

Macao 澳門

Revealing Macao's hidden nature

Government policy priorities for 2018

Ruins of St. Paul's ancient statues brought back to life







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Masthead

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Fork tailed sunbird (*Aethopyga christinae*)
by João Monteiro

From the Editor

Protecting Macao and promoting its treasures

Last November, Chief Executive Chui Sai On delivered his 2018 Policy Address, outlining a vision for Macao which included strengthening the city's disaster preparedness, growing through cultural and green initiatives, and conserving the natural environment. In this issue, we delve into the details of these and other policy priorities, as well as the record expenditure for 2018, much of the increase targeted at providing for Macao's young and older residents.

Macao's environment also takes on a more prominent role in our editorial line up for the first issue of 2018. In an interview with Tam Vai Man, director of the Environmental Protection Bureau, we discuss recent accomplishments in environmental protection and sustainability, and look forward to a range of legislation aimed at developing a more environmentally friendly Macao.

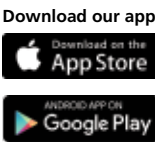
The city's oldest trees – some more than 500 years old – take centre stage in an article detailing the extensive effort by the government to preserve these living pieces of our heritage. Another article invites the reader to take a guided tour of Macao's biodiversity. From fish that can walk on land and

breathe air to frolicking Chinese white dolphins to the welcome shade of exotic fig trees, this compact city boasts a wealth of fauna and flora. Protecting this natural treasure has taken on new urgency in an increasingly urbanised Macao, as the government seeks to balance growth with preserving the environment for future generations.

Stepping away from environmental concerns, we cover three major international events hosted by Macao in late 2017. The Macau Grand Prix, a recognised proving ground for up-and-coming stars, saw triumph and tragedy on the racetrack this year. The 2nd International Film Festival & Awards Macao recognised talents from every corner of the globe, drawing film industry veterans and rising stars to the grand six-day event. Finally, the 2017 Macao International Parade invited residents and visitors alike on a magical journey into the city's remarkable cultural heritage. Winding through streets and alleys between some of Macao's most-prized landmarks, this delightful celebration of the handover offered another opportunity to enhance the city's international profile as a world centre of tourism and leisure.

Gonçalo César De Sá
Editor-in-Chief

On the move



Chui Sai On (left) and Ho Iat Seng (right) at the Legislative Assembly

Politics

Disaster response dominates 2018 policy outlook

Text Christian Ritter Photos Government Information Bureau

The five key priorities of the 2018 Policy Address were: building a smart city, consolidating transportation management, conserving the natural environment, cultivating Macao's cultural legacy and strengthening disaster preparedness.

Speaking before the Legislative Assembly last November, Macao Chief Executive Chui Sai On presented his 2018 Policy Address, a comprehensive raft of initiatives to enhance and expedite urban development in Macao. The initiatives focus on five key priorities: building a smart city to optimise resource management and boost competitiveness; consolidating transportation management to establish an accessible city; conserving the natural environment and supporting green development; cultivating and promoting Macao's unique cultural legacy; and strengthening disaster preparedness and response to enhance public safety.

With the devastation left in the wake

of Typhoon Hato in August last year, Chui instructed the government to thoroughly reassess its existing measures to tackle catastrophic events. The strongest storm to hit Macao in more than 53 years, Hato caused massive flooding and damage estimated at over MOP10 billion (US\$1.25 billion). Ten people died, 244 were injured, and thousands were left without power or running water for days.

Determined to improve its disaster preparedness and response mechanisms, the government developed a raft of short-, medium- and long-term measures aimed at addressing weaknesses exposed by the storm.

In the short term, the government plans to set up the Civil Protection and Contingency Coordination Bureau (DSPCCC) responsible for civil protection and emergency response coordination. The new bureau will enable centralised coordination of operations, promising a level of cooperation and integration not possible under the current ad hoc operations of the Civil Protection Operational Centre (COPC).

The existing by-law on the issuing of weather warning signals will be amended, improving the typhoon forecasting process and the way the city's weather station releases information to the public. Staff at the meteorological bureau will also receive improved professional training.



Chui Sai On delivering his 2018 Policy Address



Expenditure for 2018
MOP109.61 billion
US\$13.7 billion

Public Investment Plan
MOP21.148 billion
US\$2.64 billion



Health Bureau
MOP7.565 billion
US\$945 million



Education and Youth Affairs Bureau
MOP6.5 billion
US\$812.5 million

University of Macao
MOP2.338 billion
US\$292.2 million

Macao Polytechnic Institute
MOP855.651 million
US\$106.9 million

Institute for Tourism Studies
MOP427.573 million
US\$53.4 million

Education Development Fund
MOP817.399 million
US\$102.2 million

Students Welfare Fund
MOP394.487 million
US\$49.3 million

Chui pledged that the Inner Harbour area, the hardest hit by flooding in Hato, will see an upgraded drainage system and other flood-control projects, as well as a new pumping station on the waterfront. The government expects to invite bids for its construction during the first half of this year.

There are also efforts to kick start construction of a tidal gate, located between the west coast of the Macao peninsula and Wanzai in Zhuhai, to prevent flooding in the Inner Harbour during high tides and major weather events. The government aims to submit plans to the central government by late 2018, following completion of a feasibility study.

In the medium and long term, the government plans to construct a new Civil Protection Action Centre building on the peninsula, and strengthen the software and hardware development of the centralised command centre. There are also plans to set up a new professional emergency rescue team, improve human resources development for disaster prevention and reduction, and establish a third-party assessment mechanism to review risks and response capability.

The process of drafting a comprehensive ten-year plan for disaster prevention and mitigation (2019-2028) will begin this year.

Mindful of the utility outages experienced after Hato, Chui vowed that the government will work to increase Macao's water storage capacity and expedite the construction of the third link between the local power grid and China Southern Power Grid.

Chui also pointed to government efforts to get construction of a new electricity generation plant off the ground.

According to news reports from February 2017, local power utility CEM expects to have a new natural gas-powered generation plant up and running in five years.

Prioritising infrastructure development in new urban planning, including underground pipelines and windproof design for high-rise buildings, will also serve to protect the city in future.

Building a green future

In laying out the government's priorities for 2018, Chui also addressed the need to preserve the natural environment. Government efforts to promote green development in the city include plans to foster green industries, enhance green education, and advocate sustainable practices among both residents and visitors. Accelerating greening work and a new tree planting and maintenance plan promise to reclaim green space in the city, while waste reduction plans, subsidies for the recycling industry, and enhanced cooperation and collaboration with regional partners seek to address underlying issues.

Government plans to transform the city's transportation system target congestion, a common complaint in the city, and growing concerns around air pollution. The government will continue to control vehicle growth and promote environmentally-friendly vehicles while also working to offer residents better alternatives. Chui announced plans to improve the bus route network, develop a better walking environment for pedestrians, and expedite the establishment of light rail transit.

The initial phase of the smart city project, another key initiative touted in the address, will focus



Social Welfare
MOP3.579 billion
US\$447.4 million

Social Security Fund
MOP4.75 billion
US\$593.7

Macao Pension Fund
MOP2.448 billion
US\$306 million

Elderly Benefits
+/- MOP5,820 per month
+/- US\$727 per month



Public Security Forces
MOP5.264 billion
US\$658 million

Judiciary Police
MOP1 billion
US\$125 million



Macao Trade and Investment Promotion Institute
MOP689.775 million
US\$86.2 million

Forum Macao
MOP114.389 million
US\$14.3 million



Macao Government Tourism Office
MOP327.908 million
US\$40.9 million

Tourism Fund
MOP735.400 million
US\$91.9 million

applications on transportation, as well as medical services, tourism, and e-government. Environmental protection will be part of the second phase, beginning in 2019.

US\$1.61 billion to subsidise those in need

Chief Executive Chui discussed a raft of subsidies in his address, and while most will remain unchanged, others have seen increases and a new subsidy will be introduced for Macao children attending school in the Guangdong province.

Macao students attending primary and secondary-level education in Guangdong will now receive MOP6,000 (US\$747) while those at the kindergarten level will receive MOP8,000 (US\$996).

The birth grant will see a dramatic increase, from MOP1,700 to MOP5,000 (US\$623), while the annual subsidy for the elderly will increase by MOP1,000 to MOP9,000 (US\$1,121); the elderly allowance will remain at MOP3,450 (US\$430) per month for 13 months.

Macao students attending primary and secondary-level education in Guangdong will now receive a subsidy of MOP6,000 (US\$747) while those at the kindergarten level will receive MOP8,000 (US\$996).



2018 Policy Address at the Legislative Assembly

Total estimated revenue for 2018
MOP119.169 billion
US\$14.9 billion

Other revenue
MOP38.7 billion
US\$4.9 billion



Gaming revenue (direct taxes)
MOP80.5 billion
US\$10 billion

Senior citizens will receive MOP69,850 (US\$8,680) next year. According to official statistics, 9.8 per cent of the population was aged 65 or over last year.

Several subsidies included in the Wealth Partaking Scheme will remain at 2017 levels. Permanent and non-permanent residents will continue to receive an annual subsidy of MOP9,000 (US\$1,121) and MOP5,400 (US\$675) respectively. The medical voucher provision and Continuing Education plan for residents will also remain unchanged.

These and other welfare measures are expected to amount

to MOP12.9 billion (US\$1.61 billion) in 2018. Chui noted that the government's current reserves amount to MOP505.2 billion (US\$62.9 billion).

Gaming revenues expected to reach US\$28 billion

In his remarks, Chui expressed confidence in continued economic growth in 2018. After a 2.1 per cent decrease in Macao's gross domestic product (GDP) in real terms in 2016, the local economy grew by 10.9 per cent in the first half of 2017, according to official figures.

Following his one-hour policy

address to the legislature, Chui held a press conference at the Government Headquarters. When questioned about gaming revenues in 2018, he said that the government expected the city's gaming revenues to hit MOP230 billion (US\$28.64 billion).

Gross gaming revenues during the first ten months of 2017 amounted to MOP220 billion (US\$27.39 billion), a 19.2 per cent year-on-year increase and well beyond the expected MOP200 billion (US\$24.9 billion) for the entire year.

Macao's gross gaming revenues stood at MOP223.2 billion (US\$27.79 billion) in 2016. ●

Macao government spending to surpass US\$13.65 billion for the first time

During a plenary session to present the 2018 government budget bill, Secretary for Economy and Finance Leong Vai Tac announced that the government expects its total expenditure in 2018 to reach MOP109.61 billion (US\$13.65 billion), a 14.5 per cent increase from last year's budget.

This unprecedented annual budget, the first to exceed MOP100 billion, is due in large part to a 38.6 per cent increase in PIDDA, the government's public investment plan, to MOP21.15 billion (US\$2.63 billion).

According to the bill, the government expects total receipts of MOP119.17 billion (US\$14.91 billion) this year, up 15.8 per cent. Leong told lawmakers that he expected the government's revenue from direct gaming taxes to amount to MOP80.5 billion (US\$10.01 billion) in 2018, MOP10.5 billion (US\$1.31 billion) more than budgeted for last year, up 15 per cent.

The bill proposes to increase public servants' salaries by 2.41 per cent, effective from January 2018, with total expenditure for government personnel budgeted at MOP22.2 billion (US\$2.76 billion).

Leong announced plans to submit a bill to the legislature regarding the establishment of the government's investment and development fund. The operation of the fund will be in line with the Santiago Principles, ensuring proper regulation, risk management, and accountability.

During a Q&A session about his portfolio's policy guidelines for 2018, Leong explained the government's rationale behind withholding the details of its upcoming gaming concession bidding process in the run-up to the expiration of the city's three



gaming concessions and three sub-concessions.

Leong, who oversees the city's crucially important gaming industry, stressed that a premature announcement would enable other gaming destinations to adjust their policies accordingly, intensifying competition in the sector.

Macao's three gaming concessions and three sub-concessions will expire between 2020 and 2022, and according to Law 16/2001, a gaming concession usually cannot exceed 20 years. While the gaming industry law does allow the Chief Executive to grant a maximum extension of five years under special circumstances, Leong assured lawmakers that a bidding process will be held following the expiration rather than the government simply renewing the existing agreements.

When considering the city's gaming sector development, the government will take a number of factors into account, including how the sector can become more competitive on the international stage.

Social affairs

Exploring the hidden biodiversity of Macao

Text **David Gonçalves**, Dean of the Institute of Science and Environment of University of Saint Joseph
Photos **João Monteiro**

With an area of about 30 square kilometres and a population density of more than 21,000 inhabitants per square kilometre, it is hard to imagine that Macao still retains any significant biodiversity. Yet amongst the high-rise buildings, glittering casino lights, and bustle of tourists and locals, nature finds its way. Unnoticed to the untrained eye, birds of prey soar above buildings, medicinal plants blossom in urban parks, and dolphins frolic in waters near the airport lane – a wondrous world just waiting to be discovered. All you need is a guide.

We start our tour in the centre of Coloane, a village located on the greenest of the three islands of Macao. Emerging from the shadow of the large, exotic fig trees (*Ficus rumphii*) that line the central square of the village, we approach the river channel with Zhuhai, in mainland China, just a few hundred metres in front of us.

Standing still during low tide, we watch as the mudflat comes alive. Small, red bowled fiddler crabs (*Uca arcuata*) start to emerge from their burrows. Males, wielding one enlarged claw that can weigh up to 40 per cent of their total body weight, wave their claw in synchronous movements to try to get the attention of females. Apparently unimpressed by the males' efforts, they continue feeding on the microalgae film that grows on the surface of the mudflat.

Just behind them, two male great blue-spotted mudskippers (*Boleophthalmus pectinirostris*) – remarkable fish that can walk on

land and breathe air – fight with spectacular displays, spreading their fins and pushing each other mouth-to-mouth. Another male mudskipper jumps high in the air, trying to stand out from the dull background in the hope of catching the females' attention.

A bit further away a Chinese pond heron (*Ardeola bacchus*), one of about 200 species of birds that can be found in Macao, patiently waits for an opportunity to feed on them. As we stand up, life quickly disappears below ground and we move on to our next stop: the walking trails of Coloane hills.



Pied Avocet (*Recurvirostra avosetta*)



Exotic fig tree
(*Ficus rumphii*)



Blue-spotted mudskippers
(*Boleophthalmus pectinirostris*)



Red bowled fiddler crabs
(*Uca arcuata*)

Circling Coloane

The Coloane trail stretches 8,100 metres around the central part of the island. Soon after we set out, a barely audible sound at head level calls our attention. Hidden among the vegetation, a green, venomous white-lipped pit viper (*Cryptelytrops albolabris*), one of the 16 snake species described for Macao, quietly slithers away, probably disturbed by our presence.

A few more metres and a large red-bellied tree squirrel (*Callosciurus erythraeus*), introduced to Macao long ago, feeds on red flowers on the branch of a cotton tree (*Bombax ceiba*). These squirrels also feed on birds' eggs, making them a threat to native bird species. Just below, the flashlight of a mobile phone reveals a banded bullfrog (*Kaloula pulchra*) hiding in a hole of the soft rock.

The trail is generally dry but in one of its few small ponds a spot-legged tree frog (*Polypedates megacephalus*) clings with its finger pads to a leaf from a lotus plant (*Nelumbo nucifera*), symbol of the city of Macao featured prominently on the city flag.

Among the numerous and varied butterflies observed during our walk, one laying in the shadow of a Chinese hackberry tree (*Celtis sinensis*) calls our attention with its impressive size and beautiful colours. It is actually not a butterfly but a Chinese moon moth (*Actias ningpoana*), one of the largest moths in the world. We are very lucky to spot one: Chinese moon moths only live 10-12 days to mate and reproduce, dying right afterwards.

Just beside it, a giant golden orb weaver (*Nephila pilipes*) hangs from its 2 metre-wide web. Although inoffensive, these threatening looking spiders are



Red-bellied tree squirrel
(*Callosciurus erythraeus*)



Giant golden orb weaver
(*Nephila pilipes*)



Chinese white dolphin
(*Sousa chinensis*)



Black-faced spoonbill
(*Platalea minor*)

certainly impressive. After 30 minutes walking, it's time for a break. Sitting on a huge granite boulder overlooking Hac Sa Beach, we grab our binoculars and watch as a large black kite (*Milvus migrans*) glides effortlessly through the air, scanning the area in search of prey.

Still looking through the binoculars, a splash in the water calls our attention. After some minutes searching, we find its source: a group of 6-8 Chinese white dolphins (*Sousa chinensis*) periodically surface to breathe, just a few hundred metres from the shoreline. The group, composed of adults and at least one juvenile, display frequent behaviours at the surface that sometimes expose their long beaks.

The Pearl River estuary hosts the largest population in China of this species, but its numbers are under strong decline, threatened by fishing nets, heavy marine traffic, habitat destruction, and environmental contamination. We lose sight of

the dolphin group and decide it is time to finish the trail and move on to our next stop: Cotai, the landfill reclamation area that unites the islands of Coloane and Taipa, home to the larger resorts in the territory.

Hidden wildlife in the casino jungle

Exiting Coloane, we pass the Seac Pai Van Park on our right, a zoo-like area home to a number of captive animals – giant pandas, red pandas, rare primates, and birds – and an interesting collection of plants used in traditional Chinese medicine. With time running short, we turn our attention back to the local wildlife. It seems like we won't find much, standing in sight of the Cotai Strip, a replica of the Eiffel Tower emerging amid the high-volume resort buildings. Cotai and Taipa may be much less green than Coloane, but there are still a few interesting places left to visit in search of local animals

With the casino buildings in the background, we hit jackpot, spotting the most iconic bird species of Macao: the black-faced spoonbill (Platalea minor).

and plants.

These include the hiking trails of the Small and Big Taipa Hills, the wetland in front of the Taipa Houses-Museum and the Cotai Ecological Zones I and II, the latter established by the government of Macao in 2003-2004 to promote environmental education and conservation.

We choose to use our remaining time together to visit the Cotai ecological zones, managed by the Macao Environmental Protection Bureau. We begin with a guided tour of Ecological Zone I, 15 hectares of fenced wetland used as a foraging and resting place by many species of migratory birds. Water circulation between the inner waterways and the adjacent river course allow fish, crustaceans, and other aquatic species to enter the zone. Small islands with planted species of mangroves, reeds, and shrubs complete this interesting ecosystem, and provide a valuable place for birds to rest and hide.

We enter one of the four wood-built observation stations where we can eavesdrop on the local fauna without disturbing it. With the casino buildings in the background, we hit jackpot, spotting the most iconic bird species of Macao: the black-faced spoonbill (*Platalea minor*).

This species is listed as

endangered on the International Union for Conservation of Nature (IUCN) Red List of threatened species due to its very small population of slightly over 3,300 individuals. In spite of continued threats such as habitat destruction, the population seems to be bouncing back after hitting a low of 288 animals in 1988. Black-faced spoonbills winter in coastal areas between Taiwan and Vietnam, and reproduce in only a few sites in Liaoning province and along the west coast of the Korean Peninsula. The few birds we see will soon be leaving for those breeding areas. It is certainly a privilege to be able to observe these rare birds in Macao.

With our binoculars and the help of our guide, we identify 15 additional bird species during our short visit. We give our place in the observatory to a group of children from a local primary school and start our short walk to the Ecological Zone II. This open area of 40 hectares sits on the river margin overlooking Hengqin island. Its larger mangrove ecosystem boasts high levels of biodiversity, and serves as breeding and nursery grounds for many species of crustaceans, fish, and birds.

1. White-throated kingfisher (*Halcyon smyrnensis*)
2. Red-whiskered bulbul (*Pycnonotus jocosus*)
3. Yellow-bellied prinia (*Prinia flaviventris*)
4. Eurasian hoopoe (*Upupa epops*)
5. Verditer flycatcher (*Eumyias thalassinus*)
6. Yellow bittern (*Ixobrychus sinensis*)
7. Fork-tailed sunbirds (*Aethopyga christinae*)
8. Common teal (*Anas crecca*)
9. Cattle egret (*Bubulcus ibis*)
10. Common kingfisher (*Alcedo atthis*)



We join various bird watchers and photographers to peak through a small opening in the tree canopy that lines the cycle lane adjacent to the ecological zone. A few dozen metres from us, apparently indifferent to our presence and the continuous sound from the camera shutters, a pair of little egrets (*Egretta garzetta*) begin preparing their nests for the approaching breeding season.

Other species of herons and egrets, such as the grey heron (*Ardea cinerea*), the great egret (*Ardea alba*) and the black-crowned night heron (*Nycticorax nycticorax*) are in sight, often fighting for space in the mangrove canopy. Observing the natural behaviour of these majestic birds at such close distance is fascinating and we lose

track of time. The sun starts to set, illuminating the area with warm shades of orange and telling us it is time to move on to our last stop: Macao Peninsula.

Influence of urbanisation

The peninsula is the most populous area of Macao and, similar to Taipa, green areas occupy only slightly over 20 per cent of the land. With the exception of some artificial lakes, the opportunity to have contact with nature is limited to Guia Hill and smaller municipal gardens and parks under the management of the Macao Civic and Municipal Affairs Bureau. We decide to take a walk around Sai Van Lake to reflect on the challenges facing biodiversity conservation efforts in Macao.

Our one-day tour highlighted the surprisingly high number of plant and animal species that can still be observed in the territory, some with a high conservation priority.

As we look upon Our Lady of Penha Chapel, we agree that just like culture or heritage, the animals and plants of a region are part of its identity. Efforts must be made to balance economic and social development with the preservation of natural habitats, for ourselves and for future generations. Significant steps have been taken in this direction but preserving natural areas in such a small, densely populated territory will not be easy.

While Macao has been steadily growing through land reclamation, the percentage of green areas per capita has been decreasing,

illustrating the intense competition for space that makes it so difficult to expand existing natural spaces. A vividly-coloured common kingfisher (*Alcedo atthis*) dives at close distance, capturing a small fish, a reminder that for many species, there are no borders between natural and built areas.

Fragmentation of habitats is evident in Macao where natural areas are often interspersed with roads, buildings, and other infrastructures. Some animals, like the kingfisher, cope better with habitat fragmentation than others, such as amphibians or reptiles. As a Chinese softshell turtle (*Pelodiscus sinensis*) languidly swims close to the lake shore, we wonder which projects could be proposed to improve biodiversity conservation in Macao.

The territory recently accepted administrative responsibility over 85 square kilometres of its surrounding maritime areas, opening up a unique opportunity to combine terrestrial and marine environmental protection.

Continuing to restore the natural ecosystems of Coloane, and legally protect this island and part of its adjacent waters – in particular the key spots used by the Chinese white dolphins – could be an ambitious and significant nature conservation project for Macao.

A band of little egrets fly off toward mainland China, reminding us that local conservation projects such as this need to be integrated into broader plans in coordination with neighbouring regions. Green corridors, for example, should be

considered in order to allow species to move freely between naturally protected areas in different regions. Engaging current and future generations in environmental protection is another key to the success of nature conservation projects.

During our tour, we crossed our paths with many local children swept up in the same sense of awe as we were when observing animals in their natural habitats. Surely, they will be the future guardians of nature. We can only hope that they will do a better job in protecting our planet than what we have done so far.

Small bats, probably from the *Pipistrellus* genus, start flying over our heads, indicating it's time to call it a day – and what a great day it was! ●

Little egret
(*Egretta garzetta*)



Common kingfisher
(*Alcedo atthis*)



Grey heron
(*Ardea cinerea*)



Chinese softshell turtle
(*Pelodiscus sinensis*)



Small bat
(*Pipistrellus* genus)





Strengthening environmental laws in 2018

Text Mariana César de Sá Photos António Sanmarful and courtesy of the Environmental Protection Bureau

In an interview, Tam Vai Man, Director of the Environmental Protection Bureau, describes the priorities of his bureau and how they aim to preserve Macao's environment.

The past decade witnessed a dramatic shift in people's attitudes toward the environment, driven by activism and the increasingly tangible effects of global warming and environmental degradation. These factors, along with habitat loss, led to a 58 per cent drop in global wildlife populations since 1970; without interventions that number could reach 66 per cent by 2020 according to the World Wildlife Fund. Plastic, a ubiquitous material in modern life, takes as much as a millennia to break down, clogging landfills and polluting waters around the world. Rising temperatures take their toll as well, contributing to devastating famines and flooding, and strengthening tropical cyclones.

Since the early 2000s, Macao has experienced unprecedented growth as a result of the booming gaming industry, growth that far outpaced environmental protection efforts in the city. In an interview, Tam Vai Man, Director of the Environmental Protection Bureau, told Macao Magazine what issues the bureau is currently tackling and its medium-to-long term plans for Macao.

What does the Environmental Protection Bureau (DSPA) consider as major environmental issues in Macao?

There are two environmental issues that are most concerning in Macao: air pollution and solid waste.

Improving air quality is one of the government's key environmental protection objectives. A series of measures to improve air pollution from mobile sources (motor vehicle emissions) and stationary sources (emissions of commercial/industrial facilities and food/beverage establishments) were set out in the "Environmental Protection Planning of Macao (2010-2020)."

The government has taken various measures to control air pollution from mobile sources, such as restricting the import of

“

There are two environmental issues that are most concerning in Macao: air pollution and solid waste.

Tam Vai Man

high-polluting vehicles to Macao, banning the import of two-stroke motorcycles, and regulating exhaust emission standards of newly imported vehicles and vehicles currently in-use.

In order to control exhaust emissions from motor vehicles more effectively, the Administrative Regulation on "The Specifications of Unleaded Petrol and Light Diesel Oil for Motor Vehicles" was implemented in early 2017, which upgraded the quality of the unleaded petrol and light diesel oil to Euro 5 standards.



In regards to solid waste, we must try to reduce waste production at the source while also working to educate people on re-using and recycling. Both cutting down on waste going into the incineration plant, and re-using materials makes existing products more sustainable; we want to constantly reinforce the message of re-using materials.

One program that we launched during Chinese New Year in 2017 was the lai si [red packet] recycling campaign, which encouraged participants to give their used or unused red packets to DSPA so we could re-use them. Another campaign is the “Computer and Communication Equipment Recycling Scheme,” which disassembles electronic devices and re-uses the parts. If participants give us computers that fulfil the donated requirements, those are donated to partner charities like Caritas Macao that can pass them to people in need. In order to enhance the recycling consciousness of the public and to promote the collection of waste batteries for proper treatments, DSPA launched a “Macao Waste Battery Collection Program” in 2016. Until today, around 900 battery waste collection points have been set up in Macao.

Classifying waste such as paper, metals and plastics is another key focus. In the future, we want to promote “EcoFun-Waste sorting can be fun” in schools and the community. When residents send their waste to our collection points, they will receive scores based on weight or quantity. These scores can then be converted into coupons.

Organic waste is also a significant issue facing Macao – around 30–40 per cent of our



waste is food waste. We want to reroute this waste away from incinerators and toward something more productive and environmentally sound. One of the ideas currently in the pipeline is recycling around 150 to 200 tonnes of food waste per day to undergo the anaerobic fermentation process to produce biogas for electricity generation. The leftovers can then be used as fertilisers. If this works well, we can then set up a food waste

treatment centre at the landfill – this will help alleviate the pressure currently placed on the incinerators.

Apart from organic waste, Macao generates a lot of construction and demolition (C&D) waste. In the future, we will implement the “Management Scheme of Construction and Demolition (C&D) Waste of Macao”. Using an economical approach to control construction waste dumping might encourage



Two-stroke motorcycles being collected

industry players to sort C&D waste at the source and dump only waste that cannot be reused or recycled. Meanwhile, DSPA is in the process of constructing a C&D waste sorting facility, which will be located inside the C&D waste landfill.

This sorting facility will sort out and convert inert C&D waste into reclamation materials that can not only be used in local reclamation projects such as Zones E1 and D in Macao, but also can be transferred to the Guangdong province for reclamation. This initiative was approved by the State Council of the People’s Republic of China.

We know that environmental initiatives and efforts are most successful when they are integrated into the country’s legal system. Is DSPA working towards implementing laws to limit the use of plastic?

We have already finished a draft law to limit the use of plastic bags in the future. Our aim is to have this law implemented in 2019, with the legislative procedures starting in 2018.

How is the government supporting the recycling industry?

We are currently working on legislation to subsidise the

recycling industry to purchase equipment in order to improve their management capabilities. We hope to implement this legislation in 2018.

Macao has an output of 2.11 kg per capita of waste per day – a number considered high by international standards. How can we decrease the volume of waste produced, and what measures are being taken by the DSPA?

From a long-term point of view, the “Macao Solid Waste Resource Management Plan (2017-2026)” was launched in late 2017 and will be implemented step-by-step. By developing appropriate policies,



creating incentives and controls through economic means, setting-up new recycling facilities and optimising existing environmental infrastructures, the aim of reducing waste and recycling and re-using various resources can be achieved.

A 2016 DSPA report found vehicle exhaust to be a significant source of air pollution in the city. Is DSPA doing anything to support switching to zero- or low-emission vehicles?

Electric or hybrid cars would be ideal, and the use of zero- and low-emission vehicles is encouraged in the long-term as this helps to improve the air quality. Electric cars are completely tax-free under Law 20/96/M, but right now, we have to solve the charging

problem by cooperating with the Transport Bureau, the Office for the Development of the Energy Sector and the electric company to build charging stations – around 200 charging stations are being planned.

We understand that the government should take the lead and start using electric vehicles to show locals that they can and should use them too.

In addition to reducing high-pollution vehicles, the subsidy scheme for phasing-out two-stroke motorcycles was launched in early 2017. Since then, we have phased out more than 5,000 two-stroke motorcycles in Macao.

In terms of environmental protection, what are DSPA's main plans?

“The Environmental Protection Planning of Macao (2010-2020)” is Macao's first environmental planning document. As it is progressing, DSPA has conducted an assessment on the medium-term implementation and effectiveness of the document by reviewing the performances of the action plans and indicators.

The long-term tasks of the plan will be continuously propelled in the coming years.

Light pollution in Macao needs attention from the government. Is the DSPA looking to implement any laws to lessen light pollution in Macao? What do you think should be done?

DSPA has prepared a guideline on lighting equipments and this guideline is provided to relevant

licensing authorities. DSPA has suggested including the above guidelines in licensing procedures. At present, the DSPA will provide technical opinions when there are requests from relevant licensing authorities, and follow up on complaints of light pollution.

Is the DSPA actively encouraging environmental awareness in schools and among the public? If so, how?

DSPA launched the Green school program in 2010, and since then 78 schools have joined to become “green schools” – optimising energy efficiency, conserving resources, and creating a healthy learning environment for students. We recently organised a joint campus waste reduction campaign with the Education and Youth Affairs Bureau and the Macao Catholic Schools Federation to continue encouraging the recycling of batteries and electronic products in schools.

The food waste treatment project at Seac Pai Van recycled a total of around 9,000 kg of food waste between July 2016 to July 2017. Are there plans to increase

the scope of food waste treatment in the future?

DSPA had set up three food waste treatment machines in the Macao Refuse Incineration Plant to treat food waste, which is collected from government departments, supermarkets, small hotels and other enterprises, etc. We are considering expanding the food waste recycling program in 2018, to collect food waste generated from small and medium-sized restaurants too. At present, many government departments, schools, and private organisations have set up their own machines to handle their organic waste. We will be launching a program to provide financial support to institutions or housing estates if they wish to install food waste treatment machines.

Between July 2016 and July 2017, we set up a pilot food waste treatment machine at Seac Pai Van public housing to handle over 9,000 kg of food waste and provide scientific data for future analysis. In the future, we will adopt a large centralized food waste treatment centre (e.g. with a treatment capacity of 150 to 200 tons per day) at the landfill. ●

“

We understand that the government should take the lead and start using electric vehicles to show locals that they can and should use them too.

Tam Vai Man



The Environmental Protection Planning of Macao (2010-2020)

Food waste





In praise of our silent giants

Text Cathy Lai

Photos António Sanmarful and courtesy
of Civic and Municipal Affairs Bureau of Macao

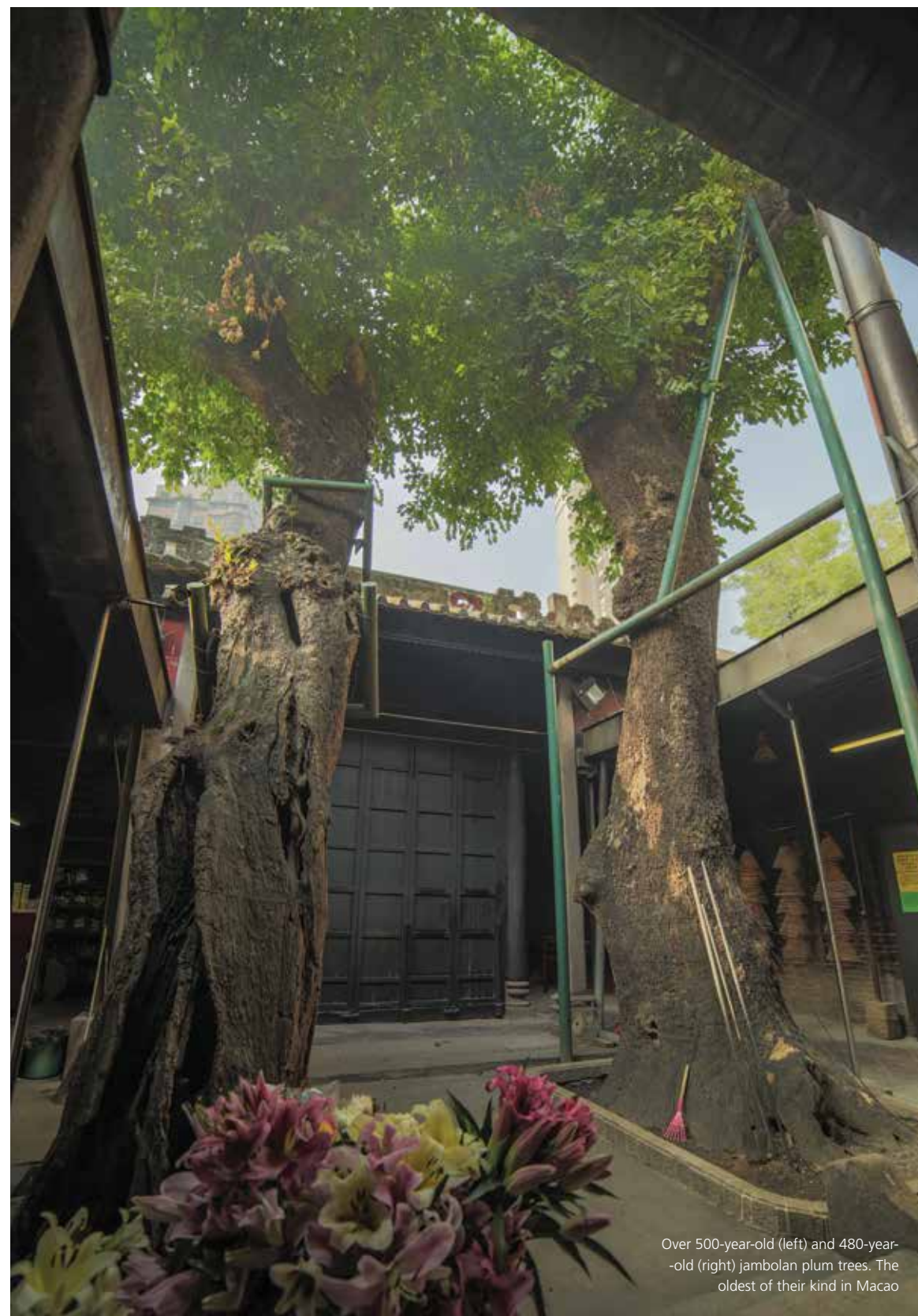
Macao is home to an impressive number of old and valuable trees, which have defied the odds to survive in this urban jungle.

Living in a densely-populated city like Macao, trees and greenery provide a breath of fresh air in the midst of an often chaotic urban environment. Imagine the busy street of Avenida Horta e Costa without the flourishing ficus trees to divert our attentions from the bustle of daily life, or strolling along Sai Van Lake without the shade of the lush green canopies. Without trees, we would be left living in a lifeless, grey concrete desert.

Trees provide far more than pleasant decoration – they play an important role in our lives, making valuable contributions so quietly that we often take them for granted. The air we breathe is cleaner and more oxygen-rich, the heat less oppressive, the soil more fertile: our ability to thrive is inextricably linked to the trees and nature around us.

Despite these clear benefits, cities like Macao provide a far from ideal environment for these natural wonders to thrive. Urbanisation increases competition for space, often forcing out trees and green areas in favour of new construction, and while adept at filtering out many pollutants, environmental degradation takes a toll. Natural disasters also hit trees hard: Typhoon Hato damaged or uprooted as many as 10,000 trees.

Fortunately, thanks to their resilient nature and human care, some trees have survived for centuries in the midst of an ever-changing city. As much a part of the city's legacy as its unique cultural heritage, the Macao government now honours these silent giants as the “old and valuable trees” of Macao.



Over 500-year-old (left) and 480-year-old (right) jambolan plum trees. The oldest of their kind in Macao



Ung Sio Wai, chief of the Division for the Greening of the City

Living relics

The Department of Gardens and Green Areas, under Civic and Municipal Affairs Bureau of Macao (IACM), collaborated with experts from South China Botanical Garden to conduct a thorough assessment of Macao's old trees in 2012, determining their ages based on respective growing speed, growing history, and its physical features such as tree girth, height, and crown width.

The investigation identified 795 old and valuable trees, belonging to 63 species, in both the public and private areas of the city. Around 98 per cent of them fell within the category of Third-Class Ancient Trees, or trees between 100 and 299 years old. The most common species include longans and camphor trees, as well as mock buddha trees and other ficus.

The department turned their research into *The Charm of Old Trees*, published in March 2013, providing the public an extensive

record of the old and valuable trees in Macao. According to the book, while Coloane has the largest number of old trees, many old trees on Macao Peninsula can be found in Guia Hill and Camões Garden, largely due to historical reasons.

“Take a look at the old photos of Macao, and you will find that Guia Hill used to be quite barren with stunted vegetation. It only began to flourish when the Portuguese government started greening the area in the 19th century,” said Ung Sio Wai, chief of the Division for the Greening of the City under Department of Gardens and Green Areas.

Camões Garden, he explained, was originally a luxurious suite with garden leased to the British East India Company in the late 18th century. The company turned it into a nursery for Southeast Asian plants to be transported to Kew Gardens in England. After the Portuguese government purchased the property in 1885, the garden was opened to the public.



The oldest Mexican frangipani in Macao, around 280-year-old; located in Kun Iam Ancient Temple

Religious sites, such as temples, churches and cemeteries, have nurtured a number of old trees with religious significance. Notable examples include the towering Michelia Champaca and much smaller Mexican frangipani, two flowering trees commonly planted in Buddhist temple gardens. Even busy streets like Avenida da República are home to a great number of impressive mock buddha trees.

Fighting against the odds

Since 2004, IACM has employed the Trees Management and Maintenance System to collect data on all trees in Macao. According to Ung, as of this year, the system contains data on 25,000 trees in the city.

While old trees hold special value, Ung stressed: “We take care of all the trees, regardless of their size and age.” Protection work takes a variety of forms: pruning helps to foster new growth, and regular check-ups identify rot or pest damage early, increasing the opportunity for intervention. The installation of drainage holes and snorkelling tubes enables better absorption of rain water and oxygen, which can be challenging for city trees.

However, the decline in the number of old and valuable trees illustrates the difficulty of retaining the aging giants. In October 2016, the government announced an updated list of 558 old and valuable trees in the public area and 170 in private areas – an implied loss of 67 trees since the publication of *The Charm of Old Trees* in 2013. Ten months later, Typhoon Hato damaged 40 old trees at different levels, 9 of which ultimately had to be removed.

Ung attributed the decline to more than just an unusually destructive natural disaster: “We



BRR disease is usually spread through root contact, resulting in rapid health and structural deterioration of trees.

Ung Sio Wai

have to understand that trees are living beings that go through the natural process of life and death. The inadequate growing conditions in the urban areas also weaken their health, making them more vulnerable to diseases and fungal infections.”

He highlighted the devastating impact of brown root rot (BRR) disease, often referred to as “tree cancer,” which causes the removal of about 250 trees on Guia Hill each year. It is also responsible for the death of some beloved old trees in Macao, such as the Batavia cinnamom in Sun Yat Sen Memorial House and the two lofty figs, famous for their interlocking branches, in the Buddhist temple Kun Iam Tong.

“BRR disease is usually spread through root contact, resulting in rapid health and structural deterioration of trees,” he explained. “As tree roots grow deep into the earth, it is very difficult for the medicine to reach this hidden part of the trees to tackle the disease.”

Prevalent in tropical and subtropical regions around the world, the deadly fungal infection has no known cure. Since 2011, the department have been working with Guangzhou Research Institute of Landscape Gardening to combat the disease, and have identified certain types of medicines that show positive effect in laboratory tests.

A heritage to be preserved

Among the oldest living things on Earth, trees reflect the world around them with each passing year recorded in their rings, their size and shape, as much a product of man as of nature. In cities like Macao, trees become a living piece of our history and culture, passed down from one generation to the next. Many of these precious old trees live side-by-side or within historical landmarks and architecture, becoming important tourism resources and cultural symbols in their own right.

As such, the old and valuable trees in public areas now enjoy protection under the cultural heritage protection law, which prohibits removal, hewing, relocation, or any other activity that may damage them.

The Division for the Greening of the City helped restore a fallen common sterculia after Typhoon Hato



The protection of old trees growing within private areas, however, is a more complicated issue. “For instance, the hill of Ilha Verde is home to many special trees and plants,” Ung said, “but it is also divided by the ownership of individuals and companies. We need a consensus from the respective land owners in order to enter a certain area to check on the plants.”

According to Ung, the department is now working closely with the Cultural Affairs Bureau to monitor the growth of old trees in private areas, most of which are historical sites like temples and churches.

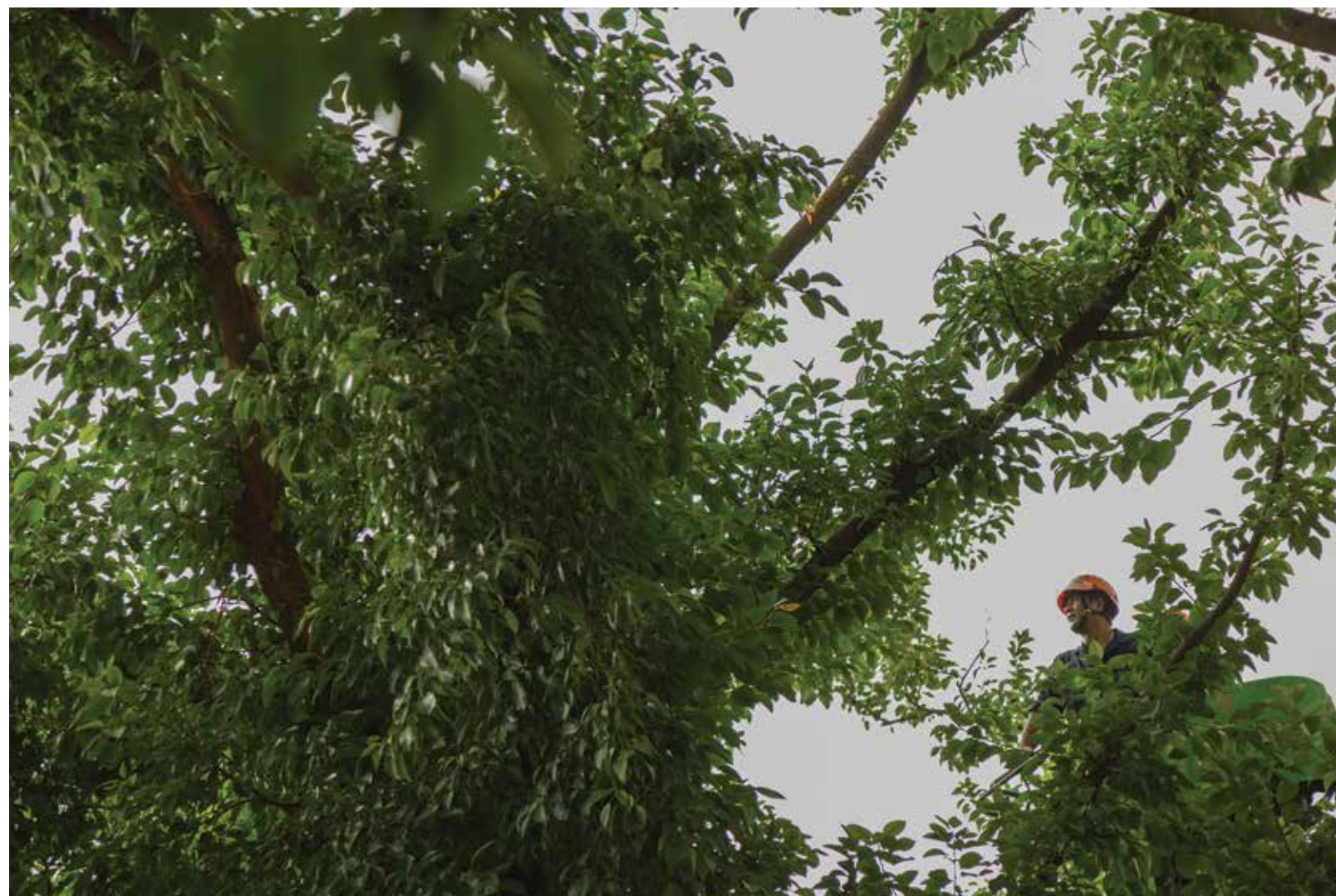
“Before we can carry out the maintenance work on an old tree in a historical site, we need careful planning on how to protect the surrounding area,” Ung said. He offered the jambolan plum – a 500-year-old First-Class Ancient Tree – growing within the small courtyard of Kun Iam Ancient Temple as an example.

“We have helped trim the tree in the temple, but a lot of protective measures needed to be taken, because the branches might fall on the roofs and cause damage,” he said. “In this case, advice from Cultural Affairs Bureau would be invaluable.”

Tending to the future

The incredible contribution of trees – to our lives, history, and environment – make their loss all the more disheartening. Deforestation driven by agriculture, logging operations and unintentional factors such as wildfires is clearing Earth’s forests on a massive scale.

Although forests still cover about 30 percent of land, huge swaths are lost each year with 200 square kilometres – more than six times the size of Macao



Tree pruning

– disappearing every day. The world’s rain forests, highly diverse ecosystems responsible for producing 40 per cent of oxygen on the planet, could disappear completely in a hundred years at the current rate of deforestation.

While it’s hard to tell exactly how many trees there are in Macao, with what is left of the green hills in Coloane and some parts of Taipa, the city has maintained a green area of more than 800 hectares since 2011, according to the Report on the State of the Environment of Macao 2016.

However, the report also points out that the maintenance of the ecological zones around the city faces greater challenges with the operation of large-scale development projects in areas such as the Cotai Reclamation Zone.

On a global level, one can make a difference in the fight to save forest by making informed daily choices, such as eating sustainable food and choosing recycled or certified sustainable wood products. Joe Chan, chairman of Macau Green Student Union, offered actions to protect the environment on the local level:

“Besides not imposing physical harm like plucking and carving, we can help protect local plants by making careful decisions on importing plants from overseas regions, as we have noticed in recent years that the native plants of Macao are under great threat of invasive species.”

We can also reduce consumption of single-use plastics, such as plastic utensils and packaging, which often end up as litter in the environment, and embrace green transit options. Walking, biking, and public transit all help cut down

on harmful emissions which, Chan noted, “can block the small holes (stomata) on the leaves, through which gases pass in and out.”

Some challenges facing our environment exist at a scale too great to comprehend, and yet our actions – whether walking to work or reusing products or planting native species – shape the world we live in. Caring for the old trees of Macao, recognising their inherent value and important place in the community, shapes the city we call home and ensures that future generations will know a green Macao. ●



Measuring tree girth

Creating a global campus

Text Mark O'Neill Photos António Sanmarful



The new campus took four years of construction, beginning in 2013, at a cost of around MOP600 million (US\$74.6 million).

Last September, the University of St. Joseph (USJ) welcomed students to its spacious new campus in Ilha Verde, marking the start of an important new chapter for the institution.

“We used to operate in apartments in the centre of the city,” explained Rector Peter Stilwell in an interview. “When students left the classroom for a coffee, they found themselves on the street – they did not feel they belonged to the institution.”

So the Catholic Diocese of Macau decided to transform land used by one of its secondary schools in Ilha Verde into a proper campus for the university. It took four years of construction, beginning in 2013, at a cost of MOP580–600 million (US\$72.2–74.6 million). The secondary school, moved offsite during the works, has since returned to a new building within the same campus.

The diocese provided the site and a quarter of the funds, with the remaining funding covered by the Macao government through the Education and Youth Affairs Bureau (DSEJ) and the Macao Foundation. The private institution currently operates at half of its target capacity with 1,100 students, one-third from overseas, and about 100 resident faculty.

Founded in 1996 along with its title-holder, the Catholic Foundation for Higher Education, the university is the product of a partnership between the Diocese of Macau and the Catholic University of Portugal. Their aim was to create a Catholic university in Macao closely aligned to the standards of top European universities. Originally known as the Macau Inter-University Institute, the university adopted its current name in 2009.

Recovering from the typhoon

The university, like much of the city, sustained significant damage when Typhoon Hato struck Macao on 23 August. Despite this unexpected setback, the move went well, much to the delight of Stilwell: “I want to congratulate the staff on their logistics. The classes opened on schedule on 18 September, and the classrooms, main library facilities, and online resources were all working.”

These successes stand in stark contrast to the damage that remains. The storm proved especially devastating for the library of the Macau Ricci Institute (MRI). The MRI library, previously housed in a leased building close to Tap Seac Square, moved its collection in response to a government request to return the building. The collection of approximately 25,000 volumes, temporarily housed in the basement of the new USJ site, was destroyed when flood waters filled the low-lying space.

The university is prepared to help MRI reconstitute the collection and host it in the USJ library, should the institute wish to follow the previous agreement to integrate the two collections while MRI retains its rights as owners. The USJ library can also provide professional expertise difficult for the institute to secure on its own.

Campus culture key to appeal

Attracting local students is intensively competitive, as USJ must contend with other institutions in Macao, Hong Kong, Taiwan, the mainland, and overseas. Distinguishing itself from the pack will prove





Rector Peter Stilwell at USJ's new campus

critical to the university's future development.

"The new campus allows us to create an academic community, and we hope to become an English-speaking campus. English is our main teaching medium, with 80 per cent of our teachers and one-third of our students coming from outside Macao. Many of our local students, however, have limited English skills.

We want to encourage them to speak English on campus, in their social life. Both to break the barriers of communication with the foreign students, and for their lives after school. Being proficient in English will be a professional advantage for them, even if they choose to work in Macao or Hong Kong. At USJ, we seek to prepare students for an increasingly globalised world. This is our niche."

Peter Stilwell

“

English is our main teaching medium, with 80 per cent of our teachers and one-third of our students coming from outside Macao.



USJ corridor

First-year students attend daily English classes, and enjoy the option of enrolling in intensive English courses during the summer holidays, while Portuguese is mandatory for all third-year students. A one-year Portuguese Intensive Course offered by USJ prepares students to continue their studies in the language, whether in Macao or abroad. Portuguese-Chinese bilingual professionals, long prized in Macao, are increasingly sought after in China and Portuguese-speaking countries as Sino-Portuguese bonds deepen under the Belt and Road initiative.

The university offers a number of programmes, run mainly in Portuguese, geared toward this growing field: Bachelor of Portuguese-Chinese Studies (Language and Culture), Mestrado em Estudos Lusófonos

de Literatura (Master of Studies in Lusophone Literature), and a new Associate Degree in Portuguese-Chinese Translation.

Cut off from mainland China

One factor continues to handicap USJ recruitment: the Chinese central government does not provide the necessary student visas to young people who wish to study at the school. While other universities in Macao, Hong Kong, and abroad enrol some segment of the millions of Chinese pursuing higher education, USJ must look elsewhere for students. The university faces difficulties at home, too.

"We face a demographic problem," Stilwell explained. "In Macao, fewer and fewer students are graduating from secondary school. The only way we can increase our numbers is by recruiting international students. They account for 33 per cent of the student body this year, up from 30 per cent last year, and represent 42 different nationalities."

As China's status in the world rises, many young people are interested in doing all or part of their studies in this part of the world. Stilwell views USJ as uniquely suited to serve this growing demographic: "They might hesitate to enrol in a Chinese-language university, because it would involve learning in Mandarin. But at USJ we teach in English, enjoy close proximity to the mainland, and work to provide foreign students with extracurricular studies in Chinese culture, history, and language."



University residence and library

Students from USJ can take part in short-term exchange programmes with mainland universities. Similar programmes are also being successfully run with universities in Portugal, Italy, France, Brazil, and the United States.

"If our university provides quality, people will come. The best advertisement is by word of mouth: if students are happy, they will tell others in their home countries. For example, two students who had enrolled for one semester recently came to us asking to stay for a full year."

The Macao government accredits the full range of USJ programmes, divided up into seven faculties: Religious Studies, Humanities, Business, Education, Social Sciences, Creative Industries, and

Science and Environment. Annual costs range from MOP34,000 (US\$4,230) for a foundation year in philosophy to MOP74,000 (US\$9,206) for a masters in business for an overseas student.

The Catholic University of Portugal acknowledges the diplomas issued by USJ, which means that they are recognised in Europe. The university maintains close links to the Catholic University of Portugal and Catholic universities in Angola, Brazil

and Mozambique, placing it in a privileged position to contribute to Macao's calling as a bridge between Portuguese-speaking countries. In fact, USJ was recently granted Consultative Observer status by the Community of Portuguese Language Countries.

"What we need now is accreditation by international bodies. The Macao government is pushing all higher education institutions in this direction," Stilwell said. "We invited a

consultant from the British Accreditation Council to evaluate our institution, and of the 27 criteria, we were not up to scratch in only three."

The university received high commendation for its small class sizes, library resources and education tradition, career enhancement and research support for academic staff, as well as its facilities and premises – due in large part to the new state-of-the-art campus in Ilha Verde.

Staffing reflects globalised world

USJ boasts 80 permanent teachers, with a further two dozen visiting from the US, Canada, Portugal, Australia, New Zealand, Singapore, and Hong Kong. Visiting professors from Hong Kong usually teach two days a week while those from more distant locales teach a course for about a month, staying in a hotel in the city.

"We teach in English, and we offer higher salaries than in Europe if not as high as the public universities of Macao. In some areas, it is not difficult to recruit, especially if we look outside Macao and Hong Kong – being close to China is an attraction," Stilwell said. Many of the teachers drawn to USJ are early in their careers and want to try working abroad. Some turnover is common, with recruiting replacing the handful who leave each year – all part of developing a dynamic young institution.

"Our international faculty is a selling point. And it is always interesting to put on one's CV that one has taught in East Asia." •



Rooftop farming



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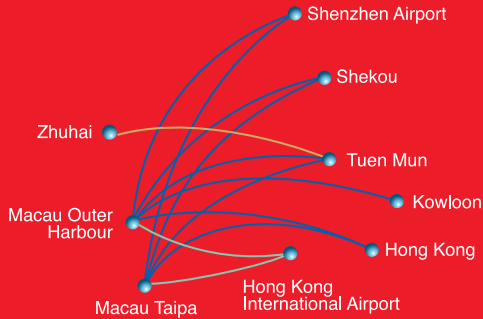
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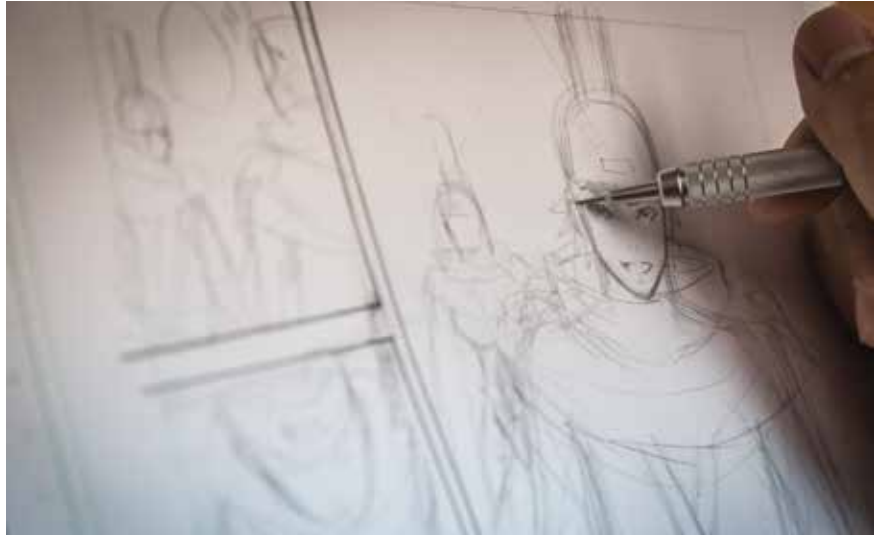
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Sam Cheung, art director of Chun Man



Magnifying creativity

Text Cathy Lai
Photos António Sanmarful and courtesy
of Chun Man Publishing Co Ltd

Macao-based Chun Man Publishing Co Ltd aims to take its comic and anime creations to the next level with a chain of indoor amusement parks.

Chun Man Publishing Co Ltd, a Macao-based comics and animation company, recently announced a cooperation plan with Hong Kong-based company Chanco Asset Management to establish a chain of indoor amusement parks under the new Mad-King Club branding. The planned parks, themed around original comics and anime, begin with the launch of the Mad-King Family Entertainment Centre in Village Land, a creative and cultural zone

in Sanxiang town, Zhongshan city. Matthew Fong, the founder and managing director of Chun Man, believes that the centre could open in the second half of 2018. Locating the park in Zhongshan enables the company to leverage various opportunities arising from the Greater Bay Area initiative, which promotes economic cooperation between Macao, Hong Kong, and nine cities in Guangdong province. With an eye to the mainland and other overseas markets,

Chun Man has established offices in cities such as Hong Kong, Zhongshan and Shantou, and expanded its business to include comic publication, comic and anime education, printing, fashion, and multimedia. “Macao will still be a base for art creation,” added Sam Cheung, art director of Chun Man. “Although it has a small market, with the support of the internet and all the favourable policies, we can promote our products externally. There is no limit at all.”



Expanding into new territory

The teen comic magazine MDecomics, launched in 2014, is one of Chun Man's most successful publications. With a monthly circulation of 30,000 copies, MOP22 (US\$2.73) per copy, MDecomics has expanded its reach beyond Macao to Hong Kong and mainland China, including major cities like Shanghai, Beijing, and Guangzhou.

Cheung attributed this achievement to the effort they spent on market exploration in the early years, which provided valuable insights that help set the company on the right path.

Back in 2010, Cheung was working as a freelance comic artist when he was introduced to Fong, then a fresh graduate of accounting with great passion for developing the comics and animation industries in Macao. Together with a few more like-minded people, they established Chun Man the same year. They launched several comic magazines targeting children and teenagers, including Bravo Magazine and Lotus Boy Quarterly, but none lasted long in the challenging Macao market.

"The audiences in Macao are limited, and seeking suitable advertising clients is also a challenge," Cheung admitted. "Even though we managed to sell advertisements to local hotels, which were the dominant business sector in Macao, they were not the ideal advertising venues for reading materials targeting young people."

Undeterred, the team began

looking for opportunities in the neighbouring cities, which supported a bigger market and a well-established publishing industry. They also reached out to the writers and artists in Hong Kong in order to diversify creative capacity. Impressed by their proposal, the Hong Kong practitioners quickly joined hands with them to launch MDecomics in 2014. The new magazine included comic series, interviews with emerging artists, reviews of comics and anime, and updated news of the industries.

With an expanded audience

encompassing Macao, Hong Kong and various cities in mainland China, the magazine confronted new challenges, such as fast-changing trends in the comic world and the declining demand for print media. Chun Man responded quickly, establishing an online channel, MDecomics.com, for publishing and promoting their work simultaneously with the launch of the print magazine. They also utilise questionnaires and monitor view rates to keep track on their readers' preferences.

"It's the era of big data and everything leaves a digital trace,"

Cheung said. "These tools allow us the flexibility of making adjustments accordingly."

A new era

For the Chun Man team, 2018 promises significant evolution and expansion. In addition to the theme park deal, there are plans to develop a distinctive new style for MDecomics. The magazine, Cheung admitted, has long relied on imitating its Japanese predecessors in order to attract readers.

"The Japanese style will always be the mainstream to follow. If we

go too far from it, the readers may find it hard to accept," Cheung explained. "However, we are now working with artists from Macao, Hong Kong, mainland China and Taiwan, and the unique features in their respective cultures and languages are reflected in their comic creations."

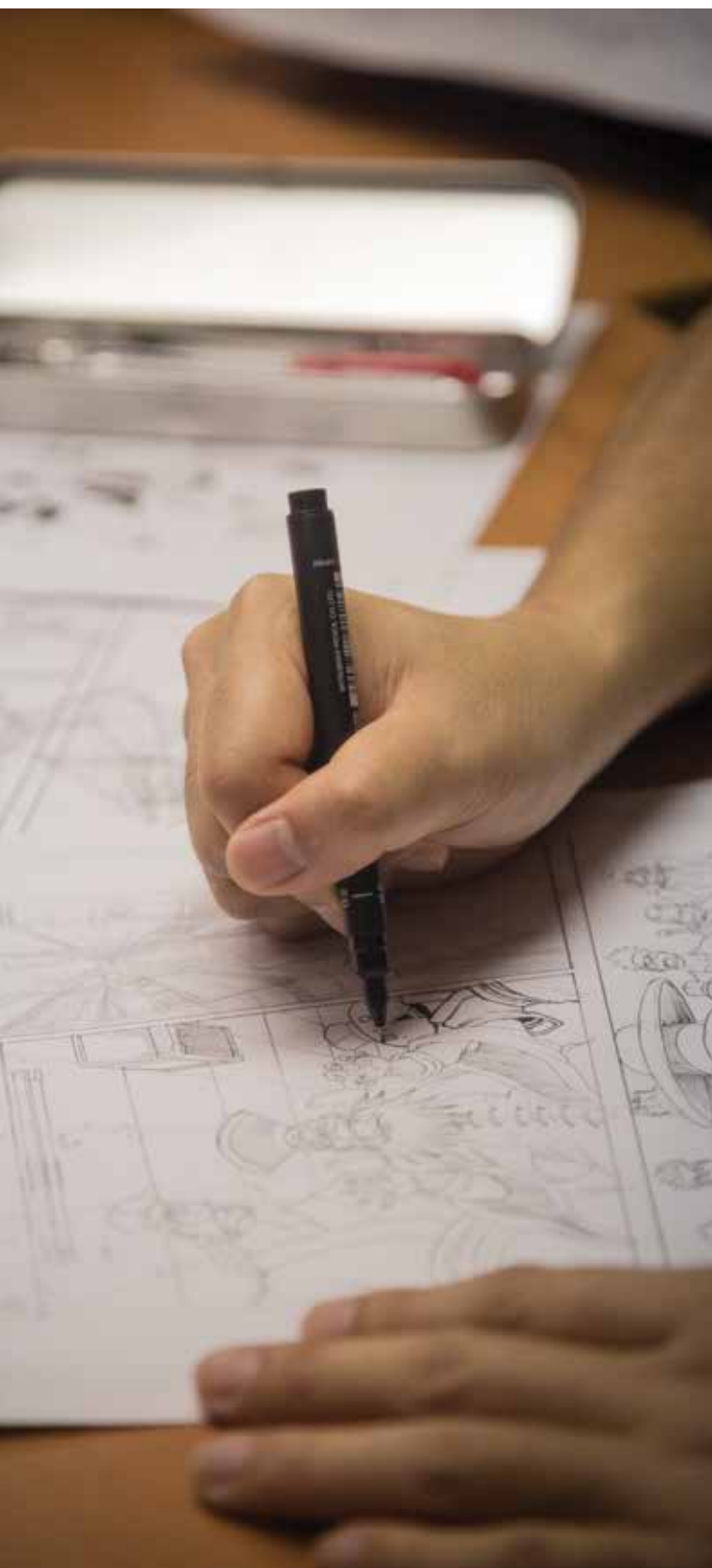
By bringing together comic artists with different cultural backgrounds, Cheung believes that the company can create a unique experience for readers. He offered little Nezha, an original comic character based on the Chinese legend of Na Tcha, a child god that runs around with wheels on fire, as a prime example.

"The worship of Na Tcha is a big part of Macao's tradition. It inspired me to create the comic series Nezha Adventure," says Cheung. Featuring fight scenes set in various Macao landmarks such as the Ruins of St. Paul's and the nearby Na Tcha Temple, Nezha Adventure tells the exciting journey of little Nezha fighting



Nezha Adventure series

Comics magazines,
by Chun Man Publishing



Chun Man received an interest-free loan of around MOP5 million (US\$623,000) in total from Cultural Industries Fund in 2013.

against demons and evils, which conspire to bring disasters to the human world.

On the other hand, Cheung pointed out, the most attractive and profitable aspects of comic and anime creations are their spin-off products. Chun Man is currently preparing to launch a series of products themed around the comic characters they've created, including food and apparel. They are also working with developers to create video games based on story lines from their various comic series.

Opening the Mad-King Family Entertainment Centre will provide a sustainable environment for promoting and marketing spin-off products. "We envision it as an integrated complex that offers a combination of food and beverage, electronic games, cinematic and book-reading facilities, and much more," Cheung said. "We hope to create a whole new cultural and creative experience for family guests through this platform."

A creative base for emerging talent

When the Macao government established the Cultural Industries Fund in 2013 to support the development of local cultural and creative industries, Chun Man was among the first batch of companies to apply for financial aid. It received an interest-free loan of around MOP5 million (US\$623,000) in total, with a funding period spanning three years.

"The reality is, artists also need money to support themselves and their career. Without money, we can do nothing," Cheung explained. "Support from the Macao government has enabled a lot of local creative talents to pursue their dreams."

He also encourages young people keen on pursuing a creative career to make the most of existing opportunities in Macao. "We are just doing things step by step, taking on challenges one after another. Nothing is too difficult if you have a passion for it." ●



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Welcoming returning Portuguese

Text Mark O'Neill Photos António Sanmarful and courtesy of Club Lusitano

Club Lusitano, one of Hong Kong's oldest private clubs with a history of 151 years, has over 500 members, of whom 270 are active.

Two walls of floor-to-ceiling crenulated windows afford spectacular views of the shining skyscrapers of Hong Kong, overlooking the home and office of Chief Executive Carrie Lam on one side and the HSBC building on the other. One wall displays two stanzas from the epic work *Os Lusíadas* by Luís Vaz de Camões, for whom the room is named, while the other features a massive world map depicting the routes taken by pioneering Portuguese explorers and mariners. Above it all, a ceiling of glittering starlight lovingly recreates the star charts that guided these adventurers centuries ago.

Welcome to the grand ballroom of Club Lusitano, one of Hong Kong's oldest private clubs with a history of 151 years. Located on the 27th floor of a club-owned building on Ice House Street, the Salão de Nobre Camões reflects a history in which members take great pride. Club Lusitano, a name derived from the ancient Iberian Roman province of Lusitania, restricts its membership to people of Portuguese heritage.

"We have over 500 members, of whom 270 are active. The rest do not live in Hong Kong," said Patrick Rozario, club president



The present Club Lusitano on Ice House Street (top) and its original 19th century location on Shelley Street (bottom)

since 2014 and an accountant by training, noting that the club is currently recruiting new members.

The club occupies the top six floors in the building, with a restaurant, bar and lounge, billiard room, library, an office, and a small chapel in addition to the ballroom. O Retiro, the quiet chapel located above the ballroom, is home to a number of religious statues including a copy of Our Lady of the Milk from Braga and Our Lady of Fátima.

The social club hosts many annual events, from festivities for Portuguese National Day and Festa

de São João in June, to a newly created, black-tie End of Year Gala Ball and a Christmas lunch in December. They also invite celebrity chefs for special dinners, organise movie screenings and talks, and host music and reading events.

The club's membership reflects the Portuguese diaspora, with members from Australia, China, Canada, Brazil and the UK, as well as Portugal. To join, a person must provide proof of Portuguese ancestry or nationality. Acquiring such proof is aided somewhat by neighbouring Macao.



Lusitano Theatre, Shelley Street, 1870s (top) and Grand Ball Room Ice house Street 1920s (bottom)



“Macao never had a major conflict, so its records, including its church documents, are intact,” Rozario explained. “There are also shipping records that show the arrival of ships from Portugal. People often use these to prove their heritage.”

Despite their shared Portuguese heritage, most members do not speak the language. The primary language in the club is English, although many members speak Cantonese.

Cycle of history

Like many members of Club Lusitano, Rozario is Macanese. “My first Portuguese ancestors arrived in Macao in the 1750s, inter-marrying

with different nationalities and later arrivals from Portugal,” he said. “I grew up in Hong Kong and remember going to Macao for christenings, weddings, and birthday parties.

Rozario left for education in Canada at 15 years old, and eventually became an accountant. He worked in Canada and the US before returning to Hong Kong in 1996. “I wanted to see the handover,” he said. “My parents and brother live in Toronto. I rejoined the club and have many schoolmates here.”

Many like Rozario have returned to Hong Kong since the handover, joined by young people from Portugal and Brazil in search of economic opportunities. “In seeking new members, we are reaching out

to these people. In the past,” Rozario explained, “we did not have to try very hard. Everyone from Hong Kong knew each other.”

Rozario’s story echoes the odyssey experienced by many members of the city’s Portuguese community since the 1960s when instability, violence, and limited opportunity spurred mass immigration to English- and Portuguese-speaking countries. Now many are returning, breathing new life into a club so central to the history of Portuguese in Hong Kong.

Early cultural centre

The club opened 17 December 1866, financed in large part by JA Baretto and Delfino Noronha, two prominent members who covered three-quarters of the construction costs for the large property on Shelley Street in the Mid-levels district of Hong Kong island.

In a neighbourhood home to many Portuguese who had left Macao in search of economic opportunity, the club served as a centre for culture and community. It included a large reception room and library, several meeting rooms, and a theatre – the venue for all performers in the colony before the City Hall Theatre opened in 1869.

The balls, theatre performances, and official ceremonies hosted by the club contributed greatly to the integration of the Portuguese community into the British colony. As did the generosity of the small community, which largely funded the club and made significant contributions to the establishment

of early Catholic institutions in the city, from the Canossian Mission, built in 1850, to the Cathedral of the Immaculate Conception, completed in 1888.

The Lusitano Challenge Cup, an annual horserace organised by the Lusitano Club, is even older than the club itself. Then called the Lusitano Cup, the inaugural race was held at Happy Valley Racecourse in 1863, and renamed in 1866, the year of the club’s founding. Still held today, this class 3 race covers 1,400 metres on the track at Sha Tin Racecourse with prize money of HK\$1 million (US\$127,970).

On 17 December 1920, exactly 54 years after completing the original club, they laid the foundation stone of a new site at 16 Ice House Street, where the club still resides today. The property was purchased by a member, AML Soares, then sold to the club at cost. The governors of Hong Kong and Macao attended the ceremony – unsurprising given governors,

military personnel, and overseas delegations had frequented the club for decades.

The men’s club maintained strict rules regarding dress and members’ conduct, and developed a reputation for its high standard of billiards, bridge, and other card games. AJ Osmond, the then billiard champion of Hong Kong, hit a break of 267 at the club in March 1925. More than 90 years on, the record still stands.

The most famous member of the club during this era was José Pedro Braga. The grandson of founding member Delfino Noronha, Braga began his career in his grandfather’s printing press. He served as managing director of the Hong Kong Daily Telegraph and spent decades as a Reuters’ correspondent in the colony before leaving journalism. The successful businessman worked closely with the Kadoorie family, and in 1929, he became the first Portuguese appointed to the Legislative Council where he served until 1937.

A refuge in wartime

World War II greatly impacted the club and the Portuguese community it served. When the Japanese attacked in early December 1941, the Hong Kong Volunteer Defence Corps mobilised to protect the city. The corps counted many club members among its ranks, and one company made its headquarters in Club Lusitano until Hong Kong surrendered less than a month later.

In the dark years that followed, the club became a refuge for the Portuguese community, providing shelter and rations to many. While Portuguese neutrality in the war lent Club Lusitano some protection, they were still subject to raids by the Japanese secret police, who accused them of spying for the British.

Carlo Henrique Basto, arrested in 1942 during a bridge game with friends, was convicted on the basis that the notes he wrote while playing bridge were coded messages. By September that year, he was dead, beheaded in Stanley.



Foundation stone laid on 17 December 1920

Patrick Rozario, Club Lusitano president since 2014



1. Gathering at Club Lusitano, 1924 2. Inside 2nd Generation Club house on Ice house Street, 1970 3. Billiard room 4. 10 June (early 1960s) National Day of Portugal at Club Lusitano (Joannes Soares, Iina Silva Netto, Lucia Lucy Jorge Azedo, Aida Noronha Nolasco, Maria Ferdinanda Soares, Cynthia Rodrigues)

In the brief battle for Hong Kong, 31 Portuguese lost their lives and many others were interned for their service in the Volunteer Defence Corps. Hundreds worked as forced labourers in squalid conditions in labour and PoW camps. In 1949, the Portuguese government bestowed the *Ordem Militar de Cristo* on the club in recognition of its distinguished service during the war.

Changing world hits Portuguese in Hong Kong

The Portuguese community in Hong Kong grew rapidly in the post-war period, reaching over 10,000 by the mid-1950s. Many returned from Macao, where they'd taken refuge during the war, while others were fleeing the mainland after the establishment of the People's Republic in 1949. Membership expanded and Portuguese played a

World War II greatly impacted the club and the Portuguese community it served. The club became a refuge for the Portuguese community, providing shelter and rations to many.

prominent role in government, commerce, sports, and the professional sphere.

For all their progress, local Portuguese still faced extensive and institutionalised discrimination that made good economic opportunities scarce. Those who did break through faced a glass ceiling in the large British banks and companies, and

in the government. With executive positions reserved for British and European expatriates, local Portuguese spent years working in firms with little hope of reaching top positions. A rare exception was Leonardo d'Almada e Castro, QC, who served as a member of the Executive Council and became the first Portuguese King's Counsel.

In 1964, the club demolished their building on Ice House Street and replaced it with a 12-storey structure designed by Macanese architect Alfredo V Alvares. Club Lusitano occupied the top five floors, more than 1,000 square metres in total. They leased the lower floors to the Philippines-based Equitable Bank; subsequent tenants included the Hong Kong government and Hong Kong Shanghai Banking Corporation. Rents provided 95 per cent of the club's income, enabling it to keep down costs and membership fees.



But the golden era of the Portuguese community in Hong Kong was already drawing to a close. The entire region felt unstable: the Korean and Vietnam wars, the bitter political campaigns in mainland China and violent 1967 riots in Hong Kong and Macao. People looked overseas for a safer, more secure future for themselves and their families.

A trickle of Portuguese emigration became a flood by the 1970s. Club membership declined from the 1950s until the early 2000s as many left for Canada, Australia, Portugal, Brazil and the US, establishing sister clubs and Casas in their new homes. Those who stayed played a prominent role in the run up to the 1997 handover. Sir Roger Lobo, who served as a member of the Executive Council between 1967 and 1985, led a crusade to protect Hong Kong rights during handover negotiations between China and the UK.

Comendador Arnaldo de Oliveira Sales spent nearly 30 years in the Urban Council, serving as its first chairman between 1973 and 1981. He is responsible for the building of many public swimming pools and other sporting facilities still in use today. As president of the Sports Federation and Olympic Committee

of Hong Kong, he oversaw the participation of the Hong Kong delegation in the games.

At the 1972 Munich Olympics, Oliveira Sales risked his life by confronting armed Palestinians holding the Hong Kong, Israeli, and Uruguayan teams hostage, and successfully secured the release of his team. In the end, 11 Israelis and a German policeman died at the hands of the Palestinian attackers before German police were able to subdue them, killing five.

The club's bar, broadly considered the heart of Club Lusitano, bears his name.



A new era

In 1996, the club building was demolished and replaced with a 27-storey high-rise, designed by Macao architect Comendador Gustavo da Roza and completed in 2002. Below the top floors occupied by the club are 20 floors of office space and a three-level ground floor retail podium. A three-storey *Cruz de Cristo* sits atop the building, recalling the early Portuguese ships which bore the distinctive, equal-armed red cross as a symbol of their faith.

In 2016, the club celebrated its 150th anniversary with a week-long celebration of Portuguese cuisine and a black-tie gala ball. Having marked this major milestone, the future of Club Lusitano looks bright: membership has expanded with the admission of women members, the return of many Macanese from overseas, and more Portuguese nationals.

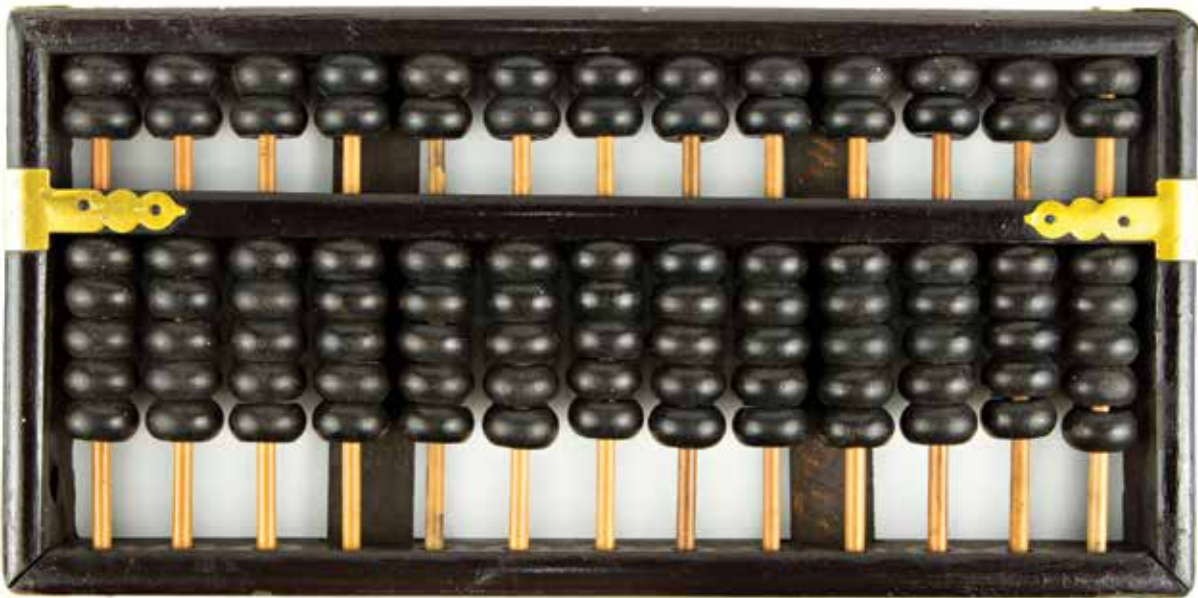
"In 2018, we will renovate the whole club," said Rozario. "We will reopen the library and probably knock down the wall separating it from the bakery. That way you can read while sipping a coffee and enjoying the fragrance of the bread." ●

Tradition

ZHUSUAN:

How the abacus became a worldwide phenomenon

Text Mark O'Neill Photos António Sanmarful



The abacus has been a tool of calculation widely used in China for nearly 2,000 years, and it is still alive in Macao.

The abacus has been used in China for millennia, and although its popularity has declined since the invention of hand-held electronic calculators in the 1970s, it remains in widespread use among traders and clerks in Asia and Africa, in shops, restaurants and street stalls. Family-owned stores in Hong

Kong and Macao, particularly those selling traditional Chinese medicine, use abacuses, and it is much the same in Chinatowns in North America.

Many factors contribute to the staying power of this ancient device – it's cheap to produce, easy to use, and requires no electricity—

but perhaps the most significant is the same factor that has cemented its place in Chinese culture. While the origin of the abacus itself remains unknown, China can claim the best and most widespread method for using it: zhushuan.

In 2013, the United Nations Educational, Scientific and Cultural Organisation (UNESCO), recognising the broad cultural impact and symbolic resonance of zhushuan—and by extension, the abacus—officially listed Chinese zhushuan as an intangible cultural heritage element.

Rise of mathematics

The abacus is the oldest and most widely used tool for calculation in the world, appearing

in Mesopotamia as early as 2700–2300 BC. Many early civilisations, including the Babylonians and Egyptians, utilised a rudimentary form of the abacus, but it was the Persians who exported the abacus to Europe and Asia.

The earliest record of the Chinese abacus, known as suanpan (counting tray), is an illustration from Supplementary Notes on the Art of Figures by Xu Yue. Published in 190 AD, the book also introduced zhushuan as a method for performing mathematical calculations with an abacus.

Zhushuan likely predates the invention of the decimal system by Indian mathematicians between the first and fourth centuries AD, and builds on a long tradition of mathematical innovation in China.

Close-up of an abacus





Kwan Kam Kuen, current owner of
Tack Sang San Yung Medicine Hong

The earliest surviving evidence of mathematics dates from the Shang Dynasty (1600–1046 BC) in the form of numbers scratched into tortoise shells. It was the most advanced number system in the world at the time, enabling calculations on number rods, and eventually, on suanpan.

Suanpan were typically constructed of bamboo with seven or more fixed wires or wooden rods affixed to metal reinforcements. Beads were attached to each wire or rod, organized into an upper and lower deck. The upper deck, known as heaven, carried two beads per rod or wire, each with a value of five. The lower deck, known as earth, carried five beads per rod or wire, each with a value of one. This was the 2/5 abacus and remained in common use until the 1850s when a 1/4 abacus went into production.

One of the most famous Chinese scholars of the abacus was Cheng Dawei (1533–1606). He published *General Source of Computational Methods*, an arithmetic guide for the abacus, in 1592. The book, which analyses 595 problems over 12 chapters, played a pivotal role in systematising and popularising zhusuan.

With more than 100 editions printed around the world, Cheng's book continued to influence mathematics and promote the spread of zhusuan for centuries. It reached Japan in 1600, pioneering the use of the abacus in that country. Each year a celebration is held there on 8 August to remember him. The most popular style of Japanese abacus (soropan) is the 1/4, which is still manufactured there.

By the end of the Ming dynasty, the book spread to Southeast Asia, Europe and the Americas, becoming the global foundation for developing the abacus.

By using an abacus, children in the east developed a clearer, more concrete grasp of figures. This type of abacus-based mental arithmetic is also thought to improve attention span, memory, and mental capability.

Moving into the modern era

For centuries, schoolchildren in the Chinese-speaking world, South Korea, and Japan learned zhusuan in their mathematics class. Research has shown that this method of instruction greatly improved their mathematical abilities and comprehension, enabling them to outperform their western counterparts. In the west, children typically learned mathematics through memorization, engaging with figures in the abstract. By using an abacus, children in the east developed a clearer, more concrete grasp of figures. This type of abacus-based mental arithmetic is also thought to improve attention span, memory, and mental capability.

In China, zhusuan competitions between students using the abacus remained popular throughout this time. But the arrival of cheap electronic calculators in the 1970s dealt a heavy blow to this ancient device. Companies in Japan, Europe, and the United States began producing light, portable calculators suitable for individual

use, which quickly spread across the developed world.

Most shops and markets switched to the new invention, and schools began to cease abacus-based instruction. While still in use in some corners of the world, the abacus largely shifted from a valuable tool to an object used as a symbol, gift, or piece of art.

Preserving heritage

At the 2013 World Heritage Congress, held in Baku, Azerbaijan, UNESCO officially listed China zhusuan—along with Korean kimchi and Japanese traditional cuisine—as an element of intangible cultural heritage. As of January 2017, China boasted 38 intangible cultural heritage elements inscribed by UNESCO, the most of any country. Other notable elements include calligraphy, paper-cut art, seal engraving, acupuncture, silk craftsmanship, several types of traditional opera, and the Dragon Boat Festival.

It is surprising that zhusuan was not recognised earlier. Often described as the fifth great invention—a reference to the Four Great Inventions: the compass, gunpowder, papermaking, and printing—zhusuan has permeated Chinese culture over the centuries. Beyond the practical use of zhusuan as a method of performing calculations, UNESCO pointed to its “vital role in giving an impetus to mathematical studies, promoting algorithmic practices, and fostering intelligence.” Even today it is credited with contributing to the “advancement of calculating techniques, cognitive schemas, educational psychology, and intellectual development. It also has a far-reaching influence in various fields of cultural creativity, including folk customs,

language, literature, sculpture and architecture.”

Let us leave the final word with scientist Huang Xuhua, broadly considered the “Father of China’s nuclear subs”, to remind us of the important place of zhusuan in the history of China.

In the late 1950s, Huang was working for the China Shipbuilding Industry Corporation when it received the critical, and secret,

mission of creating a nuclear submarine.

“Lots of critical data used in the development of the submarine burst out of the abacus,” he recalls. Armed with their abacuses and zhusuan, the team turned out five original designs in a period of just three months. “Scientists attacked the beads until every section reached the same result.”

The first submarine, the Long

March-1, was launched in 1970 and went into service four years later. Decommissioned in 2016, the submarine is now exhibited at the Chinese Naval Museum in Qingdao in east China. Huang still owns one of the abacuses used by his team, a testament to the critical importance of this tool, and the method that carried it – and China – from the second century AD into the nuclear age. ●

Flicking through time in Macao

Text Cathy Lai

The busy street of Rua dos Mercadores near Senado Square is home to some of the oldest traditional Chinese pharmacies in Macao. They are among the few remaining businesses that still use the abacus for calculation today.

Among them is Tack Sang San Yung Medicine Hong – “Hong” is a traditional name for a business – established 63 years ago by the Kwan family. Over the years, the Kwans have become a familiar name among local consumers of Chinese medicine, known for their quality products and medical treatments.



Kwan Kam Kuen, who inherited the business from his father, explained his preference for the abacus, offering insight into its continued popularity among traditional Chinese pharmacies:

“A prescription usually consists of more than ten different kinds of ingredients, such as herbs, minerals and sometimes animal parts, each at a certain price per gram. For me, it is more convenient to use the abacus for calculation, especially when the prices are sometimes going into decimal places.”

Abacuses are often constructed as a bamboo frame with seven or more columns of beads sliding on parallel rods, divided into an upper and lower deck. The pharmacist first calculates the cost of each ingredient with the columns on the right-hand side, then inserts the result to the columns on the left-hand side. After inserting the price of every ingredient, the pharmacist counts the beads on the left-hand side to find out the total cost. Some columns can be assigned to decimal places if necessary.

Kwan was a primary school student when he first came into contact with the abacus some 40 years ago. “I received abacus training when I was studying at Yuet Wah College. It was very common in local schools at that time,” he explained.

Memorising four sets of easy-to-learn formulas – namely for addition, subtraction, multiplication and division – allows users to calculate with great efficiency. Liu Wai Ming, an assistant in the pharmacy who also learned to use an abacus at a young age, said: “I do addition and subtraction faster with abacus than a calculator. I am just so used to it.”

Kwan has worked with the same abacus for more than ten years, its beads shiny from the constant rubbing and flicking “We still use the abacus every day,” he said. “It is something that once you have learned, you will never forget.”

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Sports

Emotions run high on the Guia Circuit

Text **Sandra Lobo Pimentel** Photos **Government Information Bureau and Xinhua News Agency**

Record-breaking crowds enjoyed a spectacular Formula 3 race to close the 2017 edition of the Macau Grand Prix.

The race weekend ended, as always, with the grand finale: the FIA Formula 3 World Cup. Motopark with VEB driver Daniel Ticktum took the top prize, snatching victory in the wake of a final lap that will go down as one of the most unpredictable in recent years.

Having come eighth in the qualifying event, Ticktum wasn't the favourite to win, and up until the penultimate lap, the British 18-year-old wasn't even in the podium line up.

The race started with Callum Iltott in pole position and Joel Eriksson, European runner-up in the category and Ticktum teammate, sharing the grid front row. Iltott lost the lead early on – even before the mythical Lisboa Bend – putting Eriksson in front. But with yellow flags indicating the third lap in the circuit still incomplete, his lead came to a dramatic end: Eriksson inexplicably stopped in the Lisboa Bend, letting the competition pass, with Sergio Sette Câmara taking the lead.

Pursued by two other racers, Maximilian Günther and Lando Norris, Câmara withstood the pressure. With four laps remaining, Carlin-run Ferdinand Habsburg overtook the pair, and the big showdown appeared reserved for Habsburg and Câmara.

Then Daniel Ticktum made the move that would take him to the top of the podium. In the penultimate lap, he manoeuvred an excellent simultaneous overtake of Günther



Daniel Ticktum, winner of the FIA Formula 3 World Cup

and Norris, taking control of third position in the race, while Câmara and Habsburg seemed locked in an epic battle for the championship title in Guia.

With pressure mounting, in the last corner of the race, Habsburg attempted an outside pass only to knock himself and Câmara off course, leaving the road free for Ticktum to cross the finish line and to be crowned champion in Macao.

Lando Norris came in second place and Estonian Ralf Aron, who started the race in 13th place, completed the podium. A dramatic end to an exciting race, capping off a weekend of triumph and tragedy at the Guia Circuit.

History of champions

The fastest lap in the 2017 edition went to Mick Schumacher, driving for SJM Theodore Racing, at 2:12.651. Son of Michael Schumacher, seven-time Formula 1 world champion and one of the best drivers in history, the 18-year-old German made his debut on the Guia Circuit and drew the attention of fans and media alike.

Winning in Macao is something of a family tradition: his father won on the Guia Circuit in 1990. Other famous winners, many of them exclusive to the competitive and restricted realm of Formula 1 drivers, include Ayrton Senna (1983), David Coulthard (1991), and Takuma Sato (2001) just to name a few.

The city circuit at the Macao Grand Prix has become a near-mandatory test in motor racing across the world, highlighting the stars of the future for more than 30 years.

Even without the title of champion on record, many drivers have experienced the Macao course. The city circuit has become a near-mandatory test in motor racing, highlighting the stars of the future for more than 30 years. Names like Mika Häkkinen, Jacques Villeneuve, as well as more recent Formula 1 champions such as Sebastian Vettel, Nico Rosberg, Fernando Alonso and Lewis Hamilton, have all passed through Macao in their early careers before cementing their place in the elite of the sport.



Mortara and Huff unbeaten in Macao

In the GT World Cup and Macao WTCC, victory again smiled upon two established champions on the Guia Circuit. Edoardo Mortara, the two-time Formula 3 winner, added a fourth win to his record at GT, while Robert Huff celebrated his record-breaking ninth Macao WTCC victory.

The penultimate round of the 2017 WTCC season took place in Macao, with Huff unlikely to take the title after a difficult season. Driving for ALL-INKL.COM Münnich Motorsport, Huff capitalised on his considerable experience in the Guia Circuit to secure pole position in the qualifying event.

The morning of the race was marked by rain, and Huff once again leveraged his knowledge of the circuit to dominate the race from start to finish. Honda's Norbert Michelisz hung back in second, seemingly sacrificing the points he could accumulate in Guia toward clenching the global title.

Argentine Esteban Guerrieri, the other Honda driver, and Tom



Chilton for Citroen battled for the other spots on the podium. Then Guerrieri made a mistake in the final lap and Chilton pounced, securing his third place win as he crossed the line just behind Michelisz. Championship leader Thed Björk finished a distant fifth.

Robert Huff's victory came to confirm what many in the auto racing industry hold as true: knowing the Guia Circuit is crucial, and there is no one better than Huff to claim that experience.

At 37 years old, Huff has been champion nine times with three different teams in his long career in the world of touring cars, and confessed that he feels lucky when he races in Macao.

Luck or experience was also to be found in the victory of Edoardo Mortara, known as Mr Macao, who

Mick Schumacher (right)

returned to the city to collect his fourth GT World Cup title.

The qualifying test to determine the starting grid was marked by one of the most spectacular crashes of the race weekend. A huge 12-car pileup in the opening lap of the qualifier wiped out more than half the field; only eight cars were able to take the restart, Mortara among them.

Driving for Mercedes, Mortara secured pole position with Brazilian Augusto Farfus for BMW in second place on the grid.

The race, also on a wet track, belonged to Mortara, whose leading position went unchallenged. Farfus fared far worse, forced to abandon his position in the race after suffering damages in a knock.

After the second caution period of the race, Audi driver Robin Frijns moved into the second place position, dogged by Maro Engel,



Edoardo Mortara, winner of GT World Cup

Robert Huff, winner of Macao WTCC

another Mercedes driver who initially failed to make it out of the pits. Engel recovered well to end the race in third place, up from eighth on the grid, with Frijns taking second. Only nine cars finished the 18 laps, the longest race in the Macao Grand Prix.

The sixth win for Mortara, it was his first racing for Mercedes-AMG, a fact highlighted by the driver, who also acknowledged that the crash in the qualifying event made it easier to surpass the competition.

Tragedy dampens Irwin victory

After a less-than-spectacular debut at the Macao Motorcycle Grand Prix last year, Irishman Glenn Irwin came to the 2017 edition motivated to steal the title from the usual candidates, such as veteran Michael Rutter or Peter Hickman, reigning champion two years running.

Irwin destroyed lap records, beating Stuart Easton's seven-year-old record by two seconds, putting the ambitious 27-year-old in pole position. Hickman began his race in second place on the grid, but

took the lead before the first corner. Irwin, undeterred, tried to overtake on the narrowest section of the circuit. He succeeded at the exit of the corner of Fishermen's Bend, realising his ambition for the first lap, to lead the race.

The thrilling race came to an abrupt end when a violent crash left Topgun Racing Honda rider Daniel Hegarty fatally injured. Hegarty came off his bike at a sharp bend in the sixth lap, crashing into the barriers and losing his helmet. The 31-year-old from Nottingham died on his way to hospital.

The organisation decided to end the race, counting as final classification the positions of the fifth full lap to the circuit. In a sombre podium ceremony, without anthems or champagne, organisers announced that Hegarty had succumbed to his injuries. Irwin, so eager to win going into the race, brushed off congratulations in favour of focusing people's support on Daniel Hegarty's family and team.

Peter Hickman and Michael Rutter completed the podium, taking second and third respectively.



Macau Motorcycle Grand Prix

Macanese shine in support races

The Macau Grand Prix saw two more races, involving local and regional drivers, with good performances by the representatives of Macao SAR.

This year there was a joint race in the CTM Macao Touring Car Cup, encompassing cars with cylinder capacity up to 1600 cc and over 1950 cc – a mix that left some concerned about safety. A total of 36 cars started the race, 18 from each category, with a safety car on the track for two laps

due to heavy rain.

Macao made a stronger showing with Leong Ian Veng, in the high cylinder category for Mitsubishi, dominating the race until the ninth lap when Lio Kin Chong, in 18th place, spun out. Leong braked, spinning into the barriers, but held onto first place when another incident in the second sector meant the race was red-flagged.

Felipe de Souza, also Macanese, contended for the title in the lower cylinder category, but gave up after a knock suffered near the curve of the Old Mandarin Hotel. It was up to Jerónimo Badaraco to ensure a Macao driver secured the top spot for the category. Half of the top ten finishers hailed from Macao.

The Chinese Racing Cup, also impacted by rain, saw only 11 cars finish. Macao driver Helder Assunção proved the fastest, a significant improvement on his fourth place finish in the qualifying round.

Assunção faced strong competition from the mainland China and Hong Kong drivers, but kept his head in the difficult conditions and managed to raise the Macao flag highest on the podium in another excellent edition of the Macau Grand Prix. ●



Culture

Conservator breathes new life into Ruins of St. Paul's statues

Text Louise do Rosário Photos António Sanmarful and courtesy of Cultural Affairs Bureau





Ian Miles, senior metals conservator at Artlab Australia

In November 2017, Macao began restoration of the seven bronze statues that grace the facade of its most famous landmark: the Ruins of St. Paul's, the last vestiges of a 17th-century church.

On either side of three arched windows stand St. Aloysius Gonzaga, St. Francis Xavier, St. Ignatius of Loyola, and St. Francis Borgia. The Virgin Mary stands above the central window, with the Christ Child above her, and the Holy Spirit in the form of a dove, above him. The statues, each tucked into the decorative facade, have withstood fires, typhoons, human curiosity, and the city's humid climate since they were placed at the front of the church in 1640.

The identity of the statues' sculptor is unknown, although Asian artists trained by the Jesuits

are believed to have worked on the decoration of the church. A famous cannon foundry existed in Macao, started by Manuel Tavares Bocarro in 1625, may have cast the statues.

"The sculptor did a very good job, enabling the seven to remain intact for nearly 400 years," said Ian Miles, senior metals conservator at Artlab Australia, who restored St. Aloysius Gonzaga and St. Francis Xavier last year. "We hope our conservation work will help to preserve them for another 400 years at least."

"This is one of the finest projects I have ever worked on. I thought of the Portuguese and the Age of Discovery and all those who have walked up the steps of St. Paul's," Miles enthused. "I am very passionate about cultural heritage and want to care for cultural material."

Finding the right match

The Cultural Affairs Bureau (IC) began looking for specialists to restore the statues back in 2015. They contacted Dr Donald Ellsmore, an eminent heritage architect and convenor for the Association for Preservation Technology International (APT) Australasia Chapter, who recommended several companies that specialise in this type of conservation.

As part of Macao's World Heritage Site, the Ruins of St. Paul's fall under the purview of the International Council on Monuments and Sites, a Paris-based professional association on the conservation and protection of cultural heritage places around the world. Under their rules, restoration work of this nature requires a global tender.

After considering the bids, the IC chose Adelaide-based Artlab Australia, one of a small number of

firms with the necessary experience in this particular field of restoration. It employs 26 experienced conservators with specialty skills in different types of cultural heritage objects.

Established in 1985, Artlab Australia is an organisation under Arts SA, which manages the South Australian government's funding for the arts and cultural heritage. As the largest conservation centre in the Southern hemisphere, Artlab handles everything from conservation programmes of the state's extensive collections to corporate clientele to private individuals all over the world.

Born in Britain, Miles studied building conservation before immigrating to Australia, where he completed further studies in conservation of cultural material. He specialises in sculptures, monuments, buildings, and large technology objects like vehicles or aircraft.

Moving the statues installed four centuries ago



Miles has applied his wide range of expertise to various institutional collections, including those of Museum Victoria, the Australian War Memorial, the Australian National Maritime Museum, and the Science Museum in London. He has worked on objects including a replica of the Apollo spaceship that landed on the moon, one of the first planes to make a long-distance flight, automotive items, and many outdoor sculptures.

Planning and execution

Miles and a colleague first arrived in Macao in November 2016.

“This is a World Heritage site and very significant,” Miles said of the Ruins of St. Paul’s. “These

are the last remaining objects of a building that burnt down in 1835. I have huge respect for the artefacts I work with.”

Jesuits built the structure, originally known as Mater Dei (Mother of God), in the early 17th century. The church, made of wood and rammed earth with stone walls, featured a spectacular stone facade with carved decoration incorporated both Portuguese and Chinese imagery. Set on the hillside, the splendour of the church was meant to express the triumph of the Roman Catholic Church.

In 1835, a fire ravaged the grand structure, leaving only the granite facade, parts of the walls, 68 stone steps, and other archaeological remains. The seven statues suffered only minor

damage, although some original elements are now missing, such as the angels and crescent moon surrounding the Virgin Mary.

Miles and his colleagues conducted lengthy historical research and careful testing before beginning work on the two statues. “They have survived 400 years,” he explained, “but you can damage them in an instant.”

Their research focused on collecting as much information as possible about the statues and their unknown sculptor: what materials did he use and how did he mix them together? Only then could Miles work out how to restore them.

The IC provided a team of eight to assist the specialists. They erected temporary scaffolding around the facade to allow for

closer examination of the figures.

Miles’ best lead on the statues’ creation was Manuel Tavares Bocarro, a sculptor and cannon maker who moved from Goa to Macao, where he set up a foundry to make cannons.

“The caster of the statues used a brass alloy of copper and zinc which included 13 per cent lead,” Miles explained. “This was a very unusual mixture. The lead has helped to preserve the objects, which are in very good condition. If he had used bronze, there would be green corrosion. Instead, we found greyish corrosion. There was more corrosion on the head, hands and feet, which were a little green.”

A letter from the Jesuits dated 1644 states that the heads, hands, and feet of the statues had been painted red while the vestments were gilded. That layer of gold on the vestments helped protect the statues from deterioration. The open backs did not; conservators found bird nests inside the statues. Bird droppings are highly acidic, leading to corrosion and staining.

Inspecting the rear of the statues, they found eyelets, likely used by the sculptor to lift the 400kg statues onto the facade. After confirming the strength of the eyelets, the conservators used them to tie the statues back to the facade after reinstallation.

Miles moved through the conservation process carefully, consulting with specialists in Canada and Australia to confirm his approach as the best possible option before continuing. “This work is a balance between science, technology, art history, and manual dexterity.”

The best course of action, he decided, would be to remove the dirt, bird droppings, and pollution

from the statues, then add a protective layer of wax coating to prevent water and oxygen from corroding the metal. Because of the high lead content, they had to use a hot air gun (similar to a hair dryer) to allow for a more controlled way of heating, as it is critical not to overheat the lead. Miles also decided to add netting to prevent birds from making nests within the statues.

The heads, hands, and feet of the statues had been painted red while the vestments were gilded. That layer of gold on the vestments helped protect the statues from deterioration.

The big day came to reinstall the two statues on 15 November last year – or rather, the big night. The IC elected to perform the operation in the middle of the night when there were no visitors, neatly avoiding any risk to passers-by. A special purpose-built cage was used to safely lift the sculptures.

“We planned the lifting carefully,” Miles said, noting the plan went off without a hitch. Once the two pieces were removed from the facade, the team did the necessary repairs, taking for each statue a week to complete the work.

Then they put them back up, this time fastening them to the walls, a step the original sculptor did not take. The protective wax

coating left the two statues slightly darker than they were before the work – a difference minor enough it may not be evident to visitors.

Two down, five to go

“There were challenges at every stage of the project. One was to get materials from Australia to Macao. Another was to write the treatment proposal, for a very strange metallurgy. Such a composition is not used in modern casting. It is unique and highly significant,” Miles explained, noting that the other statues could have a different metal composition.

As to the remaining five statues, the IC has not yet made its decision. There is at least one conservator eager to take the job:

“I would love to do the other five and would love to have long-term involvement,” Miles said. As part of his work on the two saints, he prepared a detailed report for the IC, which includes recommendations for the whole monument.

Beyond the technical challenge and cultural resonance of the job, Miles had high praise for the local eight-person team who assisted him and his colleagues during the project. “We could not have done the work without them. They did a fantastic job. We have trained the team – Macao can do the maintenance.”

The statues of St. Aloysius Gonzaga and St. Francis Xavier, painstakingly restored by Miles and his team, will be admired by millions for many years to come. Their work helps ensure that future generations will retain this visceral connection to Macao’s storied past, a remnant of the Portuguese Jesuit influence that continues to shape the city today. ●

Conservator Ian Miles restoring the statues



Argentinean film *Hunting Season* wins at IFFAM

Text **Christian Ritter** Photos **Government Information Bureau**

Hunting Season (*Temporada de Caza*), a 2017 Argentinean drama directed by Natalia Garagiola, took the top prize at the 2nd International Film Festival & Awards Macao (IFFAM) held in December.

An artfully nuanced coming-of-age story set in the wilds of Patagonia, *Hunting Season* explores the complicated relationship between a boy and his estranged father in the wake of his mother's death.

The film marks the directorial debut of Natalia Garagiola, a young up-and-coming filmmaker from Argentina. In accepting the coveted Best Film award, Garagiola said:

“When we watch film awards, this always happens to others so we had never imagined

that we would be standing up here to receive an award for my first feature film.”

Laurent Cantet and Michelle Yeoh, the festival's Actress in Focus, presented the award and US\$60,000 cash prize to Garagiola and producers Santiago Gallelli, Matias Roveda, Benjamin Domenech, and Gonzalo Tobal.

Garagiola later revealed that she is already working on her second feature-length film with the same producers as *Hunting Season*. The film centres on a woman doctor struggling between her faith and science in fulfilling her duties.

Hunting Season debuted on 2 September during the 32nd Venice Critics' Week of the 74th Venice International Film Festival where it won the SIAE Audience Award.



1. Director Natalia Garagiola accepting the award for the best film 2. Udo Kier received the Career Award 3. Helena de Sena Fernandes, MGTO director 4. Donnie Yen, Star of the Year award

Beast, Wrath of Silence, and Custody share top honours

Irish actress and singer Jessie Buckley won the Best Actress award for her performance in *Beast*, a British thriller set on the island of Jersey. The film's cinematographer, Benjamin Kračun, won the award for Best Technical Contribution.

The Best Actor award went to mainland Chinese actor Song Yang for his role in *Wrath of Silence*, a would-be revenge thriller set in the wilderness of the Middle Kingdom's far north. The mainland China production also won the Jury Prize.

Custody, an intense depiction of domestic violence and a child caught between divorcing parents, won two awards. French filmmaker Xavier Legrand won the Best Director award while Thomas Gioria, who plays 12-year-old Julien, won the Award for Best New Young Actor.

A total of 10 films competed for the 9 awards, with winners selected by a jury. French director Laurent Cantet headed the five-person panel composed of actress Joan Chen, writer-director Jessica Hausner, novelist Lawrence Osborne, and director Royston Tan.



Festival draws international stars

American actor Jeremy Renner, best known for his roles as William Brandt in the *Mission: Impossible* franchise and Clint Barton aka Hawkeye in the Marvel Cinematic Universe, led a star-studded international contingent for the opening night of the 2nd International Film Festival & Awards Macao.

Renner served as one of the festival's Talent Ambassadors alongside famed Hong Kong actress Miriam Yeung and Korean sensation Do Kyung-soo aka DO from the K-Pop group EXO, who walked the red carpet alongside producers, directors, and a bevy of actors from around the world.

About 800 guests attended the awards ceremony, hosted at the Macao Cultural Centre (CCM), including Social Affairs and Culture Secretary Alexis Tam, widely seen as the festival's prime mover, and Macao Government Tourism Office (MGTO) Director-cum-IFFAM Organising Committee President Helena de Senna Fernandes.

Renner received the East-West Actor of the Year award while the International Star of the Year award went to noted Hong Kong actor, filmmaker, and martial arts practitioner Donnie Yen.

The dynamic action star was recognized for his work in 2016 – including *Rogue One: A Star Wars Story* and *Crouching Tiger, Hidden Dragon: Sword of Destiny* – as well as his roles in *xXx: Return of Xander Cage* and Hong Kong crime drama *Chasing the Dragon* in 2017. Yen has five films slated for release this year, including the fourth instalment in the *Ip Man* series.

For the closing ceremony, IFFAM collaborated with Variety to spotlight eight Asian acting talents with the potential to



Jeremy Renner (centre) received the East-West Actor of the Year Award

become regional and global stars: Shioli Kutsuna (*Oh Lucy*), Ludi Lin (*Monster Hunt*), Chutimon Cheungcharoensukying (*Bad Genius*), Piolo Pascual (*Silong*), Celina Jade (*Wolf Warrior 2*), Ahn Seo-hyun (*Okja*), and Rajkummar Rao (*Newton*).

The festival, which ran 8–14 December, was organised by MGTO and the Macau Films & Television Productions and Culture Association, a non-profit dedicated to developing the emerging

cinematic scene in the city, in conjunction with special sponsor, Suncity Group.

According to IFFAM sources, the third edition of the festival in 2019 may include a segment on films from Portuguese-speaking countries and put more emphasis on Asian films. Sources also indicated that Mike Goodridge, former Screen International editor and film executive, will return as artistic director for the festival, a role he filled for the first time this year. ●

IFFAM Jury Prizes

Best Film: *Hunting Season* director Natalia Garagiola

Best Director: Xavier Legrand for *Custody*

Best Actress: Jessie Buckley in *Beast*

Best Actor: Song Yang in *Wrath of Silence*

Best New Young Actor: Thomas Gioria in *Custody*

Jury Prize: *Wrath of Silence* director Yukun Xin

Best Screenplay: Samuel Maoz for *Foxtrot*

Best Technical Contribution: Benjamin Kračun for *Beast*

Other prizes

NETPAC Award: *Angels Wear White*, director Vivian Qu

Macao Audience Choice Award: *Borg McEnroe*, director Janus Metz



Parade celebrates the establishment of the Macao Special Administrative Region

Text Christian Ritter

Photos Government Information Bureau and Xinhua News Agency



In December, some 1,350 performers dressed in colourful costumes and with big smiles on their faces livened up the city through a medley of dance, music and stunts in the Macao International Parade.

The “Macao International Parade” was organised by the Cultural Affairs Bureau to mark the 18th anniversary of the establishment of the Macao Special Administrative Region.

The parade, billed as a feast of “Love, Peace and Cultural Integration”, kicked off at the Ruins of St. Paul’s with performers dancing, playing music and showing off their stunts as they passed through the busy Largo do Senado, on to Nam Van Lake before ending in Sai Van Lake Square where each of the 64 participating groups, including 15 from overseas, got their moment in the spotlight as they performed on the big stage under a laser light show.

Around 150,000 people gathered along the parade route.

The budget for this year’s parade was about MOP16 million, MOP1 million more than last year. Most of the money was spent on sponsoring overseas groups and installations for the event. ●



History

Macao Museum remembers pivotal industries

Text Ou Nian Le Photos António Sanmarful

Match manufacturing procedure:
putting matches into boxes, 1950

The incense, matches, and firecrackers industries dominated the post-WWII economy of Macao until they were driven away by land shortages and high labour costs.

Three industries came to dominate the post-WWII economy of Macao: incense, matches, and firecrackers. Companies sold locally, and exported to Hong Kong, Southeast Asia, and the many overseas Chinese scattered across Europe and North America.

Thousands of people worked in these industries, some on the factory floor while others worked at home and on the streets, where children and old people completed parts of the production process.

Take a walk around the city today, and you won't find any bustling factories, just finished products sold in mom-and-pop stores and supermarkets. Like other once prominent industries, the production of incense, matches, and firecrackers has moved to the mainland, driven away by land shortages and high labour costs.

The Macao Museum explores this important period in *The Memorable Time – The Traditional Handicraft Industries of Macao*, an exhibition detailing the

economic and social impact of these industries, particularly in the post-war period. The exhibition combines guided tours and a number of activities with a curated selection of 210 pieces or sets, divided into six zones: one for each of the three industries, foreign trade, education and factory simulation, and a projection room. For many, the exhibit offers a vivid look into their own family history, parents and grandparents who toiled in these industries once central to Macao's economy.

The exhibition runs from 28 October 2017 to 25 February 2018. Four guided tours with curators are available this year: 6 and 10 January, and 10 and 24 February.

"We know that this is an important part of our history," said Gabriel U, a museum staff member who helped put the exhibition together. "It took six months to prepare. Former employees came to the museum for the opening. They were very excited to participate and feel part of the exhibition."

Traditional products become industrial base

After the British established Hong Kong in 1842, Macao lost its place as the major trade hub linking China to the outside world. It took the city decades to establish new industries to replace the lost trading, industries built on three traditional handicrafts already central to life in Macao: incense, firecrackers, and matches.

The incense and firecracker industries emerged first; records indicate both existed on a smaller scale prior the 1860s. "They started in Macao initially to meet demand from local residents," said U. "These products were an important part of daily life – in temples, traditional festivals, and for use at home."

Incense and firecrackers have been part of Chinese culture for millennia. Incense became part of Chinese religious practices at around 2000BC, and continues to be used as an offering or invocation in Chinese ancestor worship, Daoism, and Buddhism.

Firecrackers, invented by the Chinese around 200BC, had their own role in traditional life: the loud noise was believed to drive away devils and evil spirits, and lent excitement and a sense of occasion to Chinese New Year, weddings, birthdays, and other major events. The ubiquity of incense and firecrackers in local culture gave rise to a production



Firecrackers manufacturing procedures: adding layers (left) and trimming casings (right), 20th century

base in Macao long before the more industrialised, factory model came along in the 19th century.

Matches arrived in Macao much later. While the earliest record of matches dates back to 577AD in China, the modern, self-igniting match was not invented until 1805. Macao's first match factory opened in 1923, and by 1929, the three industries contributed a combined MOP2.9 million to the city's GDP, 40 per cent of total industrial output.

Production grew steadily over the next three decades, reaching MOP14.4 million in 1962. At that point, there were five match factories, nine firecracker factories, and at least 30 incense shops in the city, with 90 more retail outlets selling incense and paper goods.

Visitors to the city would see women and children, on the streets or at home, making their own contribution to the industries: braiding strings of firecrackers, rolling incense, and sticking labels on matchboxes.

Fragrant industry in Inner Harbour

Most of the raw materials used to make incense had to be imported: spices, incense powder, binder, cove, coloured powder, wrapping paper and, for some brands, sandalwood. Producers employed one of three production methods: paste rolling, powder coating or compression, the most efficient option. Factories sold their finished products to individual families, fishermen, abstinence halls, and temples.

Traditional festivals – Chinese New Year, Ching Ming, Chung Yeung, and the Mid-Autumn Festival – prompted the biggest sales, both locally and in exports to Hong Kong, Southeast Asia, and cities around the world with overseas Chinese populations.

Among the most famous incense producers was Leong Wing Heong. Founder Liang Shou-tian, a native of Heling village in Xinhui, Guangdong, had his headquarters on Rua de Cinco de Outubro, with a factory and a branch





Sandal wood

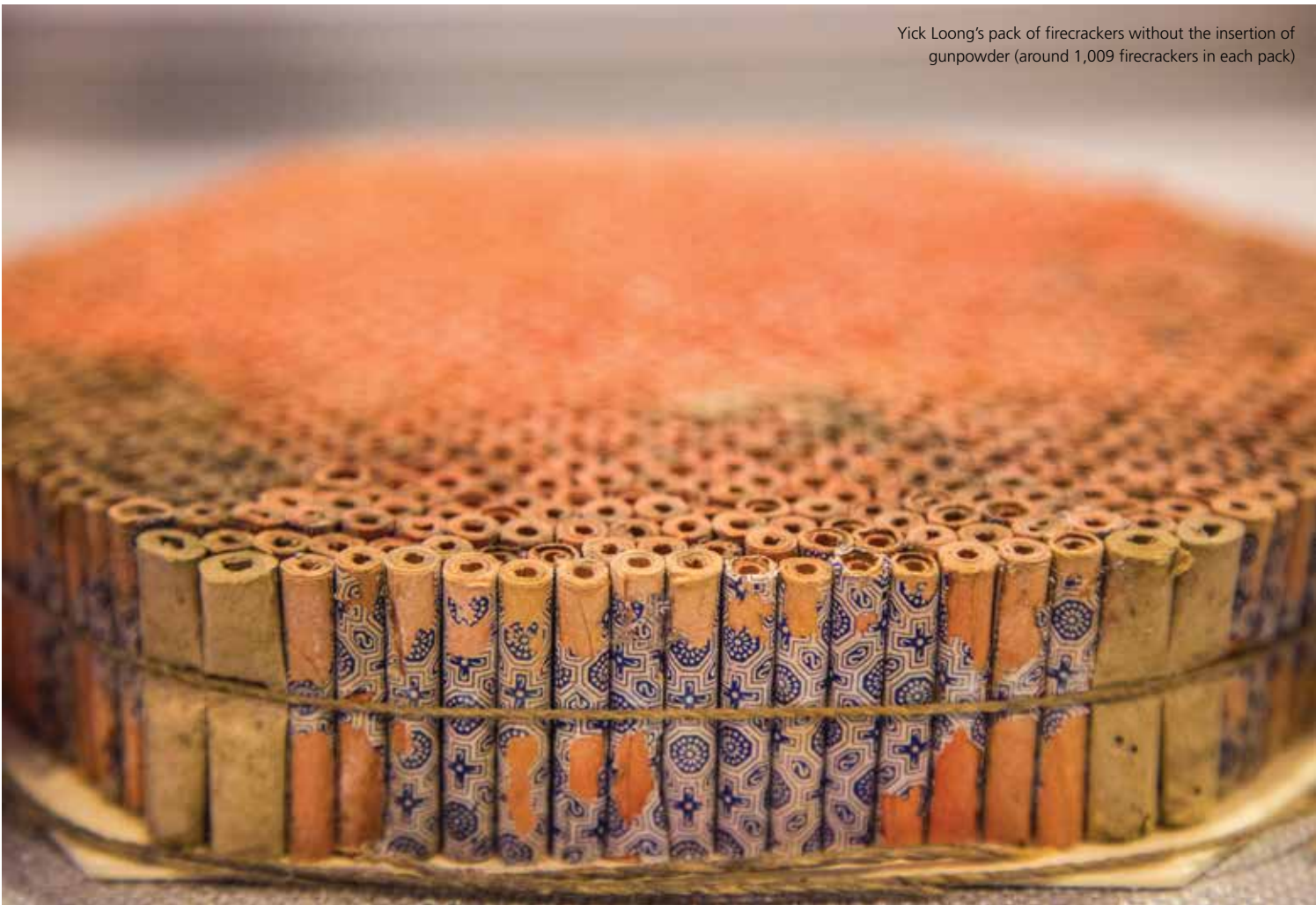
office. He had additional branches in Guangzhou and Hong Kong, and exported much of his production.

Most of the incense factories were located in the Inner Harbour district, especially the San Kio area, Rua de Entre-Campos, and Rua da Alegria do Patane. The district combined a sizeable population of available workers with the large land area needed to dry the incense, making it an ideal location for the industry.

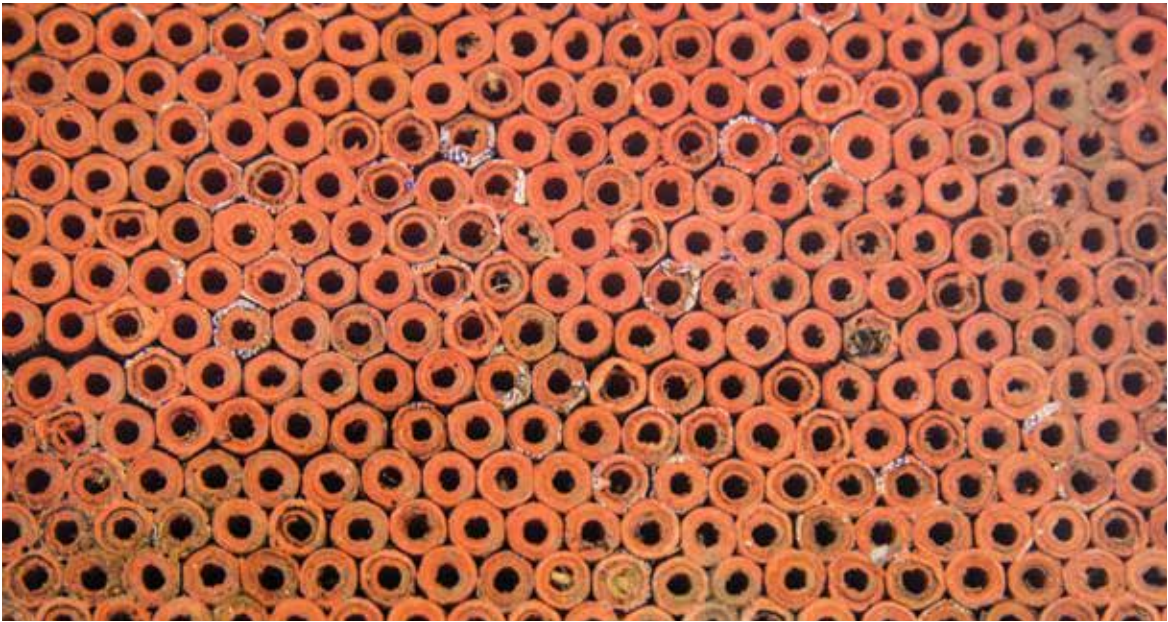
That all changed in the 1970s and 1980s, as rapid real estate development pushed industry out, turning the drying areas into construction sites for a growing Macao. The industry never recovered.

Prosperity at a price

Like incense, the industrialisation of firecracker production began in the 1860s. But manufacturing these small, explosive fireworks proved dangerous for workers. Many of the materials used were highly combustible, making safety procedures a must. Some processes were carried out in the dead of night because the materials would explode if exposed to sunlight. But with few alternative options for employment, the workers, including children, had little choice but to risk it.



Yick Loong's pack of firecrackers without the insertion of gunpowder (around 1,009 firecrackers in each pack)



In 1925, a devastating explosion at the Toi San factory killed about 150 workers and injured hundreds more; it was one of the most deadly fires in the city's history. The colonial government ordered companies to move their high-risk production to Taipa, which became the centre for manufacturing. People in the peninsula were limited to less dangerous finishing work.

The biggest of the six producers in Taipa was Kuong Heng Tai. At its peak, its plant accounted for one-fifth of the total land area of Taipa, employing thousands of people and producing millions of firecrackers each week. Founded in 1924, Kuong Heng Tai ended operations in 1974, an early victim of the changing economic landscape.

When China and Hong Kong banned manufacturing of firecrackers in the 1960s, Macao's industry boomed. Local companies exported their products to countries around the world, and played a major role in the local economy. But when those bans were removed and the Chinese market opened to the world in the 1970s, Macao found itself unable to compete against its new, lower-priced rivals. The last producer, Iec Long Fireworks Company, closed its doors in 1984.

Yick Loong firecrackers box





Gabriel U, a museum staff member

A striking piece of history

The match industry in Macao began later with the first factories opening in the 1920s, decades after the first Chinese factory had opened in Shanghai in 1877. But their late entry likely helped protect workers; early iterations of match manufacturing used chemicals that disfigured and killed many workers.

The Cheong Ming and Tung Hing factories, both established in the early days of the industry, lasted into the 1980s. At its peak, the local match industry produced 1.5 million boxes – 85 million individual matches – each day and employed thousands of workers. While most of the production was done by hand, the bigger plants had mechanical operation.

These plants exported their products to the mainland, Hong Kong, Southeast Asia, Malacca,

Mozambique, and South America. The match was an essential item in daily life, for cooking, lighting cigarettes, and burning fuel. It remained so until the invention of the Bic disposable lighter in 1973.

Labels became an important element in the industry as companies competed to create more distinctive and eye-catching designs. They carried many different images: the name of the factory, religious motifs, patriotic propaganda, animals, plants, and auspicious designs. These tiny pieces of graphic design, reflections of the world around them, are still prized among collectors today.

Like incense and firecrackers, matches retained an element of handicraft in their production. Work done outside the factories – in the homes of residents and on the streets – helped boost the popularity of matches in the city.

Match box labels



Fall of industry

A changing landscape pushed these three prosperous industries into decline, beginning in the 1960s. Urban development in Macao turned open land into homes, hotels and commercial sites, and drove up the price of land. The gambling sector, long present in Macao, began its rise to dominate the city's economy. Then China opened its doors in the 1970s, its cheap land and low labour costs prompting many manufacturers to move their operations to the mainland.

The 1970s also saw many Hong Kong industrialists set up garment and textile factories in Macao. It was cheaper than Hong Kong, and enjoyed surplus export quotas under the Multi-Fibre Arrangement (MFA). Many Macao workers moved to these new plants.

The manufacturing sector in Macao peaked in the 1980s, accounting for 40 per cent of Macao's GDP and 90 per cent of its physical exports. But the success of textiles and garments was short lived: China and Southeast Asia offered cheaper costs and the MFA was gradually phased out, ending

on 1 January 2005.

Today, Macao holds few reminders of the traditional handicraft industries that brought the city so much prosperity just two generations ago. To create *The Memorable Time*, Macao Museum assembled a collection of never-before-seen museum pieces, as well as artefacts from private collections and Macao residents, that illustrate a history all but erased from the city's landscape. In doing so, they offer a truly Macao story – the perfect subject to kick off celebration of the museum's 20th anniversary in 2018. ●

Chinese businessmen at the forefront of early modernisation

Text Mark O'Neill Photos Courtesy of Macao Foundation

In the short book *The Soul of Macao: A Study of Chinese Businessmen and Society in the Late Qing Dynasty*, Lin Guangzhi provides an insight into a group of businessmen, who modernised Macao in the Qing dynasty.

In 1894, a group of Macao businessmen opened a silk reeling factory, setting a new milestone for their community. With more than 800 men and women employed there, the factory was the largest industrial plant owned by Chinese in Macao.

It was one of five factories invested by Ho Lin-vong – the others made firecrackers, firecracker paper, and tea – and part of a much larger shift. Ho was one of a group of Chinese businessmen who rose to prominence in the latter half of the 19th century to lead the city's industry, commerce, and gambling.

Their work is celebrated in the short book *The Soul of Macao: A Study of Chinese Businessmen and Society in the Late Qing Dynasty*. Published by the Macao Foundation and Joint Publishing, the book details the modernisation of Macao during the final years of the Qing dynasty (1644–1911). By focusing on the Chinese population, author

Lin Guangzhi provides insight into the history of an important and often overlooked segment of Macao society.

The book describes how the Portuguese administration encouraged the formation and development of these businesses, so that by the 1860s, the city's economy was dominated by Chinese family companies.

They used their wealth to set up medical, educational, and welfare institutions for the poor and needy, and to establish associations that served as both a bridge between the colonial government and the city's Chinese population, and a spokesman for them. They also played a role in mediating business disputes and social conflicts.

Many of these institutions are flourishing today, including the Kiang Wu Hospital, Macau Tung Sin Tong Charitable Society and Macao Chamber of Commerce, fulfilling the same critical roles more than a century after their founding.

Chinese business blossoms

A survey by the Guangdong government in 1809 found that 3,100 residents of Macao, men and women, were engaged in commerce. Nearly all of them operated on a small scale, unable to compete with the larger foreign trade firms held by the Portuguese.

Then, on 20 November 1845, Queen Maria II of Portugal unilaterally declared Macao a free port. This opening of trade coincided with a push for greater colonial control under João Maria Ferreira do Amaral, installed as governor the following year. Amaral levied taxes and rent on the Chinese population, then expelled local customs officials, destroyed the customs houses, and cut off rent payments to the Qing government.

His actions aroused the anger of the Qing government and many Chinese, culminating in his assassination on 22 August 1849. A group of seven men pulled Amaral from his horse and beheaded him; he would be the only governor of Macao to be killed there in more than 400 years of colonial rule.

Despite this violent rebuttal, Amaral's policies continued under his successors. This included the publication of regulations covering business and commerce, and the issue of licences for different sectors, including gambling, opium, salted fish, beef, port, fireworks, and kerosene. Nearly all were issued to Chinese businessmen.

When Manuel de Castro Sampaio visited the city in 1867, he discovered “the key parts of Macao's trade” were in the hands of Chinese. Of the 40 large Chinese firms he found, 36 had their headquarters in Macao. Some had branches in the mainland, Singapore, Penang, and Thailand.

These family businesses

belonged to people whose ancestors had emigrated from the Pearl River Delta and Fujian province. The patriarchs ran them in the traditional manner, designating their sons as successors and employing members of their extended family to cut costs and ensure loyalty.

As it is today, gambling dominated local industry during the late Qing dynasty. Taxes from gambling accounted for about 50 per cent or more of government revenue most years, peaking at 75 per cent in 1884 and 1885. The government issued licences for specific forms of gambling to companies, with a time-limit on the successful bid, just as it does today.

Building a name on betting

The family of Ho Lin-vong was one of those with a gambling licence and a business leader. A native of Shunde, Ho's father came to Macao in the early 19th century. He obtained licences for fantan, still played in some Macao casinos, and Weixing. In the Weixing lottery, instead of a series of numbers, people drew names of candidates for the imperial civil service exams, winning if their candidate passed. The Ho family also traded opium and salt.

By the time he died in 1888, Ho senior had become a millionaire and one of the most famous names in the gambling sector. He left behind 10 children, including Ho Lin-vong and his only brother. They took over the family business, and during his tenure, Ho emerged as a pioneer in the development of industry in Macao.

Between 1882 and 1892, he partnered with other investors to open five factories, including the record-setting silk factory. He turned much of his wealth and time



Ho Lin-vong, Chinese businessman famous in the 19th century, led the city's commerce and gambling industry

Gambling dominated local industry during the late Qing dynasty. Taxes from gambling accounted for about 50 per cent or more of government revenue most years.

toward philanthropy, helping found two major charitable institutions: Kiang Wu and Tung Sin Tong. He was also active in Chinese politics, supporting revolutionaries such as Dr Sun Yat-sen and Kang Youwei. In November 1896, he established a newspaper and became its manager.

Ho campaigned against opium, which his family had traded in, and foot-binding. The family extended an invitation to Alicia Little, a British author and prominent voice against foot-binding, to visit their home after giving a speech in the city. Little was the leading European campaigner against foot-binding at the time, having founded the Tien Tsu Hui (Natural Foot Society) in 1898.

Her book describes the warm welcome she received in their large, European-style home with its luxurious decorations, art works, and billiard table. “But, sadly,” she wrote, “his eldest daughter still had her feet bound.”

Healing those in need

Another wealthy business pioneer was Cao You. A native of Xiangshan (now Zhongshan), he immigrated to Macao as a young man. He invested in the silk factory along with Ho and three others. After eight years of operation, it closed in March 1898; Cao had died two years earlier. His eldest son, Cao Shan-ye, who had taken over the family business, paid 3,010 yuan to buy the land and equipment of the factory.

Cao You was also one of the four founders of Kiang Wu Hospital, the first in Macao to serve the Chinese population. The four signed an agreement with the colonial government on 28 October 1871 to lease land and build the facility. Cao served as general manager twice, in 1874 and 1887.

The hospital opened less than a year later in June 1872. While the government provided the land, all other costs were covered by a



contingency of 71 businessmen and 152 companies. Kiang Wu offered traditional Chinese medicine to poor and needy Chinese who could not afford treatment from private doctors.

In 1892, it hired Sun Yat-sen as its first western doctor. Cao and his son strongly supported the work of Dr Sun at a time when western medicine, with its knives, needles and anaesthetics, seemed bizarre to most Chinese.

Cao served as one of six witnesses required to allow Sun to lease space for his Chinese/Western pharmacy, and in his will, deposited with the Hong Kong High Court in September 1896, Cao left 144 taels to pay for debts owed by Sun's pharmacy.

His son, Cao Shan-ye, went on to hold important posts assigned by the colonial government. One was as a member of a committee to welcome the future tsar, Nicholas II of Russia, in 1891. Nicholas visited the city as part of a more



Kiang Wu Hospital in 1872 (top) and in 2017 (bottom)

than 51,000-kilometre journey, from October 1890 to August 1891, designed to prepare the heir apparent for his future duties.

The transcontinental journey took him from Russia to Italy and Greece, then down to Egypt before travelling to India, Ceylon (now Sri Lanka), Thailand, and China. He visited tea plantations and factories in the Nanjing area before moving

Hosting a poll at the Kuan lam Tong Buddhist temple



on to Hong Kong, where he arrived on 4 April 1891. The visit to Macao came before his departure for Japan on 27 April. A failed assassination attempt in Ōtsu, Japan, cut his trip short; Nicholas II was the first, and only, tsar to visit Siberia and the Asia Pacific Region.

Charity and change

Another prominent businessman and philanthropist among the four founders of Kiang Wu was Wang Lu. Born in 1805, Wang's family were natives of Quanzhou in Fujian province who had come to Macao during the reign of Kangxi (1661–1722). The family primarily made its money from property, restaurants, pawnshops, trading, and the Macao staple, gambling.

Wang used profits from these businesses to build a large house and garden. He also donated generously to charity and Buddhist temples throughout his long life. By the time his family, along with 45 other business people, helped found Tung Sin Tong in December 1892, Wang was well into his eighties.

Decades earlier, in 1864, Governor José Rodrigues Coelho

do Amaral commissioned Wang to build a large theatre. The Qing Ping Theatre opened its doors in early 1875, the first large-scale performance venue for Cantonese opera in the city. It hosted an inaugural performance on the same day Wang celebrated his 70th birthday.

In the years that followed, the theatre presented many operas and eventually films, beginning in 1925. It also played host to important historical events. On 13 July 1909, the revolutionary Tongmenghui held a large meeting there for collective cutting of the pigtail. The Qing government required all male subjects sport the hairstyle, making its removal a popular form of rebellion among revolutionaries of the period.

A large queue formed. The Tongmenghui arranged an orchestra and singing, to create a more celebratory atmosphere, encouraging the audience to take that final step and cut their pigtails. This simple yet powerful protest created a new atmosphere in Macao that echoed throughout Guangdong province, a prelude to the revolution to come. ●

Tung Sin Tong building bought in December 1892 (left) and Tung Sin Tong building in 2017 (right)



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Zoom

Views from above

Photos **Hin-Lo Chan**

In recent years, drone technology has spread from the military into the mainstream, used in everything from disaster relief to competitive racing. For photographer Hin-Lo Chan, drones offer the ability to capture a truly bird's-eye view of the city. Planes fly too high, buildings stand still, but a drone can weave through the skyline as nimbly as a bird, revealing a fresh perspective on the familiar.

Hin-Lo Chan showcases this unique aerial view of the city in his latest exhibition, *The Surrounding Horizon*, organised by the Headquarters of the Macao Cultural Creative

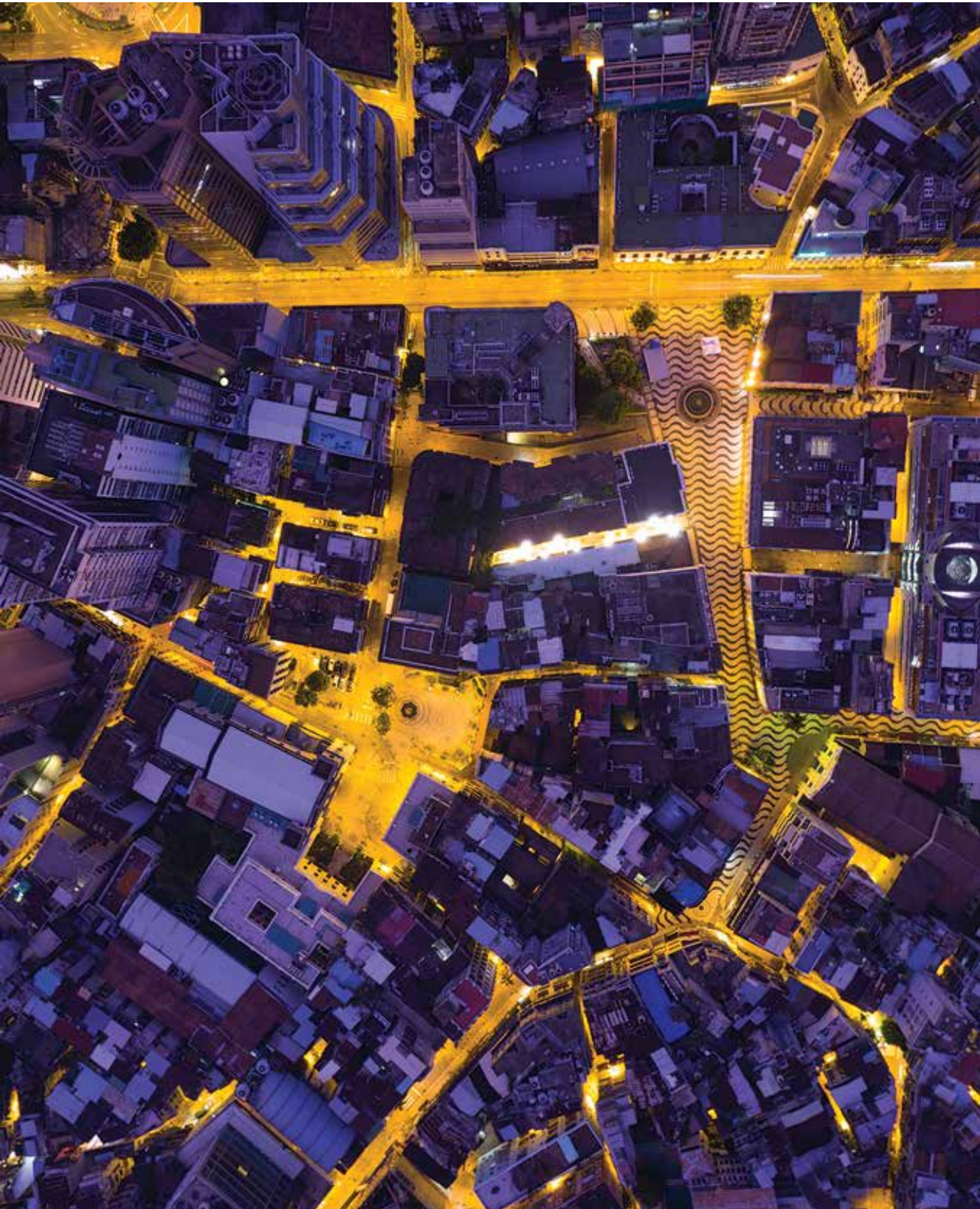
Industry Association and co-organised by Macau Creations ARTiculate.

One of the most active photographers in the city, Chan is well known for his ability to capture the culture, customs, and urban landscape of Macao. His works are part of collections held by the Macao Museum of Art and the Archives of Macao, but his latest project introduces a new dimension to our understanding of Macao, inviting audiences to experience the sensation of soaring over crowded streets, complex residential areas, lush parks, and so much more.

Fountain at Senado Square



St. Dominic's Square



Senado Square



Ruins of St. Paul's



Barra Square



Roundabout of Carlos Maia Area
(Three Lamps District)



Taipa Central Park



Roundabout of Carlos Maia Area
(Three Lamps District)



Ferreira do Amaral Square



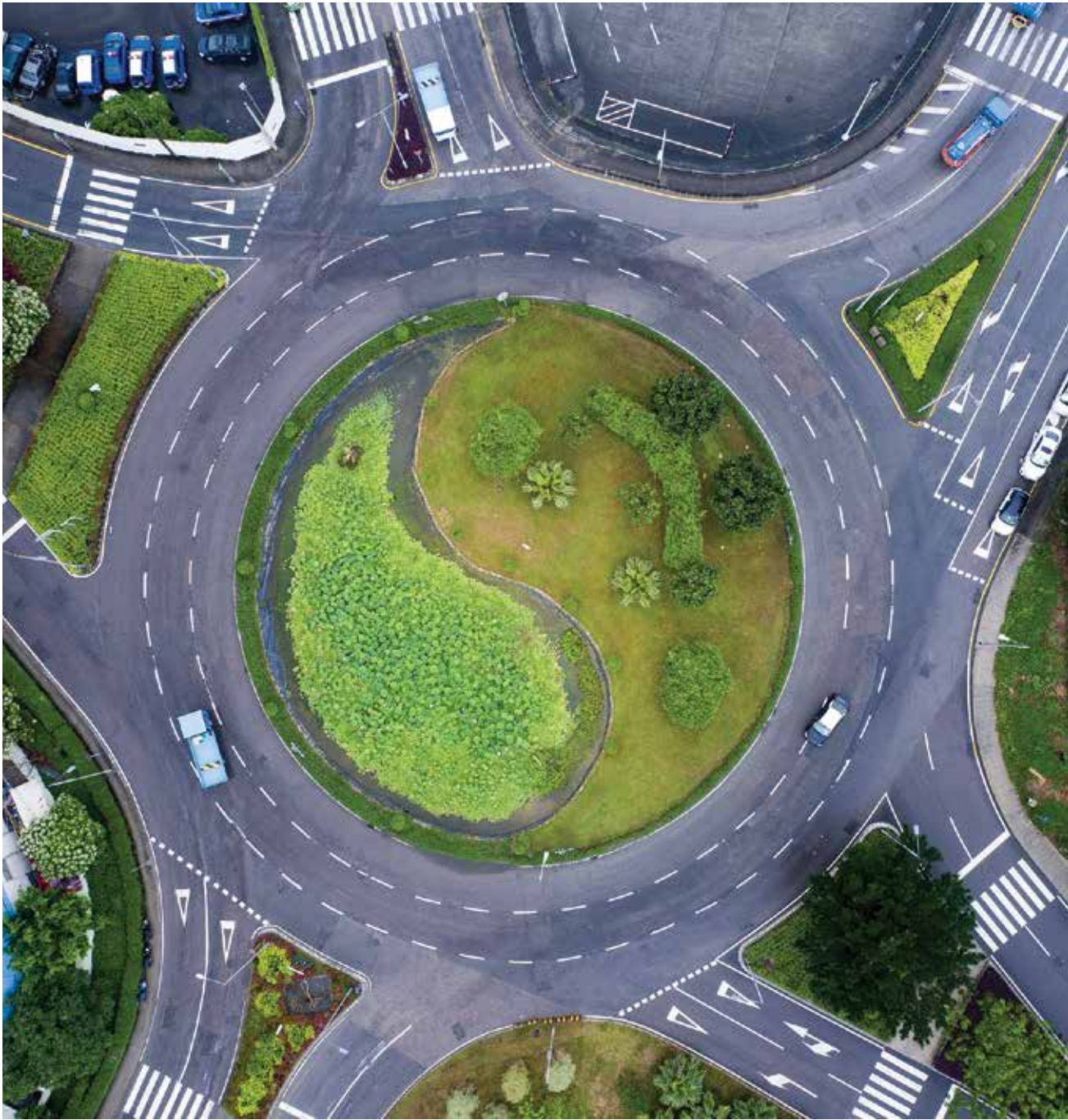
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Mong Ha Tin-clad Housing



Ilha Verde Junk Yard



Roundabout of Harmonia



Path of St. Lazarus Church



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