed surgeons from countries around the world over the next five years in response to the "Global Surgery" initiative proposed by the WHA and the Lancet Commission.

Hailing from different countries and regions, the microsurgery seed doctors trained in Taiwan are spreading to every corner of the globe. Every year Chang Gung arranges for foreign doctors to go to New Southbound Policy countries to do volunteer work, such as holding medical education seminars or giving surgery demonstrations. Wei Fu-chan hopes that in the future his program can be accredited by European medical training institutions, and also that it can link up with well-known universities such as the University of Oxford and the University of London to cooperate in joint degree programs. He also hopes to develop a PhD program in addition to the master's program, and to build up a worldwide microsurgery network centered in Taiwan.

Chang Gung University vice-president Professor Chen Jan-kan notes: "About 70–80 applicants from around the world compete for the eight to ten places in the microsurgery program every year. It's extremely competitive." After they return home, these doctors not only can serve patients, but also, by passing along their knowledge, they can spread the power of Taiwan's advanced medical services to the entire world. □

(Ivan Chen/photos by Jimmy Lin/
tr. by Phil Newell)

汽車工藝的在地想像

洪裕鈞打造台灣電超跑

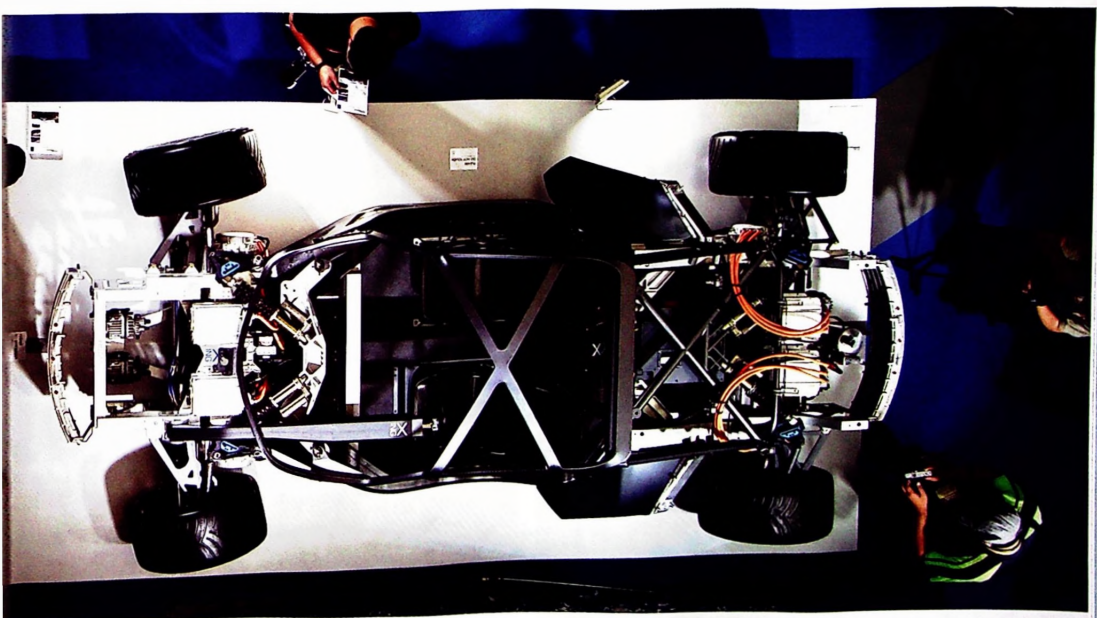
Reimagining the Automobile: Royce Hong's
Made-in-Taiwan Electric Supercar



A person is working on a car chassis in a workshop. The person's hands are visible, one holding a tool and the other resting on the chassis. The chassis is a complex metal structure with many bolts and nuts. The background is dark and industrial.

許多人都愛車如命，但能把這份愛發揮到極致的，實在不多。台灣松下董事長、愛比科技執行長洪裕鈞，就是個異數。因為愛車，他蒐集古董車；也因為愛車，他成為特斯拉第一代跑車「Roadster」的第一位台灣車主，甚至因為這份機緣，讓他與前特斯拉汽車主管齊塔克（Azizi Tucker），共同攜手在2015年初，成立以電動車技術開發為主的「行競科技公司」（Xing Mobility）。

Many people love cars, but few are able to indulge that love to its fullest. Royce Hong, chairman of Panasonic Taiwan and CEO of IPEVO, is one of those, few. His passion for automobiles has manifested in a number of ways, including a car collection that includes antiques as well as the first Tesla Roadster in Taiwan. It also includes his involvement with Xing Mobility, an automotive technology company he cofounded in early 2015 with former Tesla engineer Azizi Tucker, whom he came to know through his Roadster.



搭配4顆馬達、1.341匹馬力……種種不可思議，都在即將發表的電動超跑Miss R身上完成。(行發科技提供)

"Miss R," an electric supercar that is due to be released soon, has four motors that together are capable of developing 1.341 horsepower. (courtesy of Xing Mobility)

戴著粗框眼鏡、身著休閒西裝的洪裕鈞，外表相若斯文氣，身為三間公司領導人的他，談起自己最愛的車，除了玩家的狂熱，還有企業家對趨勢變化的敏銳觀察，以及源於工業設計背景的人文關懷，讓即便不懂車的人，也能被這股熱度所感染。

洪裕鈞說，自己是一名十足的技术狂熱者，就市場分析經常應用的「技術採用生命週期」，將一種新技術的擴散劃出一條吊鐘型的擴散曲線，並區分成創新者、早期使用者、早期大眾、晚期大眾、落後者，而他就是僅佔全體消費者2.5%的創新型使用者。這類型的消費者往往感知到些許的風吹草動，便會迫不及待購買嚐鮮，特斯拉是一例，蘋果手機也是，而這，正是因為車子帶來

「因為，車子是一種完全體驗的產品。」洪裕鈞解釋。從外觀、內裝，到油門與方向盤的反應……種種細微的體驗，打造出每一次駕駛

行進，在汽車產業的未來式

作為一名走在大眾潮流之前、具有遠見的技術狂熱者，洪裕鈞對於以年輕人為代表的次文化頗有研究。他將這輛車停泊在內湖行發科技公司的入口大廳，意味著他與齊塔克共同創業的夥伴情誼，也揭示出電動車代表的前瞻性與無限可能的想像空間。

他將這輛車停泊在內湖行發科技公司的入口大廳，意味著他與齊塔克共同創業的夥伴情誼，也揭示出電動車代表的前瞻性與無限可能的想像空間。

的樂趣，而每一次獨特的體驗，就像揭開了隱藏的寶藏，讓人遇見機會與神奇。「體驗是無價的！」

7年前，他買下全球限量2,400台的特斯拉跑車，讓他認識到電動車在動力輸出上的充沛與即時性、空間配置的高度靈活……等種種傳統燃油車所沒有的優勢，革新了他對汽車的想像；因此，即便這輛早期出品的車子，毛病百出，卻像一把打開新維度的鑰匙，「就像你使用過智慧手機，就再也回不去了。」

Royce Hong looks elegant in his casual suit and thick-rimmed glasses. The CEO of three companies, he speaks about his favorite cars not just as a fan, but as an entrepreneur sensitive to changing trends, and as a former industrial designer in touch with the human side of products. His enthusiasm is contagious even to someone who doesn't get cars.

Hong says that he's an ardent fan of technology. As one of the earliest of early adopters, he is what market analysts who study technology adoption lifecycles call an "innovator," one of the 2.5% of consumers who track the smallest changes to products and always rush out to buy the newest versions. Hong came to this kind of "innovation" through his love of cars.

"Cars offer a complete product experience." Hong elaborates, explaining that every detail of the automotive experience, from the vehicle's appearance to its steering and acceleration, delivers pleasure each time you drive. It's as if each driving experience opens a hidden window to a realm of opportunity and magic. "Those experiences are priceless!"

Hong's purchase of his Tesla Roadster seven years ago upended his thinking about cars. A first-generation product from a production run of just 2,400 vehicles, the car suffers from a myriad of ills, yet Hong saw it as the gateway to a new dimension. "It's like a smartphone: once you've used one, there's no going back."

He has since parked this Tesla in the lobby of Xing Mobility as an example of the forward thinking and the boundless imagination that electric cars represent.

The future is now

A farsighted tech lover who is usually ahead of the pack, Hong has a feel for the culture of young people. "It's like the technology adoption lifecycle. The early adopters of a product tend to be people who focus on the technology rather than the functionality. Once users gain experience with a product and work out the kinks, it jumps the divide into the mainstream." He says that the same thing is happening with electric cars.

Hong chose to call his new car company "Xing" as an embodiment of his expectations for the electric vehicle industry and of his observations of cultural phenomena. He explains: "'X' represents the unknown, the experimental. It suggests a future that is happening right now. The 'ing' was inspired by the language of Taiwanese subculture, such as the Mayday song 'Lian'ai ing'

['love-ing'], and represents youthfulness and things occurring in this moment. Together, the name suggests 'the future happening now' and 'creating possibilities through experimentation,' which are the kinds of things you associate with an innovative company."

Exploiting Taiwan's strengths

Hong drew up his strategy soon after founding the company, focusing Xing on electric vehicle technology R&D and consulting. But it still needed to build a platform capable of highlighting its technological prowess. While 2016's "Miss E" electric car was only an experimental platform for innovative tech, this year's

「This is the future！」談起電動車的遠景，

洪裕鈞信心滿滿。

Speaking about the outlook for electric cars, a confident Royce Hong exclaims, "This is the future!"



"Miss R" supercar is a more fully developed demonstration model.

A former product designer, Hong continues to be very concerned with finding ways to make his products unique. Happily, Xing has succeeded. "Everything about our car, from R&D to production, was done in Taiwan," says Hong. But, since Xing itself focuses on R&D, the manufacturing was outsourced to dozens of factories.

Taiwan's manufacturing sector is known for being highly flexible, producing large numbers of different high-quality products in small volumes, and bringing

電池模組是團隊最早成功開發出來的產品，
以其優異的散熱效果與可輕鬆堆疊的設計著稱。
Xing Mobility's battery modules were its first successfully
developed product. They feature outstanding heat
dissipation and stackability.

有共感，「就像在技術採用生命週期的曲線，一開始只有一群只管科技、不管性能的人在使用，而透過使用經驗的逐漸累積與修正，才跨越鴻溝，普及成大眾化的產品。」他繼而談道，這在文化上也是一樣，今天的主流音樂，可能是5年前的地下音樂，在文學、電影、表演藝術等領域同樣在發生。而這樣的發展歷程，也與電動車的發展趨勢若合符節。

因此，融合了對電動車產業的期許，以及在文化現象上的觀察，他把公司取名為「Xing」。洪裕鈞說，「X」是未知、是實驗，也意指正在發生中的未來，「ing」則是台灣的次文化常用的語彙，如五月天的歌〈戀愛ing〉，飽含青春氣息，也象徵著正在發生的事。因此，一個代表「正在發生的未來」、「以實驗創造出可能性」等多重意涵的新創公司，於焉誕生。

擅用台灣製造業優勢

從公司成立的初期，洪裕鈞便擬定策略，雖然公司以電動車技術的研發與顧問為主，但仍得推出一項代表性產品，用以展現技術實力。2016年發表的電動賽車Miss E，還只是許多新創技術的實驗平台。將在今年正式發表的電超跑Miss R，將有更完熟的表現。就像設計師最在意的，是如何做出具有辨識度的作品，作為公司的舵手，洪裕鈞同樣在為自家的產品尋找獨特性。

目前粗估，世界上約有10~20輛電動超跑已發表、或正在開發中，主要在歐美、日本與中國大陸等地，「會選擇在這個島上做這件事，就已經很獨特了。」洪裕鈞說。而如何進一步鏈結起本地資源，打造出台灣特色，更是一大挑戰。

可喜的是，他們做到了。「我們的車，在製造面上，從研發到生產，Only in Taiwan！」洪裕鈞自信地說。由於行競以研發為主，在製造上，



包含立偉模具工業、先進複材科技等數十家傳產廠商，都是他們重要的協力夥伴。洪裕鈞特別說明：「台灣的供應商，因為要接國外客戶的單，被磨出了高品質，在生產技術、品質、效率與成本控管上也都很好。」

再加上台灣製造業，以少量、多樣化、高品質、高彈性及開發速度快等優勢著稱，交通距離又近，溝通上可以很即時。深諳產業現況的齊塔克，便曾跟洪裕鈞提及，同樣的零件，公司若是在加州，供應商可能在波士頓，光來回就得花上一週，而台灣最遠也僅需一天車程，「加上台灣又以中小企業為主，可以直接與老闆討論，彈性特別大。」洪裕鈞補充。

Miss R從概念發想到正式上路，不過短短18個月，國外動輒3、5年時間，這樣的成績，讓洪裕鈞相當滿意：「如果不是台灣的產業鏈，我們也不可能做到這樣的成績！」

世界上跑最快的一幅書法！

不容否認，洪裕鈞獨具的人文思維，為整間相當硬派的汽車技術研發公司，挹注了另一股不一樣的軟性力道。

production online quickly. Distances between factories are also short, and communication is nearly instantaneous.

All of this enabled the Miss R to go from the concept stage to the street in just 18 months, a process that might easily take three to five years overseas. Hong says, "We couldn't have done it so fast without Taiwan's production chain."

Fastest in the world

Hong's unusual background adds a humanistic element to the hard-nosed engineering that typically characterizes a company specializing in automotive R&D.

He reveals that when they were about to release 3D renders of the Miss R, they incorporated examples of Tong Yang-tze's calligraphy into the vehicle's exterior paintwork. Such creative flourishes grow out of Hong's insight into cultural value.

Hong has known Tong for years, yet, as a mark of his respect, always refers to her as "Master Tong." He admires the explosive power of her calligraphy, and the

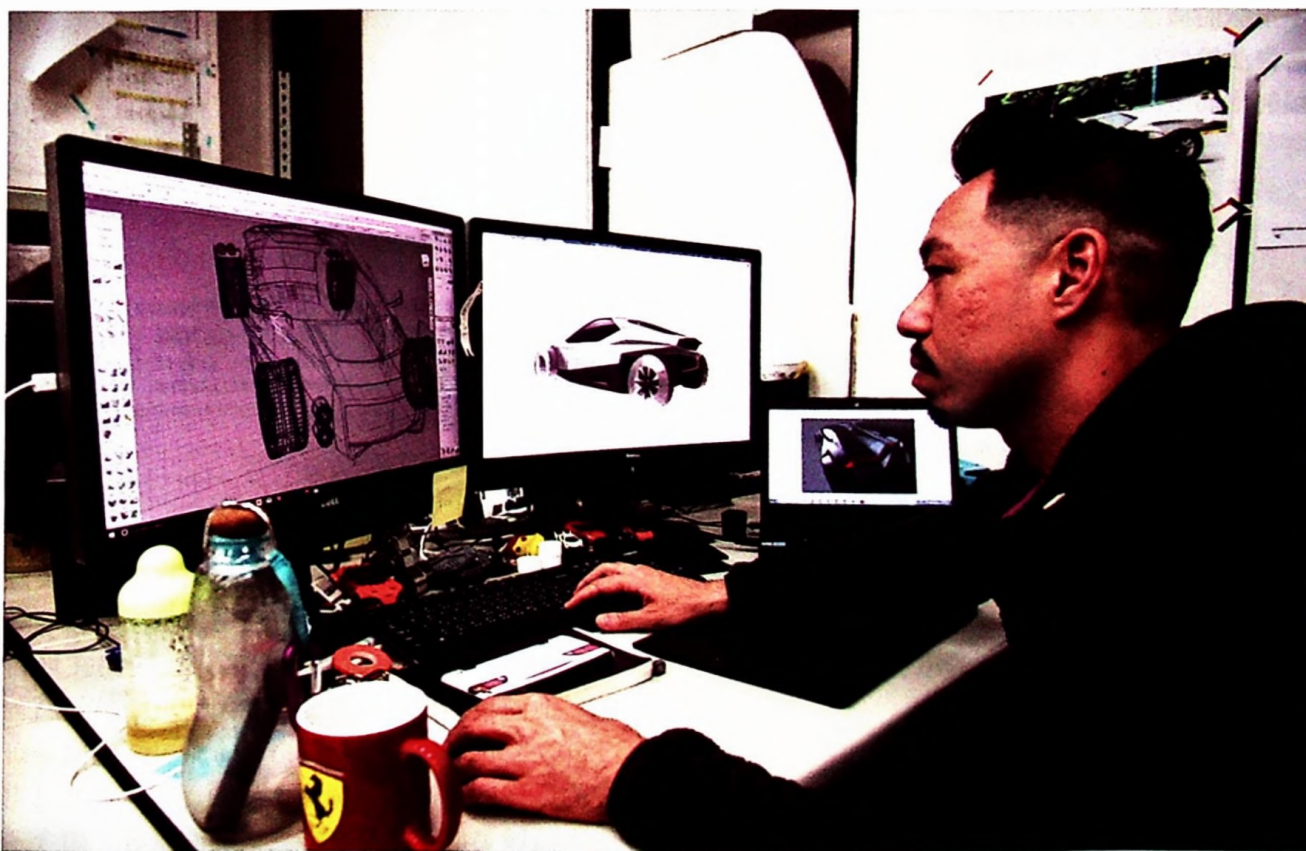
way in which her use of line has aligned her calligraphy with contemporary art in a way unique in the Greater China region. "I think that Master Tong's calligraphy embodies the special character of Taiwan's culture."

That connection led to the idea of cooperating with Tong, and to Hong's attempt to incorporate calligraphy into automotive design.

For this endeavor, he chose to use a non-standard calligraphic style filled with tension and a contemporary aesthetic. Hong views calligraphy as an art that condenses time, and sees it echoing the motion of a vehicle speeding through time and space. Tong's calligraphy is dynamic, like a car, and its incorporation into Taiwan's first electric sports car generates a high level of cultural tension. Hong says, "Calligraphy moves. A car moves, too. This is without doubt Master Tong's 'fastest' work."

Patented tech

Though just two years old, Xing has already enjoyed R&D successes. Electric cars rely on battery power, but discharging power to run a motor generates large



如何運用本地資源，做出獨特性與在地性，是團隊的一大挑戰。

One of the Xing team's major challenges was using local resources to produce a distinctive and distinctly Taiwanese vehicle.

洪裕鈞向我們透露，即將發表的Miss R 3D模擬圖，書法藝術家董陽孜的墨寶將在Miss R的車身外殼塗裝上現身！這樣叫人振奮的創舉，不得不歸功於洪裕鈞在人文價值上的眼光。

與董陽孜結識已久的洪裕鈞，總謙虛地尊稱她為「董老師」。他折服於她書法藝術中驚人的爆發力，並以書法線條之美，走出了合乎當代美學的新路，放眼兩岸三地，絕無僅有，「我以為，董老師的書法足以代表台灣文化的特色。」

這樣的慧眼獨具，引來了合作的靈感。尤其近年，董陽孜頻頻嘗試跨界合作，包含與音樂、舞蹈、時裝等領域作對話，洪裕鈞居然動念，想把書法置入汽車工藝之中。

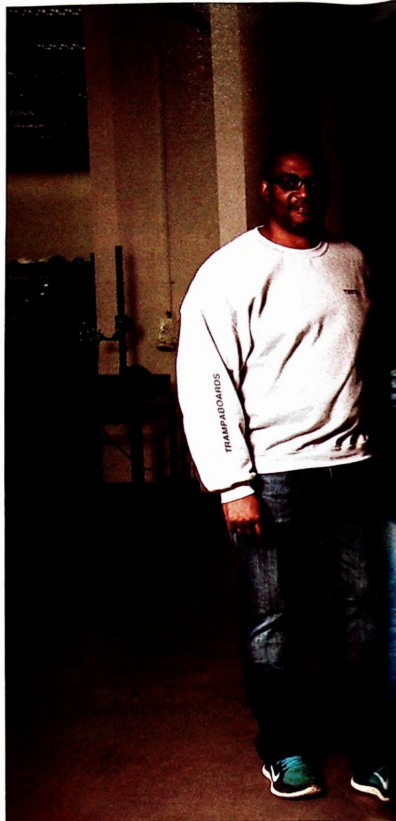
並且，不是選用一個個規矩的書法字體，而是張力十足，又合乎現代審美的墨跡線條，就在電超跑上飛躍了起來！洪裕鈞說：「Xing，就是『行』的羅馬拼音，是不斷在運轉的意思。書法基本上也是一種ing的紀錄，就是Xing的表現。」

書法，是凝結時空的藝術，呼應著汽車在時空中飛馳的概念，董陽孜的書法在動，汽車也是。當書法線條躍上台灣第一台電超跑，這樣的概念輻射出高度的文化張力，讓洪裕鈞自己也感到振奮：「書法在動，車子也在動，這一定是董老師作品中跑得最快的一幅！」

專利技術搶攻電動車市場

如今，這間才剛成立兩年左右的公司，也在核心的技術研發上交出不錯的成績。由於電動車依賴電池發電驅動，但放電過程往往會產生大量熱能，若溫度過高將造成電池壽命耗損，甚至有安全上的問題。因此，如何有效散熱，始終讓各家車廠備感棘手。而在齊塔克靈機一動下，提議將電池浸泡在不導電、抗酸抗腐蝕的3M電子工程液之中，相較其他車廠如特斯拉，僅將注入冷卻液的金屬管線纏繞在電池周圍，這樣浸沒式的冷卻技術，效果顯然更勝一籌。

因應這樣的請求，團隊進而開發出耐壓、可密封、模組化猶如樂高一般，可輕鬆堆疊的電池模組，包括歐洲、中東、日本等國際客戶紛紛聞聲而至，與之合作，應用在卡車、水泥車、挖土機等商業用車上。



洪裕鈞（右）與齊塔克（左）共同創辦行顛科技，兩人截然不同的專業背景，卻造就出絕佳團隊。Royce Hong (right) and Azizi Tucker (left), Xing Mobility's cofounders, come from very different professional backgrounds, but have assembled an outstanding team.

許多人說，台灣沒有真正的汽車產業，也沒有汽車文化與賽車傳統，那麼，到底為什麼要做電超跑？洪裕鈞逆向而行，在這個仍待開發的處女地，不僅繳交出漂亮的成績，也做出在地特色。他向我們分享他喜愛的愛因斯坦的一句話：

「Play is the highest form of research.」（遊戲是研究的最高境界）從一個車迷到投資創業，涉足電動車領域，他不僅是搶得先機的消費者，如今，也要成為趨勢的領航者，而他自己就是這句話的實踐者。



amounts of heat. If the battery temperature exceeds a certain threshold, the heat can shorten the battery's life and even become a safety issue. This makes heat dissipation a key issue for electric car companies. Xing's Tucker came up with the idea of immersing batteries in 3M's "Novec Engineered Fluid," an electrically non-conductive, corrosion-resistant liquid. Xing's immersive cooling stands in contrast to the approach of companies like Tesla, which cool their batteries by wrapping them in coolant-filled metal pipes, and is much more efficient.

Working from this idea, the team developed a modular, stackable, sealable, pressure-resistant battery pack that has attracted attention from customers in Europe, the Middle East and Japan interested in applying it to commercial vehicles, such as trucks and excavators.

洪裕鈞認為董陽孜的書法藝術是台灣文化的代表，因此把書法線條放在車身上。（行競科技提供）

Royce Hong sees the calligraphy of Tong Yang-tze as representative of Taiwan's culture, so he decorated the bodywork of the "Miss R" with calligraphic lines. (courtesy of Xing Mobility)

Hong's favorite quote is a remark often attributed to Albert Einstein, that play is the highest form of research. In his journey from car lover to electric car entrepreneur, Hong has transformed from an "innovative" consumer to a trendsetter, and come to exemplify this insight. □

(Lynn Su/photos by Chuang Kung-ju/
tr. by Scott Williams)

產業新創 ENTREPRENEURSHIP

Making a Feast
of Delicious
Surplus:
Pick Food Up
and 7C Kitchen

剩食的美味饗宴

拾合生態廚房與七喜廚房

文・陳群芳 圖・林旻萱 版面設計・蕭郢岑



打開冰箱，半顆芋頭、快過期的奶油，面對即期的食材、吃剩的餐點，你都怎麼做？

這些食物大多數的下場都是被送進垃圾桶，然後我們繼續進行購買、食用、丟棄的循環。

近年，全球掀起一波波剩食運動，台灣也有人以行動響應。才（音：手）合生態廚房黃尹宣以職人精神用剩食製作甜點；而七喜廚房的楊七喜則甘願負債也要經營剩食餐廳。她們用創意與熱情，改變眾人對剩食的想像，讓剩食變成佳餚。

剩食，指的是被剩餘的食物，可能是在消費者講求方便、快速、美觀的心態下，被丟棄的醜蔬果，也可能是在食品加工過程中，因為不方便處理或是規格不符等因素被淘汰的產品，更多的是銷售端、消費端因為即期而被丟棄的食物。根據聯合國統計，每年約有三分之一的食物遭到損失或浪費，但同時許多國家卻有人因為飢餓而死去。

衛福部食藥署在2016年調查各大通路商即期食品的結果，估算每年約產生超過3萬公噸的即期食品。這些明明還可食用卻被浪費的食物該何去何從，是官方與民間皆須面對的重要課題。

食起，拾起

「你好，我們是才合，我們用公平貿易或是有機的NG品或醜蔬果做點心……」在假日某市集的攤位上，販售著各式蛋糕點心，一位女孩耐心地向往來民衆解釋著，她是才合生態廚房創辦人黃尹宣。

Open the refrigerator, and you find leftovers and fresh ingredients with a short remaining lifespan. What to do?

The lion's portion of these foods will end up in the trashcan, after which we will continue our cycle: purchase, partially consume, discard.

In recent years, the world has seen a wave of campaigns promoting creative use of surplus foodstuffs, and in Taiwan too some people are responding with practical action. At Pick Food Up, Ann Huang applies a professional mindset to fashion confections from them; meanwhile, 7C Kitchen's Hedy Yang is willing to incur debt in order to run a restaurant specializing in cuisine made with "leftovers" of various kinds. These two women are using their creativity and passion to transform surfeit into fine fare.

The term "food waste," meaning food that is discarded uneaten, can refer to blemished or misshapen fruits and vegetables, or goods that are eliminated when food is processed, but the larger amount is foodstuffs that are discarded because they are insufficiently fresh, at the wholesale stage or later by consumers. Approximately one-third of all food is lost or wasted annually according to United Nations estimates. In some areas, people are dying of hunger.





黃尹宜以格外品作為製作甜點的主要材料，是挑戰也是堅持。
For Ann Huang, relying on surplus ingredients to make her desserts is both a challenge and a moral imperative.

看著架上造型小巧精緻的點心，如果不特別強調並不會與剩食有所連結。以剩食製作甜點，市面上少有這樣的嘗試，對黃尹宜而言是一種挑戰，「關注環境的人就會知道剩食，但我想打入非同溫層，讓對環境議題不熟悉的族群，也能認識剩食。」

大學念昆蟲系，碩士主修海洋生物，黃尹宜喜歡大自然，也愛好烹飪。本已準備出國攻讀海洋生物博士，抵不過內心蠢蠢欲動的烹飪魂，黃尹宜跑去咖啡店內場打工，這一試讓她看清也堅定了從事餐飲業的決心。

為了加強食物與環境的連結，黃尹宜到義大利修讀慢食，這段期間黃尹宜到農場打工，農場主人每周到菜攤、肉販收他們不要的食材，以自給自足的生活方式，烹調出一道道的美食，讓黃尹宜驚豔。她親身到荷蘭知名的剩食餐廳Instock實習，見識到餐廳對剩食的收集與運用。即期品超市、咖啡廳的剩食沙龍等，剩食運動在歐洲遍地開花，打開了黃尹宜的視野。

減少剩食不僅是不浪費食材，更多了一層對環境的愛護。當耗費自然資源種出來的糧食，卻進

了垃圾桶，不僅虛耗資源，焚燒垃圾更對環境造成傷害。能結合對環境的愛護與烹飪，回台後的黃尹宜躍躍欲試。

黃尹宜以在剩食餐廳實習的觀察，開發可能會有「格外品」的廠商，訂購即期的麵粉、可可粉，或是酒商提供試飲的紅酒。黃尹宜以前工作過的食品加工廠及咖啡店也會提供即期果醬、碎米、醃蔬果等食材。這些別人眼中的格外品，在黃尹宜的不斷嘗試下，成了可口的甜點。

剩食甜點的一期一會

甜點的製作對原料比例十分講究，以格外品為主要材料的才合產品，有時就更是可遇不可求。

例如黃尹宜開發的第一個剩食甜點——紫米布丁塔。不若其他產品是以現成食譜進行改良，紫米布丁塔則是黃尹宜從無到有的創作。

必須同時具備紫米、蛋白、胚芽吐司邊等格外品，缺一不可。去年紫米產量少，格外品就更是稀少，所以始終做不成。前些日子黃尹宜取得一包紫米的格外品，才終於讓才合的經典產品重出江湖。

What to do with food waste that is unquestionably edible is an issue that both governments and society at large must face up to.

Waste not, want not

"Hello, we're Pick Food Up. We make desserts from rejected fair-trade and organic food products, as well as blemished fruits and vegetables," explains a good-humored young woman repeatedly as she hawks a variety of pastries and snacks to the bustling crowd at a stall in a holiday market. Meet Ann Huang, the founder of Pick Food Up.

Few firms in the market are attempting to fabricate snacks from surplus, but to Huang, it is a welcome challenge. "Environmentally conscious people are already aware of this, but I want to help those who are unfamil-

iar with environmental issues to learn about reducing food wastage."

In order to learn more about the connection between foodstuffs and the environment, Huang traveled to Italy and steeped herself in the practice of "slow food." While laboring on a farm there, she was amazed to learn that the owner of the farm where she was working visited meat and vegetable vendors weekly, putting their unsold goods to use by cooking up a host of delicious dishes, a lifestyle that effectively rendered the farmer "self-sufficient" foodwise. She also did a stint as an intern at Holland's renowned Instock Restaurant to see for herself how unsold foodstuffs are collected and utilized.

Reducing food loss not only prevents food wastage, it is also an expression of our concern for the environment. When foodstuffs whose cultivation has consumed natural resources end up in the trashcan, this doesn't merely represent wasted resources; incinerating that rubbish also harms the ecosystem. Newly aware of how caring for the environment and cooking could be integrated, back in Taiwan Huang was keen to put her knowledge to good use.

Based on observations made during her internship at Instock, Huang cultivated relations with food manufacturers and suppliers who were likely to have "non-standard stock" on their hands, and began to buy from them flour and cocoa nearing their use-by dates. Factories and cafés where she had once worked were also willing to supply her with items such as jam nearing its sell-by date, broken rice, and blemished fruits and vegetables. Thanks to her constant experimentation, what others considered "surplus" goods were transformed into mouthwatering desserts.

The luck of the draw

The proportions of ingredients used in certain confections are very exacting, and at Pick Food Up—where the principle ingredients are surplus foods—obtaining the right amounts at the right time can be very elusive.



外型精緻可口的點心，
全是黃尹宣為替剩食吸引目光所付出的努力。
Eye-catching appetizers: Ann Huang goes the
extra mile to capture attention for her creations.



外型方正的紫米布丁塔，很難想像它的味道，聞起來有龍眼乾的香氣，一口咬下充滿彈性的紫米餡，立刻讓人眼睛為之一亮。她將紫米蒸熟加入蛋白，底下的塔皮則是胚芽吐司邊烘乾再打碎，然後加入龍眼乾製成。今年黃尹宜還在內陷與塔皮間加了一層苦甜巧克力，小小的甜點裡蘊藏了她的用心，不吃真的不知道會有甚麼樣美妙的滋味。

味覺敏銳的黃尹宜，總是先想像吃下去的味



道，再利用手邊蒐集到的格外品，不斷地嘗試做出她想像的甜點。例如抹茶戚風蛋糕佐水梨桂花奶油霜、胡蘿蔔戚風蛋糕佐金盞奶油霜，看起來不搭的食材，但卻迸出美味的火花。

源自德國的傳統甜點咕咕霍夫，則被黃尹宜用在碾米過程中被淘汰的碎米磨成粉取代麵粉，再加上白酒及柑橘醬等格外品，做成純米白酒柑咕咕霍夫。

除了甜點製作，黃尹宜也接外燴訂單，同樣是以格外品為主材料，變化出松露烤飯糰、迷迭香馬鈴薯司康等鹹點。她用有機胡蘿蔔葉加上馬齒莧等醃製成雪裡紅，加上豆渣、即期麵粉做成千層酥派，在荷蘭藝術家來台駐村的活動裡，廣受大家好評。

走過草創時期到處借冰箱借廚房的日子，黃尹宜以她獨特的甜點，為剩食吸引了目光，謙稱自己不是廚藝或烘焙技術高超的廚師，秉持著不希望好食材被浪費的精神，就像黃尹宜在粉絲頁上寫的：「才合用手結合大自然、食物與你我的力量，把值得的留下，將能看見美好。」

共享，共食

搶救剩食，不浪費食物，不只是對環境的關懷，更能拉近人與人的距離。位在台

市集裡，黃尹宜耐心地介紹理念，邀大眾一起品嚐剩食的美好滋味。Persuasion begins with the tongue: Ann Huang patiently educates the public about cooking with "leftovers" and invites them to savor the results for themselves.

For example, in the first dessert developed by Huang—a purple-rice pudding tart—surplus items such as purple glutinous rice, egg white and wheat-germ bread are indispensable. Last year's harvest of purple rice was smaller than usual, which meant there was less broken rice available from rice millers, so this sweet didn't figure on the menu. Not long ago, however, Huang got her hands on a bag of the colored grain, and thus Pick Up Food's classic treat finally reappeared.

Fragrant with the scent of longans (dragon-eye fruit), a bite of the chewy purple rice filling immediately brings a sparkle to the eye. Huang first steams the rice till it is cooked through and combines it with egg white. The bread is baked dry and crumbled, the dried longans are added to it, and this crust serves as the base of the tart. This year Huang has added a layer of dark chocolate between the filling and the crust.

Blessed as she is with sensitive taste buds, Huang customarily imagines how a dessert would taste first, and then employs the surplus ingredients she has collected to attempt—over and over—to make her imagined dish a reality. For instance, take her matcha chiffon cake with pear and fragrant olive blossom cream, or her carrot chiffon cake with kumquat cream topping. These flavors may not sound compatible, but sparks fly when they're combined.

In addition to producing desserts, Huang takes on catering business for which she also uses mainly surplus food as ingredients, transforming them into roasted rice balls with truffles, rosemary-flavored potato scones and so forth. She used ingredients such as organic carrot leaves with purslane to pickle mustard greens, and added okara to flour near its sell-by date to make spanakopita-inspired pastries,

which were widely praised at a dinner party organized by Dutch designer Siem Nozza during his stay as a designer-in-residence at Taipei's Treasure Hill.

Even during the start-up period of her enterprise—when she was borrowing kitchen and even fridge space—Huang took advantage of her unique desserts made from surplus ingredients to attract attention, and remained resolute in her desire to avoid the loss of perfectly good food ingredients. As she wrote on her Facebook fan page: "Pick Food Up combines the power of Nature and food with the power of you and me. Keep that which is useful, and its goodness will become apparent."

Shared food and enjoyment

7C Kitchen is a social enterprise based in Taichung. It was born of its founder Hedy Yang's belief that "just like with human beings, there is no such thing as vegetables and fruits that are 'surplus to requirements.'"

Hedy Yang had started out by making free meals for homeless people.

One of her volunteers introduced her to an organic produce vendor at a traditional market to whom she explained her concept, and he happily agreed to supply her with his unsold blemished fruit and vegetables. Then she and her team went on to speak with other stallholders, who also responded positively—she hadn't imagined that the food donated by a single market could feed so many people! So Yang put out the word for those in need to gather in Taichung's Huamei Street to enjoy delicious dishes made with unsightly or over-ripe fruits and vegetables. Afterwards, diners were invited to place a payment—the amount determined by themselves—in a collection box, or to offer their labor in exchange for the meal. This marked the debut of the first 7C Kitchen.



結合大自然、食物與眾人的力量，
才合生態廚房讓剩食有了更多可能。

By combining the power of people,
food and Nature,
Pick Food Up brings greater potential to
the art of surplus food processing.



樂觀開朗的楊七喜，相信七喜廚房能為剩食帶來解方。
7C Kitchen's optimistic Hedy Yang is confident that her community cookeries are a much-needed solution to the quandary posed by food wastage.

中的七喜廚房社會企業有限公司，就是創辦人楊七喜相信「蔬果與人一樣，沒有所謂剩餘」而誕生。

起初，楊七喜做的是街友送餐，在志工的介紹下，她嘗試到傳統市場專售有機蔬果的攤商介紹理念，沒想到老闆爽快的答應提供賣剩的醃蔬果供楊七喜使用，就這樣開始了她的挽救剩食之路。楊七喜與夥伴們逐一向攤商介紹理念，沒想到一間菜市場可以收到的醃蔬果量大到可以餵養許多人。於是楊七喜號召有需要的人前來台中市華美街共同享用醃蔬果烹調的美食，用餐後，大家自由定價投入箱子，或是以洗碗、環境清潔等勞務方式作為用餐的回饋。楊七喜的第一間七喜廚房，就這樣誤打誤撞的開始了。

華美街上的七喜廚房以社區廚房為定位，就是鄰居家的灶咖（台語廚房的諧音）。白天工作

人員從附近市場蒐集攤商賣剩的蔬菜和肉品，例如過熟的白蘿蔔、折損的青蔥、豬內臟、碎雞肉等，然後回到華美社區廚房，由工作人員、志工朋友一起洗菜、切菜，將這些醃蔬果變身成一道道美味的菜餚。

傍晚，小家庭、離家打拼的遊子、在外租屋的學生，當然也包括經濟不寬裕的甘苦人，通通都可以到此用餐，華美社區廚房店長廖佳倫表示，「這邊準時六點半開飯，有時不到七點菜就快吃完，還會跑去問鄰居有沒有多的飯。」鄰居路過也會進來寒暄，順便看看有沒有自己需要的食材，一來一往的互動，成了都市裡少有的風景。

為將資源確實分配給需要的人，華美社區廚房還提供免費冰箱。每天收菜回來後，夥伴們只索取餐廳需要的量，剩下的蔬果、豆腐等就擺放在餐廳門口的檯面上及冰箱裡，供有需要的民眾自由取用。隨著媒體曝光及長期在地耕耘，民眾若有家中吃不完的餐點也會拿到七喜廚房一同分享，人與人的連結因為剩食變得緊密。

楊七喜表示，關於剩食的議題，其實台灣很多團體都有涉獵，但多以公益角度出發。她認為解決剩食可以一併解決老人長照、青年創業、友善



明日餐桌的創意供餐方式與舒適用餐環境，讓剩食運動也可以有商業模式的發展。
Dish of Tomorrow's innovative approach and comfortable atmosphere herald a feasible business model for the movement to maximize use of surplus foodstuffs.

七喜廚房的免費冰箱，讓吃不完的蔬果與餐點，能提供給需要的民眾自由取用。

(right) 7C Kitchen's free communal fridge stores excess food and meals for easy access by the needy.

Located on Huamei Street, 7C Kitchen positions itself as a "community kitchen." During the day, staff collect unsold vegetables and meat from the nearby market and return to the Huamei Street cookery. The items are washed and cut by staff and volunteers, who transform them into a bevy of delicious dishes.

In the early evening, families, students and the economically strapped are all welcome to partake. "Dinner is served on schedule at 6:30 p.m.," explains Liao Jialun, the restaurant manager. "At times the food is almost gone before 7:00, so we send staff out to neighboring households to ask if they have any extra food." Neighbors passing by may come in for a chat, and some take the opportunity to see if there are any ingredients they need.

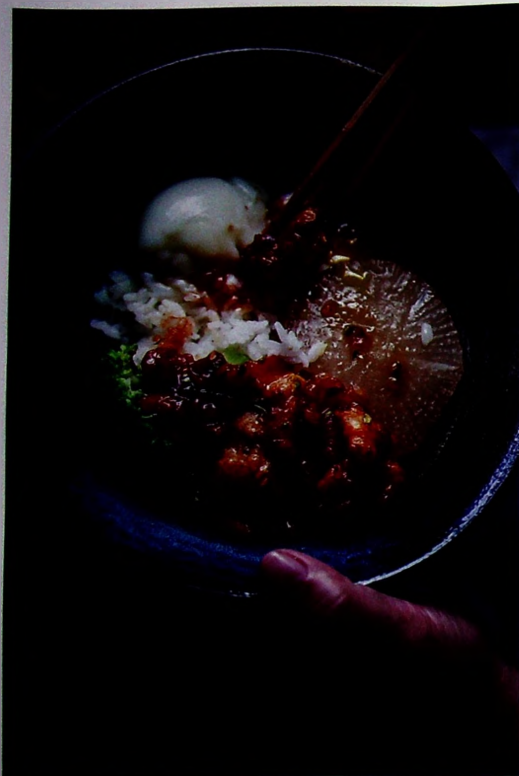
Huamei Community Kitchen also offers free refrigeration of extra foodstuffs. Each day, after donations have been collected but before cooking begins, staff select those that will be used and place excess vegetables, fruits, tofu and so forth in the kitchen's refrigerator, or on a counter at the entrance, where people in need are free to take them. If people have leftovers, they are welcome to bring them to the kitchen and share them.

In April 2017, Yang and her team opened the second 7C Kitchen, located on Yude Road in Taichung. They dubbed it "Dish of Tomorrow."

Today's leftovers, tomorrow's gourmet cuisine

Having opened the second restaurant in a wave of enthusiasm, during the day Yang sold the exotic curry at which she excels at a fixed price, while at





廚師發揮創意，
將醜蔬果與格外品烹調成媽媽牌的美味與用心。
Resourceful chefs transmute imperfect fruits and vegetables
and surplus foodstuffs into dishes that evoke a mother's
heartwarming, home-cooked fare.

耕作、食品安全等問題，於是她與夥伴們決心成為台灣第一間以商業模式解決剩食問題的餐廳。在2017年4月，楊七喜與夥伴們在台中市育德路上，開了第二間七喜廚房，取名為明日餐桌。

今日剩食，明日桌上美食

一股熱情地開了第二間餐廳，白天賣楊七喜擅長的異國咖哩，晚上比照華美社區廚房的模式，採自由定價，

但育德店的經營很快就遇到了問題。楊七喜混合各種香料自行研發咖哩的配方，不同於市售咖哩粉，風味特殊，但餐點單價也高，無法打入附近的消費族群，導致明日餐桌虧損逐漸嚴重，經不斷與夥伴討論修正經營方式，最後楊七喜決定以一日一主餐的無菜單料理，背水一戰。

以格外品和醜蔬果等剩食作為餐廳主要食材來源，雖無法掌握食材的種類，但訂購友善環境或具有國產認證的廠商提供的格外品，卻能讓消費者安心。就像媽媽打開冰箱為孩子準備愛心便當的態度，讓廚師自由發揮，將這些來自安心品牌的格外品，製作成美味可口的餐點，如蜜汁蘋果燉豬肩、蔥開雞肉燉麵等。單價訂在百元上下，並提供加70元就能享用自助吧吃到飽的選擇。這一嘗試，讓明日餐桌的經營逐漸有了起色，雖然每月還是有近30萬元的虧損，但已經縮小之前虧損的幅度。

明日餐桌還推出打工換餐的制度，民衆可以透過打工換餐券。餐券除了自己用，也能留在餐廳的牆上，讓有需要的人使用。「希望以後大家沒飯吃，就來明日餐桌，可以打工換餐，牆上也有待用券，這裡就像社會的救助線，不用等到孩子肚子餓再去偷去搶。」楊七喜表示。

隨著明日餐桌逐漸上了軌道，華美社區廚房也運作穩定，楊七喜與廖佳倫計畫在農曆年後，與昇平里合作，製作餐點送至里民服務中心，邀集大家一起用餐。楊七喜表示，剩食是所有人都需要關注的議題，希望藉由明日餐桌讓更多人注意，也歡迎有興趣的朋友前來了解，七喜廚房將不藏私地提供剩食餐廳的經營方針。楊七喜希望以一間明日餐桌扶持一間社區廚房的方式，將七喜廚房的理念散播出去。

活用剩食是對環境的愛護、對人的疼惜，也是對物質慾望的反思。剩食在華美社區廚房與七喜廚房轉譯下，顛覆了想像。剩食運動，需要你我參與，一起譜出剩食的美好滋味。



華燈初上，七喜廚房因共享剩食而溫暖。
(七喜廚房提供)

The early evening lanterns just lit, diners at 7C Kitchen enjoy their meal in a genial setting. (courtesy of 7C Kitchen)

night the clientele determined how much they wished to pay. But operations at the Yude outlet quickly ran into problems. The recipe for the curry, Yang's personal creation, fuses various spices. With a unique flavor that distinguishes it from the standard curry powders on the market, its unit price is also high, so the dish didn't catch on with local diners. After long discussions with her team about how to tweak operations, in the end she chose to go for broke by featuring a *plat du jour* that changed daily—without à la carte offerings.

The restaurant is dependent upon suppliers' unsold stock of blemished fruits and vegetables, and this means availability of specific ingredients cannot be guaranteed. But because it sources only eco-friendly and certified local surplus produce, consumers benefit from peace of mind. Like the attitude of a mother who opens her refrigerator to lovingly prepare a lunchbox for her children, the chefs are free to exercise their

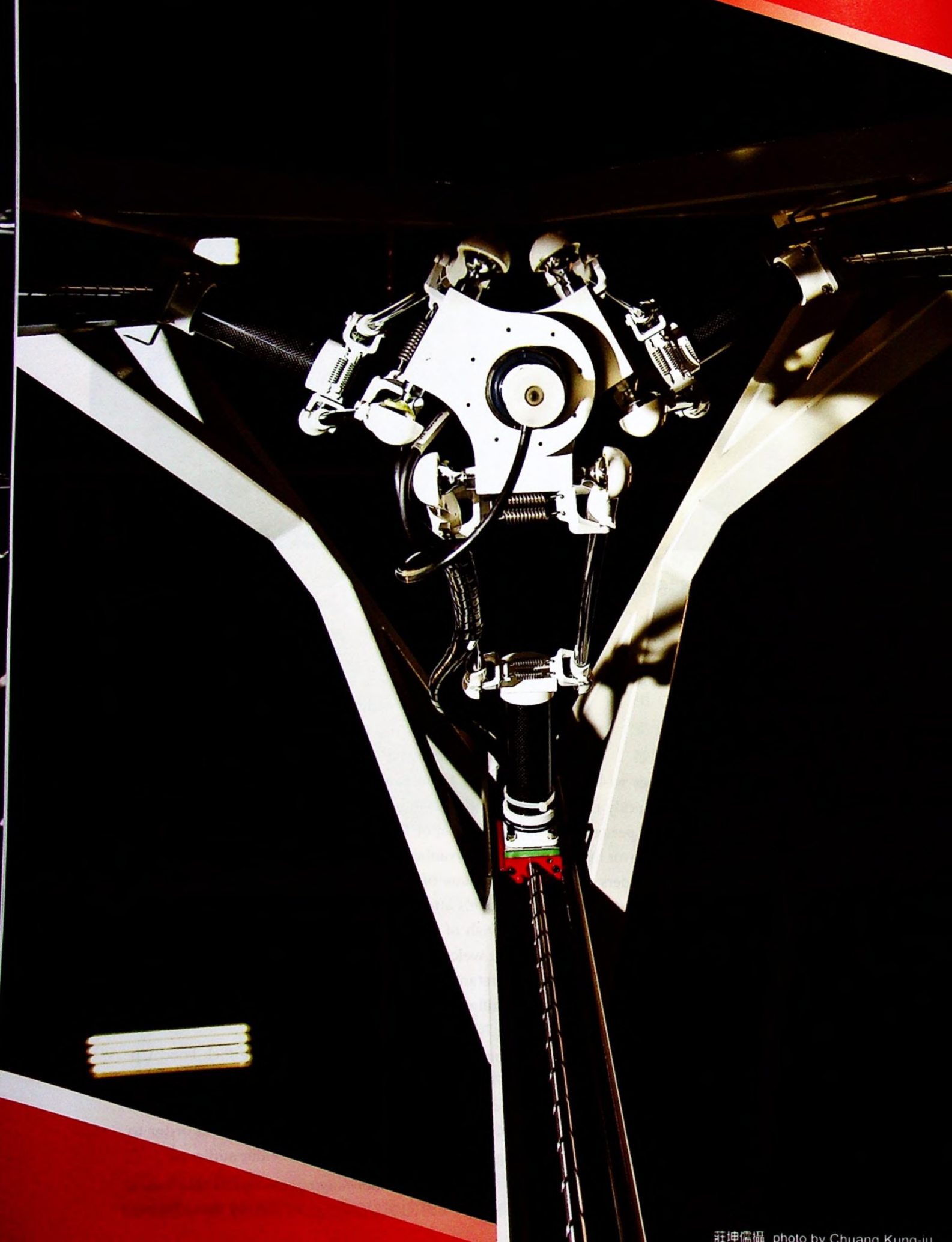
creativity and transform surplus goods sourced from trusted brand-name suppliers into mouthwatering meals. The basic price is set at NT\$100 or so, with the option of paying an additional NT\$70 for an all-you-can-eat buffet. Thanks to this experiment, business at Dish of Tomorrow has gradually taken off.

Dish of Tomorrow has also introduced a work-for-your-meal system, and meal coupons that can be used by the holder, or left on the wall so that those in need can take advantage of them.

The issue of food wastage is an issue that needs everyone's attention, emphasizes Yang, and she hopes that Dish of Tomorrow will help build awareness of it. She welcomes interested friends to visit for a better understanding, and to help disseminate the concept she will unreservedly detail the operating policies that drive 7C Kitchen.

Thanks to the vision of start-ups like Pick Food Up and 7C Kitchen, our imaginations have been turned upside down. The campaign to maximize usage of surplus edibles requires your active participation in order to bring those wonderful flavors to a wider audience! □

(Chen Chun-fang/photos by Lin Min-hsuan/
tr. by Bruce Humes)



點亮智慧機械之都

產官學研攜手邁向工業4.0

Taichung, Future Capital of Smart Manufacturing

文・蘇俐穎 圖・林格立 版面設計・蕭鄧岑

製造業的內涵往往呼應時代技術的發展潮流。自從18世紀首次的工業革命，以蒸汽機的發明為象徵，機械逐步取代傳統的人力、獸力；19世紀末第二次工業革命，電力的應用開始普及；第三波工業革命，則加入電腦數值控制的技術，邁向自動化生產。

如今，呼應當代資訊技術的成熟，2011年由製造業大國德國率先提出「工業4.0」的概念，強調運用感測技術、大數據、雲端、物聯網等，達到「智慧製造」的目的。不少國家紛紛跟進，包括美國的「先進製造夥伴計畫」、中國大陸的「中國製造2025」、日本的「工業4.1J」等，台灣也因應提出「生產力4.0」，顯示這一波的製造業革新已是全球趨勢。

國際製造業版圖重組，由於先進國家紛紛以國家級政策，搶佔高端市場；新興國家則瞄準量產市場，急起直追在後，台灣產業面臨國際市場的前後夾擊；同時，在少子化、高齡化的趨勢下，缺工問題將日趨明顯。導入工業4.0，除了可優化台灣產業結構，有希望突圍困境，進軍高端市場，也可有效解決人力問題。

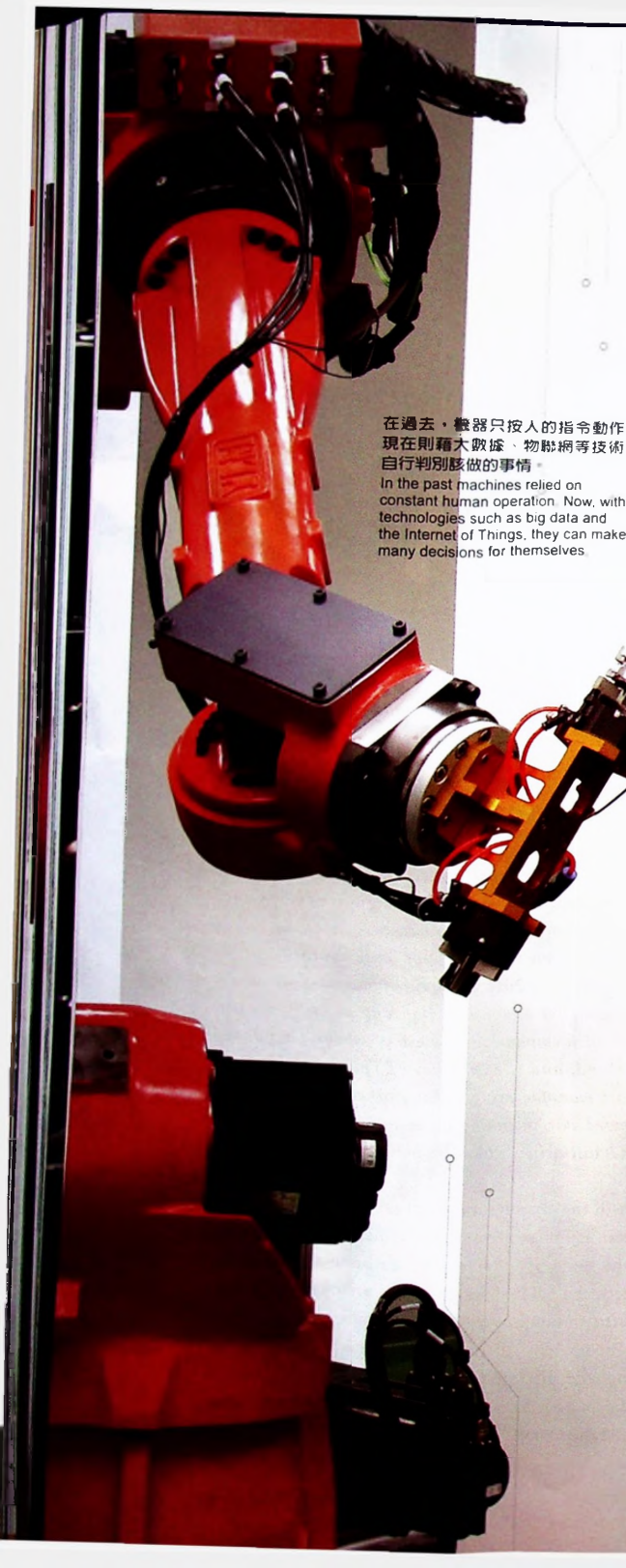
台中作為台灣機械產業的重鎮，大肚山腳下，方圓60公里之間，就聚集了上千家精密機械廠商，而早在十多年前，台中多家工具機大廠便已

The manufacturing sector is always changing to reflect contemporary trends of technological development. Since the steam engine ushered in the Industrial Revolution in the 18th century, machines have been gradually replacing the power of man and beast. The Second Industrial Revolution at the end of the 19th century saw the widespread adoption of electricity. The third wave added computer and digital control technologies along with increasing automation of industrial processes.

Reflecting the maturation of contemporary digital technologies, in 2011 the major industrial power of Germany first announced the concept of "Industry 4.0," which emphasizes the use of sensors, big data, the cloud, and the Internet of Things to achieve "smart manufacturing." Many other countries have followed suit, including Taiwan with its "Productivity 4.0 Initiative." It has become a global trend.

With the reconfiguration of global manufacturing, Taiwan is under pressure from international markets. At the same time, with a low birthrate and an aging society, the labor shortage here is only getting worse. Apart from improving Taiwan's industrial structure, the Productivity 4.0 Initiative also aims to overcome the manpower shortage by going upmarket.

Taichung is a stronghold of Taiwan's machine industry. At the foot of Mt. Dadu, within a strip of land some



在過去，機器只按人的指令動作，現在則藉大數據、物聯網等技術，自行判別該做的事情。

In the past machines relied on constant human operation. Now, with technologies such as big data and the Internet of Things, they can make many decisions for themselves.

自主組成「M Team」（Machine Tool Team），希望輔導產業鏈升級轉型。如今，政府提出「5+N產業創新計畫」，其中一項便包括了智慧機械產業，中央與台中市政府也以「全球智慧機械之都」為目標，共同成立「智慧機械推動辦公室」，研擬、推動一系列相關政策。

以航太市場作為產業出口

2011年5月，《商業周刊》就曾以「影響全世界的60公里」為題，報導台中機械產業因3C市場成長，接單不斷的榮景，將其譽為「大肚山下的黃金縱谷」，然而，隨著3C市場趨於飽和，出口產值在2015年一度出現衰退，顯示為機械產業尋找其他出口口的迫切性。

因應政策推動，在2015年12月由台中市政府與工研院主導成立的「A-I-M航太工具機產業技術大聯盟」，即是鎖定未來發展潛力高的航太市場。所謂的「A-I-M」，即是結合「A Team」（Aerospace Team）、「I Team」（Intelligence Team）、「M Team」（Machine Tool Team）三方。A Team包含漢翔航太、長榮航空等航太大廠，M Team包含台中精機、上銀科技、台灣引興等工具機及零組件廠商，I Team則以工業技術研究院為首。A-I-M聯盟的成立，就是以台中市政府為平台，結合供應端（航太）與製造端（工具機），再加上研究單位（工研院）從中輔導、加值，希望藉此做出高門檻、高附加價值的航空機械，得以在全球市場中佔得一席之地。

之所以會鎖定航太市場，中興大學機械系主任邱顯俊進一步說明：「航太市場雖屬較特定的市場，但高品質的要求，可以帶動整體工業技術的升級。航太等級的工具機也能運用在很多地方，不僅很多東西都可以生產，外銷的競爭力也能因此提升。」

以「精實生產」作為升級轉型之基礎

工業4.0以軟體為核心，不過，在加裝感測器、機器人、自動搬運車等設備以前，仍須回到製造端作檢視。「精實生產」是源於日本Toyota的一套管理方法，涵蓋生產、物流、成本等層面，可為產線建立起一套精簡、流暢的作業方式，大幅

60 kilometers long by 14 km wide, there are more than 1000 precision machinery factories. With the goal of upgrading their industry, a group of machine tool makers here formed the "M Team" ("Machine Tool Team") some ten years ago. Now the government has launched the "Five-Plus-N Innovative Industries Initiative." The smart machinery industry is one of the initiative's focuses. Both the central government and the Taichung City Government have resolved to make this area the "global capital of smart machinery" and have together set up the "Smart Machinery Promotion Office," which is charged with formulating and promoting a series of relevant government policies.

Targeting aerospace exports

In accord with central government policies, the Taichung City Government and the Industrial Technology Research Institute (ITRI) oversaw the establishment of the "A-I-M Aerospace Machine Tool Industrial Technique Alliance" in December of 2015. "A-I-M" is derived from the three teams that comprise the alliance: the "Aerospace Team," the "Intelligence [i.e., smart

technology] Team," and the "Machine Tool Team." The Taichung City Government has served as the platform for establishing the A-I-M Alliance, bringing together the supply side (aerospace) with the manufacturing side (machine tools), and adding a research organization (ITRI) to provide advice and add value, all in the hope of manufacturing aerospace machinery of high quality and high added value and thus giving Taichung a prominent place in this global market.

Lean production to spark upgrading

Software is at the core of "Industry 4.0." Nevertheless, before you can get to sensors, robotics, automated guided vehicles and so forth, you've got to return the focus to the place of production. "Lean production" comprises a set of management concepts pioneered by Toyota to foster production-line methods that generate precision and rational workflows while reducing costs and raising quality.

About 20 years ago, King Wang introduced lean production at Keyarrow, where he is now chairman. The company even stepped beyond manufacturing to found a lean-production management consulting firm. When we walked into Keyarrow's plant at the Taichung Industrial Park in Taichung's Xitun District, the clean working environment and orderly production lines immediately suggested a sense of freshness and innovation.

A production cycle that would take a typical factory producing machine parts two days to finish can be completed here in four hours. A new line just added this year has in fact dropped that production cycle to under 30 minutes. What's more, most factories look for economies of scale by putting completed goods in a warehouse and waiting for customers' orders to ship out.

But Keyarrow can wait until customers place an order before beginning production, while still delivering goods faster than their competitors. Wang notes, "We have zero inventory. Finished goods never sit in the shipping area more than two hours before collection."

That's a remarkable statement.

And it raises a question:
"What kind of software do
you use to manage a

工具機最關鍵的控制器，掌握所有的技術支援，猶如人的大腦。
(程泰機械提供)

The control module of a machine tool is its most essential component, like a human brain. (courtesy of Goodway Machine)



降低企業成本、提高生產效率，並提高產品品質。

約二十年前，台灣引興董事長王慶華便引進精實生產，甚至跨界成立精實管理顧問公司。當我們踏入位於台中西屯工業區的工廠，乾淨的工作環境與井然有序的生產線，已讓人留下別開生面的第一印象。

就以同樣生產工具機零組件的廠商作比較，一般工廠的生產週期約需2天，但台灣引興僅需4小時，2018年剛完成的新產線，生產週期更降至30分鐘以下。另外，一般工廠採大量生產，做好的商品先放在倉庫，等顧客下單後再出貨，台灣引興則從客戶下單後，從材料開始製作，速度還比同業更快，並且，「我們的工廠完全零庫存，做好的產品在出

貨區等待集貨不超過2小時。」王慶華的一席話讓人瞠目結舌。

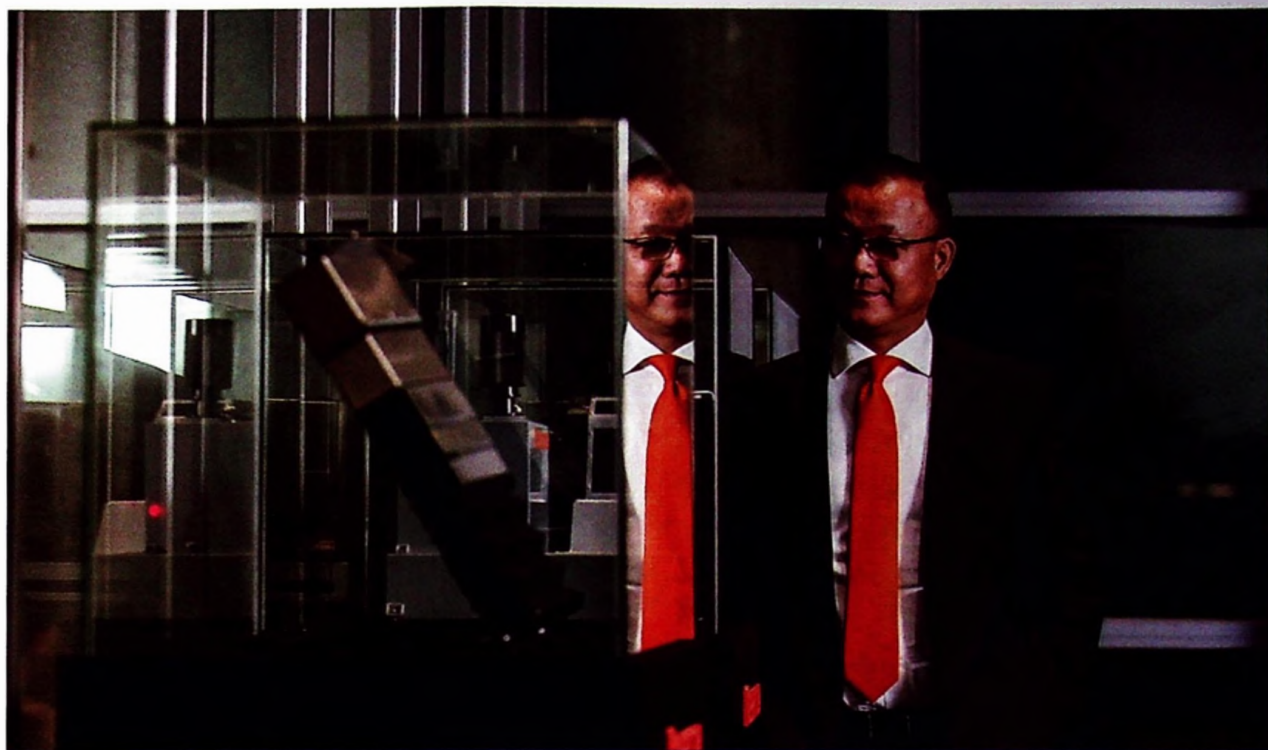
問題隨之而來，「這麼精準的生產流程，到底是靠什麼電腦軟體來管理？」王慶華的回答更令人咋舌：「這間工廠，不靠任何電腦來管理，但可以管理得比用電腦還來得精準！」

走入廠內，王慶華陸續為我們揭密。原來生產線運用精實生產中「可視化管理」的方法，放眼望去，整層樓有20個台車在各個加工機台間緩緩移動，加工好的材料就放在台車上，等待進行下一個步驟。「以前有200個台車，但因為數量多，大家沒有感覺，覺得慢慢做就好，但數量少，一下子就做完了，有多少量一目了然，大家就會緊張。」王慶華說：「而且，在這個工廠裡，『順序就是我們的聖旨』，一般的工廠發現做錯，為避免生產線斷掉，會跳過先做下一件，但我們一旦做錯，就不可以繼續做，等處理好再繼續做下一件。」他一語道破其中的奧秘：「我們藉此創造出無形的張力，讓每個人都主動戰戰兢兢，因此不需要別人管理。」

這就是台灣引興引以為豪的「順序生產」。



工具機是用來製造、加工、切削各種金屬零組件的機器，因而被稱為「機械之母」、「工業之母」。(程泰機械提供)。
Machine tools are used in the making and processing of various kinds of metal parts, and are thus known as the "mothers of machinery" and the "mothers of industry."
(courtesy of Goodway Machine)



台灣引興董事長王慶華以精實生產重新
定義製造業價值。(林晏萱攝)

Keyarrow CEO King
Wang is leveraging
lean production to
redefine value in
manufacturing.
(photo by Lin
Min-hsuan)

production process that is so lean?" Wang's answer is even more astonishing: "This factory doesn't use any computers to control production, but it still has achieved leaner production than factories that do!"

As we walk through the plant, Wang reveals its secrets: It turns out that the production line achieves lean production via "visual management." Casting one's eyes across the production floor, one can see 20 carts, which travel between processing stations. Once the process at a station is completed, the materials are placed on one of the carts, ready for the next step in the process.

"There used to be 200 of those carts, but because there were so many of them, no one paid them any mind," notes Wang. Workers lacked a sense of urgency. But with only a few of them, workers finish working on what they are brought quickly. One sees the quantity clearly, so it keeps people on their toes. "Furthermore, in this factory, doing things in the right order takes

precedence over all. Upon discovering a mistake, most factories are reluctant to shut down the line, so they'll just pull out the problematic workpiece and go on to the next. But as soon as we find a mistake, we stop. We wait for the root problem to be sorted out before making the next item." He then gets to the heart of the matter by divulging another secret: "In this way we created a certain invisible tension, wherein everyone actively steps up so that no one else will have to tell them what to do." This is the "orderly production" of which Keyarrow is so proud.

Lean production emphasizes that "demand equals supply." Wang says that inventory is like the water level of a reservoir. As the level gradually declines, many little problems become visible. With greater management focus on the individual links in the corporate chain, such as workflow, purchase orders, staffing, and delivery, steps that add no value can be eliminated from the process bit by bit.

"There's nothing unusual about solving problems by spending money," he notes. "What we aim to tackle are those things that you can't solve simply by throwing money at them." Take, for instance, their new production lines. With lean production improvements, lines with equipment costing NT\$30 million can be replaced by lines costing only NT\$6 million. With those lower

也由於採少量多樣化生產，王慶華將全台近300家客戶，依位置劃分成9個區域，同一個區域的產品會集中生產，再運用類似公車路線的送貨路線圖，以同一輛車出貨，運費成本竟比以前更省。

精實生產強調「需求=供給」，王慶華說，庫存就像水庫的水位，水位逐步降低，細小的問題也隨之浮現，再加以管理，針對生產流程、訂單排程、派員、送貨等不同環節，把不具附加價值的浪費（如運輸、庫存等）逐一消除。

他另指出：「能花錢解決的事情不稀奇，要做花錢不能解決的事情。」就以新產線為例，透過精實改善，將原本需要花費3,000萬的機台設備，以600萬就達到相同效果，成本驟降，製程的工程長度也從90公尺縮減到22公尺，生產週期則從2小時濃縮到30分鐘以下。過去，因工程長度與生產週期較長，曾有顧問建議，可投資購買自動搬運車與Barcode追蹤系統，隨著產線改善，問題也迎刃而解。

產線導覽結束後，王慶華領我們到全廠唯一的倉庫。不過約十坪大的房間，集合了上百種零件，每天有工作人員依訂單配給固定的數量，在這裡，連一顆螺絲都不容浪費！

王慶華語重心長地說，在往工業4.0的路上，台

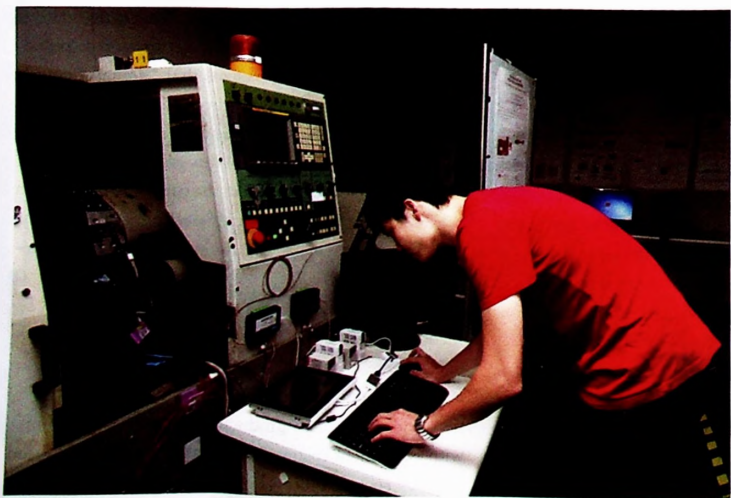
灣產業最缺乏的，往往不是智慧製造，而是按部就班的態度，因為就算交由機器，步驟仍是由人來管理。因此，還是得回歸根本，為產線建制起標準化作業流程，並運用精實管理，將其做到極致，再針對需要升級的地方作升級，這樣的升級才有意義。

教育創新×產學合作=創新人才

王慶華談到：「機械產業是很特殊的產業，從研發、設計到製造，都有很高的技術量在內，因此很依賴人才。」邱顯俊進一步指出：「所有的事情最後都會回到人，人才有短期救火隊型，長期的要仰賴學校深入培養。」而作為人才的搖籃，呼應產業趨勢，加上政府政策的積極推動，中部各大專院校也已陸續動員。

逢甲大學副校長黃錦煌從個人案例談起，14年前，他已享譽學界，但始終是純理論研究，由於一個企業的提案，才驚覺不足，從此投入產學合作。在過去，學界與產業界斷鏈，也連帶影響到社會新鮮人的素質，台灣引興管理部經理蔡雪美指出：「學校所學不比企業進步得快，使用設備也比較舊，因此過去才會覺得新鮮人不好用。」但她樂觀地說：「現在情況已經漸漸改善。」

有鑑於此，逢甲大學除了與約500家企業共組



除了讓學生到業界實習，藉由與企業合作，企業提供設備給學校，打造出學用合一的學習環境。Apart from offering internships, industry is providing machinery to colleges and universities so that students can train on the latest equipment.



林晏暉 photo by Lin Min-hsuan

costs comes a drop in the length of the production line from 90 to 22 meters and a shortening of the production cycle from two hours to 30 minutes. When the assembly lines and production cycle were longer, a consultant once suggested that they consider buying automated guided vehicles and a barcode tracking system. But with lean improvements to the production lines, there was no need for such expensive solutions.

Wang says that in terms of Industry 4.0, Taiwan hasn't lacked smart manufacturing technologies so much as a commitment to sticking to the correct routine—because even if you get the right machinery, the steps in the manufacturing process must still be managed by people. Consequently, before looking at possible localized equipment upgrading, there is a need to turn to the root issues, creating a standardized workflow for the production line and implementing “lean management” approaches as much as possible. Only then will machinery upgrades be meaningful.

Fostering innovative personnel

“The machine industry is a special realm of manufacturing. From research and development, to design and production, every step demands large amounts of specialized techniques and technology. Firms are thus dependent on having the proper personnel.” Chiou Shean-juinn, chair of mechanical engineering at National Chung Hsing University, takes it a step farther: “Everything in the end comes back to people. You can bring someone in short term to put out a fire, but over the long term you’ve got to rely on more extensive cultivation of skills in educational institutions.” Various colleges and universities in central Taiwan are one after another mobilizing to become cradles of this kind of talent, actively responding to industry trends and government policies.

Feng Chia University, which grew from a small university with colleges of business and engineering, has formed an industrial-academic alliance with about 500 businesses. The alliance promotes specialized

因應知識爆炸、產業變化快速的年代，逢甲大學李秉乾改變教學方式，重新為大學定位。

In response to this age of explosive growth in knowledge and rapid industrial change, Feng Chia University's Lee Bing-jean has repositioned his institution by revamping its teaching methods.

產學聯盟，由企業提供資源，借師資推動專題合作，並且提供學生實習機會，這些資源座落在校園各處，打造出全方位的教學場域。好比以5間實驗室所組成的「智慧機械廊道」，猶如落實課堂知識的學習道場，裡頭備有企業贊助的最新設備，全校學生均能使用。另有與Apple簽約成立的「區域教育培訓中心」，備有校友贊助的Mac電腦與iPad，校內有2名師資經Apple培訓後認證，針對iOS系統開設App設計課。

除了積極與產業界接軌，教育方法的變革也同步展開。逢甲大學校長李秉乾強調：「過去的教育較重視知識的傳播，現在我們除了積極引進政府、產業界的資源，也創造新的教育內容。」他了解到，唯有培養具創新能力的人才，而非低階人力，才能賦予產業新的價值，幫助產業升級轉型。

因此他積極推動，簽署加入由美國麻省理工學院等國際頂尖大學所推動的「CDIO計畫」，落實Conceive（構思）、Design（設計）、Implement（實施）、Operate（操作）的創新設計歷程，也向史丹佛大學的「思考設計」（Design Thinking）課程取經，以兩大創新教育方法，有系統地融貫在4年的大學課程中。

台灣引興堪稱先鋒代表，參與產學合作已有15年，蔡雪美談到，公司將實習學生等同視為公司新鮮人，個別安排前輩指導衣食住行各方面的問題，同時傳承企業文化，她說：「現在產學合作已是我們人才培養的中流砥柱，佔公司人力來源兩成，最年輕的部級主管也是這樣進來的！」

不僅如此，中部科學園區管理局也因應開設「智慧機械技術」相關課程，給予業界工業4.0的觀念雛形，以供日後升級轉型作參考；正規教育上，台中市政府緊鑼密鼓與學界、工研院展開討論，2月起推動一系列智慧製造課程，9月將開設



跨校共享課程的「智慧製造碩士在職專班」。

打造官產學研合作平台

發展改革的路上，不能只靠產業界與學界單打獨鬥，政府更是關鍵推手。台中經濟發展局專門委員江振璋指出：「即便像德國有很多機械大廠，但都是個別散佈，全世界沒有一個地方像台灣一樣，整個產業生態鏈群聚在一起。」機械產業高度集中的特性，將是未來發展的一大優勢。

因此，台中市政府擘劃「神岡豐洲科技工業園區第二期」作為智慧機械園區使用，吸引廠商進駐；並挹注百億以上資金，建立「水湳國際會展中心」，主要因台灣大型展館多在中部，但由於精密機械體積龐大，長途運輸較不方便，國際買家到展館看展後，可在半小時內直接拜訪鄰近工廠，達到「前店後廠」的經濟效益。

另外，台中市政府目前規劃成立「全球智慧機械發展中心」，將有效鏈結官產學研各方，包

collaborative projects, with businesses providing financial support and the university providing teaching personnel. Students are also given internship opportunities. The alliance's resources are found at various places on campus, creating a holistic educational realm. A good example is the "Smart Machinery Corridor," which comprises five labs. Places to put into practice the academic lessons taught in class, these labs include the latest equipment donated by industry partners, which is made available to students. Apple, moreover, has signed an agreement to establish a regional training center, which will be equipped with Macs and iPads donated by alumni. The school includes two faculty members who have been trained and certified by Apple to teach courses on app design for the iOS operating system.

Apart from taking active steps to connect with industry, the university has also been introducing revolutionary educational methods. Feng Chia University president Lee Bing-jean emphasizes: "Education used to place greater stress on the transmission of knowledge. Now, apart from welcoming the resources of government and industry, we are also creating new forms of educational content." He explains that only by cultivating talent capable of innovating will it be possible

to give industry new value and assist with industrial transformation and upgrading.

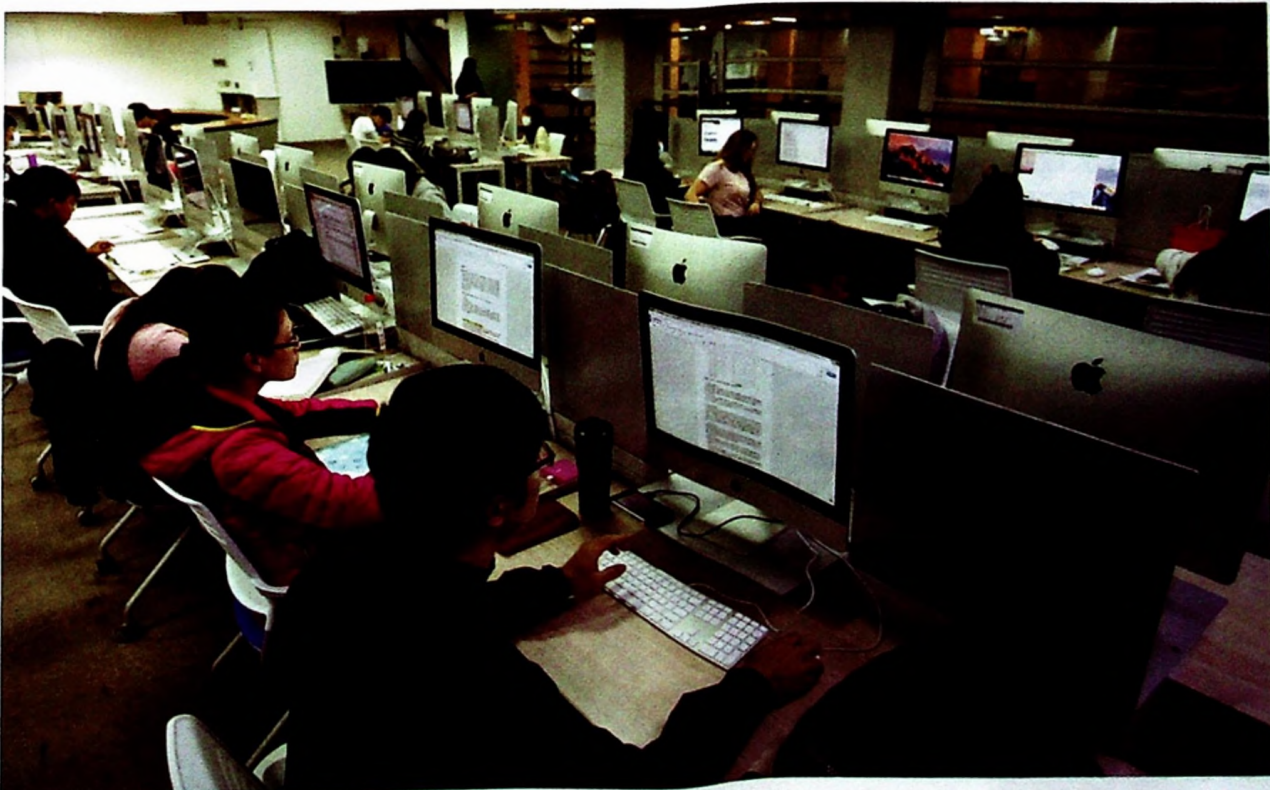
Cross-sector cooperation

The reform effort cannot rely only on isolated efforts by industry and academia. Government too has a key role to play. Charlie Chiang of the Taichung City Economic Development Bureau points out, "Even if Germany has a lot of major machinery manufacturers, they are all in different locations. No place in the world is like Taiwan, with the entire industry clustered together." For future development, that clustering offers distinct advantages.

Consequently, the Taichung City Government is planning Phase II of the Fengzhou Science Park, which will serve as a location for smart machinery production. The city government is recruiting firms to set up factories there, and is pouring more than NT\$10 billion into the Shuinan International Exhibition and Convention Center. Most of Taiwan's large convention facilities are located

學生在Apple區域培訓中心學習寫App程式，
接軌當前發展趨勢。

Students at Apple's regional training center study how to create apps and keep up with the latest trends.





台灣工具機產業佔全球出口
排名第5名，具高度競爭力。
(林曼雪攝)

Taiwan's highly competitive
machine tools industry ranks
fifth globally for exports
(photo by Lin Min-hsuan)

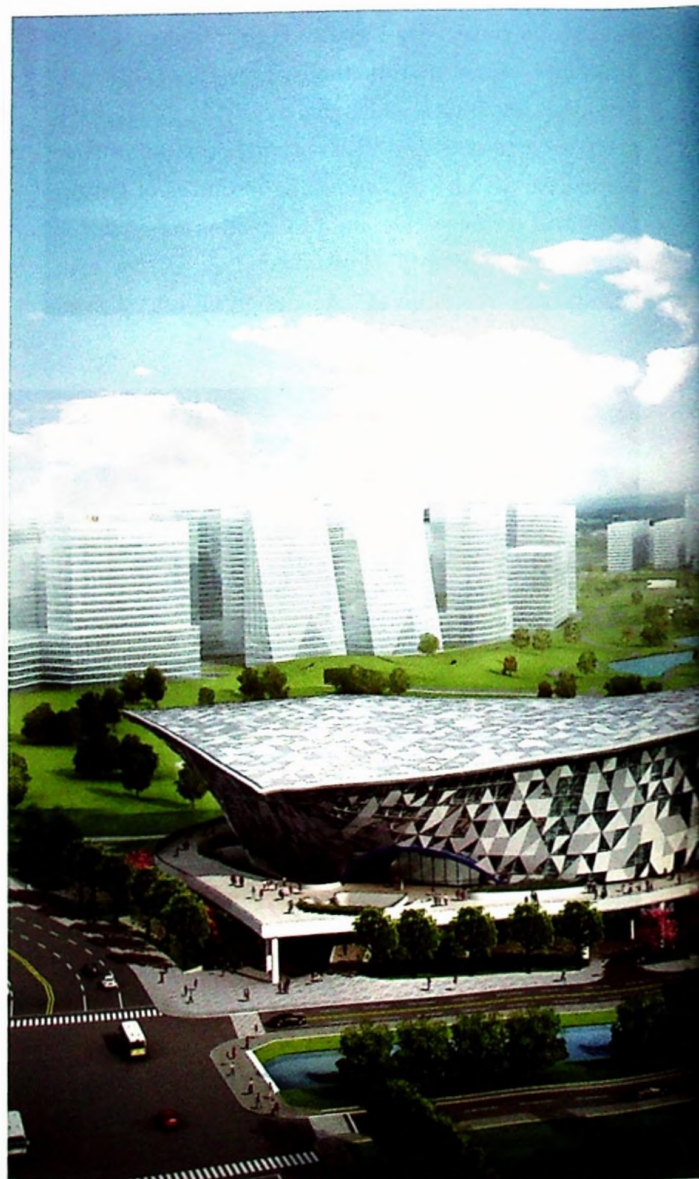
(右圖) 挹注百億資金打造的水湳國際會展中心，為產業構畫
出新藍圖。(台中市政府提供)

(right) NTS10 billion has been allocated to build the Shuinan
International Exhibition and Convention Center, which aims to
create a new blueprint for manufacturing.
(courtesy of Taichung City Government)

含就座落園區內，將在6月竣工的「智慧製造試
營運場域」，展示由工研院輔導、100%國產的
工具機、機器手臂、輸送設備、自動搬運車等設
備，同時搭配大數據、物聯網、彈性生產等虛實
整合技術，向國際展示台灣智慧製造的實力，許
多大學院校紛紛派人駐點或設置辦公室，並規劃
應用在教學使用上。

江振瑋語帶振奮地說，許多國外廠商如德國西
門子、美國洛克威爾、法國達梭系統、日本三菱
電機等，均表示高度興趣，希望能在此設點展示
產品，不少東南亞國協則表示希望到此來採購，
「想買東西、賣東西的廠商都來找我們，我們變
成智慧機械的hub，大家在這裡華山論劍。」同
時配合政府推動新南向政策，儼然天時、地利、
人合紛紛到位。

上看世界智慧製造之都的格局，政府以國家力
量搭建交流平台，不同領域各司其職，並跨界密
切合作，工業4.0的新願景應是指日可待。 □



up north, but precision machines are bulky, so transporting them long distances isn't convenient. After international buyers visit future trade shows at the center, they will be able to reach neighboring factories within half an hour. It will be a much more efficient arrangement.

What's more, the Taichung City Government currently plans on establishing a global smart machinery development center that effectively brings together government, industry and academia. The center will include a smart manufacturing beta testing area under the guidance of the ITRI, and it will exhibit machine tools, robotic arms, conveyor equipment, and automated guided vehicles that are entirely made in Taiwan as well as technologies related to big data, the Internet of Things, flex-

ible manufacturing and so forth, thus integrating the virtual and "real" worlds and showcasing Taiwan's smart manufacturing prowess to the world. Many educational institutions have sent staff to locate or set up offices here and have plans to make use of the resources for educational applications on their own campuses.

In its support of Taichung's aspirations to become the global capital of smart technology, the government is leveraging the nation's power to build a platform where different realms can each do their part and cooperate closely across sectors. The new vistas of Industry 4.0 are just around the corner. □

*(Lynn Su/photos by Jimmy Lin/
tr. by Jonathan Barnard)*



否極「泰」來的人生

Turning Life Around
—Downhome Thai Cuisine
in Taoyuan

用家常菜療癒鄉愁

文・李珊瑋 圖・林昱萱 版面設計・蕭郭彥





桃園是一個輕工業城市，多年來成為外籍人口集中的地區。因為泰籍移工在工廠中佔有極大比重，泰式料理也如雨後春筍般興盛。「泰式永順小吃店」就開在桃園火車後站，東南亞一條街上。新鮮道地的家常口味，不僅是泰國人的最愛，也大獲台灣人的好評。

Taoyuan is a city of light industry, so it has long had a large population of foreign laborers. With so many Thai factory workers, Thai cuisine has also thrived here. The "Thai-Style Yongshun Snack Bar" is located behind the Taoyuan Train Station on a street featuring numerous South-east-Asian businesses. Its fresh and authentic Thai food has been a hit with Thais and Taiwanese alike.

老闆趙秀蘭來台近40年，雖然命運坎坷，帶傷而行，卻在歷經世間冷暖後，始終如小草般，柔韌堅挺。「我愛台灣，我愛台灣人。」一顆慈悲寬容的心，因感恩而珍惜。「我唯一的祈求，是一家人平平安安，相守在一起。」初來台灣時，無法忍受的寒冬，因有情而溫暖，早已不冷了。



趙秀蘭總是笑臉迎人，用歡喜心化解生活中的磨難。

Maintaining a sunny disposition through all her life's hardships, Zhao Xiulan always welcomes people with a smile on her face.



19歲與台灣相遇

生長在曼谷一個食指浩繁的家庭中，排行老五的趙秀蘭，一直是最乖巧順從的女兒。生養了7個孩子的母親，在她5歲時辭世；從事水電工程的父親，裡外兼顧，一肩承擔起照顧兒女的責任。

「小時候，爸爸都說空心菜會讓眼睛發亮，所以每天都做空心菜給我們吃。」趙秀蘭說起兒時生活，一種笑中帶淚的酸楚，盤踞心頭。但是再窮，父親還是顧及到孩子成長中的營養，「每天打開飯盒，都有一個蛋，而且爸爸會用各種做法來變化。」對父親廚藝的崇拜，就從這時候開始「爸爸做的每道菜都很好吃。」

19歲那年，趙秀蘭跟著阿姨來到台灣。那時住在淡水，在麵包工廠做工。「台灣錢很好賺，我在泰國曼谷時，一個月賺1,800元，但是到台灣

工作，一個月賺10,800元。」說起初來台灣工作的情景，趙秀蘭不禁眉開眼笑。「我第一次帶著好多禮物回去泰國，把7,500塊錢放在爸爸手心裡。」雖然她父親已故多年，但是他那驕傲又安慰的神情，至今仍歷歷在目。

然而北台灣的冬天，讓從小習於四季如夏的趙秀蘭冷到顫抖，不到半年，她就跑回泰國。可是2個月後，阿姨病了，她又回來台灣。「好像冥冥中，我就是註定要來台灣。」半年後，她嫁給了她大二十多歲的台灣人。

失之交臂的幸福

「他是好人，對我也很好。」但是年齡的差距、語言的隔閡，以及生活習慣的不同，讓趙秀蘭和幸福失之交臂。半年後，她選擇離開，結束了短暫的婚姻生活。「朋友都對我很好，在我走

Yongshun's owner, Zhao Xiulan, has lived in Taiwan for nearly 40 years. Although her path here has been a bumpy one, full of times both good and bad, through it all she has proved as resilient as grass, bending but never breaking. "I love Taiwan and I love Taiwanese people." Compassionate in spirit, she is grateful for the blessings that life has brought her. "All I ask is that my family is together and safe." When she first came to Taiwan, she couldn't stand the cold winters, but quickly, thanks to the love and warmth of her family, she became inured to the hardships of being overseas.

Arriving in Taiwan at 19

Born in Bangkok to a large family that struggled to feed its many mouths, Xiulan was the fifth sibling and a smart and obedient child. Her mother, who had seven children all told, died when Xiulan was just five. Her father, a plumber and electrician, had to bear the burden of juggling his career with caring for his children.

"When I was young, Papa would say that eating water spinach would brighten one's eyes, so he gave us it every day." When Zhao speaks about her childhood, there is a bittersweet quality to it, a sense of sorrow

amid the nostalgia. Yet, however poor the family was, her father made sure that the children got the nutrition they needed to grow. "Every day, when I would open my lunchbox, I would find an egg. What's more, my father always found ways to mix things up to create some variety." She thus came to revere her father's cooking.

When she was 19, Zhao came to Taiwan with her maternal aunt. They lived in Tamsui and worked in a bread factory. "Money was easy to make in Taiwan. When I lived in Bangkok, I earned 1800 Baht a month, but once I moved to Taiwan, I was making NT\$10,800 a month." Recalling her work situation when she first arrived in Taiwan, Zhao's eyes can't help but brighten. "The first time I went back to Thailand, I came loaded with gifts and placed 7,500 Baht in my father's hand." The expression of pride on her father's face is still vividly etched in her mind.

最家常的泰式料理，慰藉遊子思鄉的胃。
Downhome Thai food soothes the cravings of
expatriate workers.



投無路的時候，收留了我。」說起悲淒的往事，趙秀蘭依然是滿懷感恩。

失婚後的趙秀蘭，在朋友幫忙下，搬遷到桃園龜山，開啓新生活。經營雜貨店，販售泰國相關生活用品，也結識了許多同鄉。28歲那年，她再次走入婚姻。「我喜歡小孩，但是生不出來。」爲了一圓做母親的美夢，趙秀蘭花了幾十萬元進行試管嬰兒手術。可惜事與願違，不但一連三次都失敗，而且埋下嚴重的副作用，持續損傷著她的健康。「這都是命啦！不要怪醫生。」篤信觀音菩薩的趙秀蘭，總是用慈悲心接受一切。

苦難是前世業障

「會開小吃店，也是觀音媽的照顧。」因爲原本經營小吃店的友人出車禍，拜託趙秀蘭來幫忙。沒有多久，房東看餐廳生意不錯，要漲房租，友人只好搬遷。沒想到房子空了8個月，就是沒有人來租，房東無奈，只能回頭再找趙秀蘭。「阿蘭，我不漲房租，妳來用啦！」讓她十分心動。原本就對做菜有興趣的她，再加上幫忙期間做出信心，於是就大膽的承租下來。沒有想到，原本以爲的天賜良機，卻是一連串試煉的開始。

「剛開店時，不斷地借新還舊，陷在欠債漩渦裡，弄到我都快活不下去了。」想到二十多



年前那段艱苦的歲月，趙秀蘭眉頭緊蹙，眼中泛淚。「當時負債累累，又賺不到錢，來吃飯的同鄉，常常不付錢。或是欠了很久，又因爲人被遣返，而收不回來。」諸多不順，接踵而來。「賣電話卡，被偷6萬塊。店裡的菸酒，被人白白拿走。卡拉OK中的硬幣，也被人撬開偷走。」但是開門營業，每天要用現金買菜，再加上作料、

房租，被逼的想立刻逃跑。「有一次，

我好心讓一位客人到我房裡穿絲襪，沒有想到她



不斷研發創新菜色的永順，喜歡給老客人新嘗試。

Constantly innovating.
Yongshun works at
creating new dishes for its old
customers.

But the winters in northern Taiwan made Zhao shiver, accustomed as she was to four summer-like seasons. Within a year, she had returned to Thailand. After two months back home, however, her aunt in Taiwan grew ill, and she came back to look after her. "It was as if I was destined to come to Taiwan." Some six months later, she married a Taiwanese man who was more than 20 years her elder.

"He was a good person and treated me well." But with their age disparity and the language barrier, as well as different customs and habits, they ended up divorcing.

After the marriage ended, Zhao, with the help of her friends, moved to Taoyuan's Guishan, where she operated a general store. At 28, she remarried. "I like children but I wasn't successful in my attempts to have them." For her dreams of motherhood, Zhao spent several hundred thousand NT dollars on in-vitro fertilization procedures. Sadly, all three attempts proved fruitless.

Karmic debt

"It was thanks to the benevolent guidance of the Bodhisattva Guanyin, the Goddess of Mercy, that I opened a restaurant." But what she originally regarded as a gift from heaven turned out to be the first in a series of a trials by fire.

"When I first opened the restaurant, I was continually having to borrow money to pay off old loans. The spiral of revolving debt almost pulled me under." When she recalls those hard times, Zhao frowns, and her eyes well up with tears. "My debts were mounting, and I wasn't able to make any money. People from my hometown would often come to eat, and they wouldn't pay. Or they'd keep a tab for an extended time, and I wouldn't be able to collect when they moved back to Thailand." Then she experienced a series of unfortunate events: "NT\$60,000 worth of phone cards were stolen, and the coins were broken out of the karaoke machine." Yet the restaurant's operations required cash to purchase produce every day, and there were seasonings to buy and rent to pay. It made her want to run away.

The toll that this crisis took on her mind in terms of depression far exceeded the fatigue it imposed on her body. "In my last life, I must have accrued substantial debts, leaving me with a lot to pay off this time around." The chronic turmoil and desperation imposed a heavy psychological burden.

"Things started to go more smoothly when my

younger siblings came over from Thailand to help." Having survived three tough years, Zhao was at last able to enjoy sunnier days. "I was able to pay off my debts gradually. I am very grateful to the Goddess of Mercy. She blessed and protected me." As an expression of Zhao's gratitude, the restaurant has a shrine to the bodhisattva, featuring a statue that came originally from Keelung.



作料是泰國菜的靈魂，講求原汁原味的老闆阿蘭，總是親自由泰國帶回來。

The soul of Thai food is found in its spices. "Ah-lan," as the boss is familiarly known, personally brings them back from Thailand.



把我僅有的8,000元買來錢偷走。」

心愛的沮喪，遠遠超過肉體的疲憊。當時每天睡在店裡儲藏室的趙秀蘭，打烊後，緊到直挺挺地躺在硬梆梆的床板上，四週一片漆黑，淚水沿著眼角，不斷地靜靜滑落。「我上班子一定虧欠了很多，這一世才有那麼多的債要還。」數十年的風雨，在眼前一幕幕倒帶。山窮水盡的絕望，坎坷命運的折磨，點點滴滴，在心裡翻攪沸騰。

「直到弟弟、妹妹過來幫我忙，一切才開始平順。」熬過了挫敗苦難，趙秀蘭終於等到花開向陽的日子。「這幾年，才漸漸地把債務還清。我很感謝觀音媽，是她保佑我。」店裡供奉著由基隆請來的觀音菩薩，趙秀蘭虔誠感恩。

早已成為家族核心支柱的趙秀蘭，不僅用愛心長期照顧長輩、手足，更無私地提攜下一代，把他們視為自己的兒女般疼愛。「現在採購食材都是弟弟去，他們都可以獨當一面了。」看到他是在店裡認真穿梭的身影，否極泰來的趙秀蘭，細結的眉頭，終於舒展。「台灣就是我的家，現在我心裡唯一的祈求，就是一家人平平安安，相守在一起。」一如小吃店的招牌，永遠平順。 □

用感恩修補傷痕

「你不喜歡我，沒關係，只要我喜歡你，每天對你笑，總有一天，你也會對我笑。」她用微笑和沉默，化解一次又一次的打壓。雙手緊握著垂掛在胸前的觀音項鍊，趙秀蘭展現出繞指柔般的剛毅，那是一種身經歷後的智慧。

早已成為家族核心支柱的趙秀蘭，不僅用愛心長期照顧長輩、手足，更無私地提攜下一代，把他們視為自己的兒女般疼愛。「現在採購食材都是弟弟去，他們都可以獨當一面了。」看到他是在店裡認真穿梭的身影，否極泰來的趙秀蘭，細結的眉頭，終於舒展。「台灣就是我的家，現在我心裡唯一的祈求，就是一家人平平安安，相守在一起。」一如小吃店的招牌，永遠平順。 □

「東西好不好吃是其次，新鮮最重要。」口耳相傳建立起的口碑，每天都有川流不息的新舊顧客上門。今年2月將再次展店的趙秀蘭，用良心為食材把關。「如果這個東西你自己能吃，才可以給客人吃。」簡潔，而且物一定要美，是趙秀蘭一貫的堅持。

雖然是以葷素兼有的泰式家常菜起家，但是泰式傳統的精緻擺飾，趙秀蘭也不馬虎。「如果朋友店裡有名，我會去買回來，看看人家怎麼做的。」她用做功德的心，不斷精進。

「小店就是要自己賺。」堅持原味的趙秀蘭，至今仍然不辭辛勞，每個月都要回泰國採買各式配料。但是來台超過半甲子的她，早已摸透台灣人的口味，懂得適度調節酸甜苦辣。「我一直在改進，我常常和客人說如果不好吃，請您告訴我。」掌廚幾十年的趙秀蘭，從來不自滿，總是謙卑的接受顧客的意見。

顧客就是家人

「我最愛吃台灣料理，牛肉麵是我的最愛，但是因為遲鈍，我現在已經聞不到牛味。」剛來台灣1年，才20歲的趙秀蘭滑了一跤，沒想到卻躺在在床上，動彈不得。「當時我求觀音媽，保佑我，讓我能夠走路，只要我恢復健康，我這一輩子都不再吃牛肉。」心臟則邊，趙秀蘭至今三十多年，再也沒有吃過一口牛肉。

店內供奉第五代泰皇朱拉隆功，是推動泰國現代化的重要推手，也保佑生意興隆。

Zhao Xiu-lan's restaurant features a shrine to Chulalongkorn (1853-1910), the fifth monarch of Siam under the house of Chakri. An important figure in Thailand's modernization, his spirit is said to help businesses thrive.



"I love Taiwanese food. Beef noodles used to be my favorite, but for religious reasons, I no longer eat beef." When she had been in Taiwan for just a year, Zhao, then 20, slipped and fell and found herself confined to bed, unable to walk. "I prayed to the Goddess of Mercy to bless me and allow me to walk again. I promised that if I regained my health, I would no longer eat beef for the rest of my life." True to her word, Zhao has not taken a bite of beef in the 30-odd years since.

Customers are family

"The taste of food is secondary. What's most important is that it's fresh." Having built a reputation on word of mouth, the restaurant has a steady stream of customers, both new and old, who come through its doors every day. Preparing to open another restaurant in February, Zhao takes a principled line on controlling the quality of ingredients: "You can only give to your customers what you would eat yourself." Zhao is intent on keeping prices low but quality high.

"With a small business, you've got to be willing to get things done yourself." Committed to authentic-tasting Thai food, Zhao makes a trip every month to Thailand to acquire various ingredients. Yet having resided in Taiwan for more than 30 years, she long ago became familiar with the flavor preferences of Taiwanese, and understands how best to balance sour,

sweet, bitter and hot flavors in a manner that appeals to the local clientele. "I'm constantly adjusting. I often say to customers: If it's not good, tell me." Despite being a cook for decades, she is far from smug and self-satisfied, and she is always willing to listen to her customers' opinions.

The tonic of gratitude

"If you don't like me, that's OK. So long as I like you and smile at you every day, a day will come when you smile back." She has used smiles to overcome one hard knock after another in her life.

Zhao Xiulan has long been the central pillar of support for her family. She has provided financial help to her elders and siblings and even selflessly supports her nieces and nephews, loving them as if they were her own children. "Now my younger brothers do all the purchasing of ingredients for the restaurant. They're up to handling these responsibilities on their own." Seeing them hard at work, walking back and forth in the restaurant, she feels blessed despite all the struggles she has had to endure. "Taiwan is my home. Now I pray for just one thing—that the family may stay together at peace." An appropriate wish for the proprietor of a restaurant whose name means "eternal peace." □

(Lee Shan Wei/photos by Lin Min-hsuan/
tr. by Jonathan Barnard)



Taiwan is My Home —Tang Nu Huong

台灣 是我的家

照亮姐妹的燈塔
——曾女香

文·李珊璋 圖·莊坤儒 版面設計·蕭麗夢

越南是一個古老的國度，和中國歷史有著密不可分的關連。其中儒學的智慧精髓，不僅是越南歷代經世的骨幹，更是文化思想的主軸，無論是風俗民情或是禮教倫常，都留下不可磨滅的印記。

曾女香就是在一個尊崇儒家傳統的華裔家庭中成長。在成為台灣媳婦後，二十多年來，不僅家庭和樂美滿，更無私的照顧弱勢姐妹。在忙碌中，不斷求知進修，努力實踐自我，足堪新住民典範。

「我以為這一輩子不會結婚了，沒想到39歲那年卻嫁來台灣。」曾女香回想起和先生相識的過程，真是印證了「千里姻緣一線牽」這句話。婚後兩人總是笑著說：「因為我們的姻緣線，繞了半個地球，所以才要等那麼久。」而這條姻緣線的起點，不在越南，在北歐。



繞了半個地球的姻緣

家中有6位手足的曾女香，眼見姐妹們都成家了，原本抱定單身過一輩子，唯獨父母始終不死心，不斷地為她介紹，但從未打動過她的芳心。移民北歐的弟弟，無意間和台灣來的好友談起曾女香，沒想到對方卻認真的希望能到越南和她相見。

相親之日，曾女香從容赴會，根本不抱任何希望。閒聊間，男方卻發現曾女香是個不折不扣的瓊瑤迷，對每部小說和電影都如數家珍。這個話題，立即拉近了彼此的距離，彷彿劇中男女主角，就這麼浪漫的情定終身。

用愛經營和樂的家

「結婚後，我們一直和婆婆同住。」雖然先生排行老四，但是曾女香嫁到台灣後，就一肩挑起

Vietnam is an ancient land, and its history is inextricably tied to that of China. This includes the essence of Confucianism, which was not only the backbone of Vietnamese statecraft over the ages, but also the main axis of cultural thinking, leaving an ineradicable mark both on popular customs and on etiquette, ethics and morality.

Tang Nu Huong grew up in a family of Chinese ancestry that respected Confucian traditions. After marrying into a Taiwanese family, over the past 20 years and more she has not only enjoyed a full and happy family life, but has selflessly looked after her disadvantaged Vietnamese "sisters." Though constantly busy, she continually seeks to improve her knowledge and works hard at self-realization, setting an example for her fellow immigrants.

"I used to think I would never get married. Little did I expect that the year I turned 39, I would marry into Taiwan." Tang recalls how she and her husband got to know each other, a story that corroborates the old saying: "Two beings destined to marry, though born a thousand miles apart, can be tied together by a single thread."

The day of their arranged interview as prospective marriage partners, Tang went to the meeting without any nervousness. While chatting, the man discovered that Tang was a diehard fan of the writer Chiung Yao. This topic of conversation immediately closed the distance between

them, and like the male and female protagonists in a drama, they each romantically found the love of their life.

Managing a happy family with love

"Since getting married, we have always lived with my mother-in-law." After coming to Taiwan, Tang has had to bear the responsibilities of a daughter-in-law and show filial respect to her mother-in-law. "A heart for a heart—my mother-in-law has also loved me like a daughter!" As Tang talks about her family life, her face is filled with happiness.

Tang was determined to bear a child for her in-laws, and to this end she really went through a lot. "The doctor said I was 'super, super, super old' to have a child." Although they tried all kinds of methods and failed repeatedly, she always held onto a thread of hope, and was unwilling to give up. Five years after her marriage, at age 44, Tang finally had her wish fulfilled, giving birth to an adorable daughter.

"My mother-in-law really helped during my lying-in month, so now my health is even better than when I was young." As she talks about her mother-in-law, Tang's heart is filled with gratitude.

"For two whole months, my mother-in-law forbade me to touch water. She washed the baby every day, and did all the housework single-handedly." The relationship between Tang and her mother-in-law was closer than between a mother and her own daughter.

"Life is what you make it. If you really want something, you'll find a way, and if you don't, you'll find a



新莊社區大學學員認真的排演著越南傳統舞蹈。
Students at Xinzhuan Community College earnestly rehearse traditional Vietnamese dance.



曾女香長期在醫院做志工，服務病患和家屬。
Tang has long served as a hospital volunteer, assisting patients and their families.



媳婦的責任。「人心換人心，我婆婆也把我當女兒一樣疼愛呢！」曾女香談起家庭生活，滿臉洋溢著幸福。

曾女香一心想為婆家生個孫子，為此可真是吃盡了苦頭。「醫生說我是『超超超』高齡產婦。」不顧醫生和夫家的勸阻，她甘願拿命來搏。雖然用盡各種方法，屢試屢挫，頻受打擊，但是她卻總是抱著一線希望，不願放棄。5年後，44歲的曾女香終於如願以償，生下一個可愛的女娃兒。

「婆婆幫我做月子，我現在身體狀況，比年輕時更好。」說起婆婆，曾女香滿心感恩。當年已經七十多歲的婆婆，在曾女香生產前，就認真的學做越南月子餐。台式加越式，用愛心把曾女香的身子，補的滿滿。

「好多姐妹都說生了孩子後，手關節一到冬天就會又麻又痛，可是我一點兒也不會。」曾女香說，「整整兩個月，婆婆都不准我碰水，她每天為嬰兒洗澡，家事更是一手包辦。」這樣的婆媳關係，真是情逾母女。

「路是人走出來的，要的時候想辦法，不要的時候找理由。」身兼數職的曾女香，雖然非常忙碌，但是始終把家庭放在第一位。尤其是婆婆在2012年

中風後，曾女香推卻了許多工作。每天餵食、洗澡、復健，把照顧老人家視為最重要的工作。

朋友鄰居都說她傻，為什麼不讓其他兄弟輪流照顧母親？曾女香卻很不以為然，「老人家都90歲了，未來的日子是有限的，為什麼不肯把握機會，做到圓滿呢？」篤信佛教的曾女香，總是把婆婆對她的恩情，感念在心，而有機會回贖，是上天給她的福報。

付出是幸福的泉源

「在越南時，我就在外語中心教華文。」從小接受華文教育的曾女香，是由注音符號學習繁體字。一直是職業婦女的她，來台後，成為全職家庭主婦，直到女兒進入幼稚園，才有機緣重回職場。

「婆婆和先生一聽我要到醫院工作，全部投反對票。」當時衛生局需要通譯人員，協助到醫院就診的東南亞移民、移工。「我告訴婆婆和先生，只是先去面試，不一定會錄用喲！」來台7年後，曾女香用志忑的心，寫下第一份履歷表。「沒想到，她們立刻要我馬上上班。」能夠看得懂中文，又能說國、台語的優勢，讓曾女香出師大捷。

雖然後來經費中斷，但她覺得仍有很多姐妹需要幫助，所以留在仁愛醫院擔任志工。「我也

way out." Although Tang is busy with multiple jobs, she has always put the family first. This has been especially the case since 2012, when her mother-in-law suffered a stroke, and Tang cut down on her outside work. Every day there is feeding, washing, physical rehabilitation... she makes taking care of the elderly woman her most important task. Tang explains, "She's 90 years old, and doesn't have a lot of time left, so why not grasp the opportunity to do things right?" Tang, a firm believer in Buddhism, has always kept in mind her mother-in-law's kindness to her, and she feels that having the opportunity to repay that is a karmic reward given to her by Heaven.

Giving is the source of joy

"When I was in Vietnam, I taught Chinese in a foreign language school." Tang, who had always been a career woman, became a full-time housewife after coming to Taiwan. It was only after her daughter entered kindergarten that she had the chance to reenter the workplace.

At that time the Taipei City Department of Health needed translators to help immigrants and migrant workers from Southeast Asia during hospital visits. Seven years after coming to Taiwan, Tang nervously wrote out her first CV. "I never thought they would want me to start working right away." Having the advantages of being able to read Chinese, as well as speak both Chinese and Taiwanese, Tang was able to get employed immediately.

Although later the funding for translators was cut, she felt that there were still many "sisters" (other Vietnamese immigrant women) out there who needed help, so she decided to stay on at the Ren'ai Branch of Taipei City Hospital as a volunteer. "I also hoped that by my example I would be able to change the prejudice that has existed toward Vietnamese people!" After more than ten years of determined perseverance, in 2015 she surpassed 5000 hours of service, and received a silver medal for voluntary service from the Ministry of Health and Welfare.

"It's really hard when you can't speak the language." Tang recalls that when she was serving at the Ren'ai branch hospital a "sister" came to her to lament that the doctor didn't understand her complaints, and so couldn't treat her properly. It had gotten so bad that she was planning to go back to Vietnam for medical treatment. Her inability to express herself had caused her to make many wasted trips, and she complained that Taiwan doctors were no good. But Tang built a bridge of communication, and corrected her mistaken perception.

Another Vietnamese woman, who lived in New Taipei City's Taishan District, kept putting off going to the doctor because she didn't speak Chinese. After Tang found out, she met the woman in neighboring Xinzhuang and brought her to the Ren'ai branch hospital. Throughout her longish treatment, each week Tang accompanied her to the hospital and back, until she had fully recovered. Tang's way of giving without asking anything in return is something that her Vietnamese sisters find immensely heartwarming.

A beacon for her Vietnamese sisters

Cultural differences are a fountainhead of misunderstandings. Tang looks forward to better public understanding of Vietnamese culture. "I feel a sense of mission, so I have no regrets." Her greatest joy has been in seeing the big improvement in the living environment for immigrants in recent years.

In 2006, Tang underwent training by the Pearl S. Buck Foundation, and gained her qualification as a judicial interpreter. She then began working as an interpreter in the Taiwan High Court and in district courts, while also serving as an advisor at the Taipei City New Immigrants' Hall, encountering many criminal and civil cases involving Vietnamese immigrants.

"For a lot of things, you can't only look at the surface. When we criticize Vietnamese brides for running

曾女香接受培訓後，在台灣各級法院擔任司法通譯。
After undergoing training, Tang Nu Huong was hired as an interpreter at the Taiwan High Court and at district courts.



希望因為我的表現，能夠扭轉以往對越南人的歧視！」十多年來的極久堅持，因服務超過5,000小時，獲衛生福利部頒發「志願服務績優銀牌獎」。

「語言不通，真的很痛苦。」曾女香回想起在仁愛醫院服務時，有一位姐妹向她哭訴。醫生聽不懂她的訴求，無法對症下藥，讓她痛苦到要回越南就醫。「我安撫她的情緒，陪她到和平醫院去看病，向醫生解釋她的情況，終於治好了。」表達的障礙，讓姐妹走了好多冤枉路，還抱怨台灣醫生不好。曾女香搭起溝通的橋樑，也導正了姐妹們錯誤的認知。

還有一位住在泰山的姐妹，因為不會說國語，不敢就醫，一再拖延，曾女香知道後，就從新莊帶她去仁愛醫院就診。在一段不算短的治療期間，曾女香每週陪著她往返，直到痊癒。不求回報的付出，讓姐妹們感受到無盡的溫暖。

越南姐妹的燈塔

文化的差異，是誤解的源頭。曾女香期待眾人了解越南文化，「就是這種使命感，讓我無怨無悔。」看到近年來新住民生存環境的大幅改善，是她最大的喜悅。

2006年時，曾女香接受賽珍基金會的培訓，取得通譯人員資格。隨後，開始在台灣高等法院及各地方分院擔任司法通譯，並在台北市新移民會館擔任諮詢人員，接觸到許多越南移民的社會案件。

「很多事，不能只看表象。當我們指責越南新娘逃婚時，誰又能體會她們滿腹的辛酸？」在那個非法仲介猖獗的年代，越南新娘和夫家都是受害者。



曾女香用活潑的方式，吸引大家學習越南語。
Tang attracts people to study Vietnamese with her lively manner.

家人都以為台灣比越南進步，嫁到台灣，就像上了天堂。受到家暴的姐妹，也只能眼淚往肚裡吞，不敢讓父母知道。

「因為不懂法律，姐妹們吃了很多虧。」明明來台3年後，即可取得台灣戶籍，卻有很多姐妹嫁來10年，卻還沒有台灣身分證。因為害怕隨時會被遣返越南，為了留在孩子身邊，無知的姐妹只得忍氣吞聲，任人宰割。

當年還有被販運來台的年輕女子，被賣入火坑。曾女香親眼看到姐妹們受到蹂躪的慘狀，心裡好痛。

知識就是力量，剛自稻江大學法律系畢業的曾女香，希望未來能夠幫助更多弱勢的姐妹，不再受到委屈和迫害。

用美食拉近彼此距離

「我出生在基隆市，那裡的小吃非常有名。」從在仁愛醫院做志工開始，曾女香不時帶些自製的家鄉味給姐妹們解饞，大獲好評。沒想到無心插柳，竟因此開啓了她教學的生涯。

2010年時，在南洋姐妹會取得東南亞文化講師證照，2011年開始在永和社區大學講課。曾女香首開先例，用美食引導民眾認識越南文化，也教授越南語。她自製食譜，一期18週，每週一美食，這一教，就是3年。不僅解了姐妹的鄉愁，也讓台灣人品味越南美食。口碑建立後，又轉到新

away, who can understand the misery that they feel?" In that period when illegal marriage brokers ran wild, both the Vietnamese brides and the families of the husbands were victims. Perhaps it was the broker who stuffed his pockets with the greater part of the generous betrothal gift offered by the husband's family.

"Because they didn't understand the law, a lot of sisters lost out." In fact they were eligible for ROC citizenship three years after arriving in Taiwan, but a lot of women had been married here for ten years and still hadn't gotten a Taiwan ID card.

In those days some young girls were deceived into coming to Taiwan and then sold into prostitution. Seeing their tragic situation caused Tang great pain.

But knowledge is power. Tang, who has just graduated from the Department of Law at Toko University, hopes that in the future she can help even more disadvantaged immigrant women, so that they no longer are wronged and persecuted.

Food brings people together

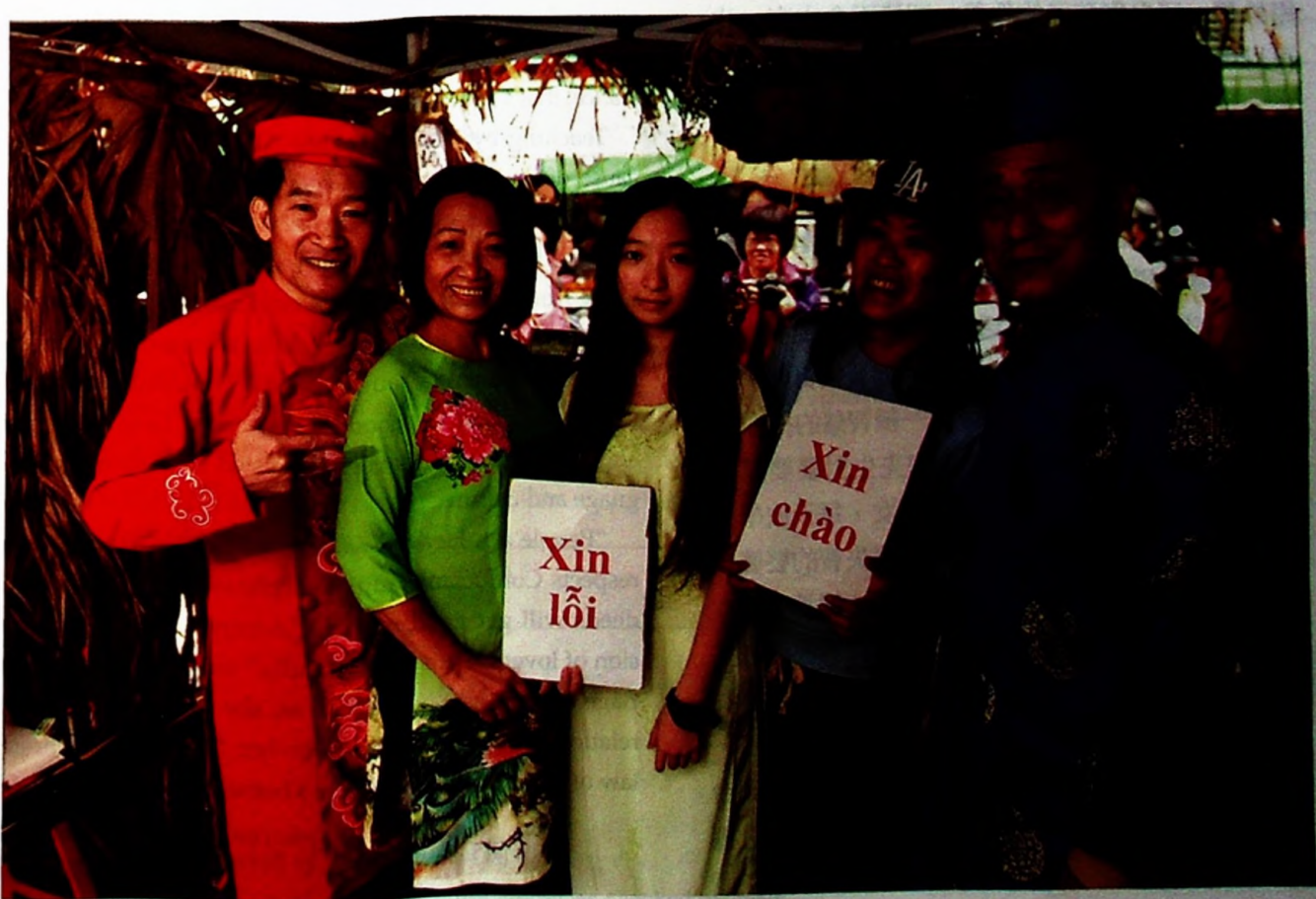
"I was born in the city of Chau Doc, which is very famous for its snacks." Ever since she became a volunteer at the Ren'ai branch hospital, Tang has often brought

along some food she makes herself to give her Vietnamese sisters a taste of home, much to their delight.

In 2010, she got a professional certificate as a lecturer in Southeast-Asian culture from the TransAsia Sisters Association, Taiwan, and in 2011 began teaching at Yonghe Community College. She broke new ground by using cooking classes to introduce people to Vietnamese culture, and also began teaching the Vietnamese language. Using her own adaptations of traditional recipes, she taught one dish per week for 18 weeks each term. After teaching in Yonghe for three years and building her reputation, she transferred over to Xinzhuang Community College to offer courses there. Besides cuisine, she has also introduced traditional Vietnamese dance into the curriculum.

To further spread Vietnamese culture, Tang teaches classes at Da Li Elementary School in Wanhua, Zhonggang Elementary in Xinzhuang, and Bali Junior High in Bali. Though the journeys are exhausting and the income very

新莊社區大學19週年校慶，曾女香率領學員表演越南舞蹈。
At the celebrations for the 19th anniversary of Xinzhuang Community College, Tang led a group of students in performing Vietnamese dance.





莊社區大學開課。除了美食，更將越南傳統舞蹈帶入課程。

爲了推廣越南文化，曾女香還到大理國小、中港國小、八里國中授課。雖然舟車勞頓、收入微薄，但是看到小朋友期盼的眼神，再累，也不忍放下他們。她還在台灣廣播電台主持「越南溫馨味」，希望能幫助來台的越南姐妹，融入台灣生活。「先學禮，後學文。」曾女香在節目中鼓勵姐妹們一同參與孩子的教養，即使不會中文，也可以用身教來教導生活禮儀。

身教重於言教

「千萬不要和婆婆計較，就算爭贏了，也是輸。」談起家庭和樂的方法，曾女香搬出孝敬公婆的儒家傳統思維。「不聽我勸的姐妹，下場都不好。」在同一個屋簷下生活的兩個女人，要雙贏，還是雙輸？「對婆婆愈好，先生會對我們更好。」有時輸了面子，贏了裡子，才是一種智慧的抉擇。

身教重於言教，因為曾女香和先生對婆婆無微不至的照料，被婆婆一手帶大的孫女，每天放學回家，就先和祖母撒嬌，讓曾女香輕度失智的婆婆，笑得好開懷。今年已國中三年級的她，傳承了曾女香的勤奮孝順，更對越南語和其文化深具興趣。

「人在做，天在看。」尊崇儒家傳統的曾女香認爲，篤信「積善之家，必有余慶」的道理。「接納就是愛的表現，我們都是一家人。」嫁到台灣，就要珍惜緣分，「因為我是台灣媳婦，這裡是我的家。」 □

small, when she looks into the children's expectant eyes she can't give up on them no matter how tired she gets.

She also hosts a program on Taiwan Radio aimed at helping her Vietnamese sisters integrate into life in Taiwan.

Teaching by example

"Never bicker with your mother-in-law. Even if you win, you still lose." Talking about her secrets for a happy family life, Tang hauls out traditional Confucian thinking on filial piety toward one's in-laws. "The better we are to our mothers-in-law, the better our husbands will be to us." Sometimes you lose on the surface, but you win the substance: that's the wise choice.

Teaching by example beats explaining in words. Because of the meticulous care given to her mother-in-law by Tang and her husband, every day when Tang's daughter, who her mother-in-law helped so much to raise, gets home from school, she first affectionately plays up to her grandmother, making the elderly woman, who suffers from mild dementia, laugh happily. The child, now in her third year of middle school, has inherited Tang's diligence and filial piety, and is very interested in Vietnamese language and culture.

"People act, Heaven watches." Tang Nu Huong, who respects Confucian traditions, believes deeply that good deeds will get good returns. "Acceptance is an expression of love; we are all one family," she says, and as marriage has brought her to Taiwan, she should treasure the relationships that fate has given her. "I am a daughter-in-law of Taiwan; this place is my home." □

(Lee Shan Wei/photos by Chuang Kung-ju/
tr. by Phil Newell)

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