Urban beauty, elitism and the vernacular

Happy Chinese New Year to FoA colleagues and our wider DRup readership. Earlier this week an alumnus who reads Dean's Roundup sent me a profound thought in response to our recent Urban Ugliness discussion. Many, if not most, vernacular designs we are able to observe and investigate are elite architecture, he noted. Wittily he also noted that the large bulk of forgotten vernacular over the centuries and millennia is likely to have been more like Stalinist walk-ups (or South China self-built urban village houses or the low-grade suburban slums that our colleague Joshua Bolchover is working in Mongolia and Nepal).

Buildings constructed with higher quality materials tend to last and the better they are designed and more cultural significance they have embodied, the more likely are future generations to preserve and re-use them. There is very little non-religious architectural history in SE Asia predating the earliest colonial builders of the 16th century. That's because most buildings were wooden constructions. Only teak, ironwood and a few other indigenous hardwood species make it much longer than a century before being destroyed by wood-eating insects or fire or extreme weather. All pre-19th century houses in England, probably almost without exception, are those of the wealthy, even down to long-buried Saxon village homes and the mosaic floor remains of long-forgotten Roman occupier's villas. Of Britain's vast stock of fine late Victorian terraces, it is the middle-class homes of the then bourgeoning industrial managerial classes that have mostly survived.

This adds nuance to my correspondent's hypothesis. The 19th century was a turning-point for urban beauty as it was for most other things. Industrialisation and the associated urbanisation that started in Britain, transformed the fortunes of a vast mass of formerly working-class agricultural peasants and labourers, as it has in China over the past 40 years. I have spent approximately 50 years of my life living in Victorian suburbs of England and Wales and have learned to spot the finest of distinctions in architectural embellishments that differ from street to street according to employment and income status of the original

inhabitants. A third floor in a Victorian terrace circa 1880s in any British city signifies a street initially occupied by mid-upper management in the docks, steel mills and factories. A double-fronted version of the same with better quality bathstone window bays (a fine and beautiful oolitic limestone mined near the city of Bath) signifies a street originally occupied by either the very highest managerial class in a city or modestly wealthy families with a city home as well as one in the country. In the massification of urbanisation that happened in the 19th century, the urban beauty industry also massified. No longer the preserve of wealthy land-owners, royalty, conquerors, and merchants, the rising middle-classes could also afford to purchase beauty, and the range and variety of sources of urban beauty exploded.

Urban beauty became popularised, commodified and sorted by affordability.

My DRup correspondent made another fascinating proposition: urban beauty is created by embellishments. Interesting. I agree and would also add 'quality materials'. So, rephrase the above: architectural embellishment, including superfluous or luxurious or non-utilitarian uses and materials that do more than just hold a building up, became popularised and commodified. Our recently arrived architectural history and theory colleague, Emma Jones, researches this phenomenon as manifested in the design pattern-books that helped standardise this process from late Victorian times, including in then colonial cities such as Shanghai.

One stark conclusion that comes from all this is that the modern history of architecture has principally been driven by rising wealth, the desire to distinguish, and elitism. Is architecture intrinsically elitist? Is industrial design intrinsically elitist (architecture being, for the sake of argument, industrial design of buildings)? One way of testing the idea is to turn the question on its head. Can we identify an industrial design that has been designed *en masse* for the common people? Or even for the poor? Volkswagen comes to mind (the people's car). The 1938 Beetle, designed by Ferdinand Porsche, was a state-organised project to provide every German family with the means to autonomously transport a family of four up to 100km. To achieve this goal, the German state organised a popular savings scheme that provided an air-cooled engine (no freezing water pipes in the cold German winters), aerodynamic, Porsche-designed motorcar, for just five German marks a week.

One significant features of this example (there are many others – significance and examples), is that the increasingly powerful and wealthy governments of industrialising countries and cities became a new agency for beauty. The industrial state, backed by rising tax revenues, had the power to organise collective action in the provision of 'welfare'. And urban beauty quickly became part of the welfare state, as seen in the City Beautiful, Civic Design and homes for the poor movements that spread across Britain, America, Europe and the colonies from the start of the 20th century. National and municipal states quickly established themselves as commissioners of built environmental design.

So, by this time we now have three groups commissioning architectural embellishment: the wealthy, the middle classes, and the state. The state

became the agency for beautifying products for those who could not afford to do so because of low purchasing power.

It is ironic, therefore, that much of the remaining urban ugliness that persists from the 20th century was invented by designers working for state agencies. Is this vernacular? In one sense, yes (popular). In which case, 20th century modernism eventually bequeathed a vernacular that has lasted (too long). In another sense, no. In spite of being mass consumed, it was not vernacular in the sense of being an evolved, bottom-up style.

In this sense, it would be more accurate, perhaps, to say that the vast range of private house-building designs that evolved over the 20th 'suburban' century was the true vernacular of the period, with 100 individual years of designing and building and marketing and living and re-designing, in pursuit of adaptation towards something pleasing. Arguably, given the pace, scale and sheer volume of investment going into architectural design in the 20th century, the processes of vernacular emergence of good-fit designs (functionally, aesthetically and financially) were probably as intense over that century as over the entire history of humanity.

So, did it produce beauty? Personally, yes I think so at its high points. But there were many low points, just like the many failed phases of primitive vernacular experimentation that history has kept from us. Generalising, I would say that 20th century evolution of architectural beauty was inhibited most by two things. First, inhibited by state control over design (either by direct design and build, or by design regulation). Second, inhibited by lack of competition in the private home-building market (due to the monopolistic and oligopolistic home-building industries that tend to develop in all countries because of the political economy of land, and which lead to a tragic under-supply of design).

What, I wonder, will be the vernacular of the 21st century? And how might our students be encouraged to imagine practices and systems that incentivise emergent, lasting, resilient and varified beauty, in homes, infrastructure and places occupied by city dwellers, whatever they can afford?

Congratulations to colleagues mentioned below. Winning big grants (in Hong Kong, Theme-based Research Scheme grants are among the biggest from government sources) means we can research more accurately, investigate bigger issues of greater social and academic significance, and that our research is likely to be read by, and useful to, more people. Becoming highly cited authors often (but not always) follows from getting big grants. More importantly, it comes from being great thinkers.

That's the goal for this immensely privileged profession we are in: to become great thinkers and thus to become great teachers, thoughtful designers and generators of the knowledge that, by virtue of its insights and quality, will help guide society into the future.

Chris Webster
Dean, FoA

Faculty of Architecture

1. World's Top 2% Scientists by Citation

   - The following FoA members have been ranked among the world's top 2% most-cited scientists in their respective disciplines, measured by long-term and single-year performance.

Citation data from 1996-2020 (long-term performance)			
Name	**Rank (self-citation excluded)**	**Position**	**Department**
Anthony Yeh	39,542	Professor	DUPAD
Chris Webster	52,653	Dean and Professor	FoA/DUPAD
Wilson Lu	90,732	Professor	REC
Shenjing He	91,960	Professor	DUPAD
Steve Rowlinson	132,784	Emeritus Professor	REC
K. W. Chau	148,115	Professor	REC
Jiangping Zhou	227,074	Associate Professor	DUPAD
Lawrence Lai	268,654	Professor	REC

Citation data in 2020 (single-year performance)			
Name	**Rank (self-citation excluded)**	**Position**	**Department**
Wilson Lu	9,516	Professor	REC
Shenjing He	15,326	Professor	DUPAD
Anthony Yeh	31,910	Professor	DUPAD
Chris Webster	40,720	Dean and Professor	FoA/DUPAD
Jiangping Zhou	42,496	Associate Professor	DUPAD
Xingjian Liu	46,119	Associate Professor	DUPAD
Steve Rowlinson	56,908	Emeritus Professor	REC
K. W. Chau	67,426	Professor	REC
Chinmoy Sarkar	71,727	Associate Professor	DUPAD

The scholars were ranked in the Updated Science-wide Author Databases of Standardized Citation Indicators, compiled by a research team at Stanford University and led by Professor John Ioannidis. It is a database of more than 100,000 top scientists across the world, created according to standardised citation indicators, including h-index, co-authorship adjusted hm-index, citations to papers in different authorship positions, etc. The latest dataset is based on the 1 August 2021 snapshot from Scopus and is updated to citation year 2020.

More information:
https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3

2. Theme-based Research Scheme (TRS)

- Dr Jianxiang Huang (DUPAD), Professor Wilson Lu (REC), Dr Chao Ren (DLA), Professor Bo-sin Tang (DUPAD) and Dr Frank Xue (REC) have received funding of almost HK$10M in total, as Co-PIs/Co-I of the following project awarded by the RGC Theme-based Research Scheme (TRS) 2021-22.

Project title: Healthy and Resilient City with Pervasive LoCHs
Project number: T22-504/21-R
Project coordinator: Professor Jianlei Niu (PolyU)
Project duration: 5 years, from 1 January 2022 to 31 December 2026

Funded under the theme of 'Developing a Sustainable Environment', the project aims to demonstrate that localised comfort hubs (LoCH) can be created to raise thermal comfort of a city, which is highly related to physical and mental wellness, mortality, hospitalisation rate and energy consumption. This will be achieved by employing a scientific microclimate design methodology based on advanced modelling and simulation of wind, heat and moisture at the early building design and planning stage.

'Self-driving' optimisation of building forms and architectural masterplans via big data analytics and artificial intelligence (AI) programming is the target deliverable of the project, combining GIS and BIM, and enhanced with high-resolution wind and thermal microclimate modelling down to the scale of the pedestrian level. State-of-the-art computing will be applied in conventional architectural design and planning practice to improve urban liveability and sustainability, and to cope with a rapidly changing climate.

More information about the project:
https://www.ugc.edu.hk/eng/rgc/funding_opport/trs/funded_research/trs11_lay_sum.html#201_21

The following FoA members are leading Work Packages 3 and 4 of the awarded project, and their contributions are interrelated:

Work Package	Name	Role	Funding Received HK$ (M)
WP3	Professor Wilson Lu (REC)	Co-PI	3.284
	Dr Fan Xue (REC)	Co-PI	1.347
	Dr Jianxiang Huang (DUPAD)	Co-I	1.347
WP4.1	Dr Chao Ren (DLA)	Co-PI	1.270
WP4.2	Professor Bo-sin Tang (DUPAD)	Co-PI	2.413

Total: 9.661

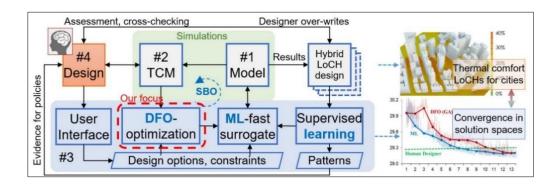## Work Package 3 – led by Professor Wilson Lu; co-led by Dr Frank Xue and Dr Jianxiang Huang

WP3 is to develop a simulation-based optimisation (SBO) platform for pervasive LoCHs design. It takes from WP1 and WP2 the improved understanding of urban wind and microclimate, thermo-physiology and human-behaviour, juxtaposing the diverse expertise with urban climate, urban morphology, building science, landscape architecture and computation to realise the vision.

Firstly, WP3 translate the LoCH design challenges into an optimisation problem, which takes microclimate and urban wind conditions, accepts existing urban morphology and neighbourhood configurations, considers possible design interventions, simulates and optimises to inform an anthropocentric LoCH design. From the perspective of applied mathematics, the problem inherits many discrete and indefinite variables from other tasks and simulates their dynamics to affect the design outcomes within the constraining conditions; a complex 'fitness landscape' *per se*.

Thus, a core challenge to the LoCH design SBO platform arises from the complex fitness landscape and the expensive simulation process. WP3 will devise general optimisation theories and apply derivative-free optimisation (DFO) algorithms on resolving the challenge.

Machine learning (ML) of existing local built-up community cases can not only avoid wasting the lessons learned from them, but also generate new LoCH design options, which is the spirit of this computational design platform.

Underpinning the WP is a web-based Building/City Information Modelling (BIM/CIM) platform with interactive graphical interfaces and informative dashboards to visualise and calibrate SBO outcomes. The

computational design platform works with monitoring and steering from professional designers and close engagement of major stakeholders.

Work Package 4.1 – led by Dr Chao Ren

Open spaces in downtown Hong Kong are limited but have a positive contribution to the physical and mental wellbeing of a neighbourhood. Hong Kong is an ageing society. Given the global climate change and prolonged summer, it is expected that the elderly in the city would suffer more extreme hot weather events in near future.

Hong Kong 2030+'s planning vision and strategy target to reinvent public parks and streets to create an age-friendly environment for 'active ageing' and 'ageing in place', while embracing the 'active design' concept for healthy and quality living. Thus, there is an urgent need to understand how to improve the design quality of open space and semi-open space from the residents' point of view.

WP4.1 will formulate different prototype designs of LoCHs to create the best possible micro-climatic environment that encourages more outdoor activities, at the same time enhancing the physical and mental wellbeing of the ageing community in Hong Kong.

Work Package 4.2 – led by Professor Bo-sin Tang

WP4.2 will examine the relationships between the built environment and the spatial/temporal variations in the use of open space, with a view to ascertaining the possible benefits of LoCHs derived from WP1. It will assess effects of socio-economic factors, demography, walking accessibility and land uses on the use of outdoor spaces.

WP4.2 will also assess the economic, policy and regulatory implications of the prototype designs of LoCHs, including pricing and quantified costs and benefits of the improvement schemes, as well as evaluations of existing development control parameters, design option manuals and/or codes of professional practices. It will identify rooms for improvement and possible change in policy, regulations and professional practices,

while also providing feedback of essential behavioural, economic and regulatory parameters as data input into the optimisation models in WP3.

Uses of different types of open space in today's Hong Kong. © Bo-sin Tang

Department of Architecture

1. Mr John Lin and Mr Sony Devabhaktuni

   - have been awarded the 2021 RIBA President's Medal for Research for their project 'As found houses: Experiments from self-builders in rural China'. It is also the winner of the Cities and Community category.

Highway House, Wooden House © John Lin

Jury abstract: The research addresses the tendency toward vernacular obsolescence in rural China by identifying unique cases of previously overlooked vernacular dwellings that have been informally adapted by villagers. Instead of abandoning their traditional dwellings in favour of generic concrete frame and brick constructions, these self-builders have developed intelligent solutions for updating their old houses. The results are fresh ideas for sustainable living that contain spatial nuances related to deep rooted social structures – relevant for professional and informal builders and designers alike.

Systematic documentation of these innovative houses has produced a design guidebook for adaptation, while also providing architectural evidence for the social, economic and cultural imperatives motivating transformations of the rural environment. By cataloguing and redrawing the houses, the spontaneity of their designs can be understood as clear and imitable spatial strategies. In this way, design innovation is found, recorded and disseminated back into the community, also laying the groundwork for more formal solutions by designers – calling for a new role for the architect in what formerly were sites without architects.

More information: https://www.architecture.com/awards-and-competitions-landing-page/awards/riba-presidents-awards-for-research

Division of Landscape Architecture

1. Mr Nikolas Ettel

   - was invited by the HKU Centre for the Enhancement of Teaching and Learning to share his experience in film creation, as a means to help students produce effective and engaging assignments. The sharing was held via Zoom on 13 January 2022.

     More information: https://www.cetl.hku.hk/cic220113/

Department of Real Estate and Construction

1. Sr Leo Cheung

   - commented on the introduction of a new Home Ownership Scheme (HOS) Mortgage Plan in an interview with TVB news on 21 January 2022. Watch the full news story HERE.

2. Professor Lawrence Lai

   - was interviewed by Phoenix TV for their documentary on the Battle of Hong Kong. Watch the full documentary HERE.

3. Professor Andrew Young

   - has been appointed as one of the nine new non-official members of the Construction Industry Council (CIC), for a two-year term from 1 February 2022 to 31 January 2024. Professor Young is currently teaching PropTech for the MSc(RE) programme.
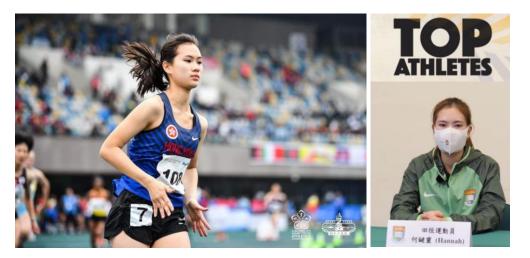

     Press release:
     https://www.info.gov.hk/gia/general/202201/14/P2022011400147.htm

4. Top Athletes Direct Admission Scheme

   - Ms Hannah Ho Kin-ling, a BSc(Surveying) Year 1 student and a track and field athlete who broke the junior record for Girls' 400 metres in Asian Youth Athletics Championship 2019, was invited to share her experience as an athlete and a HKU student at a media conference on 25 January 2020, to introduce the newly launched Top Athletes Direct Admission Scheme. Hannah was admitted to the BSc(Surveying) programme via the Sports Scholarship Scheme in 2021.

     Press release: https://www.hku.hk/press/news_detail_23979.html

     Selected media coverage:
     (i)   http://www.takungpao.com/news/232109/2022/0126/680812.html
     (ii) https://topick.hket.com/article/3164419/

Department of Urban Planning and Design

1. City Gallery Student Ambassadors Programme

   - A group of MSc Urban Planning (MUP) Year 2 students have enrolled in the City Gallery Student Ambassadors Programme 2022, organised by the Planning Department (Plan D). The Programme offered opportunities for our planning students to provide voluntary community services through conducting guided tours of the City Gallery for members of the public, including people with disabilities, in order for them to understand the planning and development of Hong Kong.

     Together with the participating students, Mr Roger Tang (MUP studio teacher) also attended the Programme launch on 30 December 2021.

2. MIT Hong Kong Innovation Hub

- On 7 January 2022, a group of MSc Urban Planning (MUP) Year 2 students were invited to present their recent Community Planning Studio baseline review findings on Hong Kong Island South (Aberdeen/Wong Chuk Hang area), in a workshop on smart cities organised by the MIT Hong Kong Innovation Hub at the Hong Kong Productivity Council. Mr Roger Tang, as a Studio teacher, also attended the workshop.

Centre of Urban Studies and Urban Planning

1. Dr Zhan Zhao and Ms Yuebing Liang (PhD student)

   - has published the following paper:

   Liang, Y., & **Zhao, Z.*** (2021). NetTraj: A network-based vehicle trajectory prediction model with directional representation and spatiotemporal attention mechanisms. *IEEE Transactions on Intelligent Transportation Systems*, 1-12. https://doi.org/10.1109/TITS.2021.3129588

   Abstract: *Trajectory prediction of vehicles in city-scale road networks is of great importance to various location-based applications such as vehicle navigation, traffic management, and location-based recommendations. Existing methods typically represent a trajectory as a sequence of grid cells, road segments or intention sets. None of them is ideal, as the cell-based representation ignores the road network structures and the other two are less efficient in analyzing city-scale road networks. Moreover, previous models barely leverage spatial dependencies or only consider them at the grid cell level, ignoring the non-Euclidean spatial structure shaped by irregular road networks. To address these problems, we propose a network-based vehicle trajectory prediction model named NetTraj, which represents each trajectory as a sequence of intersections and associated movement directions, and then feeds them into a LSTM encoder-decoder network for future trajectory generation. Furthermore, we introduce a local graph attention mechanism to capture network-level spatial dependencies of trajectories, and a temporal attention mechanism with a sliding context window to capture both short- and long-term temporal dependencies in trajectory data. Extensive experiments based on two real-world large-scale taxi trajectory datasets show that NetTraj outperforms the existing state-of-the-art methods for vehicle trajectory prediction, validating the effectiveness of the proposed trajectory representation method and spatiotemporal attention mechanisms.*

iLab

1. iLab researchers

    - have published the following articles:

(i) **Dong, Z. M.** (PhD Year 1 student), **Chen, J. J.** (PDF), & **Lu, W. S.** (2021). Computer vision to recognize construction waste compositions: A novel Boundary-aware Transformer (BAT) model. *Journal of Environmental Management.* https://doi.org/10.1016/j.jenvman.2021.114405

Abstract: Recognition of construction waste compositions using computer vision (CV) is increasingly explored to enable its subsequent management, e.g., determining chargeable levy at disposal facilities or waste sorting using robot arms. However, the applicability of existing CV-enabled construction waste recognition in real-life scenarios is limited by their relatively low accuracy, characterized by a failure to distinguish boundaries among different waste materials. This paper aims to propose a novel boundary-aware Transformer (BAT) model for fine-grained composition recognition of construction waste mixtures. First, a pre-processing workflow is devised to separate the hard-to-recognize edges from the background. Second, a Transformer structure with a self-designed cascade decoder is developed to segment different waste materials from construction waste mixtures. Finally, a learning- enabled edge refinement scheme is used to fine-tune the ignored boundaries, further boosting the segmentation precision. The performance of the BAT model was evaluated on a benchmark dataset comprising nine types of materials in a cluttered and mixture state. It recorded a 5.48% improvement of MIoU (mean intersection over union) and 3.65% of MAcc (Mean Accuracy) against the baseline. The research contributes to the body of interdisciplinary knowledge by presenting a novel deep learning model for construction waste material semantic segmentation. It can also expedite the applications of CV in construction waste management to achieve a circular economy.

(ii) **Li, M. S.**, Peng, Y., **Wu, Y. J.**, **Xu, J. Y.**, Tan, T., **Guo, H.**, **Lu, W. S.**, **Yeh, A. G . O.**, & **Xue, F.** (2022). Role of the built environment in the recovery from Covid-19: Evidence from a GIS-based natural experiment on the city blocks in Wuhan, China. *Frontiers in Built Environment, 7.* https://doi.org/10.3389/fbuil.2021.813399

Abstract: The built environment closely relates to the development of COVID-19 and post-disaster recovery. Nevertheless, few studies examine its impacts on the recovery stage and corresponding urban development strategies. This study examines the built environment's role in Wuhan's recovery at the city block level through a natural experiment. We first aggregated eight built environmental characteristics (BECs) of 192 city blocks from the perspectives of density, infrastructure supply, and socioeconomic environment; then, the BECs were

associated with the recovery rates at the same city blocks, based on the public "COVID-19-free" reports of about 7,100 communities over the recovery stages. The results showed that three BECs, i.e., "number of nearby designated hospitals," "green ratio," and "housing price" had significant associations with Wuhan's recovery when the strict control measures were implemented. At the first time of reporting, more significant associations were also found with "average building age," "neighborhood facility development level," and "facility management level." In contrast, no associations were found for "controlled residential land-use intensity" and "plot ratio" throughout the stages. The findings from Wuhan's recovery pinpointing evidence with implications in future smart and resilient urban development are as follows: the accessibility of hospitals should be comprehensive in general; and the average housing price of a city block can reflect its post-disaster recoverability compared to that of the other blocks.

- have the following articles accepted for publication:

(i) **Wu, L.** (PhD Year 1 student), **Lu, W. S.**, **Zhao, R.** (PhD Year 1 student), **Xu, J. Y.** (PDF), Li, X., & **Xue, F.** (2021). Using blockchain to improve information sharing accuracy in the onsite assembly of modular construction. *ASCE Journal of Management in Engineering*. Accepted.

Abstract: *Onsite assembly is a critical stage for modular construction. Its success or failure depends on accurate information sharing among numerous stakeholders who, unfortunately, often possess unsynchronized information. Owing to its decentralized consensus mechanism, blockchain has the potential to improve information-sharing accuracy on construction sites. However, little research has documented how this can be done. Adopting a design science research (DSR) method, this study aims to explore the use of blockchain technology to improve information-sharing accuracy in the onsite assembly of modular construction (OAMC). Firstly, an OAMC business process analysis is conducted to understand the issues leading to information sharing, in particular its accuracy. Then, a blockchain-based conceptual model is developed. Its components such as membership registration, information sharing-request, ordering service, consensus mechanism, and distributed storage are described. Finally, a prototype system is developed and validated in a mock-up OAMC. The results show that the prototype system can improve the accuracy of information sharing in OAMC by allowing project participants to endorse information about the modules and their assembly through the blockchain's consensus mechanism. This study explores and implements blockchain technology in a specific construction area. It can serve as a valuable reference for future endeavors in harnessing the power of blockchain technology, particularly for mobilizing information endorsement mechanisms for various value-added applications.*

(ii) **Guo, H.** (PhD Year 4 student) & **Lu, W. S.** (2022). Measuring competitiveness with data-driven principal component analysis: A case study of Chinese international construction companies. *Engineering, Construction and Architectural Management*. Accepted.

Abstract:

Purpose – Defining and measuring competitiveness has been a major focus in the business and competition literature over the past decades. This paper aims to use data-driven principal component analysis (PCA) to measure firm competitiveness.

Design/methodology/approach – A "3Ps" firm competitiveness indicator system is structured for indicator selection. Data-driven principal component analysis (PCA) is proposed to measure competitiveness by reducing the dimensionality of indicators and assigning weights to them according to the endogenous structure of a dataset. To illustrate and validate the method, a case study applying to Chinese international construction companies (CICCs) was conducted.

Findings – In the case study, 4 principal components were derived from 11 indicators through PCA. These principal components were labeled as "performance" and "capability" under the two respective super-components of "profitability" and "solvency" of a company. Weights of 11 indicators were then generated and competitiveness of CICCs was finally calculated by composite indexes.

Research implications – This study offers a systematic indicator framework for firm competitiveness. It also provides an alternative approach to better solve the problem of firm competitiveness measurement that has long plagued researchers.

Originality/value – The data-driven PCA approach alleviates the difficulties of dimensionality and subjectivity in measuring firm competitiveness. It offers an alternative choice for companies and researchers to evaluate business success in future studies.

2. Professor Wilson Lu

- co-authored a book chapter which has been accepted for publication:

   Lu, W. S. & **Xu, J. Y.** (PDF) (2022). Big data analytics and project organising. In Winch, G., Brunet, M., & Cao, D. P. (Eds.), *Research Handbook on Complex Project Organizing*. Edward Elgar. Accepted.

   Abstract: *The uncertainty, temporality, heterogeneity, and discontinuity of projects have created a perception that big data and its analytics are largely irrelevant to project organizing. In this chapter, we argue, and demonstrate with evidence, that project organizing is a highly big data-pertinent area. Big data is incessantly generated from project organizing,*

including its organizations, operations, networks, and broader social contexts via ubiquitous sensors, easy-to-access portable devices, and other convenient means of interactions. Nevertheless, big data is like the 'gold mine', whose values to project organizing are largely an uncharted territory. The backwardness of big data in this heterogeneous domain is due in part to the barriers caused by the characteristics of project organizing thereof. However, recent developments in technological instruments and project organizing thinking provide enormous opportunities to harness the power of big data. Stakeholders need to see a virtuous circle; they can invest initial resources but the long-term sustainability will depend on the perceivable values instigated by big data analytics. In the meantime, the classic dilemmas in big data such as empower and disempower, ownership and liability, availability and legitimacy, open sharing and protection in silos, and big data ethics, must be resolved in the heterogeneous context of project organizing.

- co-authored a book chapter:

Lu, W. S. & Ye, M. (2022). The global construction market. In Ofori, G. (Eds.), *Research Companion to Construction Economics.* Edward Elgar. ISBN: 978-1-83910-822-8.

Abstract: *Economic globalisation, trade liberalisation, advanced technology, fast transportation, and convenient communication all have catalysed the globalisation of construction. This chapter aims to provide an overall picture of the global construction market. It starts by clarifying some of the concepts and terms, such as the construction sector or industry; architecture, engineering, and construction; products or services; and market segments or geographic dispersal, and then empirically describes the historical development and status quo of the market from a global perspective. Global construction has developed into a massive market worth trillions of dollars, encompassing the developed world as well as hotspots in the emerging countries. A considerable portion of the market is occupied by contractors who 'follow the money' to new continents for growth and to minimise the risk of vicissitudes of individual markets. There is a clear tendency for them to expand to other continents or sectors through vigorous mergers and acquisitions, but the outcomes are mixed. We conclude by looking at the future of the global construction market. The market is now confronting great uncertainty triggered by the rising populism, increasing xenophobia, and distrust of globalisation, which are further exacerbated by the COVID-19 pandemic. There must be a 'new normal', but no one knows what it will look like, and how it will affect the global construction market.*

- was invited to give a talk on 'Construction digital transformation research at iLab: Fantasy and reality' to Tianjin University, on 14 December 2021.

- was invited by the National Natural Science Foundation of China (NSFC) to give a talk on 'Environmental and ecological systems engineering research funding structure in Hong Kong', at the 'Development of Environmental and Ecological Subject' Forum on 4 January 2022, alongside seven professors from Demark, Germany, Japan, the UK and the US.

- gave a talk on 'OpenBIM, blockchain, and automated compliance checking: some propositions on Hong Kong's BIM e-submission', on the HKABAEIMA (Hong Kong Alliance of Built Asset & Environment Information Management Associations) Training Centre Training Class, on 22 December 2021.

3. Dr Jinying Xu

- was invited to give a talk on 'Blockchain technology applications and prospects in construction management', as part of the CRIOCM Young Scholar Seminar Series (Session 3) on 23 December 2021. The talk was held online and successfully attracted more than 100 attendees.