A faculty that models friendship

I recently wrote the piece below in response to an invitation from HKU’s Architectural Society (AS). It is tradition in HKU for its student societies to adopt a name and a mission for the year and to make something of this when the new executive committee is inaugurated. I share the piece with teaching colleagues and FoA friends to show that FoA’s goals extend beyond academic excellence. A university and its faculties and departments are communities that shape lives. It is good when the conversations we have with our students embrace the full scope of our university motto, which reads, in Chinese, mingde 明德 (to manifest virtue) and gewu 格物 (to investigate things); and in Latin, virtue and wisdom. Friendship can be both inward-looking and outward-looking, depending on your boundaries, purpose and attitude to others. Self-interested friendship is an evolutionary strategy within groups (strength of the clan), and between groups (clan alliances). But one of the great achievements of modern human civilisation is to have created sufficiently secure environments for individuals to build open and non-defensive friendships around multiple interests beyond family and clan. We are currently in a global social moment when defensive cultural boundaries are re-emerging. Shared educational experience has proven to be a powerful equalising, unifying, social class eroding and bridge-building device in modern history. Our AS student leaders want to spend their year in office building friendship and trust across the FoA student body. According to the QS organisation, which measures university KPIs globally, HKU is one of the most international in the world. That means we have huge potential for gains when turning our energies to building a culture of friendship. I hope we can all work actively and inspirationally with AS in support of this great vision.
Personal message from Professor Webster to Arkadaş, the 2021/22 executive leadership of HKU’s student Architectural Society

I was so glad to read the vision statement of this year’s AS executive. Arkadaş has set itself a noble task pursuing a much needed vision. Well done all. Let’s hope that after a year pursuing your vision of greater inclusivity, integration and friendship, Arkadaş will go down in FoA’s history as having opened up AS to the truly multicultural family that HK now is. Leadership is the best way to model vision. Leaders (political, company, student society, religious, etc.) who have personal integrity, inspire personal integrity among those they serve. If Arkadaş’s leadership truly believes in the ‘FoA friendship’ vision, which I am sure it does, then this will be a very exciting year. I am happy to work with you on appropriate collaborations between FoA teachers and AS, directed at your mission.

 Arkadaş is a great name (note the grammatical squiggle under the ‘s’ of the Turkish word means that this is pronounced ‘Arkadash’). I have close links with Turkey and while their president is known as one of the world’s contemporary strong-man populists and overly-powerful politicians, the country is often wrongly viewed as somehow all being tainted by the weaknesses of its governance system. Nothing could be farther from the truth. Countries by and large do not choose their leadership systems and in many ways, even in the so-called free liberal democracies, do not really choose their leaders. Some democratic systems are better than others. American democracy is widely regarded as being at something of a crisis point. Turkey comprises a liberal west coast and traditional central and eastern regions. It’s a wonder to many observers that friendship binds this ancient cultural geo-political entity together. But it does, supported by appropriate laws and practices.

Personal friendships are easy, unless they go wrong in which case they are among the most difficult and traumatic. Family friendships can be more tricky, because you don’t get to choose your family! Friendships across cultural, ethnic, national, regional, religious and political groups can be easy and wonderful at an individual level. But for leaders and influencers trying to break down long-developed divides, where legacy culture and status-quo norms shout otherwise, they are embarked upon both a truly noble ambition and a very difficult task. But it can be done. It can be done in different ways. Mahatma Gandhi, Nelson Mandela and MLK Junior were astoundingly successful by blending a mix of self-sacrifice, forgiveness, tolerance and the rule of love, with popular peaceful protest and patient dialogue. The Bretton Woods agreement that formed the World Bank and UN after WW2, and the EEC and EU that followed, were all attempts to avoid continuing and repeated conflict and achieve friendship via political and economic means. The ultimate end of the EU project is to achieve cultural homogeneity as a basis for friendship between countries that have been at war on and off for centuries. Ironically, the demand for politically-generated cultural, legal and fiscal union, has brought the ultra nationalists to their most powerful
position in Europe since the fateful 1930s. By contrast, Brexit Britain, with a popular suspicion of this ‘grand Europe’ approach to friendship by coercive rule of law, has been more easily able to negotiate on delicate internal politics. The result has been that the far right party in Britain was more or less laughed, maneuvered and voted out of existence in recent voting and is not the threat that the far right is in France, Italy, Greece, Hungary, Austria, Poland and elsewhere. Some methods of forging friendships between groups are more risky and less likely to succeed than others.

Sometimes small gestures can make big gains. Small seeds can grow into mighty trees. There is another organisation called Arkadiş. It aims to shine a light for friendship between Turkey and Israel. Jews have lived in Turkey for three millenia, and established strong communities there after bloody persecution and forcible eviction from France, Spain and other European countries in the late middle ages, and before that, from waves of persecution by occupiers of Palestine from Ancient Rome to the European Crusaders. In a small Israeli town, there is a statue of Ataturk, the founder of the modern Turkish nation. It’s a small gesture but an influential one. It shows that someone really does care about friendship between these two peoples while most eyes are on the growing politicial animosity expressed by national leaders.

So – very best wishes to FoA’s Arkadaş. I expect to see many small statues to friendship popping up around the faculty and many more seeds that cannot be seen right now but that will, over the next few years, grow into large trees under which FoA students from multiple backgrounds can find shelter and shade. Let me know what you think we can do together.

As always in Dean’s Roundup: congratulations to colleagues whose work is mentioned below. FoA’s teachers and researchers inspire in many ways. I plan to ask colleagues currently active in innovation and entrepreneurship to say something about their patents, spin-offs and other activities in the coming few DRups. In this issue, you’ll learn about Llewellyn Tang’s recent success at the Geneva Inventions exhibition, and about Jun Ma’s patents.

Chris Webster

Dean, FoA.
1. Welcome to the following academics and researchers, who have recently joined our Faculty or are now serving in a new role:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Bin CHEN</td>
<td>Assistant Professor, joined the Division of Landscape Architecture w.e.f. 31 March 2021.</td>
</tr>
<tr>
<td>Ulrich Nikolaus KIRCHHOFF</td>
<td>Serves in his new capacity as Associate Professor of Practice in the Department of Architecture w.e.f. 1 March 2021.</td>
</tr>
<tr>
<td>Dr Ka Man LEUNG</td>
<td>Post-doctoral Fellow, joined the Department of Real Estates and Construction w.e.f. 17 March 2021.</td>
</tr>
<tr>
<td>Dr Fabian Josef TERBECK</td>
<td>Post-doctoral Fellow, joined the Department of Urban Planning and Design w.e.f. 8 March 2021.</td>
</tr>
</tbody>
</table>
Dr Yulun ZHOU  
Assistant Professor, joined the Department of Urban Planning and Design w.e.f. 7 April 2021.

2. As of 13 April 2021, the following PhD candidates have been awarded the Research Grant Council’s Hong Kong PhD Fellowships (HKPFS) and/or the HKU Presidential PhD Scholarship (HKU-PS) in the 2021/22 admission exercise:

**HKPFS and HKU-PS Awardees**

<table>
<thead>
<tr>
<th>Name</th>
<th>Dept.</th>
<th>Primary Supervisor</th>
<th>Co-supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Dong Li</td>
<td>DUPAD</td>
<td>Professor Anthony Yeh</td>
<td>Dr Weifeng Li</td>
</tr>
<tr>
<td>Mr Dongsheng He</td>
<td>DUPAD</td>
<td>Dr Guibo Sun</td>
<td>Professor Chris Webster</td>
</tr>
<tr>
<td>Mr Mutu Tantrige Osada Vishvajith Peiris</td>
<td>DUPAD</td>
<td>Professor Anthony Yeh</td>
<td>Dr Jianxiang Huang</td>
</tr>
<tr>
<td>Mr Mingze Bai</td>
<td>DUPAD</td>
<td>Professor Shenjing He</td>
<td>Professor Kelvin Wong</td>
</tr>
<tr>
<td>Ms Yuquan Zhou</td>
<td>DUPAD</td>
<td>Dr Weifeng Li</td>
<td>Dr Jiangping Zhou</td>
</tr>
</tbody>
</table>

**HKU-PS Awardees**

<table>
<thead>
<tr>
<th>Name</th>
<th>Dept.</th>
<th>Primary Supervisor</th>
<th>Co-supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Benjamin Kwaku Ababio</td>
<td>REC</td>
<td>Professor Wilson Lu</td>
<td>Dr Frank Xue</td>
</tr>
<tr>
<td>Ms Xinhui Chen</td>
<td>DLA</td>
<td>Dr Cecilia Chu</td>
<td>To be confirmed</td>
</tr>
</tbody>
</table>
1. Dr. Kristof Crolla

- has been awarded the University Research Committee Small Equipment Grant 2020/21 for his project entitled ‘Equipment to support applied Augmented/Virtual/Mixed Reality inte\ration into current digital design and fabrication workflows’, at the amount of HK$559,579.83, for a project period of 36 months commencing 1 April 2021.

2. Dr. Eric Schuldenfrei

- has been awarded the University Research Committee Small Equipment Grant 2020/21 for his project entitled ‘Equipment for the Fabricaiton Laboratories to support an applied and sustainable digital fabrication workflow’, at the amount of HK$895,800, for a project period of 36 months commencing 1 April 2021.

3. William Tam and Stephen Chan

- are exhibiting their design projects at PMQ, to investigate built forms and search for the equilibrium confluence of conception with technique.

**In Search of Equilibrium**

The three projects on display are a series of wider practice and research work, designed by William Tam, Associate Professor of Practice at the Department of Architecture, HKU, and our alumnus Stephen Chan (MArch 2000), who also received the HKIA Young Architect Award in 2004. Two of the projects were completed, namely *Library Club* (2016) in Shunde (順德) and *Snow Lodge* (2018) in Niseko, Hokkaido (北海道二世古). *Infinity Library* (2019) in Dayi, Chengdu (成都大邑) is still at its detail design stage.

The projects investigate built forms and their resolution with narrative, context, function, space and tectonic, encouraging encounters, engaging movement and making everyday life attractive. Behind these projects is a search for the equilibrium confluence of conception with technique.
For further enquiries, please contact Ms Isabel Wong at isabel.wong@hku.hk.

Date: 4 April (Sunday) – 25 April (Sunday) 2021  
Time: 10:00am – 8:00pm  
Venue: S507, 5/F, Staunton (Block A), PMQ, 35 Aberdeen Street, Central, Hong Kong

Library Club (2016) in Shunde is inspired by duckweed in Lingnan (嶺南) countryside; the building sinks whereas lawns extend to the interlacing, round-cornered roofs. The organic flow of the canopies, landscape, light and shadow build a three-dimensional garden, where local clay bricks are made convex/concave and spaced to create ever-changing transparency.

Snow Lodge (2018) in Niseko, Hokkaido is next to a ski resort where summer pastures are covered by winter snow. The streamlined architectural language inspired by skiing echoes the internal spatial sequence whilst its glass walls reveal and reflect movement. Along with its natural building materiality, the southeast-facing balcony opens to Mount Yotei, strengthening the relationship between man and nature.

Infinity Library (2019) in Dayi, Chengdu uses the infinity symbol to form a Mobius Strip, signifying the boundary-free course of pursuing knowledge. The bookshelves are part of the structure, so that taking a book out is to glimpse the natural world beyond. The stepped circulation follows the hilly landscape; its floor warps into a bridge with views to paddy fields. Within the loops are two courtyards mimicking terraces and reflecting the sky through its pond.

Video interview: https://www.arch.hku.hk/event/in-search-of-equilibrium/
1. Ir Dr Llewellyn Tang

- BIM Warehouse of Llewellyn and Partners Company Limited (LPC) won Silver Medal at the 2021 Special Edition of The International Exhibition of Inventions of Geneva (IEIG). It is invented by Ir Dr Llewellyn Tang and the LPC team.

Mr Alfred Sit, the Secretary for Innovation and Technology of the Hong Kong SAR Government, sent a congratulatory letter on 31 March 2021.

**BIM Warehouse** formulates a new AEC business model. It is a B2B2C e-warehouse and e-commerce platform to house AEC assets within an ISO-compliant asset information management platform (AutoCDE) that integrates BIM, GIS, IoT, A.I. and Blockchain. Its A.I. functionality (AutoBIM) can generate a semantic 3D BIM model. Powered by its blockchain (AEC2hain), it is a solution to AEC and real estate tokenisation. BIM Warehouse optimises the processes and unifies the industry's supply chain for higher cost efficiency and security. It empowers the sector for a new construction normal in digitalisation, standardisation, integration and industrialisation.

This year’s competition is a first-ever special virtual-only edition of IEIG, one of the most significant global annual events devoted exclusively to inventions. Around 600 inventions from about 20 countries were evaluated on virtual platforms by an international jury of specialists from 10 to 14 March 2021.

- gave a webinar at Technology Transfer Office’s HKU Technology Transfer Primer on 17 December 2020, as one of the Technology Startup Support Scheme for Universities (TSSSU@HKU) awardees 2020. In the webinar, Ir Dr Tang talked about his start-up company (LPC) and the latest technology, recent milestones and entrepreneurial journey with the support of HKU TTO: https://www.tto.hku.hk/event/technology-transfer-primer-highlight-on-tsssu-hku-awardees
- was featured in HKU Technology Transfer Office’s (TTO) e-Newsletter TechXfer Issue 9 (published on 22 March 2021), on his successful story of the perfect concoction of BIM, A.I. and Blockchain Technology: https://www.tto.hku.hk/news/tto-e-newsletter-techxfer-issue-9-2021

- was interviewed by HKET on 9 April 2021:

【建築數碼化】HKU 建築學博士結合國際經驗 建公司提高本地建築 BIM 標準: https://inews.hket.com/article/2926686/【建築數碼化】HKU 建築學博士結合國際經驗%E3%80%80%E3%80%80%E3%80%80建公司提高本地建築 BIM 標準
Featured news and stories of his start-up company (LPC) at HKU TTO:
https://www.tto.hku.hk/news/bim

- was featured in an article on Ming Pao, 17 September 2020, where he shared his views on knowledge exchange, BIM innovation and entrepreneurship:

- gave an online workshop on BIM, Common Data Environment (CDE) and ISO 19650, on 8 and 15 January 2021, to all Year 3 and Year 4 Surveying students. The workshop was to keep students up-to-date with the latest international and local practice on the use of BIM and other latest digital technologies, for through-life project and asset management.

Upon finishing the workshop, each participating student received a CPD Certificate issued by the Department, which served as one-day education requirement of the CIC-Certified BIM Manager Scheme.
- was honoured as ‘BIMer 2020’ by the Construction Industry Council (CIC) at the Celebration of BIM Achievement 2020, held virtually on 10 November 2020, for his transformative achievements in unleashing the potentials of BIM in his over a decade of R&D and teaching experience in the UK and China.

In the ceremony, Ir Dr Tang talked about his early dedication to the research of artificial intelligence and digitalisation in the UK, which had rooted his ambition in shaping the new era of a smart city, launched his journey in introducing the UK BIM Level 2 into China, where he led the formulation of the strategic framework of smart infrastructure based on BIM, GIS, IoT and Blockchain technologies. As a founder of Llewellyn and Partners Company Limited (LPC), with the support of HKU, he continues his passion in his hometown, Hong Kong, to empower individuals, brands, and the community with cutting-edge digital solutions, training and cross-border synergies.

https://www.linkedin.com/posts/construction-industry-council_outstanding-bimers-winners-showcase-activity-6757442873983016960-EH7w

- gave a talk for the Faculty of Architecture on 4 December 2019, titled ‘ISO 19650 – An International BIM Language Shaping Surveyors’ Role for Industry Integration, Workflow Digitalization, and Innovation’. 
published an article to share his experience on bringing the first ISO 19650 standards on BIM and innovative information management into China:

2. Ir Dr Llewellyn Tang and Dr Greg Chan

- Llewellyn and Partners Company Limited (LPC), as a building information modelling (BIM) innovation start-up of HKU, has been commissioned by the Construction Industry Council (CIC) to conduct the world’s largest industry-scale BIM Adoption Survey 2020 for the architecture, engineering, construction, owner and operator (AECOO) industry of Hong Kong. The Survey has reached 1,497 organisations and received 483 responses in the seven stakeholder groups below:

i. Government Departments
ii. Statutory Bodies
iii. Main Contractors
iv. Subcontractors
v. AEC Consultants
vi. BIM Consultants
vii. Real Estate Developers and Asset Owners

This report, led by Ir Dr Llewellyn Tang and Dr Greg Chan, will serve as an essential benchmark for the industry to maintain its competitiveness on how BIM can be adopted successfully in the next 3-5 years in Hong Kong. An overall 4% improvement in BIM adoption is found compared to the result in 2019.

Other key findings include:

- Support for small and medium enterprises (SMEs) BIM adoption
- Push-pull approach for private sector
- Key Performance Indicators (KPIs) for the push-pull approach (4% improvement in BIM adoption; 5% improvement in BIM index; 12% improvement in BIM maturity; 30% improvement in top 6 BIM uses; and 39% improvement in BIM uses with 50%+ benefits.)
- Investment for the BIM talent
- OpenBIM approach and Common Data Environment
- Culture change for SME leaders
- A showcase of BIM leaders with innovative practices
Reference:


Public-facing report:


Related webinars:

https://www.bim.cic.hk/zh-hant/events/detail/276
https://www.bim.cic.hk/en/events/detail/331


Following a strategic cooperation between the Faculty of Architecture, British Standards Institution (BSI), and Professional Construction Strategies Group (PCSG), the three parties jointly held the Digital Infrastructure and Construction Summit 2019 on 25 April 2019.

As the CIC-Certified BIM Manager and CCBM Assessment Panel member for the Construction Industry Council (CIC), Ir Dr Tang designed the Global BIM Manager Professional Training Course with his team and BSI, which was recognised as a CIC accredited BIM Manager Course. Led by Ir Dr Tang and Dr Greg Chan, the team had trained over 160 delegates from over 40 units from both public and private sectors from Hong Kong, China and Malaysia.
3. Professor Lynne DiStefano

- co-edited with Dr Katie Cummer, a recent publication titled *Asian Revitalization: Adaptive Reuse in Hong Kong, Shanghai, and Singapore*.

Apart from Professor DiStefano and Dr Cummer, Lavina Ahuja, Hugo Chan, Fredo Cheung, Dr Ho Yin Lee and Dorothy Lau have also contributed in various areas, including indexing, of this book project.
Abstract:

Adaptive reuse refers to reusing an old building for a purpose other than which it was originally built or designed. This conservation approach has become increasingly popular around the world. However, there are few publications that focus on its application in Asia. This book fills this gap by looking at both unique and shared aspects of adaptive reuse in three Asian urban centers: Hong Kong, Shanghai, and Singapore. Building on government policy documents and extensive field work, this book contextualises adaptive reuse in each city and reveals the impetus behind a wide range of projects from revitalisation in Hong Kong, commercial development in Shanghai, to community building in Singapore. The introductory chapter sets adaptive reuse within an international perspective, noting salient differences and similarities between Asia and other parts of the world. It also anchors the discussion within a regional perspective, focusing on the similarities and differences between Hong Kong, Shanghai, and Singapore. Each of the following four essays addresses a specific topic about adaptive reuse, including its relationship to urban development and sustainability, how it benefits heritage buildings, and how it reveals best practices in heritage conservation in Asia. The subsequent three essays, one for each city, supplemented with timelines, set out a clear framework for understanding the city-specific case studies that follow the essays. Afterwards, fifteen representative projects across the three cities are presented as in-depth case studies. The pairing of essays and case studies provides a detailed understanding of each city’s approach to adaptive reuse in the twenty-first century; a time when the need for sustainable development solutions are at the forefront. Intended for classroom use and professional readership, this book will be of considerable value in Asia, as well as elsewhere, providing material for stimulating and worthwhile discussion.

More information: https://hkupress.hku.hk/pro/1798.php
1. Dr Jun Ma

- has obtained two patents related to his research:

(i) A new image-based Quick Response code (QR code); Chinese patent, ZL 2017 1 0134207.1

This patent is for a new type of 2D Quick Response code. Instead of black-and-white bricks, the new code stores 1/0 information using cross angle colour difference. This technique can turn black-and-white QR codes into self-defined images, upgrading the traditional QR system into a new tool for offline and online commercial marketing and income generation.

(ii) An intelligent waste sorting system; Chinese patent, ZL 2016 1 0337301.2

This patent is for a waste sorting system using computer vision and robotic arms. It can help identify different types of recyclable solid wastes and classify them in real time using robotic arms.

The two patent applications above were filed five years ago, went through rigorous application processes until recently being awarded. The patented technologies have since been advancing in order to make ongoing impact in society, while having received more than 20 awards at municipal and national entrepreneurship competitions, including First Prize at Inno China (2015), Third Prize at Alibaba International Innovation Competition (2015) and the China Innovation and Entrepreneurship Competition of Hong Kong, Macau and Taiwan (2017). It is anticipated that their concepts and related products will be widely accepted by the market in the near future.
Centre of Urban Studies and Urban Planning

1. Dr. Weifeng Li and Xuehui Pi (PhD student)
   - have published the following papers:


   **Abstract:**

   As essential parts of the unique ecosystem of Tibetan Plateau (TP), the sizes and associated physical properties of alpine lakes have long been investigated. However, little is known about one of the most critical biogeochemical properties, i.e. the Chlorophyll-a (Chl-a) concentrations. Here, for the first time, we presented a comprehensive investigation of the temporal–spatial variations in Chl-a in 82 lakes (>50 km²) across the entire TP region, based on MODIS observations in the period of 2003–2017. The results showed that the 82 lakes exhibited an average long-term mean Chl-a of 3.3 ± 3 ±3.3, with high Chl-a lakes concentrated in the eastern and southern inner TP basin and northeastern parts of the TP. An interannual trend analysis revealed that lakes exhibiting (significantly) decreasing Chl-a trends and (significantly) increasing Chl-a trends were comparable in numbers but differed in distribution patterns. A correlation analysis indicated that at least 70% of the interannual variability in Chl-a values of lakes was significantly correlated with one of the four environmental factors (wind speed, ice cover duration, lake water surface temperature and surface runoff) and lake size. In addition, glacier meltwater tended to reduce lake Chl-a while salinity levels showed minor influences.


   **Abstract:**

   Lakes are essential components of the water cycle and ecosystems. Therefore, the ecology and water security of lakes is of great concern. However, on the Tibetan Plateau (TP), which is known as the Asian water tower, knowledge of lake water quality is in its infancy. In this study, we developed a Moderate Resolution Imaging Spectroradiometer (MODIS)-based Secchi disk depth (Zsd) retrieval model and used the proposed model to study the temporal and spatial dynamics of water clarity in 64 lakes (>50 km²) located on the TP during the 2003–2018 period. The results show that the 64 lakes have an average long-term mean Zsd of 4.4 ± 3.0 m, where lakes in the northern TP generally exhibited lower Zsd levels than those located in the southern and northeastern parts of the TP. Among all selected lakes, the number of lakes showing (significantly) decreasing Zsd change trends was approximate to those showing (significantly) increasing change trends. Nevertheless, the two trends exhibited different spatial patterns. An analysis of the potential links between lake Zsd and environmental factors suggests that lake expansion is an essential factor affecting the increase in lake Zsd, while such an impact may be offset by the increase in phytoplankton.
induced by climate change in lakes showing a significant $Z_{sd}$ decreasing trend. In addition, land use types are partially responsible for the $Z_{sd}$ disparities between different lakes since lakes with high $Z_{sd}$ commonly occurred with high vegetation cover in their surrounding areas, while glacial melting and hydrological networks showed minor influences. This study is expected to enhance our understanding of lacustrine environments in TP and other global alpine lakes under the scenario of climate change.

2. Dr. Weifeng Li
- has published the following papers:


**Background**
It remains uncertain whether socioeconomic factors modify the effect of air pollution on human health. Moreover, studies investigating socioeconomic modifying roles on the effect of PM1 are quite limited, especially in developing countries.

**Objectives**
The present study aims to investigate socioeconomic modification effects on the associations of the incidence rate of male lung cancer with ambient PM1 and SO2 in China.

**Methods**
We conducted a nationwide analysis in 345 Chinese counties (districts) between 2014 and 2015. In terms of multivariable linear regression models, we examined the modification effects of urban-rural division, education level and proportion of construction workers in the stratified and combined datasets according to the tertile and binary divisions of the three factors. Moreover, we performed three sensitivity analyses to test the robustness of socioeconomic modification effects.

**Results**
We found a larger effect of PM1 on the incidence rate of male lung cancer in urban areas than in rural areas. The association between PM1 (or SO2) and the incidence rate of male lung cancer was stronger in counties with low education levels than in those with high education levels. The findings of the significant modification effects of urban-rural division and education level were robust in the three sensitivity analyses. No significant modification effect was observed for the proportion of construction workers.

**Conclusions**
Male residents in urban areas have a high risk of lung cancer incidence associated with ambient PM1. Male residents with low education levels suffer from larger effects of PM1 and SO2 on the incidence rate of lung cancer. Area- and population-specific strategies should be developed to reduce the urban-rural and educational disparities in air pollution effects, which thereby alleviates air pollution-associated health disparities in China.

**Abstract:**

Accurately measuring the costs and social benefits of environmental programmes may have significant public sector policy implications. When considering environmental programmes, governments may choose to conduct landfill clean-ups to improve urban living environments and health. However, these programmes may generate substantial costs, and it is not clear whether their social benefits can recover these costs. Since the 1990s, the Hong Kong government has restored 13 closed landfills. This study seeks to quantify the short-term social benefits of this landfill clean-up programme by measuring its impact on the housing market. Using the difference-in-differences method, we find that housing prices near landfill sites increase about 2.2%, on average, within two years after landfill restoration. However, housing prices show no further change after the restored landfill sites are redeveloped into urban parks and other facilities. We argue that removal of the stigma effect is likely the main channel for housing price hikes. Through a back-of-the-envelope estimation, we find that the social benefits from housing value appreciation can sufficiently recover the programme costs.
i5 BIM Research Group

The i5 BIM Research Group studies the state-of-the-art and cutting-edge R&D contributions of A.I. technologies to Building Information Modelling (BIM) for the delivery of future smart assets. The main research goal of the Group is to simulate virtual representations of real-world assets to enable ‘better’ decision-making throughout life for the Architecture, Engineering, Construction and Operations (AECO) industry. The four core ‘I’s are Internationalisation, Innovation, Interdisciplinary and Impact, which realisation is based on the University’s vision for 2016-2025: ‘(3+1)Is: Internationalisation, Innovation and Interdisciplinarity, which converge to create collective Impact.’ The fifth, final ‘I’ is A.I.

Funding/Grant:

- In May 2020, the Group was awarded the Innovation and Technology Fund (ITF) by the HKSAR via the Technology Start-up Support Scheme for Universities (TSSSU), to commercialise the BIM Warehouse project. Ir Dr Llewellyn Tang’s start-up, LPC, subsequently received a three-year grant from the Hong Kong Science and Technology Parks (HKSTP) in August 2020.

Student Achievement:

- Mr Mengtian Yin (REC PhD student jointly supervised by Ir Dr Llewellyn Tang and Dean Chris Webster) was awarded at the Chi Sun Hack 2019 competition for his project ‘Credit-based Solar Energy Optimization System’.

Published Refereed Journal and Conference Papers:


**Keynotes and Talks:**

(i) Invited by the Hong Kong Trade Development Council and Asian Financial Forum, Ir Dr Llewellyn Tang presented on 19 January 2021 his vision for the AEC industry and how his start-up company’s revolutionary R&D digitalisation solutions empower the smart city for the construction’s next normal.

(ii) Ir Dr Llewellyn Tang gave an online talk for the Construction Industry Council, at the CDE Webinar Series: Webinar on Visualization and Integration Hub, on 10 July 2020. Watch the webinar at: [https://www.bim.cic.hk/zh-hant/events/detail/243](https://www.bim.cic.hk/zh-hant/events/detail/243)

(iii) Invited by the Hong Kong Institute of Housing (HKIH), Ir Dr Llewellyn Tang gave a talk on ‘ISO 19650 – An International Building Information Modelling (BIM) Approach for Better Asset Management’, on 22 December 2020.
(iv) Ir Dr Llewellyn Tang gave a keynote on ‘Cultivating Digitalization Talent for the Next Normal in Construction Industry’, at the 11th Digital Annual Building Summit, on 27 August 2020, for Glodon Company Limited. The presentation was well-received by more than 12,000 delegates online globally.

(v) Ir Dr Llewellyn Tang gave an online talk for the Construction Industry Council, at the BIM X CITAC Common Data Environment (CDE) Webinar Series: An Overview of a CDE, on 28 April 2020. There, he gave an overview of a CDE workflow, solution, information management principles and its R&D for the AECO industry. Watch the webinar at: https://www.bim.cic.hk/zh-hant/events/detail/206

(vi) Ir Dr Llewellyn Tang presented a paper titled ‘ISO 19650 – An International Approach to Support the Creation of Digital Twins for Better Asset Management’, at the HKIBIM 10th Anniversary Conference: from BIM to Built Asset Information Management, on 9 January 2020, Hong Kong.

(vii) Ir Dr Llewellyn Tang gave a talk titled ‘ISO 19650 – An International BIM Language Shaping Surveyors’ Role for Industry Integration, Digitalization and Innovation’, at the HKIS BIM Conference, on 13 December 2019, Hong Kong.

https://www.hkis.org.hk/hkis/general/events/bim-20191118v2.pdf

(viii)Ir Dr Llewellyn Tang was invited to a panel and gave a talk titled ‘智慧基础设施 BIM-GIS 的标准化’, for the conference: 粤港澳大湾区数字交通技术交流大会暨华南智能交通论坛, on 13-14 November 2019.

(ix)Ir Dr Llewellyn Tang gave a talk at the Construction Industry Council BIM Talks X Research Forum, titled ‘Making the Most out of BIM and Blockchain for the New Smart City’, on 20 February 2019, Hong Kong. His successful story, which had been delivered at TEDx Shanghai in 2018, on using BIM, GIS, IoT and Blockchain technologies to create future new smart cities in China, was shared with the audience. Watch the talk at:

https://www.youtube.com/watch?v=vJaDyB5kGtA
(x) The UK-Beijing Embassy invited Ir Dr Llewellyn Tang to give a keynote to their event on Smart City, titled ‘Making the Most out of BIM and Blockchain for the New Smart City’, on 17 January 2019, Beijing.

(xi) Ir Dr Llewellyn Tang was invited as a panel discussion member to share his views on ‘What does the future hold for our next generation?’ at the RICS-SCC PropTech Conference 2018, 23 November 2018, Hong Kong.