

EXCHANGE

Issue No.3

Higher Education

Perspectives on

the future of

design across

different sectors

make

Contributors

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JOANNA GRIFFITHS is a partner at Make and worked on the University of Nottingham's Teaching

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PETE MATCHAM is a partner at Make who worked on the Big Data Institute and Innovation Building for the University of Oxford, on the Old Road Campus. He also acted as project architect for the London Academy in Edgware when he worked at Foster +

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PETER MCGEORGE is a lead consultant at Capital Insight with 27 years' experience in Australian higher education. He specialises in the alignment of property portfolios, campuses and infrastructure.

NICOLE MARCHHART is the University of Sydney's Energy and Waste Manager, helping to deliver a sustainability framework across all campuses.

DAVID PATTERSON is a partner at Make and leads our Education division. He is a founding member of the Education Design Unit, a consortium of specialists working to deliver better spaces in the higher education sector. David is a mentor for an RIBA-led design project for students aged 14-19 and vice-chair of the RIBA London Council. He also teaches at Central Saint Martins.

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“Adaptability and resilience are being put to the test. In many cases, COVID-19 has reinforced trends already coming to bear.”

Welcome

Our third edition of Exchange, a series that examines the issues spanning the built environment industry, focuses on the design of higher education buildings, places and spaces.

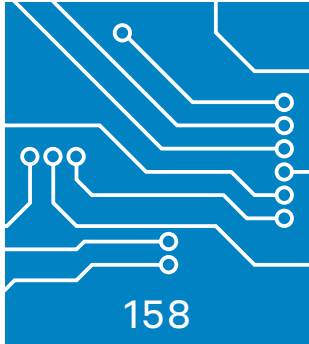
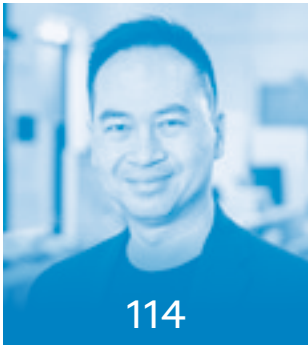
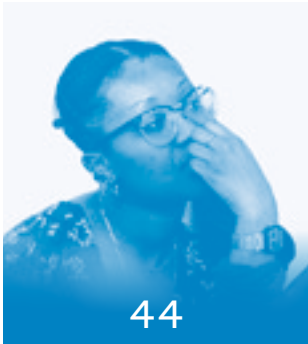
It's important to note that in the previous editions – on workplace (2018) and retail (2019) – and indeed when we began this one, no one had heard of COVID-19. Since then, this pandemic has had a major impact on every sector and individual. It will influence decisions across the built environment for many years to come. As such, most of the articles here are viewed through that prism.

Universities are commercial entities, and regardless of their size, heritage or pedigree, the pipeline of work for estates directors is unrecognisable from what it was mere months ago. Adaptability and resilience are being put to the test. In many cases, COVID-19 has reinforced trends already coming to bear, such as the need for flexible, high-tech spaces and the switch from subject-specific buildings to hubs that cater for a range of subjects, teaching styles and study preferences.

Bringing together our contributors – thought leaders whose wisdom and ideas are needed more than ever – has been a real delight. We hope you enjoy their articles as they come over the next few weeks.

A handwritten signature in black ink, appearing to read 'Ken Shuttleworth', with a stylized, flowing script.

Ken Shuttleworth
Founding Director, Make Architects



THE UNIVERSITY OF THE FUTURE

by David Patterson
Make Architects

The COVID-19 crisis is the start of a renaissance for social and experiential learning in universities. The pandemic has increased digital learning and the demand for connected, flexible, inclusive and resilient teaching and learning environments that promote social engagement at a safe physical distance.

As a result, we'll likely see formal teaching spaces designed around traditional teaching methods diminish in favour of buildings that support a broad variety of workspaces and activities – in other words, what the influential architect Herman Hertzberger calls 'learning landscapes'.

Learning landscapes are not unarticulated spaces, left to be divided

up by teachers and students. It's up to architects to recognise the sector's needs and develop unique landscapes that meet them. This requires a well-organised diagram of inclusive, inviting spaces defined by spatial unity and cohesion, followed by collaboration with a broad range of stakeholders. Recent projects such as Make's Science Central masterplan for University of Newcastle and Teaching and Learning Building



Science Central masterplan for University of Newcastle.



Teaching and Learning Building for University of Nottingham.

“Accessible public realm is a crucial resource when everything else is shut.”



for University of Nottingham, along with Grafton Architects' Town House for Kingston University, demonstrate how articulated space within a fixed framework can be adapted to different situations as they arise.

EMBEDDING INTO THE LOCAL COMMUNITY

Universities are moving from a model of knowledge transfer to one of knowledge exchange, with campus development increasingly seen as an opportunity to drive the local economy by utilising local skills, research and knowledge. Institutions are redefining their relationship between home, campus and city to create blended working, learning and living environments that feature inclusive public-facing developments.

Take Science Central, which builds on Newcastle upon Tyne's robust research base to support an emerging knowledge economy. Make's masterplan delivers over 150,000m² of buildings to accommodate a range of uses – including teaching, research and residential – on the former Newcastle Brown Ale site. This is a pivotal location within the city, bordered on one side by a highly skilled workforce and on the other by high levels of deprivation and long-term generational unemployment.

One of our principal design strategies was to address the site's disconnected status as an island within the city. We achieved this by identifying missing links and creating new routes that enhance pedestrian desire lines and connect people to the city via the campus. We then designed these routes to support learning and social



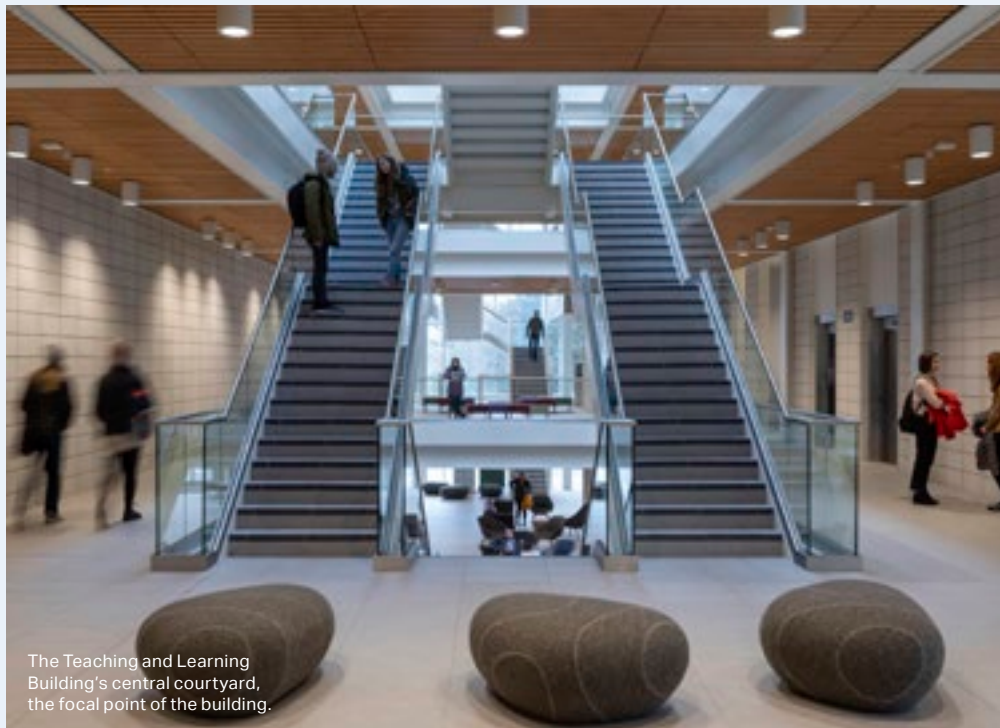
interaction. For example, a new green space called Knowledge Square includes a programme of experiments and other activities for local schoolchildren that explore local biodiversity and the ecology research taking place on site. The aim is to encourage the city's inhabitants to move through the site and create a place where disparate communities can come together.

These new green routes and public squares provide the city of Newcastle with safe outdoor spaces for learning, socialising and recreation. As the COVID pandemic has demonstrated, this kind of accessible public realm is a crucial resource when everything else is shut.

ACCOMMODATING THE CHANGING EDUCATION LANDSCAPE

Even prior to COVID, university courses had begun blending online learning with face-to-face teaching and support. Leading universities know that to attract the best students and academics, they'll need campuses that satisfy this evolution. The University of Nottingham, for example, recognised that its existing provision of teaching and learning space wasn't responding flexibly to the changing needs of students and teachers, so it commissioned Make to deliver a new building with space to innovate and enhance the experience of teachers and students alike.

Our design imagines the building as a series of flexible spaces that can be adapted over the academic year,



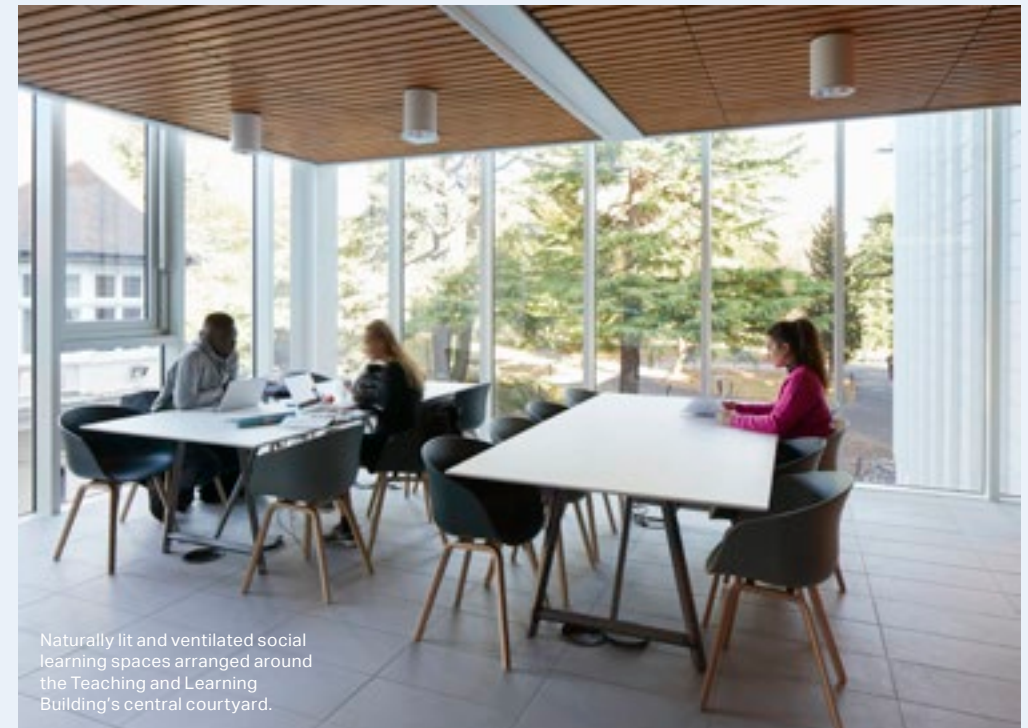
The Teaching and Learning Building's central courtyard, the focal point of the building.

supporting traditional educational practices while also accommodating new kinds of teaching and learning. We started by devising a series of simple rectangular blocks with a perimeter steel structure. This provided column-free floors that could be easily adapted to accommodate a variety of configurations.

We treated the blocks as a city within a city, using the spaces between them to create 'streets' aligned with key pedestrian routes. To intensify social interaction, these converge on a central courtyard overlooked by wide balconies. This is the focal point of the building – a place to meet and spend time. It's part of a wider building diagram that encourages sequential movement from open areas and social learning spaces to secluded classrooms. Instead of corridors, the circulation routes are

focused around the courtyard and its balconies, which provide a variety of spaces, from private study areas to more formal meeting rooms.

As with Science Central, what we've designed for Nottingham is adaptable, allowing people to come together in a fluid space and interact at whatever distance is required. For example, it's possible to remove some of the building's seating, space out the furniture and control pedestrian flow without sacrificing the capacity for social learning and chance encounters. Both projects have effectively been designed to accommodate the distancing necessitated by COVID, even though we didn't anticipate this pandemic or its specific implications.



Naturally lit and ventilated social learning spaces arranged around the Teaching and Learning Building's central courtyard.

“The sector faces increasing demand from students and academics for more diverse spaces to meet, study and socialise.”



The colonnade at Town House, an inviting threshold.

DIVERSIFYING UNIVERSITY SPACES

The sector faces increasing demand from students and academics for more diverse spaces to meet, study and socialise. Such spaces are critical for learning and – with the right sense of openness, accessibility and spatial richness – can provide new focal points for the communities they serve.

A good example in practice is Kingston University's new Town House, by Grafton Architects, a communal building for both students and the public. Grafton has created a deep colonnade around the perimeter of the building that establishes a distinct presence and buffers it from the busy Penrhyn Road, one of the main routes into Kingston. This creates an inviting threshold, drawing people into the ground floor and beyond, where there's a range of public spaces.

Most of Town House is open-plan, with no specific programme of use or partitions subdividing it. Instead, spaces are defined with a structural concrete frame that supports a series of interlocking volumes rising through the building. This arrangement, interwoven with stairs, creates many different types of workspaces and meeting places. It is well used and vibrant with activity.

Again, it's an adaptable place, not a prescriptive one, meaning that people can continue to use the building at lower densities when needed – a strength that has come into play during the pandemic and will serve the university well in the future.

CREATING VIABLE LEARNING LANDSCAPES

COVID-19 has created a once-in-a-generation opportunity for sustainability in its truest sense. There are environmental benefits to adapting university buildings to meet future needs, and practical ones too, like minimising disruption during construction. Not all buildings can be easily adapted, but even new-builds can use modern methods of construction to promote a more careful and economical use of resources. Recognising the importance of natural light, ventilation and the user control will also ensure new additions become viable learning landscapes.

In any case, a generous spatial structure with a loose-fit quality is key to ensuring university building design can be adapted to meet both current and future needs for living, working and learning.

SARAH O'HARA

Nottingham

*Pro-Vice Chancellor
for Education and
Student Experience,
University of
Nottingham*



“We think it is really important to make students a part of our development projects, and we do this by working very closely with our student body and through the student union.”

We discuss... Student participation in campus design, how students want to learn and how COVID will impact space requirements in the future.

Sarah O'Hara

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Sarah O'Hara is the Pro-Vice Chancellor for Education and Student Experience at the University of Nottingham. Sarah is responsible for teaching and learning at the university, and has oversight of the broader student experience.

JACK SALLABANK: How have the last couple of months been, since lockdown?

SARAH O'HARA: They have been very busy and challenging, but we were well prepared for lockdown. We have campuses in China and Malaysia, which helped us prepare, and also we started our preparation to go online in the first week of February, when there had only been a couple of cases confirmed in the UK.

We recently ran a survey to see how students had found the last few months, and they were very positive about how the remote learning set-up has worked. However, if we are still in the same situation come September, I'm not sure they will remain as positive.

JS: Will COVID have a longer-term impact on the masterplan you have been developing for the university?

SH: Yes, I think it will. We have a lot of administrative staff who are located at our King's Meadow Campus, and over the years they have begun to feel disconnected from the university. Pre-COVID we were designing how we would bring them onto the campus, but already COVID has changed that thinking. We have managed to work quite well



View looking towards Central Hall and the lake on Campus West.

from home, so do we need all our staff located at the university?

I suspect the next year or so will teach us a lot about what we need and what we don't need in terms of our spaces.

JS: What type of space do you think will become increasingly important?

SH: First of all, it will be interesting to see if students still want to go away to university. My gut feeling is yes, they do, but it may well be that people decide that because going to university is expensive, one thing they can save money on is the going away cost. Therefore, we will need spaces which will enable us to scale up and scale down depending on demand.

We will need collaborative work areas which have the ability to bring people together physically but also have the tech built in so that people can access the space digitally.

JS: How important will it be to engage students in decisions about the type of spaces that you develop?

SH: We think it is really important to make students a part of our development projects, and we do this by working very closely with our student body and through the student union. That said, you do run the risk that whatever is popular now for students might not be what is needed in three years' time. Therefore, you have to challenge them with questions such as: what might this look like in three years' time or what might happen if this happens?

It's important for them to help shape our thinking around what a teaching space should look like in the future and how they want to be taught.

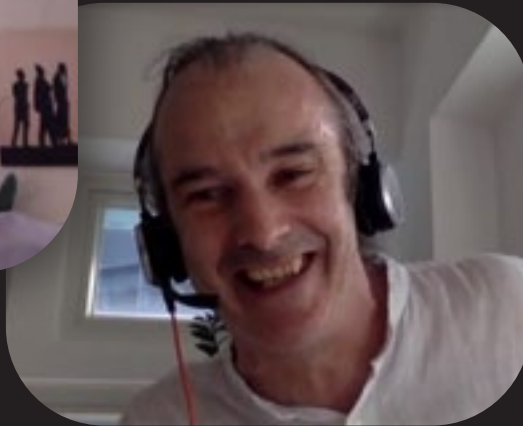
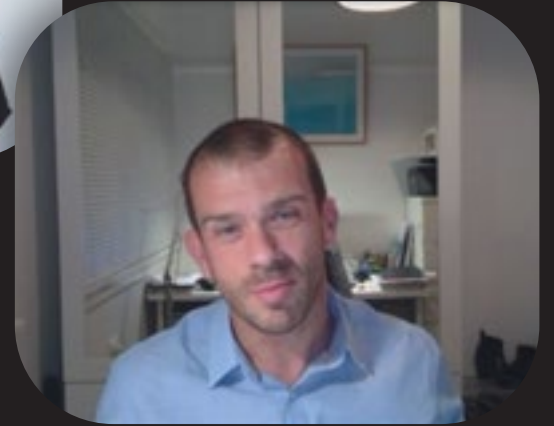
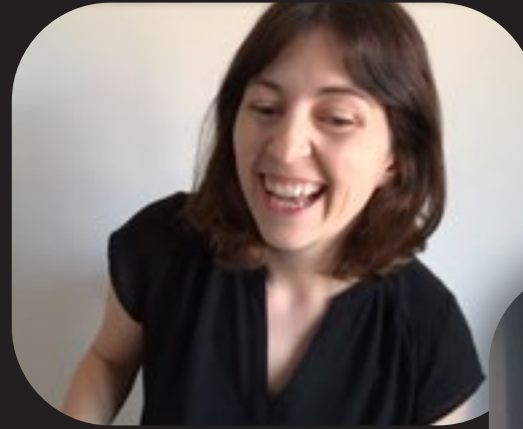
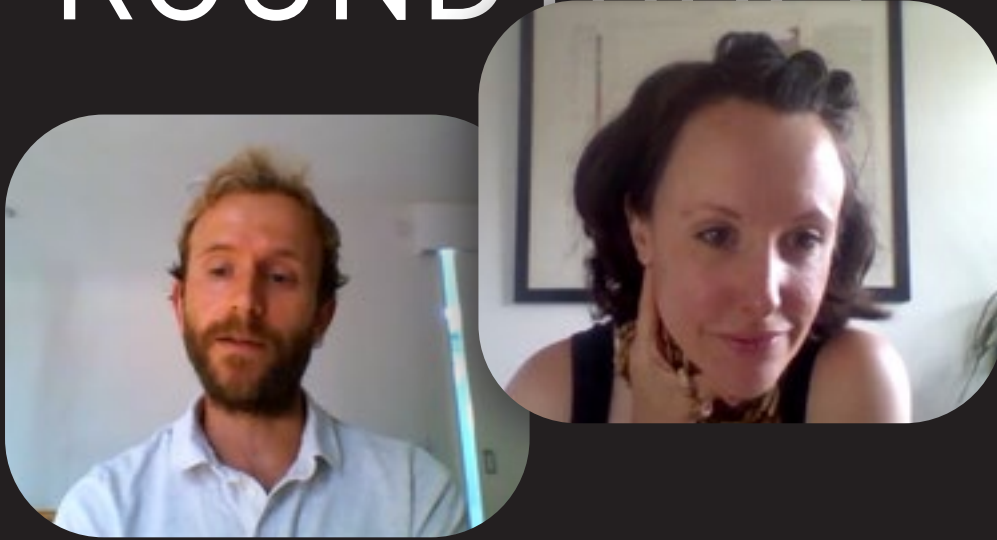
JS: How do students want to be taught?

SH: They don't want to sit and listen. They are not interested in an academic standing at the front of a lecture theatre talking at them. They want to be far more engaged in their learning and learning from doing, as opposed to just passively listening and regurgitating it back.



Main entrance to the Teaching and Learning Building.

MAKE ROUNDTABLE



Sean Affleck, Joanna Griffiths, Simon Lincoln,
Pete Matcham, David Patterson, James Redman,
Jack Sallabank, Sarah Worth

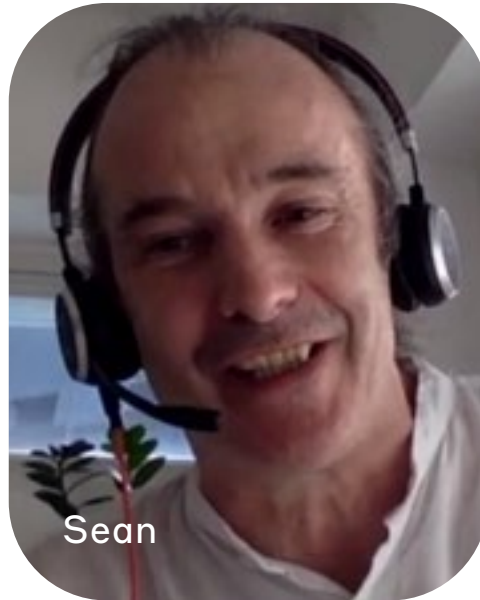
Was the future of higher education design always headed in this direction, or has COVID-19 charted a new course? Jack Sallabank chaired a roundtable with architects from Make to discuss their perspective on higher education design.

Jack Sallabank: What impact do you think COVID-19 will have on the future design of universities?

JAMES REDMAN: There will be financial implications of COVID which universities will need to respond to. Student numbers are going to be uncertain for a while, and there are likely to be fewer international students. As a result, universities will be looking at their existing campuses and thinking about how they can make them more efficient spatially, with a focus on creating more flexible spaces.

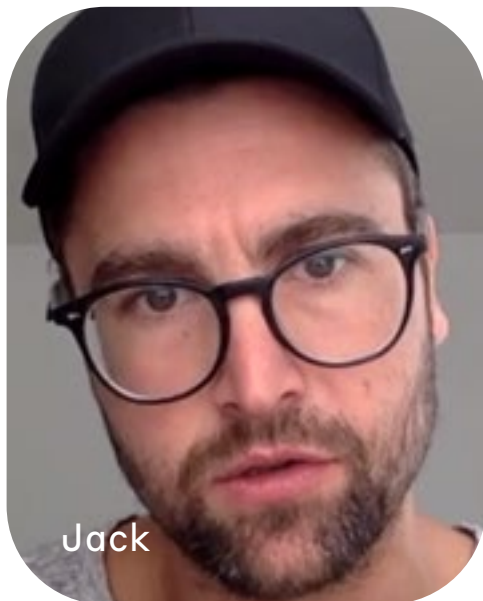
JOANNA GRIFFITHS: The pandemic has demonstrated that remote learning is viable for universities and they can deliver lectures in a very efficient way. Therefore, I think there will be more remote learning embedded into university courses, which will open up the possibility for universities to rethink how they use their current stock of buildings.

PETE MATCHAM: We now need to ask if we really need this much space and how much of what happens here can be done remotely. The Kennedy Building that we designed for University of Oxford is essentially a laboratory building but with a lot of write-up space. If you were doing that building now, knowing what we know about our ability to work remotely in large numbers, you would just build the labs in the buildings and the write-up areas could be in another location. This would reduce the footprint by roughly 40%.

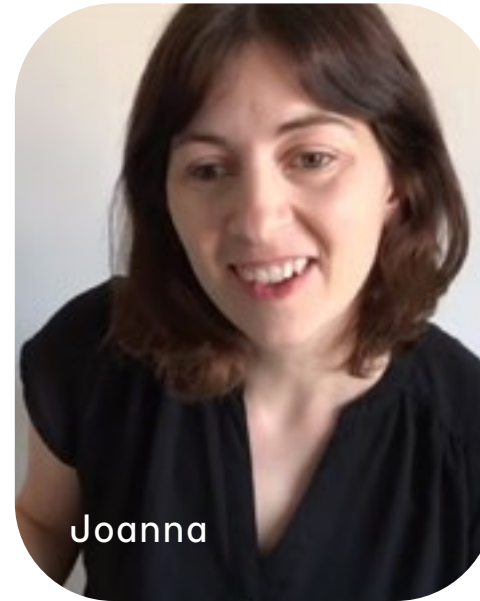


Sean

SEAN AFFLECK: This could be a really exciting moment for universities. Their buildings could be developed and operated in such a way that they could expand or contract, depending on the numbers. Different types of spaces could enable different types of learning, with students becoming less reliant on the campus and instead just using one or two really high-quality, flexible buildings.



Jack

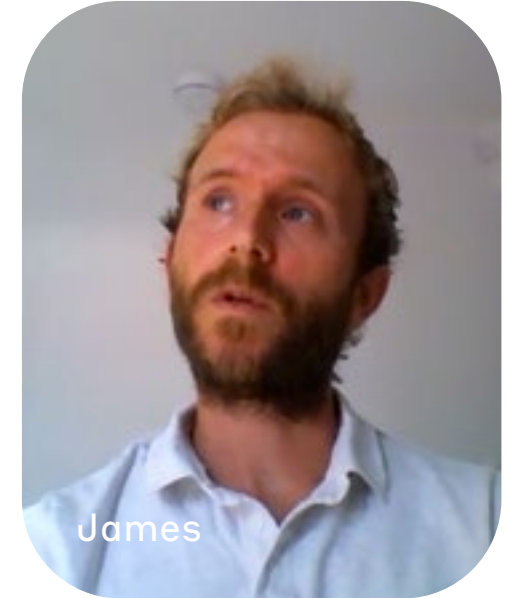


Joanna

JOANNA: The Teaching and Learning Building that we designed for University of Nottingham is an interesting example of exactly this. It's a hub building, and there is no one faculty assigned to it. Students can come onto campus for one day a week and spend most of their day in the building. There are quiet areas, areas where big groups can collaborate, areas where you can get your lunch. It has a great connection to nature and is naturally ventilated, so it is a space you can spend all day in.

JAMES: Despite the focus on efficiency and flexibility, the flagship buildings you see on university campuses will still be required to attract talent. Key days in the university year are the open days, when prospective students are visiting, and universities need a really high-quality journey to take them on. If those buildings are an exemplar showcasing what the

university is about, then that will be the thing which sells it to prospective students.



James

Jack: How do you respond to a brief which asks for a flexible building?

DAVID PATTERSON: The Teaching and Learning Building brief was exactly that – the university didn't know what they would be teaching in it, so they wanted it to be flexible, adaptable and to provide a real step change in how they were delivering education. We won the brief because we designed column-free floorplates that allowed users to adapt the space to meet teaching needs now and in the future.

SEAN: Flexible buildings need to be as big-span as possible, with as high floor-to-ceiling as you can possibly get, and you build columns not walls. If you have these fundamentals in place, you have the agility to change



and adapt the buildings as you need.

SIMON LINCOLN: If you are looking for ultimate flexibility, then you start thinking about modular construction and the role that has to play in universities. You can bolt on another section of the building as and when your numbers dictate.

Jack: Pre-COVID, climate change and the environment were the big items on the agenda for universities. What can we expect to see in the coming years on that front?

JOANNA: I think we are at the beginning of that journey. There are more clients waking up to the reality of climate change, and more architects and construction professionals are developing skills to help them meet those challenges.

I think we will see more clients embedding the ambition to achieve zero-carbon buildings at the very outset of a project.

PETE: When designing a new campus, you have the chance to incorporate low-energy buildings into your masterplan, but a lot of us are working on projects which involve old buildings with poor thermal efficiency. We therefore need to make sure that we are doing what we can to improve the thermal efficiency of those older buildings. I think that requirement will accelerate over the coming years.

DAVID: The role of the natural environment will become increasingly important, not only to deal with the effects of climate change, such as flooding and higher temperatures,

but to connect students and communities with nature, which has many demonstrable benefits to their health and wellbeing. There will also be a shift in focus to encourage wildlife and biodiversity on campuses.

SIMON: Nearly every brief we are getting in Australia now talks about native species. We have been seeing some enticing briefs that want to use universities and university buildings as 'living labs' – buildings where students can learn but which also support the wildlife and ecology on the campus.

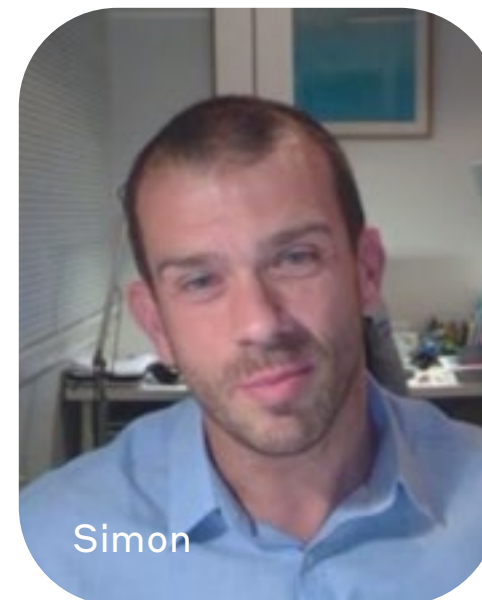
JAMES: The ultimate users or clients of the buildings we are planning at the moment are currently 14 or 15 years old, so we need to ensure we consider this next generation of students. What themes, discussions and passions are they currently talking about? Campuses will need to be visibly sustainable – places that

will give prospective students, having visited for only a few hours, a real sense that the university is investing in the things which matter to them.

Jack: How can a city-based university be 'of the city' and not just 'in the city'?

DAVID: It's about making the university boundary as porous as possible and creating people-focused public spaces. That can be achieved in part by responding to pedestrian desire lines and how people physically need to move around that part of the city. In London we've seen LSE do some great work over the last 15 years to create student-focused public realm. But universities also need to open their spaces for the outside world to use. Certain university buildings only function three or four days a week. Could these spaces be used by the community on the other days?

SEAN: With space at a premium in



cities, it would be great to have the opportunity to better use university space during down times.

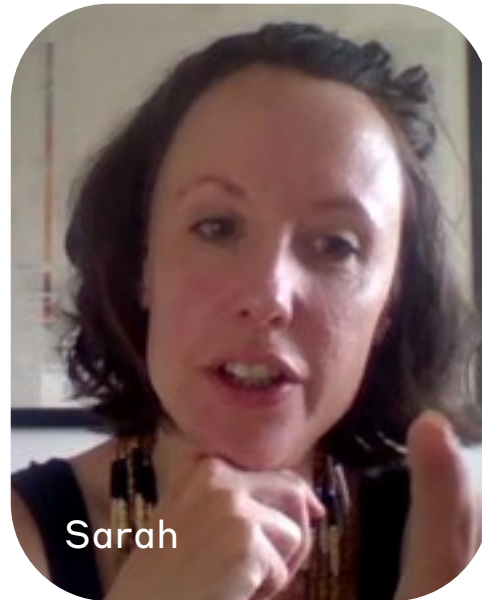
JOANNA: I agree with David that the key to universities integrating into the city is not just about the architecture but also by making a connection with the community through various initiatives.

JAMES: Creating connections with local industry is also key for universities. What we've noticed during our conversations with University of York is not just their focus on the three-year undergraduate degree but also the next steps for the students. With this in mind, they are offering incubator space for students to stay on the campus and develop their own companies, often in collaboration with local industry.

Jack: What does the university of the future look like?

SIMON: It will have fewer iconic buildings, but the ones they do have will be more important. We will see more living labs and a better relationship between buildings and nature.

JOANNA: It's an exciting time, and we will see universities that have been established for hundreds of years having to pivot and change to adapt. It will be exciting but challenging for estates departments as they try and get their head around how quickly they need to move. As a student, it will be a fantastic time to go to university, as there will be lots more crossover between different courses – better communication and



collaboration with people you might not previously have encountered.

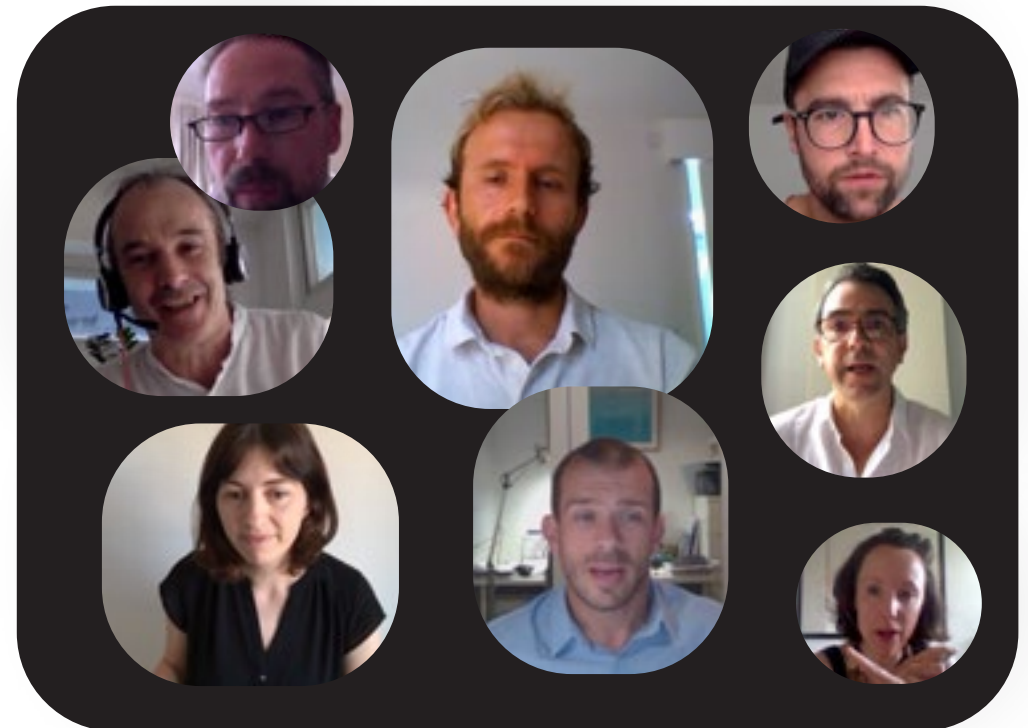
SEAN: One day buildings will be one thing and the next day something else. Very blurry, very green, very natural and lots of robots.

JAMES: They will showcase the emerging trends and passions of the future generations. The students are the clients, and they will be asking about what they're tuition fees are being spent on. There will be more students and staff based at home, connecting through technology but learning better as students learn where they want and when they want. There will be a greater focus on health, wellbeing and mindfulness, with less rigid teaching methods. It'll be more about gaining holistic knowledge.

DAVID: It will be a better version of what we have today. The pandemic has accelerated a lot of trends that were already happening, such as digital education, which will become an increasingly important way to teach and learn. Students,

academics and communities will demand more social spaces to come together, learn and socialise, while universities will explore how their campuses can be better utilised to create efficient estates, becoming more sustainable and reducing running costs. Our challenge will be working out how we can make existing campuses work harder to achieve this.

PETE: I think we will build on the positives that have come out of the pandemic, such as the need for cleaner and quieter environments. We will also see fewer but better buildings being developed. Our role as designers is to make sure we keep challenging the brief so that we are helping universities shape their future.



SIU-MAN FUNG

Hong Kong

*Director of Campus
Development,
Chinese University
of Hong Kong*



“If people are not going to a real campus, to what extent can the virtual campus be integrated with research and development?”

We discuss... Campus masterplans, flexibility and connecting people with nature.

Siu-Man Fung

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The Chinese University of Hong Kong (CUHK) is a public research university in Shatin, Hong Kong. The university was established in 1963. CUHK possesses the largest campus of all higher education institutions in Hong Kong. The hilly campus covers 137.3 hectares.

Siu-Man Fung holds degrees from the University of Hong Kong and University College London in architecture as well as urban development planning.

JACK SALLABANK: How is the university functioning during COVID-19?

SIU-MAN FUNG: Over the past years we have spent time developing our digital infrastructure to support remote and global learning. Prior to COVID, the university had built up

an archive of teaching material and content which is proving especially useful now. We are running lectures either in real time or by broadcasting materials and then holding interactive discussion sessions using Zoom. There will be hurdles for the subjects which require laboratory sessions, as it is difficult to practice that remotely, even with the help of simulation sessions. So that will be a continuous challenge for us.

This raises a couple of interesting perspectives on long-term campus planning. Many campuses are developed around building clusters, with the brief being to bring people together to collaborate. Now we are pushed to explore other forms of communication and means to work collaboratively. If people are not going to a real campus, to what extent can the virtual campus



“When we build a building, we always make provisions for the next step.”

be integrated with research and development? That is a question that we will need to consider carefully.

JS: As an architect and planner by training, what do you enjoy about working on a campus project?

S-MF: I really enjoy the journey of exploration and innovation. With every project, we are looking into some aspect where we don't readily have a definitive answer, and it takes rounds of research and experiments together with stakeholders to map out the solutions.

My responsibility is the planning

and management of projects. We do a lot of masterplanning, feasibility studies and concept design studies. In Hong Kong, the majority of funding for university development comes from the government. So we have to do the study in terms of site selection, area and budget before submitting the proposal and liaising with the approving bodies. We often start with a wish list and a dream plan, and then we consolidate it into a detailed briefed and a concept design.

JS: Do you have a campus masterplan that you are working from?



The Learning Garden
in the CUHK Library

S-MF: After various phases of expansion since its establishment in 1963, CUHK conducted a new round of campus masterplanning in the late 2000s to facilitate sustainable development in the coming years. As we started an extensive consultation process to develop the masterplan, we identified that stakeholders found it very difficult to consolidate their thoughts into a physical mega-structure for how different buildings should develop over the next 20 years. Therefore, we developed the masterplan to be very flexible to enable future refinements. We identified possible new spots for the buildings, and defined the clustering of buildings and how the campus should be organised.

JS: Is one complication of developing a campus masterplan the challenge of knowing the popularity of different subjects in ten years' time and therefore the amount of space to dedicate per subject?

S-MF: Exactly. A good example is the growth we experienced over the last decade in students' preferences for business and law studies, as well as the gaining popularity of big data, AI and robotics, biomedical research, sustainability, and interdisciplinary studies these days. On a university campus, it is very difficult to build all facilities in one go, and such changes impact on what you need to build and when. We revisit our academic planning, space inventory and projects on a periodic basis in parallel with the funding applications. So it is a continual process of doing appraisals for

our spatial needs and the subjects of academic and research excellence that the university would like to expand.

JS: How do you build flexibility into your campus design?

S-MF: Flexibility and possibilities for enhancement, alteration and expansions are very important for planning the campus. In space planning we try not to pack new buildings with rooms but allow more flexible and collaborative space. All of these spaces can turn into a classroom or other functional areas should you need it.

When we build a building, we always make provisions for the next step, if the building were to expand, and we try to build in the possibilities as appropriate – say, in the foundation and structure design, allowing for one or two more floors of expansion in the future.

JS: That must make the build cost more expensive?

S-MF: Yes, and that is difficult with our funding model. If you look at it strategically, one would say 'let's make some provisions for expansion'. But when you are doing the funding application for a building project, the approving bodies may have difficulties supporting the budget allowance for another two or three floors in the future. Therefore, we need to successfully articulate the possibility for future expansion and incorporate that as part of the project brief.

JS: What are your key principles for good campus design?



LEE SHAU KEE ARCHITECTURE BUILDING
Arch Design Architects Ltd



LEE SHAU KEE ARCHITECTURE BUILDING
Arch Design Architects Ltd

S-MF: In the masterplan we have a number of major principles which guide all of our projects. First is to create excellence in the teaching and research environment. Second is to ensure we are a campus which respects our history and cares about how our new developments integrate with the campus.

Alongside these major principles, we put particular emphasis on energy efficiency, sustainability, and health and wellbeing. We try to promote a pedestrian campus where students can move around among the various clusters. Rather than focusing on particular buildings, we are promoting collaborative space planning, thinking about how buildings will be connected to other buildings, land parcels and other amenities.

The campus is hilly with natural terrain, so we have a suburban and beautiful landscape. We try to blur the edges of our landscape and building interiors by creating semi-open forums and very transparent building envelopes. We strive to make the best use of the landscape and the outdoor space on our campus so students will be welcomed to work and can interact freely with a coffee and laptop in a green environment.

Connecting people with nature and architecture is a real focus of our design. CUHK was awarded the esteemed Pioneer Award in the Green Building Leadership category at the Green Building Awards 2019, organised by the Hong Kong Green Building Council and the Professional Green Building Council.

UNIVERSITIES RESHAPING LONDON



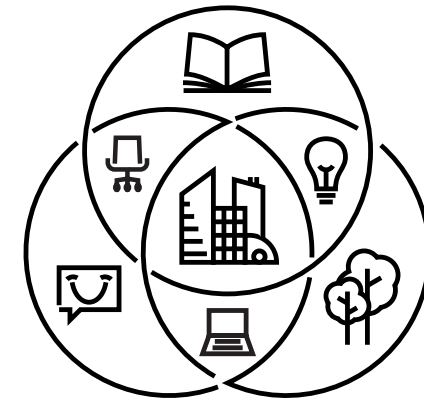
Over the last decade, the growth of some of London's key commercial and social destinations has been in no small part down to the presence of a university. Think of Granary Square and the role that Central Saint Martins has played. King's Cross and the presence of UCL. White City and the impact of Imperial College London. The Olympic Park and the draw of the future UCL campus.

Would each of these locations have experienced such success without the presence of a university? Would Google call Granary Square home without Central St Martins? Would pharmaceutical giant Novartis have moved from outside of London to White City without Imperial College London's presence? Would King's Cross have been chosen as the home for the Francis Crick Institute without UCL being a stone's throw away?

The power a university has to help regenerate a location or stimulate growth isn't lost on local authorities or the developer community. I've had multiple conversations over the last few years with both parties about their attempts to involve universities in big regeneration projects.

But the development plan flagging universities as a regeneration anchor or placemaking stimulator was for the last decade. As London seeks to rebuild in the wake of COVID-19, universities should be front and centre of a reimagined and recalibrated capital.

Here are a few ways I think universities can help London to come back stronger:



REIMAGINING SPACE

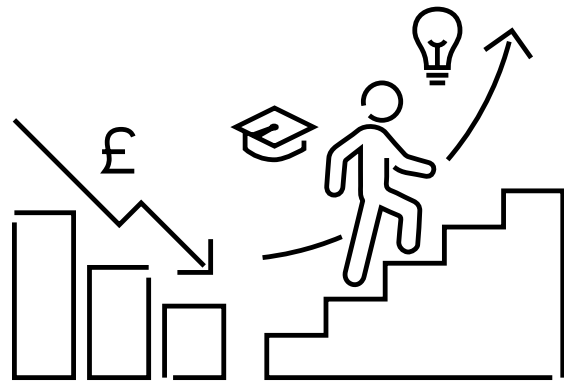
'The office is dead' is the provocation many are posing post-COVID. While this is unlikely to be the case, it's clear that the office as we knew it at the start of 2020 is going to change. Increased remote working and occupiers downsizing their office requirements will potentially lead to large swathes of under-utilised office space across CBDs.

COVID has therefore presented London with a once-in-a-moment opportunity to redefine what the office is for. People shouldn't commute to do tasks they can do from home. The environment, our transport infrastructure, and our mental and physical wellbeing have all been creaking under the stress of the daily commute.

Instead, the office should be a place for added-value tasks such as collaborative working, creative thinking, and lifelong learning and development. With this vision in mind, London's universities should partner with the real estate sector to help turn under-utilised space into hybrid spaces that combine work with learning – spaces

which truly foster and enable a culture of problem-solving and innovation alongside university-quality learning and development opportunities.

Such a blurring of space could create new business models for universities and the real estate sector. What about a 'university subscription model' whereby attendees pay a monthly fee to access different courses whenever and wherever they like? Or an office lease in which you share space with a university faculty related to your company's business?

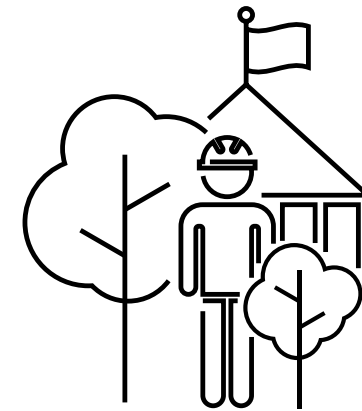


RESKILL AND UPSKILL

Linked to the opportunity to reimagine office space as a place to work and learn is the need to reskill a generation. The UK has entered a once-in-a-lifetime recession, the result of which will be high levels of unemployment. The sectors currently feeling the brunt of the job cuts are leisure, hospitality and retail. The UK needs an ambitious and radical upskilling and reskilling initiative to move those out of work or at risk of redundancy into long-term resilient work. These resilient roles will lie in the knowledge economy, in

sectors based on knowledge-intensive activities that create a greater reliance on intellectual capital rather than physical inputs.

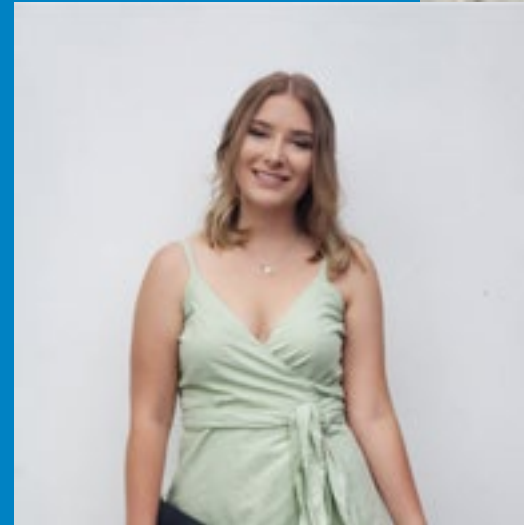
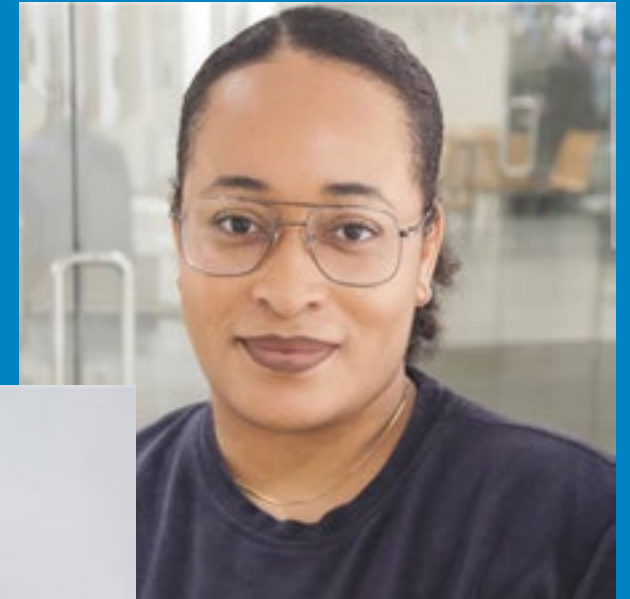
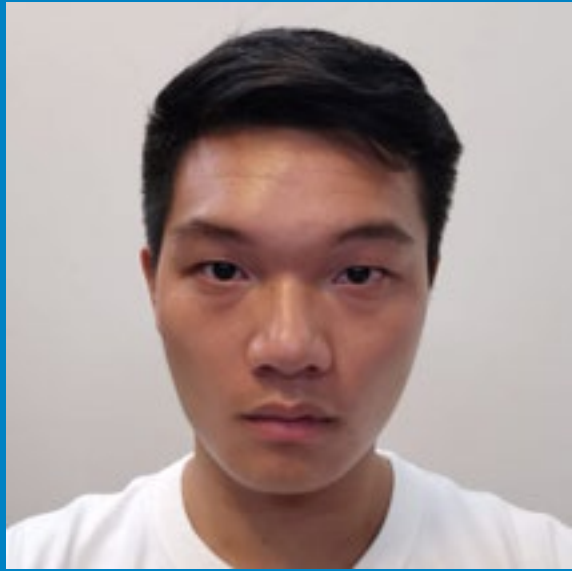
If we combine our world-class academic institutes with our need to reskill our population and rethink our cities, surely we can find an innovative and exciting solution.



GREEN INFRASTRUCTURE

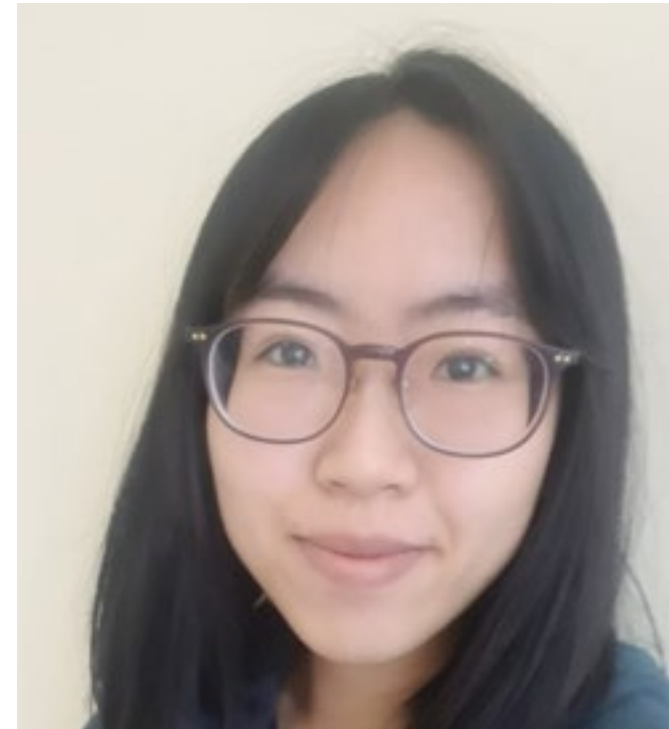
The collective fight against the climate crisis should underpin all future initiatives to help London 'bounce forward' following COVID. Universities must lead the way in developing net zero carbon buildings and retrofitting old buildings to achieve zero carbon status. In doing so, they should be trialing new innovations, new products and new solutions before working with the real estate sector to scale innovations across London.

A workforce of newly skilled green infrastructure specialists, trained in university lecture theatres and employed to work on university buildings, should help transform London into a green beacon.



STUDENTS SPEAK

As we continue our examination of higher education design, it would be remiss of us not to ask students their views on the campuses of the future. We talked to students, recent graduates and alumni from the Stephen Lawrence Charitable Trust in London, as well as Hong Kong University and University of Sydney, asking them the same questions we asked our own architects, all of which are inspired by interviews we've done with international thought leaders in the field. It's interesting to see how the students' thoughts compare with those already working in the industry, especially their hopes for how campuses can evolve to be more inclusive and sustainable, with an emphasis on collaboration and engagement.



CHUNYAN LIM,
SECOND-YEAR MASTER OF ARCHITECTURE STUDENT
AT THE UNIVERSITY OF SYDNEY

How can city campuses become part of the city and not just in the city?

Openness and permeability are the key to integrating city campuses into the urban fabric. This is something I realised in the course of my studies at the University of Sydney. In my personal experience, USYD is a great example of how a city campus can be interwoven with city life. Coming from the direction of Redfern Station on my first visit, I was greeted by a row of bamboo trees that led me to Cadigal Green. I didn't even realise I'd reached the campus until Google Maps informed me.

When there is no defined boundary, a campus can open up and connect

itself to the urban space. It struck me that Cadigal Green is not simply part of the campus but more like a public space that serves students, staff and the neighbouring community. The huge lawn area slopes towards the Old School Building, which acts as the focal point.

It has been fascinating to observe the multiple uses of this green space. In the morning, the wide promenade becomes a shortcut for those commuting to City Road or Redfern Station. In the afternoon, the lawn and S-shaped benches are a favourite lunchtime spot for both students and staff. In the evening, you see locals walking their pets, kids running around, and friends relaxing and chit-chatting. On

weekends, there are family barbecues. The most exciting time is summer break, when outdoor film screenings are held in the evenings with beanbags on the lawn.

Cadigal Green is surrounded by a gym, library, café and even a bubble tea shop, all of which help bring liveliness to the area. It's my favourite spot to relax after a workout at the gym. By opening up the campus and increasing its permeability to the public, there's more opportunity for creative use. This not only merges the campus with the city but also enriches campus life beyond just study.





SIMONE CARMODY,
FINAL-YEAR BACHELOR OF ARCHITECTURE AND ENVIRONMENTS
STUDENT AT THE UNIVERSITY OF SYDNEY

How can universities design in flexibility to respond to changes in course popularity and how students are taught?

The way students are learning, as well as the courses they are choosing to pursue, is a direct reflection of our rapidly changing world. It is no surprise that students are choosing courses that offer opportunities to be leaders of change, enabling them to make a positive impact in a world seemingly plagued by bad news.

Many courses are shifting to incorporate interdisciplinary approaches, providing students with a wide range of skills that enable them

to adapt to the changing world. We are increasingly seeing the necessity of collaboration between disciplines to tackle shared challenges.

Many students are no longer contained to a cookie-cutter curriculum. Instead, they have opportunities to cater their education towards individual career interests and goals. It would be in the best interest of universities to consider these new ways of learning in their teaching environment, designing flexible campuses that can embrace change.

As learning environments have changed to be exclusively online, questions around the future of the

“If we are able to repurpose our dining tables into classrooms, imagine what designers could achieve by repurposing the campus to embrace new technology and collaborative modes of learning.”

campus arise. Are the days of the lecture hall gone? What comes next for face-to-face teaching?

Some faculties hope for a post-pandemic return to ‘normality’; however, I believe these times have presented us with opportunities to rethink ‘normal’. We have adapted to working and learning from home, transforming the purpose of our built environment through technology.

Similarly, the university campus has to adapt to its changing purpose through flexible design. If we are able to repurpose our dining tables into classrooms, imagine what designers could achieve by repurposing the campus to embrace new technology and collaborative modes of learning.

A particular realisation shared by students throughout the past semester is that for many classes, the experience of sitting in a lecture hall is unengaging and outdated. If participation is not mandatory, the turnout of students is low, with many opting to watch lecture recordings online even before the pandemic struck. Being comfortable during Zoom lectures has ultimately led to a higher engagement from students.

In some cases, the rigid architecture of lecture halls can cultivate an environment of intimidation for both teachers and students. As versatile courses increase in popularity, collaborative spaces become more in demand. The inflexibility of the lecture hall may be a detriment to its future as the platform for face-to-face teaching.

It is vital now more than ever for universities to learn from this past year. Embracing flexible design in learning modes, teaching policy and the built environment solves current issues and prepares for an uncertain future.



GEORGINA LARBIE,
ALUMNA FROM THE STEPHEN LAWRENCE CHARITABLE TRUST

How can city campuses become part of the city and not just in the city?

When I think of this, I personally think of my own university location, which I suppose most students would do. Brighton, composed of two universities and a beach, is the epitome of a 'uni town' – a good setting for a coming-of-age novel. The University of Brighton has three campuses spreading from the seafront to Falmer, the edge of the student-led abyss, while Sussex University hovers even closer to the edge, with its own pubs, accommodation, Co-op and post office. The latter is practically its own self-reliant ecosystem of learning and achievement. It is in no way part of

the town; it's merely part of the bus route.

Numerous universities are a town within themselves – they want for nothing, so the cities that surround them don't have a place in their ecosystem. My immediate response to any attempt to blur cities and the universities they contain is to suggest disrupting where university buildings physically end. They should connect to other city buildings like pubs and public libraries, creating a labyrinth that smudges the lines separating learning spaces and public spaces.

This discussion hints at the general boundaries drawn between universities

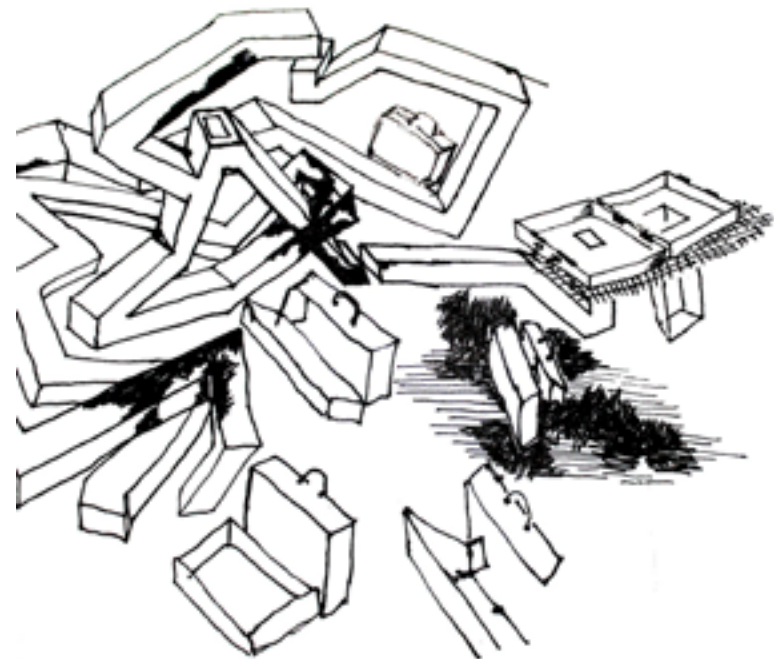
and the general public. University libraries, pubs and lecture theatres are not for the public. In the UK, higher education has a £9,000 gatekeeper, and this is reflected by the fact that the general public can't just walk into the spaces students risk debt to occupy. Likewise, students can't take two steps away from their tutors and suddenly be in their favourite shop. Boundaries work both ways.

Architecture and town planning are often representative of current social settings and economic values. In this case, higher education sits on a pedestal. A university library is more thorough and diverse in content than a public library, but why? Because only

university students should have access to a wealth of knowledge or specialist equipment? Why should the general public be at a loss while 18 to 25-year-olds are enabled (for the length of their degrees, anyway)?

For campuses to become part of a city and not just in that city, we must build fewer walls and instead integrate campus buildings throughout towns. Clustered buildings discourage connectivity between a university's private spaces and the very public nature of cities. Perhaps we should rethink what a university even means so that it can be something not just to students but also to Joe Bloggs, his wife and his child.

Attempting to Connect Spaces
by Georgina Larbie





SHANAE BOISSON,
ALUMNA FROM THE STEPHEN LAWRENCE CHARITABLE TRUST

How can universities design in flexibility to respond to changes in course popularity and how students are taught?

To future-proof higher education, we must design integrated spaces where different faculties are no longer separated. By easing access between different subject areas, students will encounter more topics outside of their chosen course, in turn broadening their knowledge and critical thinking skills.

We must also design built environments that enhance individual methods of learning. While mixed-use space is one approach, a new typology is necessary to truly open students'

minds, enable them to see the bigger picture and inspire innovative thought. One example is Neri Oxman's MIT Media Lab in Massachusetts, a cross-disciplinary setting that interlaces technology, media, science and art. Students here work together as a collective, solving real-world problems.

As the world advances, curricula must also advance, with greater consideration given to the courses provided to future generations. Incorporating more public spaces within educational environments would help ensure students aren't shut out from the outside world. The outside world and the academic built environment should not be treated as separate entities.

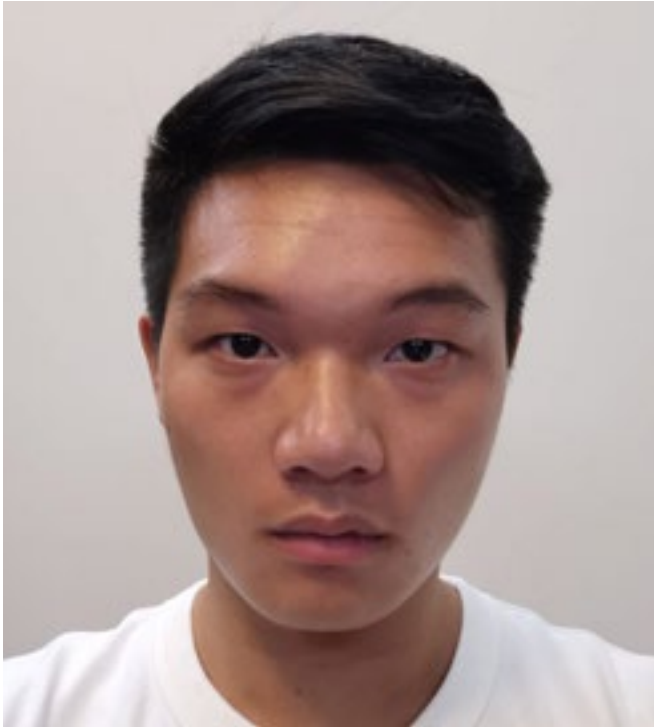
"While mixed-use space is one approach, a new typology is necessary to truly open students' minds, enable them to see the bigger picture and inspire innovative thought."

It's one thing to attract talent but another to lose talented individuals, even though they have the right level of skill and ability, because they didn't feel the environment was right for them. You cannot expect students with diverse interests and talents to excel equally in the same environment. As Albert Einstein famously said: "If you judge a fish on its ability to climb a tree, it will live its whole life believing it is stupid." Individuality should be celebrated, with the academic built environment tailored to enable students to fully express themselves.

Throughout 2020, students have demonstrated remarkable adaptability all over the world, with many successfully completing their academic year virtually from their bedrooms, often alongside family members also

working from home. This is an indicator that we no longer need just one ideal for the academic built environment, especially in the digital age, where we are not confined to physical space.

This could be the end of overcrowded courses and vast building footprints that hold a limited number of students. With more choice and flexibility to the environment in which they carry out their studies, students have been able to approach their lives more holistically. They've been reminded that they are more than just students, that there is life outside of education and that their wellbeing matters. As individuals, they have found balance and discovered themselves.



VINCENT LO,
MASTER OF ARCHITECTURE STUDENT AT HONG KONG UNIVERSITY

How can city campuses become part of the city and not just in the city?

Universities are often seen as prestigious institutions where highly educated people attend courses to refine their skills and knowledge within a specific aspect of interest. These people in return fuel society by strengthening various fields of study and boosting industries' human capital.

With such large contributions to cities by university graduates, it is only fair that cities give back to their universities. The city typically reserves large prime plots of lands for building these institutions, but being physically located in a city does not mean a university

is necessarily intertwined with its daily routine. One aspect I myself as a university graduate have experienced is a lack of an exterior intervention during my course of study. I felt set apart from the world, even though I walked through the city to my campus every day. The only external connections I had were with people from practices who came in to give talks. The things I learnt were not directly applicable to the world of real practice.

I think mixing up public places and university campuses to combine the two could help address this, allowing both sides to coexist, observe each other's daily lives, and experience a small yet direct taste of each other's existence and

"I felt set apart from the world, even though I walked through the city to my campus every day."

contributions to society. For example, a city could invest in a cutting-edge cancer research lab, with the city's best firms locating their scientists there while students from local universities work side by side on their own projects. Students could keep their distance to avoid obstruction, but still operate enjoy occasional collaboration in terms of talks and knowledge sharing.

This could work with other industries too – architects and their studios, pharmaceuticals and their drug labs, lawyers and their courtrooms, and more. With some more thought and refinement, I believe this idea could be implemented with success and have a surprisingly positive impact on society.

CAMPUS AND THE CITY

Designing for rapprochement



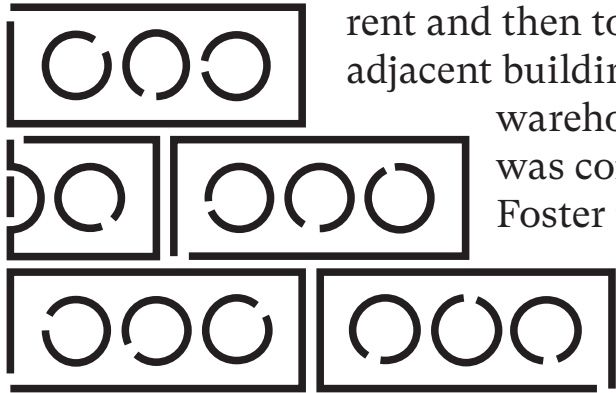
Prof Michael
Hebbert
*The Bartlett School
of Planning*

A thumbnail sketch might reduce the complicated history of design for higher education to just three episodes. To begin with, universities sprang up in cities, taking their names from them and fitting their buildings into the ordinary street pattern. That's still how ancient universities like Oxford, Cambridge, Göttingen and Salamanca operate. Episode two begins in the Victorian era, when colleges began to experiment with out-of-town estates so spacious they were called campuses. Campus designs become the norm in the twentieth century, especially in the great phase of expansion after the Second World War.

Throughout the Western world, governments rejected the pleas of municipalities to bring new university investment their way. Instead, the money flowed out to extensive sites with space for landscaping, playing fields, car parks, internal distributor roads, bus stops, halls of residence and all the academic building needs of today and, they hoped, tomorrow.

We're now into episode three. I've watched the transition as a university academic with an interest in design history. When I was an undergraduate in the 1960s, Britain was in process of building a fresh generation of campus universities on greenfield sites outside Lancaster, York, Coventry, Norwich, Colchester, Canterbury and Brighton. My interview at the University of East Anglia was held in a temporary hut in Earlham Park. It was assumed that many existing urban colleges would want to follow suit and relocate to campuses with ample space for car parking and building projects. The London School of Economics, confined to a dense cluster of buildings in Houghton Street off the Aldwych since 1920, took an option on a 45-acre greenfield site south of London. Though this relocation proposal was rejected by academics in 1965, it resurfaced some years after I had joined the staff of LSE in 1979. I remember being stunned to learn at a special staff meeting in the Old Theatre that the School might relocate to Croydon.

But the tide was turning. LSE stayed put, perceiving the advantages of its tightly wedged position in the street pattern between the City and Westminster.



Instead of relocating, it began to rent and then to buy and redevelop adjacent buildings: the W H Smith warehouse to the north was converted by Norman Foster into a library, the Mobil oil company blocks to the east became university



LSE SAW SWEE HOCK STUDENT CENTRE
O'Donnell + Tuomey



LSE LIBRARY
Foster + Partners

departments, St Philip's clap hospital to the west was rebuilt by the Irish practice O'Donnell + Tuomey as the student centre, and further expansions around Lincoln's Inn Fields and down the curve of the Aldwych more than doubled the School's footprint. One of the boldest expansion projects – under construction at time of writing – is the Marshall Building by Dublin-based Grafton Architects. It's on a large plot between Lincoln's Inn Fields and Portugal Street, wrapping around the back of the Old Curiosity Shop. When I first arrived at LSE, my office was just across the road. Watching the construction of its predecessor on the site, the Cancer Research Institute, I remember wondering why it made sense to put research laboratories in such a central location. Now I see.



Continuing in this autobiographical vein, in 1994 I joined the University of Manchester. Like many other red-brick civic universities, it had for many decades seen its urban location as a disadvantage and pursued various design initiatives to make itself as campus-like as possible. These included highway plans to divert traffic around the edge of a higher education precinct, buffer landscaping and security fencing to screen the university from adjacent neighbourhoods, and architectural commissions that faced inwards, presenting the outside world with a view of loading bays and car parks. Over the next two decades I watched a fundamental shift in design philosophy as the university and the city tried to redefine their relationship in terms of integration rather than segregation. Teaching an urban design studio, I could see how many other civic universities were

attempting similar shifts, and how much business this created for masterplanning specialists such as Sasaki Associates (Cambridge, Massachusetts), Urban Strategies (Toronto), Venturi Scott Brown (Philadelphia), Farrels (London) and URBED (Manchester) – and, consequently, for our students.

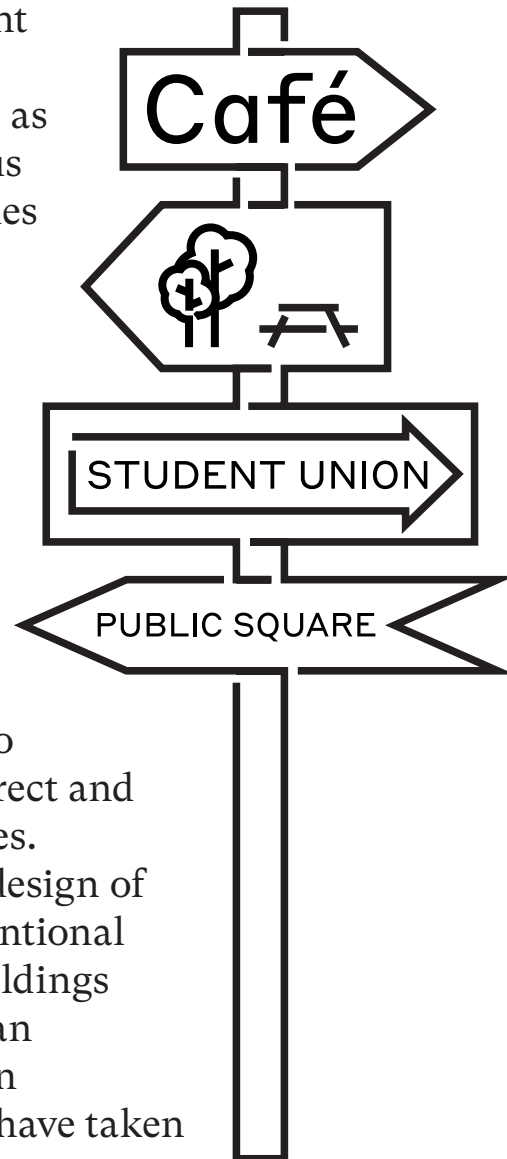
Campus boundaries designed for impenetrability are becoming edges that encourage connectivity. A pioneering example is the University of Pennsylvania campus in its setting of inner-city Philadelphia. When Penn threatened to relocate out of town in the 1960s, the municipality used urban renewal powers to demolish surrounding African-American neighbourhoods, creating a *cordon sanitaire* of parking lots round the campus. Then came a revolutionary



Imperial College London

2006 masterplan called Penn Connects, which aimed to re-embed the university in the city through street reopenings, reorientation of building fronts and backs, and development of shops serving both campus and neighbourhood. The strategy was extended in 2011 with a series of shared parks and open spaces, and architectural guidelines that require new buildings to present active frontages onto public thoroughfares and be designed as much for external as for campus viewing. Many other universities have pursued similar concepts, encouraging the public to come in rather than keep out. They've realised that town-gown linkage and community partnerships are good for academic health, encouraging knowledge transfer and helping attract and retain talent. And cities, for their part, have woken up to the economic significance – direct and indirect – of partner universities.

The change also affects the design of university landscapes. A conventional low-density campus allows buildings to be positioned freely within an accommodating setting of open parkland. Recent masterplans have taken



a more assertive view of placemaking, imposing shared frontage lines and other design disciplines that define the outdoor spaces of a campus as an expression of corporate identity. It turns out that legible, well-ordered spaces, framed by buildings, are not just needed to impress parents when prospective students come on visit days; they enhance walkability and contribute to carbon mitigation, and arguably they encourage intellectual creativity by providing public space where a university's diverse specialisms can meet and mingle. The more streets, squares, parks, bars and cafés, the better the prospects for cross-disciplinary innovation.

Finally, the same hipster logic is being applied to university architecture. The discrete building types of the last century are being replaced by hybrids, designed for multiple functions and for versatility over time. In the era of ubiquitous mobile and laptop IT, the single-function library is merging with the café, the corridor, the common room, the seminar, computer cluster into 'learning commons', a blurring of typologies that reflects real-world changes in work patterns and learning behaviour.

So you could say we've come full circle. Take one of the largest current projects: Cambridge University's 150-hectare development to the north-west of the city. It's a street-based suburb mingling private housing, student halls, academic accommodation, R&D space, start-ups and commercial units. The masterplanner, AECOM, wants to replicate the land use blend of historic Cambridge in a 21st-century environment. The era of the campus is over.

JULIAN
ROBINSON
London

*Director of Estates,
London School
of Economics*



“This could be a game changer for London which forces us all to think of an alternative use for commercial buildings.”

We discuss... Office stock post-COVID, buildings as brands and designing a university quarter.

Julian Robinson

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The London School of Economics (LSE) is one of the foremost social science universities in the world. The university, located near the Aldwych and Lincoln's Inn Fields in Central London, was established in 1895.

Alongside his role at LSE, Julian Robinson is the Chair of the Higher Education Design Quality Forum (HEDQF).

JACK SALLABANK: We are deep in the midst of COVID-19. What do you think some of the longer-term implications could be for LSE?

JULIAN ROBINSON: Currently our teaching is happening remotely, and

we are considering what elements of that infrastructure we can retain post-COVID. However, people come to LSE because it is the top social science institution in Europe, we are the most international university in the UK, and we are located in the centre of one of the best cities in the world. All of this combined creates an incredible melting pot of people and ideas, and it offers our students the opportunity to rub shoulders and collaborate with incredible thinkers. The challenge of going online is that it dilutes that experience.

We are considering whether we need all of our office space, as we have seen that as an organisation we can successfully work from home.



LSE's Saw Swee Hock Student Centre.

“We want to feel very much of the city and not have this distinct ‘town and gown’ divide.”

I can see us moving out of leasehold space and just using our freehold space.

I don't think we will be the only ones looking at reducing office stock, and this could be a game changer for London which forces us all to think of an alternative use for commercial buildings.

JS: Were you already looking at reducing office stock? Has COVID essentially been the tipping point?

JR: Yes, there was a desire to have a more agile work set-up and to be a more flexible employer. COVID has given an economic stimulus to look at putting some of those plans in place.

JS: You've been at LSE for 15 years. Have you seen a lot of change in that time in how the estate operates and the university approaches design?

JR: When I arrived, LSE very much lagged behind our competitors in terms of its estate. I came from Queen Mary University, which had invested heavily in its estate, and I quickly realised that LSE was behind in terms of ambition and level of investment.

One of the challenges that we identified was that most people had heard of LSE, but few knew where we were located. Therefore, a key

part of the strategy was to create a university quarter which would give the School more presence and a better connection with the city.

The second part of the strategy is to create a world-class estate and buildings commensurate with our academic reputation.

JS: What are some of the design features of a university quarter in a city?

JR: A key component is the importance of buildings as brands and giving a physical identity to a space or place. An example of that is the Centre Building by Richard Rogers (RSHP). One of the reasons that RSHP won that project was because they proposed a new public square in the heart of the campus, which wasn't part of the original brief. They looked at the way people flowed through and used the site, and determined the need for a square.

JS: Is creating that permeability and connection with the city important to you?

JR: Very. We want to feel very much of the city and not have this distinct 'town and gown' divide.

The public square has created this new plaza, and it is very much part of the public thoroughfare. This is different from a lot of other



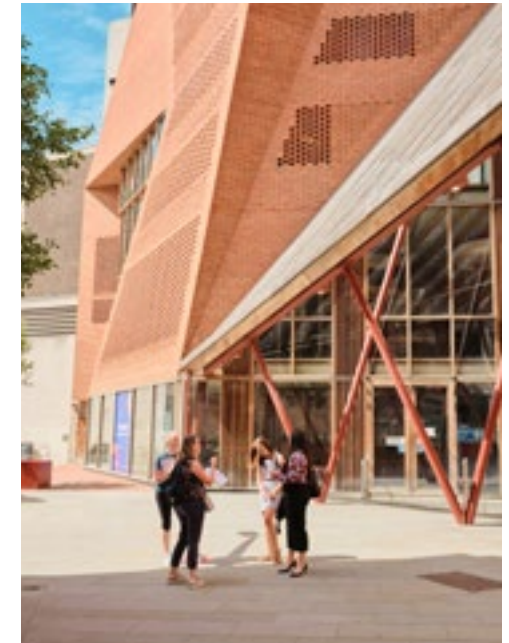
Saw Swee Hock Student Centre.

university campuses, which are often gated or walled off, with people entering into a semi-private realm.

The other thing we add to that is having very permeable ground planes which the public can enter.

JS: The Marshall Building is currently being built on Lincoln's Inn Fields. What other projects are in the pipeline?

JR: We have one more significant project in the offing, which will be a £100 million-plus scheme on Lincoln's Inn Fields. We were due to go out to architect competition, but that has been put on hold due to COVID-19. After that project, the focus of the estate strategy will be turning to the existing buildings and bringing those up to a commensurate standard. There is an added ingredient, which is the School's desire to get to net carbon zero by 2030.



JS: Universities such as Imperial College and UCL have expanded out to new locations like White City and Stratford. Would LSE look at a similar move?

JR: No. We are located in a pivotal position between the City, legal land and the heart of government, and we run the biggest public events programme in Europe. We are a natural stopping-off point for prime ministers and presidents because we are in the heart of London. Therefore, we wouldn't look at being located anywhere else in London.

We have a 2030 strategy which shows only a small growth of student numbers, so we don't need additional space outside of the Aldwych area. We are just going to go very high-quality, high-end – that's our business model.

Photography essay

It's interesting to look at how universities develop, expand and invest in their built environment. It differs, of course, depending on location, whether an institution is part of a city or on a park campus, its heritage, history and culture. We commissioned urban photographer Polly Tootal to visit four universities across the UK to show how each tells its own unique architectural story.

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York
Nottingham

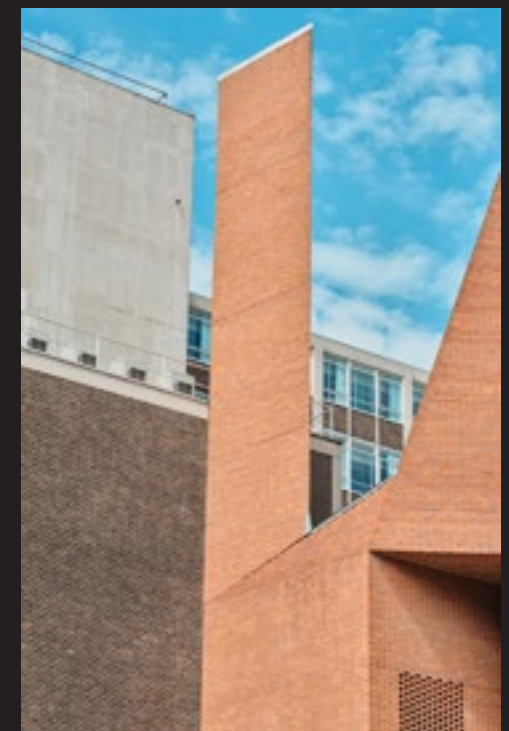
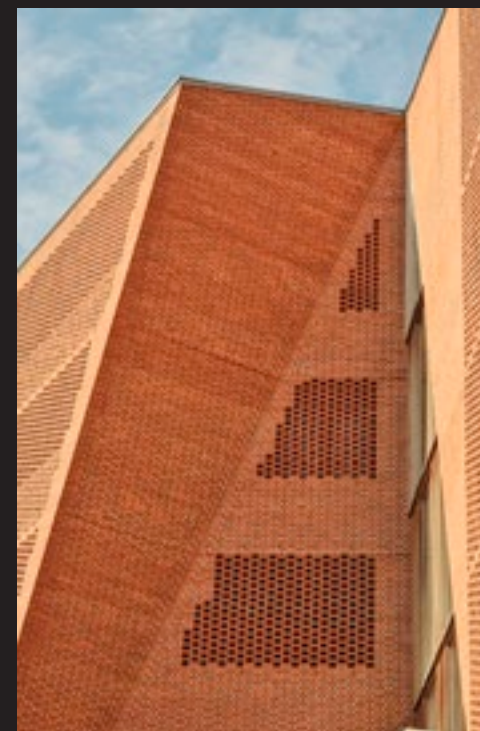
LONDON

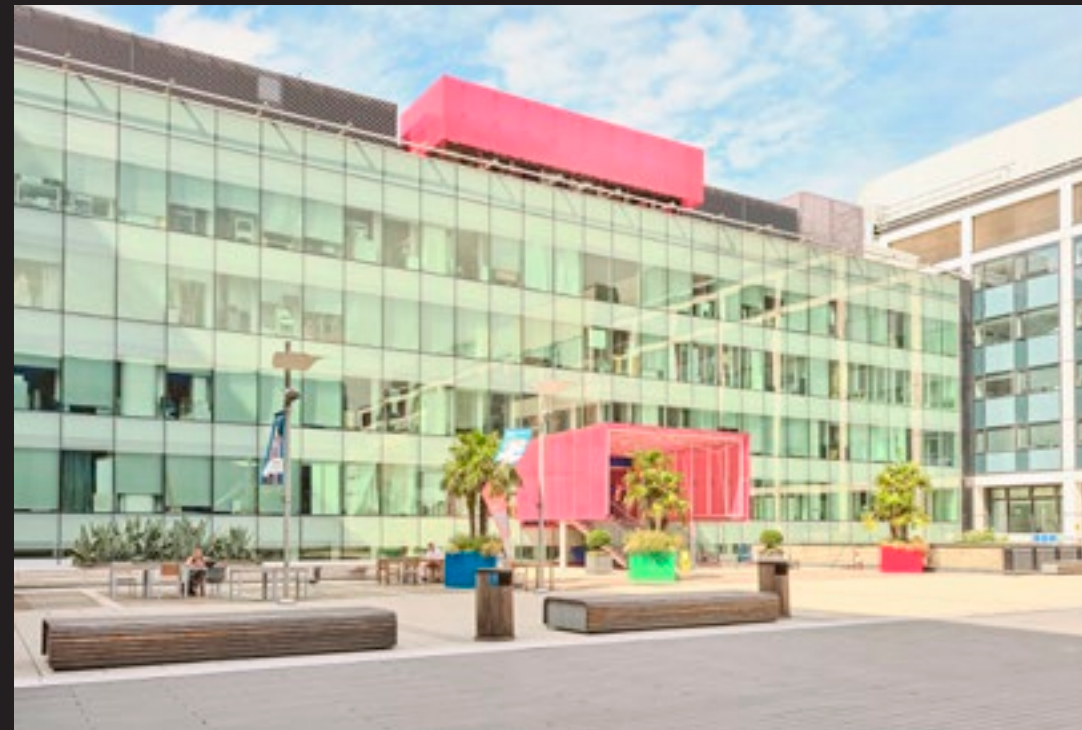
Each of our London case studies has a lengthy history, and has adapted to the constraints of the capital by converting and adapting existing stock as well as developing new campuses or buildings. LSE is a city centre university established in 1895, close to the Strand. Over the years it has considered moving to alternative locations but always stayed close to its original Holborn location, which is now a core part of its brand.

Imperial College London grew out of Prince Albert's original vision for a centre of culture and learning in South Kensington, where its main campus is still located, surrounded by prestigious neighbours that have expanded the Prince's aim, such as the Victoria and Albert Museum. It has since developed off-shoot campuses in other areas of London.

UCL's campus is a defining feature of its Bloomsbury location, sprawling out from its original 'Main Building', which incorporates the Octagon, Quad, Cloisters, Main Library, Flaxman Gallery and Wilkins Building.







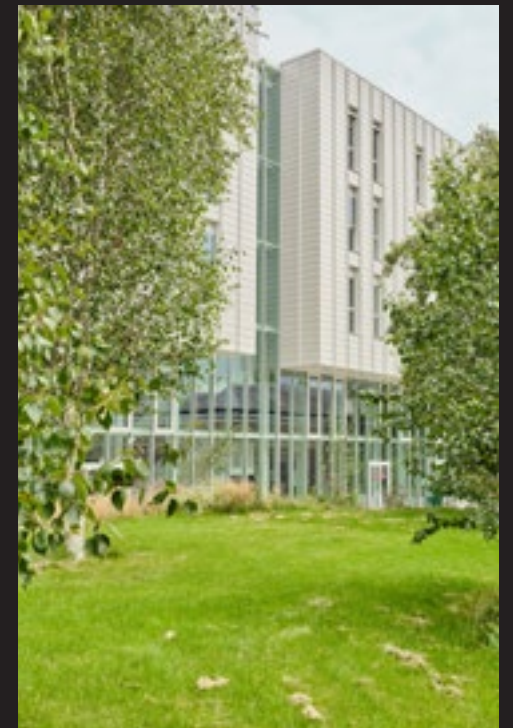


NOTTINGHAM

The University of Nottingham was born in the late 1800s as a civic college. It moved to the Trent Building on its now-renowned University Park Campus in 1928, with its boating lake and parkland, before expanding into the surrounding acres. It has invested in its masterplanning and architecture to provide a range of state-of-the-art facilities.





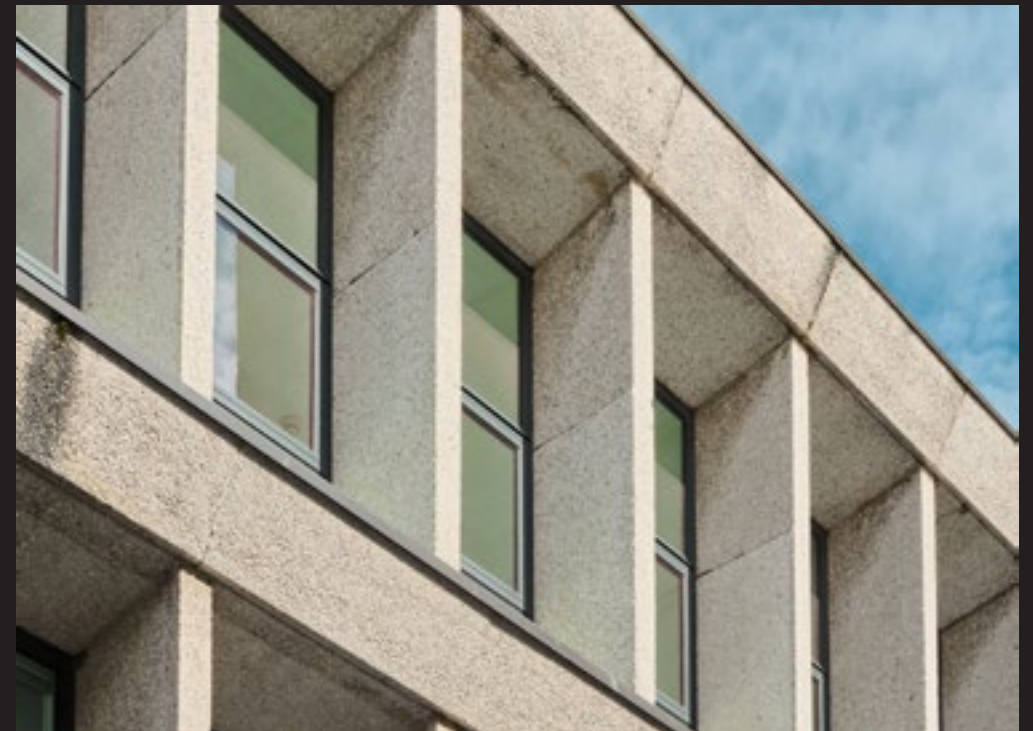


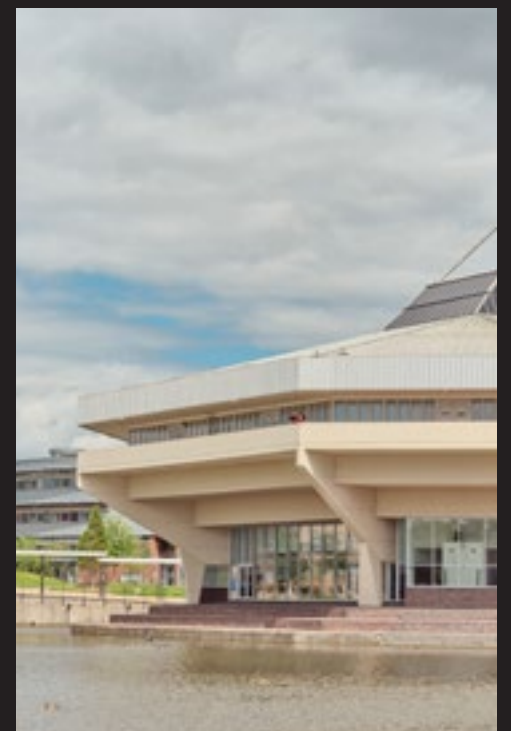
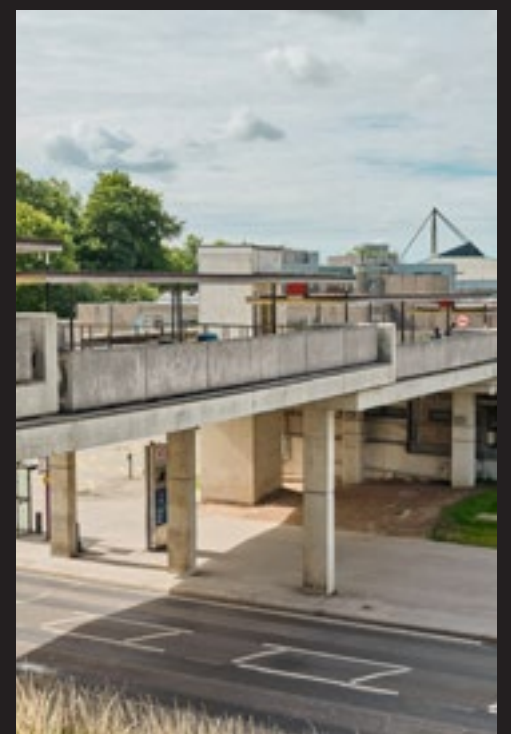
YORK

The University of York, established in the 1960s, operates as a collegiate university, which means each student is allocated to one of its nine colleges.

Located south of the city, it has two campuses. Shown here is Campus West, a stunning setting, with buildings connected by lakes, green spaces and wildlife.









UNITED KINGDOM AND IRELAND



DR JULIE
WELLS
Melbourne

*VP, Strategy and
Culture, University
of Melbourne*



“Our aim is to try and achieve the same qualities of engagement and community that we would have on our physical campus in a virtual space.”

We discuss... COVID-19, climate change and responding to a crisis.



The University of Melbourne, founded in 1854, is the second oldest university in Australia and the highest ranked. It is a research-intensive university with 55,000 students, 40% of whom are international.

JACK SALLABANK: Julie, this interview is taking place in the middle of the COVID-19 lockdown. What does life look like for the university at the moment?

DR JULIE WELLS: The university campuses are currently closed to all but a few staff, so all of our courses are running online, which generally speaking is working well. Today we went live with our online Campus Community platform in which we are creating a virtual space for our community to interact. Our aim is to try and achieve the same qualities of engagement and community that we would have on our physical campus in a virtual space.

JS: So in essence you are trying to recreate parts of the campus experience but in a digital setting?

JW: Yes. For example, the University of Melbourne has five art galleries, one of Australia's best theatre companies and partnerships with all of Melbourne's cultural institutions. As part of our virtual campus, we are looking at ways that we can digitise the experience of visiting these places not just for our own community but for the rest of the world as well.

Interestingly, the situation we find ourselves in with COVID actually reinforces the strategy that we have been developing over the last few years. The strategy – due to launch but delayed by COVID – is very much pitched towards increasing our global impact and relevance, but doing that in part by leveraging our strengths and our partnerships at a local level.

“Universities should be leaders in sustainable urban development, and our vision is of a more flexible campus.”

JS: What has driven the focus of your strategy?

JW: It reflects the imperative that universities are feeling around re-establishing a social contract. We are in an era where we have a crisis of trust; people are questioning the value of expertise, and indeed some question the relevance, of higher education. Our response is largely around building trust and finding new ways to contribute to a world which is changing very rapidly.

We had bushfires in January, and we had COVID in February. In many ways these sudden jolts have given us the opportunity to think about how we put that strategy into action.

JS: You mentioned the bushfires. What role does your response to the climate crisis play in your strategy?

JW: One of the things that emerged really strongly when we were working on the strategy was the aspirational nature of our own campus community and the altruism within that community. There is a generational shift, and increasingly our campus community and stakeholders are looking for us to lead, not by control but by using our convening power to bring people together around these global problems that affect us all. It has been a no-brainer to start to gather our forces to contribute to the global

effort to manage climate change, but also to contribute to community efforts to support bushfire recovery.

What that means in a practical way is making infrastructure available to communities, and that's something that we have been thinking a lot about in campus design. How does your infrastructure support both your core activity and your engagement with your stakeholders? Can you adapt the space in times of crisis to provide enhanced services, supporting students and community? Universities should be leaders in sustainable urban development, and our vision is of a more flexible campus, where infrastructure can be utilised more nimbly and borders are more porous than in the past. The idea of flexibility is rising to the surface in all developments, and we are thinking about how our space can be repurposed should the need arise.

JS: In the UK we're seeing a number of universities working with local partners to create knowledge clusters or innovation districts. Is the same true for the University of Melbourne?

JW: I know some of the UK examples very well. I have visited White City and Imperial College and UCL in Stratford, and we have captured great learnings from watching their experience.

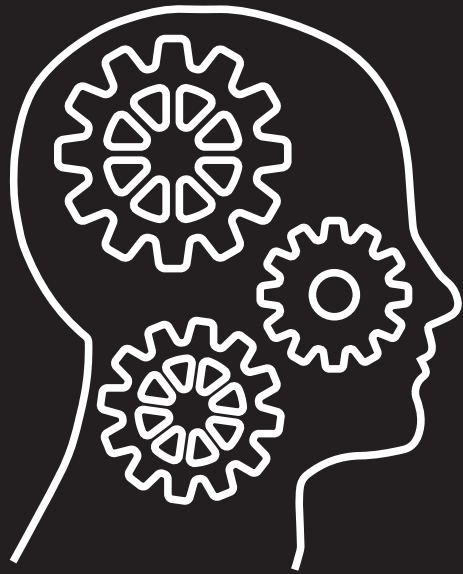
When the University of Melbourne was established in the 1850s, it was in the same decade that a number of other significant medical, cultural and civic institutions were founded in what was a young colonial hub. So we've had a biomedical precinct which has grown organically over 170 years and has become a node for collaboration and engagement. On the western side of our campus we now have the biomedical district, which includes four major hospitals, medical research institutes, a number of different university institutes, and industry collaborators including CSL, Australia's only big pharmaceutical development company. It has become a focal point for precinct development and helped us to think about how we build the local knowledge economy.

We have also developed the Melbourne Innovation District Partnership with the City of Melbourne and RMIT University, Melbourne's other big urban university. The project's primary goal is working together to activate the part of the city that we all occupy, which is the Northern Quarter. We have actively collaborated on an urban realm plan which aims to attract new jobs and businesses into the district, including startups, and build urban amenity. We have also partnered to make it a living lab for urban design. It has been a node for testing and trialling 5G technologies, for example.

JS: You're working with Lendlease on a significant campus project. Is working in partnership with a developer a shift in how the university normally operates?

JW: I led the university's negotiations to find an industry partner to develop our Melbourne Connect precinct, which is a collaborative hub on the eastern edge of the campus that is focused on digital technologies and big data and due to open at the end of 2020. This ultimately led to the partnership we have with Lendlease. At the time it was a completely new thing to work with a development partner, and it has been a very positive collaboration. Lendlease is positioning itself as an innovative developer of urban precincts globally, and working with them has given us a much deeper understanding of how the property world functions, the brand value of universities as partners and the value of a university asset to a developer. The exchange of knowledge and insights has been rich.

KNOWLEDGE EXCHANGE *and* SOCIAL CONNECTION



Ziona Strelitz
*Founder/Director,
ZZA Responsive
User Environments*

Designing for the 'new normal'

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Writing this midst the COVID-19 hiatus, one inevitably speculates on how the world is going to be. I see this disruptive event as highlighting knowledge exchange and social connection as key aspects of higher education design that will emerge as even more important as we move forward.

My work involves research and strategy – generating evidence on how people use and experience buildings and spaces, and leveraging the deep and continuously evolving insight that accrues from this to help inform new design projects.

Sectoral crossovers

An aspect of my practice that provides particular value is learning from ZZA's work across different sectors. This spawns design ideas and user protocols that can be usefully transferred from one sector to another, in either a similar or adapted form, as appropriate. Among the sectors we cover, the crossovers between academic and commercial environments have increasingly converged.

It's not uncommon for people to consider the established work milieu in their respective sector as a special case, and academics have continued to be unwavering about individual, assigned offices being essential to their work as researchers, tutors, pastoral carers and colleagues. And until COVID forcefully zoomed them en masse onto online modes of student engagement, many have also held firm on traditional modes of teaching as the only real possibility.

But requirements are often less specific than assumed, and despite academics' long-standing success in retaining their offices, the context of academia has been changing all the while. How could it have been otherwise, with the locational flexibility and cultural change that technology has brought to social and economic functioning across the board? And especially as academic work is highly characterised by autonomy and agility – faculty have extensive discretion over significant parts of their activity, spatially and temporally.

In terms of design, the strongest programmatic alignment between commercial workspace and higher education is promoting knowledge transfer. Whereas



the acquisition and imparting of knowledge has always been the rationale of universities, it is now also seen as the heart of business – both private and public sector.

Organisations' quest for new ideas and their need for resilience require their people to share knowledge. Physical spaces that promote this are viewed as important enablers.

Having contributed to numerous workplace strategies and judged many workplace awards, I know first-hand that organisations consistently cite knowledge transfer as an objective for procuring new workspace, with their business case invariably geared to this end.

Social space as the fulcrum

The distinguishing feature of workplace design for knowledge transfer is space to promote physical encounters and interaction, based on the expectation that this will lead to social engagement, information exchange and added value. Indeed, review of space budgets of commercial workplaces over recent decades evidences a very clear shift from space for solo working to settings that facilitate interaction – spaces to convene, present, discuss and chat. In contrast to the previous workplace focus on corridors lined with formal meeting

rooms, which now seems so ‘last century’, the new social settings typically comprise a diverse range of informal environments that look lively and are more inviting and stimulating to use.

More recently, this approach has infused higher education. The contemporary focus on social learning has established a striking physical presence on university campuses, and social learning has become forceful in steering the settings that academic institutions now look to provide.

Why learning together benefits learning

Learning with others involves various degrees and forms of togetherness. Group discussions and joint presentations are perhaps the most obvious and active collaborative modes, but people frequently learn together seated in pairs, and often this involves study partners pursuing entirely different subject areas from one another. The stimulus they want is to feel motivated by other people who are also learning, and to counter a sense of isolation while pursuing individual study. ZZA identified these powerful motivators in our research on *Why Place Still Matters in the Digital Age*, reporting the scenario of student friends – taking degrees in non-cognate domains at different universities – coming to support each other in independent study at the British Library. And we’ve observed the range of social learning formats in action again and again over the decade, most recently in our post-occupancy research at the London School of Economics’ highly popular new Centre Building, with its expansive Learning Commons,

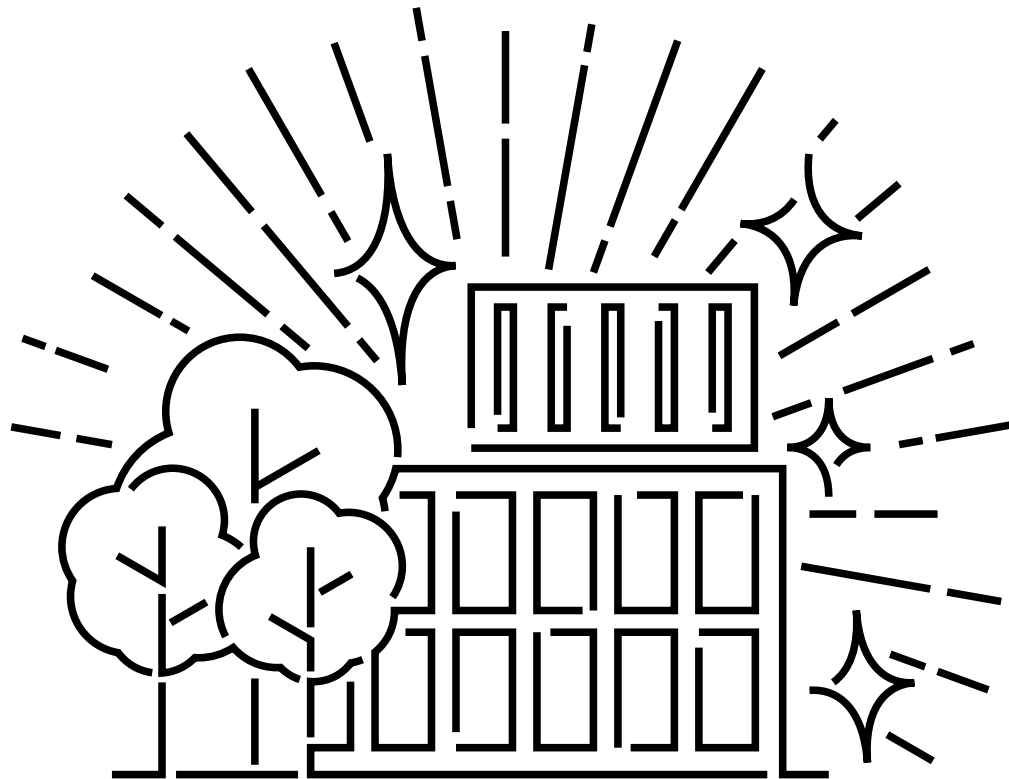


which offers a range of study settings.

This physical coming together, face to face, offers an immediacy of engagement that outstrips remote connection. It’s not that virtual platforms aren’t valuable. Indeed, how much more disconnected would we all have been during COVID-19 without them? Like others, I’ve made extensive use of online connection over the pandemic’s lockdown. But none has given me more benefit than a face-to-face encounter – eyeball to eyeball, helping me to discern and respond to co-participants’ gestures, pace and other cues in real time, all of which are important nuggets in registering a fuller picture. Not even my clients whose business is to sell technologies for virtual connection doubt that the ready availability of someone to tap on the shoulder, and the osmotic learning from being in earshot, trumps having to contact someone who is remote to ask a non-urgent question.

Social connection as important in itself

There's more to convening with others in physical space than the instrumentality of better learning or knowledge transfer, pivotal though that is. We don't go to university or the office just to work; sociability in itself is a big attractor. The COVID laboratory has reinforced our recognition of social contact as a driver, whether for work or study. We value live company – a chat, a hug, a community beyond our household, an active arena in which to define ourselves. People want this. The office isn't dead. Nor are universities as we've known them obsolete in real life. Indeed, the role of sociability in combatting loneliness and poor mental health has attracted widespread attention.



Quo vadis?

Based on the compelling appeal and benefits of social settings in commercial workplaces and universities, I foresee no diminishing interest in physical spaces to promote knowledge and learning. But this begs the question of the business model for onward development of higher education buildings. Student numbers, and students from abroad, have played a significant part in funding the construction of the new learning environments that have won acclaim – those social spaces that photograph so attractively and in turn serve as powerful posters for their campuses. With social learning in physical settings a potent ingredient that helps fuel higher education's attractiveness and effectiveness, full migration to online learning is not going to be the answer. But with capital expenditure and revenue budgets dramatically squeezed, resourcing of even slowed-down development programmes will be a challenge. COVID's financial hit to universities and businesses can't be magicked away, so what does the future bode?

Institutions may be in a catch-22, but their lifeblood is indispensable. For higher education, this means students and staff; and of these two constituencies, it's students who have more agility and room for manoeuvre in where they choose to go. Their selection of university is a nimbler decision than an academic considering a switch of employer, so students' interest is poised to have the stronger clout. A positive aspect of economic crises is the visibility they give to redundancies. I predict that future priorities for higher education accommodation

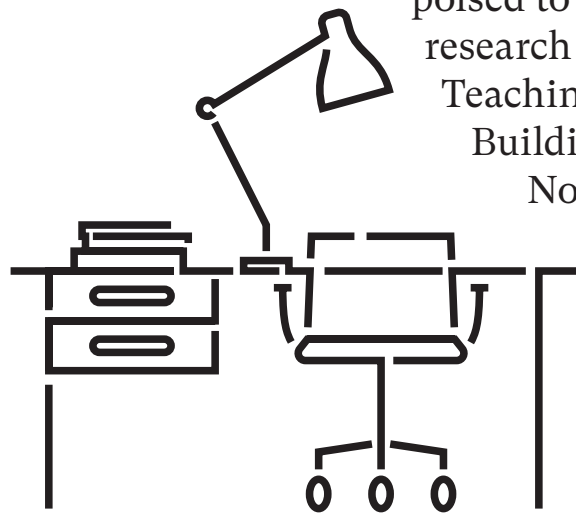
will reflect a rebalancing of space budgets, with the slack that now resides in under-occupied academic offices making way for more student learning space.

And with a likely moratorium on brave new buildings, existing space will be released for adaptive reuse. ZZA's study of LSE Life, the innovative curated learning environment in the LSE Library, evidenced its game-changing effectiveness for students – in a retrofit. With its stripped-back interior and exposed services, the space itself is atypical in the LSE campus context. What so hit a note with students were its readily available study spaces for individuals and groups, the scope to talk while studying, and the provision of expert assistance in learning skills, offered on the spot.

Retrofitting higher education facilities can be part of a rich seam, incorporating a relevant variety of study settings. But I have no doubt that when the 'new normal' emerges, higher education will re-mobilise to procure more new environments that promote learning and knowledge transfer. Base building design is uniquely

poised to optimise this. ZZA's research on Make Architects' Teaching and Learning Building at the University of Nottingham evidences the

positive influence of its human scale, excellent daylight and external views in helping students study effectively



Teaching and Learning Building.



LSE's Saw Swee Hock Student Centre.

and for long periods. Importantly, technology will be there too, in the mix with physical space, supporting all participants in their preferred approaches to blended teaching and learning.

Win-win-win

And I venture that faculty will also benefit. As in any squeeze that drives innovation, academics will be led to varied new work settings akin to the suite of environments that commercial workspace has offered for two decades, predicated on what were called 'new ways of working' when office workers were first untethered from their desks. Academic workspace will catch up, if not leapfrog, with thoughtful design to align with academics' needs – in its conception, realisation and testing of use. So integral to future gains for students and faculty, I foresee a likely win for designers too, as collaborators in delivering buildings and spaces that will help universities continue to flourish.

JOSEPH WONG

Hong Kong

*Vice Principal,
Hong Kong
Design Institute*



“Our aim is to try and achieve the same qualities of engagement and community that we would have on our physical campus in a virtual space.”

Make's Sean Affleck talks to Joseph Wong, Vice Principal at the Hong Kong Design Institute, about sustainability in Hong Kong and inspiring future generations.



Hong Kong Design Institute (HKDI) was designed by French architectural practice Coldefy, to provide an open and dynamic environment conducive to creative learning and exploration. HKDI attained BEAM Plus 'Gold' from Hong Kong Green Building Council. Photograph Ambrose Fok, fyr design studio

SEAN AFFLECK: Hong Kong isn't known as the most sustainable city in the world, but it is changing. As an academic working to inspire future generations, what are your views on that?

JOSEPH WONG: It's true we're behind the curve. I'm a current council member of the Hong Kong Institute of Architects and I serve on their sustainable development business group, so I've been following sustainable design in the city for quite a while now.

What frustrates me is that although Hong Kong has talked about it for quite a while, we still don't really see it. We're still applauding buildings for having two or three 'features' like solar shading or PV panels, but there's nothing to

encourage a building to actually be sustainable. Their sustainability features are simply solving problems the building design has created. In my opinion that's indicative that sustainability wasn't thought about early enough.

For me, sustainability is looking at how buildings can continually change. So much energy is used because developers don't actually look at how we, the occupier, will use the building. I think the days of accruing points in a LEED or BEAM system are past. There has to be a more holistic way of looking at it.

SA: So, you'd argue that flexibility is key?

JW: Yes, but also adaptability. When I was teaching at City University of Hong Kong, I conducted research on open buildings and adaptable spaces which can be retrofitted to prolong their life in



The 125 metre-long Design Boulevard connects the four towers of HKDI, as well as the auditorium and multifunctional and exhibition spaces on both sides. This provides a meeting place for HKDI community and the general public, through exhibitions and creative events, and functions as a cultural hub of the district. Photograph Ambrose Fok, fyr design studio

use. We're not good at this in Hong Kong, we tear down buildings just because they don't fit their use anymore. I remember watching a 15-year-old hotel get torn down just because they wanted to change it into an office. There was no consideration of adaptability.

It's interesting because even

in the way architecture is taught these days, there seems to be an assumption that buildings will be used the same way 24/7, but a building's usage can change so dramatically over time. Take our own campus at HKDI as an example. It's much more interactive, working with international institutions, collaborating, much more project work, but our building can't always offer the flexibility that these changes mandate.

Now we should be designing for varying activities and different

scales – one-to-one, small group learning, presenting to overseas groups, preparing a video, etc. Large-scale lecture theatres aren't needed so much, for example, so how can we make better use of our 700-seater theatre, which takes up a lot of room and uses a lot of energy? Now that students can download the lecture to listen in their own time, do we still need those big energy-guzzling spaces? It has to be about how we control and monitor uses within the building, so that we can turn off spaces that are not in use.

SA: What happens when the students aren't there? Like during the holidays and especially now, when people aren't travelling – does that relationship between campus and city change?

JW: Our campus is quite good in that regard, all the public spaces and some of the facilities are open to the public or can be leased out for use by outside groups. So there is a design factor here. A number of the secondary schools in Hong Kong have their halls located on upper floors of the building and not on the ground floor, so if you want to lease out or open the halls to the public, it presents a problem. So, for me again it comes down to studying the buildings to learn how we can use them more efficiently – who are the different users? How can we make the most of the building? We need to consider the access through the buildings and, especially now, how to minimise contact between different groups of people. This is a great opportunity for designers to think about that.

SA: So we need to make the architecture more adaptable. That would make it more exciting in a way.

JW: Yes, but also more human because we must talk more to the users of the design. Academia seems to be still in the phase of wanting iconic buildings, and they do attract and excite the students, but then they realise that some windows can't even open!

SA: In Europe, we're finding that companies need to improve their

sustainability actions, not just state empty rhetoric, to attract the best talent. It's something students are demanding and pushing companies to do more and more – are you finding that?

JW: No, not really. Students are aware of the smaller things like conserving water and paper, while the government may focus on higher-level matters like zero carbon. But it is at the middle of these two extremes where architecture comes in. There's real scope for them to make an impact on the day-to-day architecture of the city. Not everyone will get to work on high-budget, groundbreaking projects, as most will work on delivering ordinary buildings for common use. But that is where great strides can be made in bringing forward

real sustainable architecture that impacts more people.

What is interesting is that Hong Kong has real expertise in high-density, high-rise living, but it's never really used as a design studio topic. Students don't think about design in a high-density environment as a specialty, but actually this is a body of knowledge that Hong Kong architects could be exporting around the world as market leaders. And surely there is much scope for achieving sustainability goals for cities that can deliver high-quality, high-density, high-rise architecture.

Top right: The professionally equipped, 740-seat auditorium not only serves as a teaching venue, but also hosts a range of collaborative events with the design industry and academia, such as master lectures, concerts, and HKDI's annual graduation show. Photograph Ambrose Fok, fyr design studio

Bottom right: A series of high-quality design exhibitions – organised with local and internationally acclaimed museums, designers and curators – are presented annually at the three exhibition spaces: HKDI Gallery, d-mart and Experience Centre. The exhibitions are free and open to HKDI students as well as the general public. Photograph Ambrose Fok, fyr design studio



WELLBEING IN THE UNIVERSITY LANDSCAPE

by James Redman
Make Architects

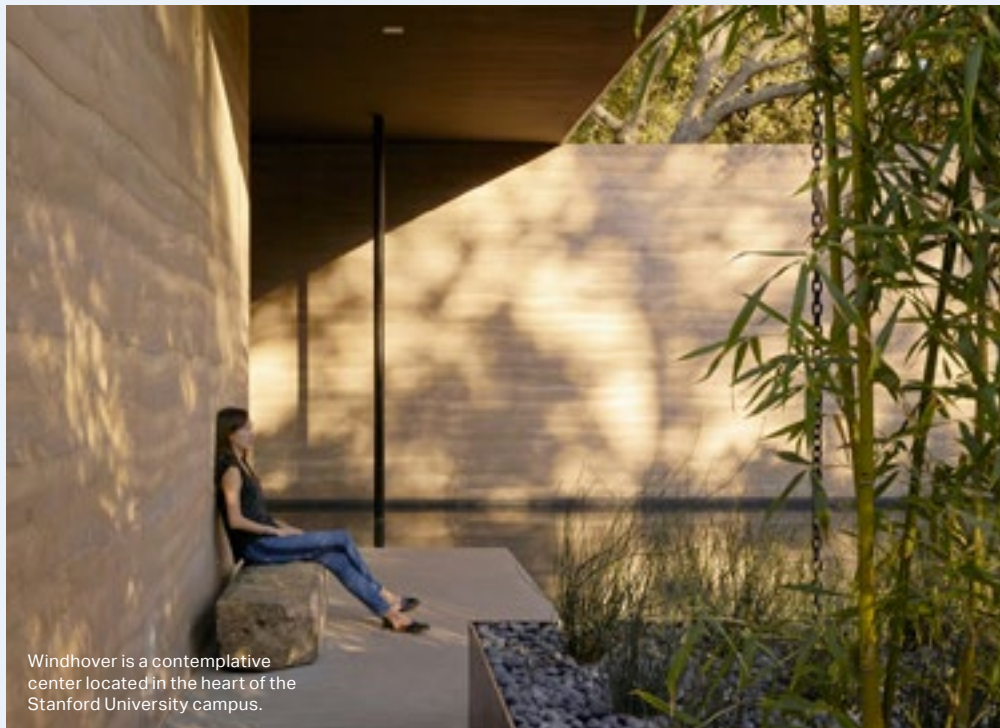
For prospective university students, the choice of a healthy living environment has become part of the application process. Mental wellbeing is no longer considered secondary to physical health. Prospective students are now looking for a living environment that feels welcoming, flexible and healthy, and universities are responding through the development and management of their estates.

COVID-19 has further highlighted the role of wellbeing. Lockdown has limited our ability to interact socially, access outdoor spaces and continue our old routines. Students have faced school closures and uncertainty over the reopening of universities. There are concerns over the long-term mental health impact of lockdown, which for some has resulted in stress, anxiety, loneliness and a drop in confidence.

But lockdown has presented opportunities as well. It has been a unique moment in time to hit the 'pause' button, to give individuals and organisations the chance to reflect and quickly implement cultural changes that were originally been part of a longer-term agenda. Ten-year plans have been turned around in a matter of weeks, something that was previously thought impossible. Switching to online



“The university of the future will be shaped less by rigid teaching methods and more by experiences, community, social interaction and collaboration.”



Windhover is a contemplative center located in the heart of the Stanford University campus.



Student gardens at the University of Pennsylvania.

teaching, for example, has been part of many universities' long-term plans, but COVID-19 accelerated this out of necessity. And so we can now justifiably take the time and care to think about a positive future for all generations. We have been rudely stripped of our old normal, yet we are now in control of what the new normal can be – it's a future that places our wellbeing at the centre of our lives.

Universities are rethinking what constitutes their campus of the future, creating environments that are inviting, healthy and flexible and represent good value for money for students paying up to £9,000 a year in tuition fees. Their choices will span the campus landscape and built environment at large, along with transportation options and living conditions. With online teaching now embedded, the university of the future

will be shaped less by rigid teaching methods and more by experiences, community, social interaction and collaboration.

In recent years, researchers have demonstrated that access to green space can reduce your risk of mental health problems, improve your mood and increase your life satisfaction. Harnessing the potential of green campuses is important for maximising students' wellbeing. Making outdoor spaces readily accessible and maintaining them to a high standard allows students and staff to have a visual and physical connection to nature, and is essential to a balanced and healthy life. Perhaps we will see more student-run gardens – spaces for growing fruit and vegetables, a place to meet, get fresh air, contemplate, pause. Or perhaps there will be more outdoor gyms and



exercise routes, where landscape and community connect.

A strong connection to nature is likely to be even more prevalent within future building design as well. The notion of biophilic design – where building occupants are connected with nature – can reduce stress, improve cognitive function, and enhance mood and creativity. At Make we place these themes at the very centre of higher education building design. Historically, building design has turned its back on the natural environment, the facade forming a barrier between nature and artifice. Yet the higher education buildings of the future may well introduce landscaping at all levels, with external terraces, planting, vertical gardens and natural materials creating a three-dimensional campus. Such buildings will be naturally ventilated and maximise natural light during the day – a piece of architectural therapy, if you will.

Higher education building design should also promote wellbeing through its composition, function and spatial arrangement, much like contemporary office design. The notion of a normal, or standardised, workplace now appears defunct. Buildings should seek to offer

freedom to their occupants, recognising that everyone is different and one person's optimal working environment might be another's worst nightmare. All working environments should feel welcoming, flexible and safe. Choice is key here – how do we design for introverts and extroverts? How can we create buildings that foster social interaction and creative dialogue while also providing a sanctuary for quiet work? How can we make buildings accessible to all, both day and night? University campuses must work hard around the clock, helping students forge individual routines within their ideal work and social environment.

Prospective students will need to see that higher education buildings support and sustain their occupants on a daily basis – for example, through healthy food and drink options, a variety of workspaces and environments, adjustable workstations, movable furniture, excellent technology, cleanliness, and considered lighting. The campus should be a site for positive placemaking, which can be achieved through safe and sustainable transport, generous cycle storage, pedestrian-friendly areas, inspiring public art, and events for and by the students. A positive university brand will enable them to feel



The Teaching and Learning Building.

“The sector faces increasing demand from students and academics for more diverse spaces to meet, study and socialise.”



View of the atrium in the Teaching and Learning Building.

part of a wider community that they can lean on, integrate into and ultimately be proud of.

We are in the midst of substantial cultural change. A global tragedy has created a unique scenario in which we have all been affected by the same event. Together we are back at the start line, reflecting on a pre-COVID world but with the opportunity to determine what our future looks like. This will shape the way we live and work for

generations to come. We may never get a chance like this again, and so it is our duty to up the ante on how we design spaces, places and buildings to ensure every individual's wellbeing is at the heart of the design. Together we should be shaping the most positive, supportive and fulfilling experiences for all, in turn setting the benchmark for living, working and socialising.



Green wall in 1 Centenary Square, Birmingham.

EDUCATION Q&A

by Simon Lincoln
Make Architects

Interview with Nicole Marchhart and Victoria Bolton from the University of Sydney.

We discuss sustainability, the 2020 bushfires, and the impact of the pandemic on university design.

Nicole Marchhart (*left*) is the University of Sydney's Energy and Waste Manager. Victoria Bolton (*right*) is the Design and Space Strategy Manager, UI.



SIMON LINCOLN: How has the University of Sydney pioneered the design of its buildings to minimise their impact on the environment?

NICOLE MARCHHART: Many years ago, we established a sustainability framework for the University of Sydney, similar to a Green Star-equivalent design standard. That framework ensured the design of all of our buildings incorporated sustainability features like solar power and water tanks for irrigation on gardens. Since then, we've moved towards a Green Star Design & As Built standard, which of course is a more universally recognised standard, and this will be adopted across all of our campuses. The Engineering Transformation Precinct will be the first of our new buildings to meet this standard.

We've also recently launched the University of Sydney Sustainability Strategy, which is the result of consultation with academics, operation staff and student representatives.

VICTORIA BOLTON: Further to Nicole's comments, it's important to note the scale and age of our university. Founded in 1850, we have over 500 buildings across several campuses and properties, plus around 10,000 staff and 60,000 students. The Camperdown-Darlington Campus is our largest campus and through the Campus Improvement Program 2014-2020, we have invested A\$1.5 billion in enhancing the built environment. Through the implementation of design standards, we have made product selection more sustainable.

The flow-on impact of the major builds has been a lot of relocations across campus. To create a more circular economy and reduce waste, we have implemented a furniture re-use store in partnership with Egans, which stores our high-quality furniture and redeploys it for other fit-outs. Thanks to this initiative, we saved around 18.5 tonnes of furniture from ending up in landfill in the first quarter of 2020.

NM: We're enthusiastic proponents of training future generations by demonstrating how we can do things differently. Our Abercrombie Business School building is a wonderful example. That building was designed around a very large eucalyptus tree that provides habitat for local wildlife. By saving that tree, we've not only created a beautiful focal point for the design but, in my opinion, also positively impacted on the health and wellbeing of the staff and students who utilise that building.

SL: Can you share some of the pandemic's likely long-term impacts on the university as both a workplace and a learning environment?

VB: My team manages the spatial register of the university. We capture where departments are located across our portfolio and monitor the utilisation of those buildings.

Looking ahead, our staff surveys are showing that most people wish to continue to work from home for two or three days a week. Suffice to say, that will impact the future of our workplace design. There will be a focus on why people come



ABERCROMBIE BUSINESS SCHOOL
Photograph Trevor Mein



ABERCROMBIE BUSINESS SCHOOL
Photograph Trevor Mein

into the campus, and shifting the workplace design to suit those needs. Offices will still form part of the equation, but increasingly we are getting requests for more activity-based workplaces (ABW) which reflect the modern requirements. That is zones for quiet work, collaboration or connection. Our new Susan Wakil Health Building has all academics and staff in an ABW environment.

As you'd expect for any academic institution, one of the biggest pandemic challenges has been the change in education delivery. For example, at the end of last year, the Faculty of Science had only 18 courses online. Post-April 2020 they have over 240 wholly online. I must give credit to all the academics who made that possible and adapted their teaching to suit the new environment.

Post-pandemic, I don't envisage us reverting to business as usual. However, when students and staff do return to campus in larger numbers, we will be challenged to create magnetic spaces they want to engage with. We must continue to ask ourselves: what is the genius loci of the university? I think a lot of that comes back to peer-to-peer learning and social connections. The university really provides a place to connect like-minded people within a space. Students in particular have been craving that. But it's also about what's in between the buildings and having spaces for informal learning, for dining, and for enjoying nature and the surrounds. I think our university is quite exceptional. It's one of the most beautiful campuses in Australia and the world.

Over the past decade, we have

prioritised designing buildings that focus on the ground plane. Our current design standards support an open ground plane to invite the public in, via a flow through of informal spaces that lead to formal spaces. But the pandemic sees us embracing more barriers to entry – for example, all of the buildings are on swipe access, so while you can look through the ground plane, it's less seamless to navigate. The challenge is to foster an active ground plane while also maintaining a high level of security.

SL: What types of new opportunities might the post-pandemic landscape open up for universities in terms of the civic and social nature of campuses?

VB: I think we need to extend the conversation beyond our buildings and focus more on innovation districts. As per the 2016 Australian Innovation System Report, Australia is ranked 11th in the OECD for innovation, but [according to a 2015 Rattan Institute study] ranked last of 27/30 OECD countries for university-industry collaboration with large firms, and second to last for collaboration with small firms.

In my opinion, the solution lies in welcoming industry into our universities. How? By creating knowledge clusters that aim to solve the problems we're facing in the 21st century. People who are driven to do innovative work will need to use existing facilities, because so many areas lack the capital to acquire new equipment or build new facilities.

Institutions like the University of Sydney already have the types of cutting-edge technology required

to test innovative ideas, undertake research and development, and co-develop and co-design innovations that will drive society forward. The university's Sydney Knowledge Hub (SKH) is a great example of this theory being put into practice. Located opposite our incubator start-up space Incubate, SKH provides a co-working space for start-ups, non-profits and corporates to come on campus and access our facilities and researchers. In addition, we have well-established companies like Microsoft on site, working with colleagues in the Sydney Nanoscience Hub. Other examples include Rio Tinto, GE and Qantas.

NM: I agree with Victoria and add that a university is a living lab, and we have a role to play to inspire change and incorporate sustainability research into design. Universities can demonstrate this sustainable and innovative design for student experience. In particular, the area of circular economy for ensuring products used are easily recycled at end of life and that buildings utilise materials that incorporate the circular economy, as raw resources are finite — an example of this is the work Dr Ali Abbas is doing, using crushed glass as a replacement for sand in concrete.

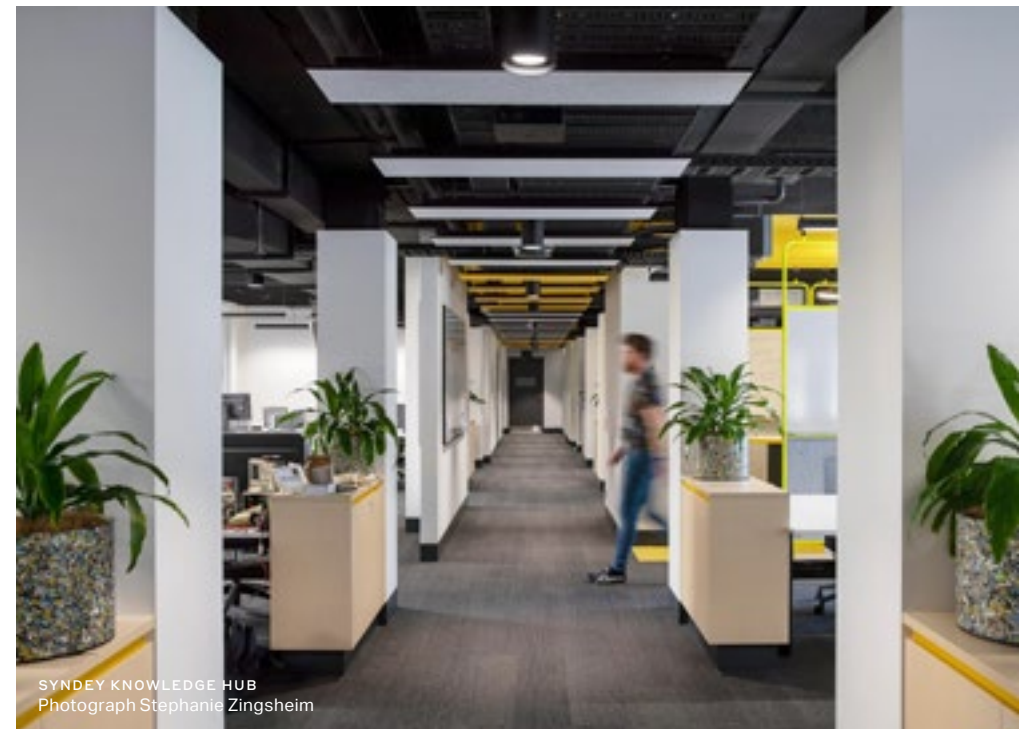
SL: What changes do you think we'll see for university campuses as a result of Australia's devastating bushfires in early 2020?

NM: Looking to the future, I think we'll see more of a focus on precinct design and infrastructure that is

more climate resilient. We need to consider not only how buildings impact on the land, but also how they impact on their neighbouring communities and the animals that inhabit nearby areas too.

From an infrastructure perspective, climatic events such as the bushfires really highlight the need for rigorous operational procedures and information mapping. For example, our School of Veterinary Science in Camden still required people to care for the livestock and maintain experiments during the fires. It was critical that our buildings had been zoned correctly, allowing parts of a building to be shut down that are not required during a period, while catering to specific key areas where essential equipment was located and was required to remain operational.

VB: The bushfires really amplified the students' passionate appreciation for nature, biodiversity and the ways we interact with our environment. Specifically, they became vocal about recycling and environmental sustainability as exemplified by the Student Climate Strike in March. I thought it was wonderful to see their passion and sense of urgency to protect our resources and to reflect on the fact that we only have one world and one earth.

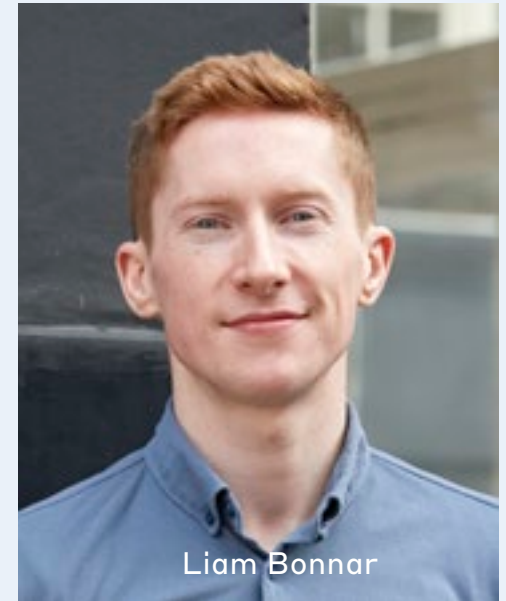


ASK THE MAKERS

Many of our interviewees for this issue of Exchange spoke about the need to integrate campuses within cities, increase building stock flexibility for sustainability, and respond to restricted budgets. We asked some of our architects at Make to offer their insights on these themes. Emma Thomas, Greg Willis, Liam Bonnar and Jennifer So have experience on university projects across the UK and Australia – here's what they had to say.



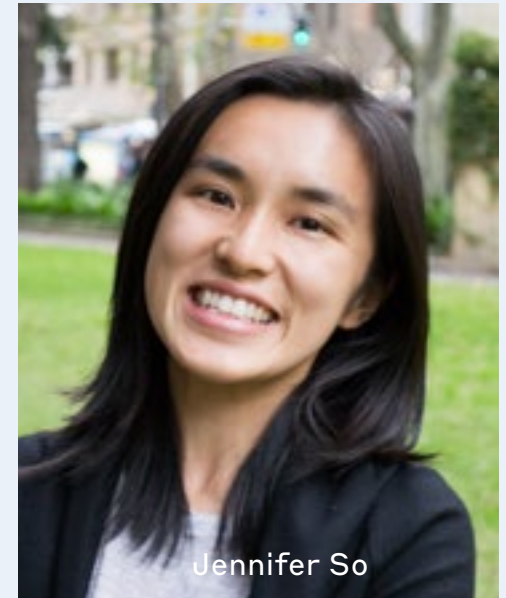
Emma Thomas



Liam Bonnar



Greg Willis



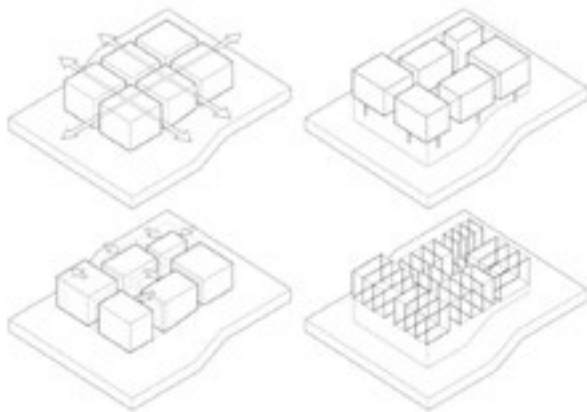
Jennifer So

Flexibility in design

How can universities design in flexibility to respond to changes in course popularity and the way students are taught?



The Teaching and Learning Building.



Concept drawing.

Emma Thomas

A building's fabric often outlives the original functional requirements, as user needs change over time faster than our building stock. Most recently, in higher education this has been in the form of a gradual shift from demand for traditional lecture theatres to individual and group learning spaces as tutor/student contact time decreases and teaching styles become less formal.

Current spatial requirements and an acknowledgment of unknown future requirements were the focus of our concept design for the Teaching and Learning Building at the University of Nottingham. We developed the form as a series of steel-framed modules which each provide adaptable column-free spaces that can be easily reconfigured by adding and removing internal partitions and loose furniture. Developing flexibility into the design during the early stages of a project enables easier implementation and increases the potential future benefits. Thus, the building can inherently respond to changes in learning as and when they occur without significant disruption to the length and cost of building works. In my opinion, flexibility is about carefully designing spaces to be easily altered to prolong their lifespan.

Developing adaptable buildings for future scenarios is not exclusive, nor should it be, to the higher education sector. As sustainability moves up the agenda, the commercial sector is now looking for more flexibility in office designs, reducing the likelihood of buildings being demolished entirely to be rebuilt in 30 years' time. We are increasingly seeing clients looking for clean, open floorplates, high floor-to-

ceiling heights, and spare capacity in MEP plant space, risers and ceiling voids to provide for any future tenant requirements for the space. As with higher education spaces, the focus is on designing buildings that provide a robust, future-proofed structural frame within which future users can shape their spaces to improve users' quality of life, study and work.

As the recent temporary abandonment of university departments, libraries and workplaces in the wake of the coronavirus global pandemic shows, the future cannot always be predicted. As people across the world adapt their dining tables into workspaces and video conference calls negate the need for lecture theatres and meeting rooms, it is unclear what post-COVID higher education and office spaces require. As architects, ensuring our buildings are truly adaptable by integrating flexibility at the concept design stage is the best way to ensure they are equipped for future societal and building user changes.

Liam Bonnar

Data-driven design continues to shape our built environment and will increasingly influence how universities manage their estate assets. Make has been involved in a number of projects where empirical data has informed forecasting and capital planning for the coming decades. With the emergence of 'big data', the future of forecasting could be more dynamic, using real-time data from parameters like space utilisation, course popularity, attendance, funding and expected growth to predict future building needs. Universities could use these simulations to assess viability and build a case for demolition, refurbishment, rehousing or new construction – all before any design work has commenced.

As architects, it's important to understand that our buildings will play host to a constantly churning set of spaces throughout their lifespan. Space requirements vary per faculty, from the incredibly specific – laboratories, archives – to general study spaces. There is no universal solution, but there are steps we can take to create flexible spaces. This means providing not only adaptable layouts but also the tools to support educational development.

Robust audio/visual infrastructure is one such tool, and can effectively bridge the gap between digital and physical university services. Students and staff can work from anywhere by connecting digitally or physically, and can also interact with the buildings themselves via localised environmental control, room booking, multimedia systems and even facility management.

Modern methods of construction (MMC), meanwhile, reduce waste and construction time while increasing quality. Common examples include prefabrication and modularisation, but we're also seeing a trend in 'design for disassembly', where building elements are demountable, reusable and recyclable. By designing to a generous structural grid, with castellated beams above and raised access floors below to house services, demountable/modular partitions could be infinitely arranged.

Further flexibility could come from structural 'soft spots' in floors that accommodate new stairs or atria; bolted steelwork connections that allow for an adaptable structure; a reduction in fixed furnishings; perimeter cores and stairs that unencumber open-plan floorplates; and the relocation of energy-intensive building services like server rooms to purpose-built, off-site buildings to free up layouts and reduce plant. BIM is incredibly important here, as MMC relies heavily on coordination.

Flexible and adaptive buildings are key to creating resilience in the post-pandemic built environment. In a future where widespread adoption of remote working means learning can be experienced anywhere, education buildings need to work harder than ever to provide connected, flexible spaces that support social interaction, collaboration and community.



University of York masterplan model.



University of York model.



1 Centenary Square – 'Village Green' style workspaces.



The Big Data Institute – Lively breakout space.

Urban Placemaking

How do you design city campuses to be of the city and not just in the city?



'The Exchange' – Sketch by Ken Shuttleworth.



The Exchange – University of Birmingham

Greg Willis

An interesting take on integrating campus and city came through our work for the University of Birmingham. The university wished to refurbish a key city centre site as a vital part of its own brand identity, which centres on “opening access and unlocking value so that others can follow and benefit.” This evolved into our core brief – to create a civic laboratory where great ideas and conversations inform research that matters and, in turn, inspire action that changes lives and communities for the better.

The University of Birmingham was born out of, and still operates within, a wider belief that the health, welfare and fairness of our urban societies rely on strong institutions that are connected to their communities. It is perhaps this sense of civic responsibility that is the key to healthy city and campus integration.

A civic university used to mean more than simply having a city centre site. Civic universities were built on key notions of endowment, opportunity, inclusion and legacy made possible through a genuine symbiotic relationship with local communities and the simple notion of wanting to give something back. Perhaps it is time to put the ‘civic’ back into these great institutions so that they may be more than simple academic silos. The stated intention of the University of Birmingham in its new city centre location is to reinvigorate this vision for the modern day by “utilising the University’s role as an anchor institution to bring together multiple stakeholders to address the challenges of our time and deliver inclusive growth for the wider region.”

Educational establishments within our cities are thus in a unique position to be able to open access and unlock value – and to do it all for the expressed benefit of others to follow. There are few institutions which can be so far-reaching and so forward-thinking in their mission, and therefore any building project should be equally as ambitious.

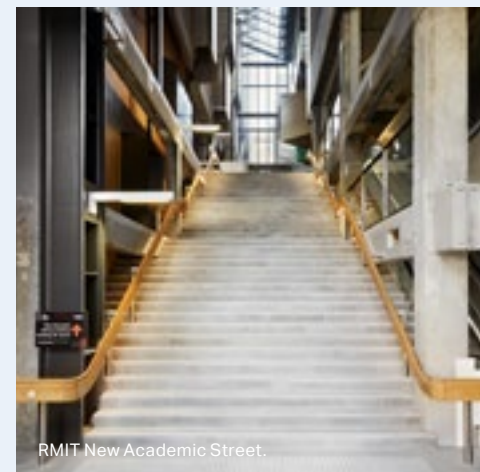
How do you design city campuses to be of the city and not just in the city? What should a modern civic university look like? The city must be welcoming to the university, and the university must be as representative as possible of the people in the city.

Jennifer So

City campuses are in a unique position to not only provide their students with beautiful learning spaces but also look beyond and provide for the city they inhabit. Universities shouldn't be designed to be inward-looking institutions but the reverse, with city campuses becoming part of the city fabric.

In Melbourne, RMIT's *New Academic Street* is an excellent example of a city campus that is blended into the city block. With an urban civic focus as the design driver, the university has created a variety of different spaces for both the city and its students, including new gardens, laneways, rooftop terraces, retail and F&B. There are provide traditional learning spaces, but these are also supported with infrastructure for learning and collaboration. On the prominent corner of Swanston and Franklin Street is RMIT's *Media Portal*, which actively engages with the city and brings its university activities into the public domain.

University campuses have the potential to provide informal learning spaces that can fill the void in our Australian city centres with genuine public space. In our CBDs, public spaces with workspace capabilities are more often than not leased or tenanted areas, and their use requires a paid drink or meal. True public space is often not free. Aside from providing public space, campuses can also add to the cultural landscape of the city, offering programmed events like industry talks, performances and even cultural exhibitions via a location that's easily accessible and visible to the public. Universities will always be civic institutions. With beautiful spaces and an ambitious vision, urban campuses can become integral to any cityscape of the future.



STEPHEN
TALBOYS
York

*Director of Estates
and Campus
Services, University
of York*



“We have basically had to reinvent our business and come up with an adjusted operating model.”

We discuss... Coherent masterplans, big-picture questions and the financial implications of COVID-19.

Stephen Talboys

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JACK SALLABANK: How have you found the last few months during the COVID lockdown?

STEPHEN TALBOYS: Pretty hectic. We closed our campus and turned into an online institution more or less overnight. We are now going through the process of reopening the bits of the campus that we closed.

We have basically had to reinvent our business and come up with an adjusted operating model, which we did pretty quickly. We also have five large development projects under construction which we are trying to keep running.

JS: Do you anticipate change at the university post-COVID?

ST: There could well be real financial pressure on us, and if so we

will have to be more efficient than we currently are. We have a very large estate, possibly bigger than we need. Pre-COVID I had been suggesting an idea of knocking some buildings down and becoming more efficient, and I think COVID will be the tipping point for this, as we have all got used to working remotely.

In normal times, making some of the changes we have made over the last few months would have taken longer to get a consensus, but because we have just had to get on and do it, we have had to make quicker decisions. I'm hopeful that some of that stuff we can retain and we can do things a bit differently post-COVID.

JS: How do you think your department will go about navigating the new financial realities while



View looking towards Central Hall and the lake on Campus West.

continuing to develop the university campus?

ST: We have to think differently about where our funding comes from and align ourselves with the UK Industrial Strategy and other government initiatives that bring pots of money. We had already begun thinking about this because of the possible implications of Brexit. That will probably mean that our campus will look very different in ten years' time. I don't think we will have all the money we would want to expand without traditional funding, but we might have different government programmes and associated funds that we can bring onto the campus.

We might also attract different private sector investment onto our campuses. An example would be the model in Warwick, where Jaguar Landrover has facilities on the campus of the university. My view is that the campus of the future might have more of that. An interesting question is: do you invite industry to come play a part on your campus, or do you go and position yourself within industry?

JS: Pre-COVID what were the big things driving your university design?

ST: The sustainability agenda. We were beginning to think about how we could become a carbon-neutral

institution in 10 or 15 years' time. Also, we were looking at how we can be more customer-focused. We focus quite rightly on student experience and are number one in the Russell Group for student satisfaction. We are also rated by the Teaching Excellence Framework at the highest level of Gold. But research-led institutions such as ours generally have two customers, with staff very much seeing themselves as a customer as well. So we need to deliver for both customers.

As I think about the future of the campus, sustainability and efficiency are the two areas of work which occupy my mind the most.

JS: From a sustainability perspective, are you experimenting with the types of materials used?

ST: The 1,500-bedroom residential project our partners are constructing on site comprises precast concrete panels formed in a factory, and that is quite interesting for us. In our nursery project we are trying to get the project to Passivhaus standards, and that drives the materials you use, because to get there you have to have very high levels of thermal efficiency. We are also building a new energy centre to power the growth of Campus East, and we have had a lot of conversations



Make's 20-year masterplan framework with refurbishment, new-build and public realm projects.



Masterplan showing two front doors to the university, designed to draw people in with clear and legible routes.

about materials, renewables, what technology you can put in. We're asking questions such as: should the building look sustainable as well as be sustainable?

JS: You've been working with Make on your current masterplan. What challenges are you seeking to overcome during this project?

ST: Part of the challenge we have had is that the old campus was really well designed and the whole masterplan sat together very well. It had this idea of propinquity, which is the philosophy of designing the route in such a way that you bump into others as you go about your day.

different design style from the original campus, with lots of space between buildings. Over time, we will carefully infill some of these spaces.

JS: What is the vision for the modern masterplan?

ST: The idea is there will be ways that people can bump into each other again. But also we are asking ourselves some really challenging questions such as: are big lectures a thing of the past? And what will the percentage of online learning be in ten years' time?

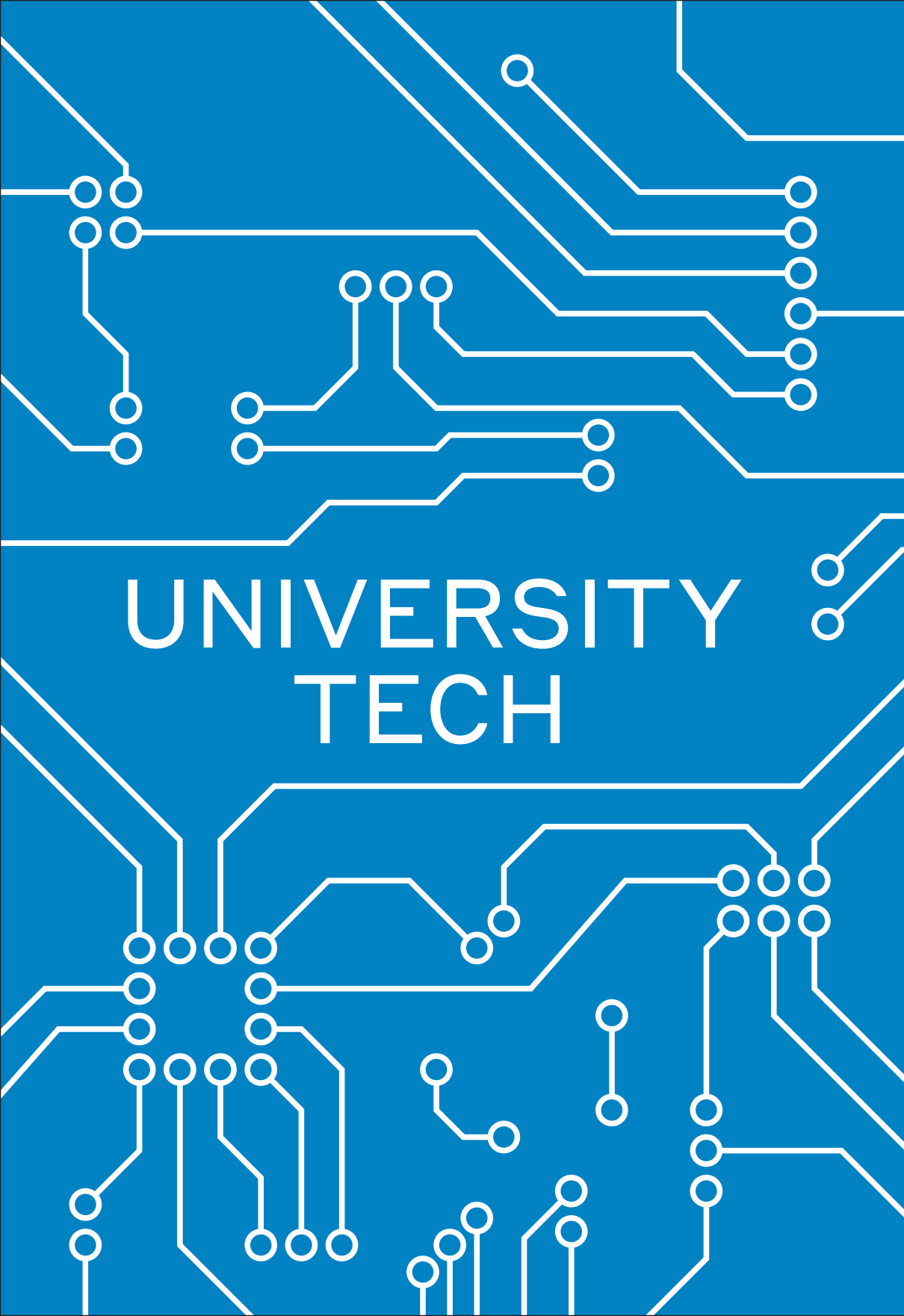
We have to be able to answer these big-picture questions, which will help shape and guide the

“We have to be able to answer these big-picture questions. Doing more of the same isn't good enough anymore.”

The way that all of these concrete buildings sat in the landscape was very well thought through and coherent. What then happened over the subsequent years was the university started to plonk buildings in different places where there was an easy space to build in – and in some cases they look like they are plonked. If you look at a map of the campus, you can see the coherence of the original campus, and then you have the less coherent effect of plonking.

The newer buildings are nice in themselves, but they don't hang together as a whole. On Campus East, which is our extension to the original campus, we have a very

masterplan. Doing more of the same isn't good enough anymore.



UNIVERSITY TECH

A range of innovative tech solutions are making their way into the higher education sector as universities seek to improve and enhance the university experience. Jack Sallabank from Future Places Studio picks out a few to keep an eye out for.

ROBOTS

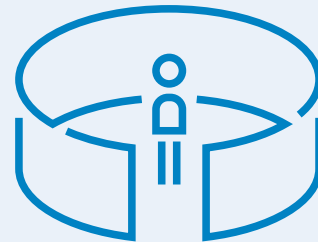
Georgia Tech in the US has been experimenting with a robotic assistant named Jill Watson. The robot answers questions posed by students in a group discussion or in a one-on-one setting.

VIRTUAL REALITY

At Rensselaer Polytechnic Institute, in upstate New York, an immersion lab with 15-foot walls and a 360-degree projection system transports language students to China, where they learn Mandarin by conversing with AI avatars that can recognise not only what they say but also their gestures and expressions, all against a computer-generated backdrop of Chinese street markets, restaurants and other scenes.

NUDGE TECH

The thinking behind ‘nudge tech’ is for universities to be able to use data to impact on student behaviour – for example, helping students establish productive study habits or ensuring they make time in between classes for fitness and rest.

**LEARNING RECORDS**

The way we document what we have learnt is also about to change with a race underway to create a lifelong learning transcript. The ‘interoperable learning record’, or ILR, will list the specific skills that people have learnt, as opposed to which courses they’ve passed. The records will also include other life experiences they have accumulated.

WIRELESS PRESENTATION TECHNOLOGIES

This technology allows students and lecturers to easily project materials from a computer or mobile device onto a flat surface via wifi. It enables a greater use of different types of spaces to learn in and creates a more seamless learning environment.



PETER
McGEORGE
Sydney

*Lead Consultant,
Capital Insight*



“People were starting to reconsider all the elements of a university building such as the workspace, research space, and teaching and learning space.”

We discuss... Flexibility, expansion strategies and why campus planning has changed.

Peter McGeorge

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JACK SALLABANK: Since you entered the sector, what have been the main drivers of change in campus planning?

PETER MCGEORGE: When I first joined the university sector in 1990, Australian universities had to apply to the federal government for capital project funding on a rolling triennial basis. Projects were funded where they addressed centrally determined planning profiles of discipline priorities. Capital funding came with restrictions, such as low-maintenance finishes and no air conditioning, which drove spartan, naturally ventilated, narrow-floorplate buildings. In the days of free education, the quality of the campus and buildings, and the student experience, weren't important factors in attracting and retaining staff and students.

In 1994 the federal government began transferring the responsibility for capital planning to universities along with capital roll-in funding to their operating grants. They also started to pull back on operating funding to fund other national priorities and to motivate universities to drive more efficient operations. That meant that universities had to find ways to replace the funding; therefore, the international student market became very attractive. All of a sudden, universities had to start thinking about how to attract and retain students and staff, especially in an increasingly competitive environment, when global league tables were taking on greater importance. At the same time, people were starting to reconsider all the elements of a university building such

as the workspace, research space, and teaching and learning space, partly driven by new pedagogies and AV technologies, but also by new ideas around collaborative work environments and space efficiencies.

Coupled with the shift to air-conditioned environments, building typologies started to shift to much deeper floorplates, often with atria injecting light into the deep floorplates. That allowed for a range of different environments, and you could integrate workplaces alongside academic research environments. Buildings also became more vertically integrated to improve circulation and collaboration among people. Along with the need to optimise the development capacity of the main campus, at UNSW for example, and given that the overall 1990 campus planning structure remained sound, new built forms changed dramatically. As a result, projects increased enormously in value, from tens of millions to hundreds of millions of dollars.

JS: What approaches have universities adopted to use the built form to attract students?

PM: Different universities approach this in different ways. Some have delivered one-off developments – the ‘starchitecture approach’ – driven by branding and marketing. When University of Technology Sydney employed Frank Gehry to design their Business School building, for example, they paid a significant premium. However, it put them on the map. The famous ‘paper bag’ building, which opened in 2015, has elevated their profile, and students are coming because of that.



Frank Gehry's famous 'paper bag' building at University of Technology Sydney.

JS: Are universities having to increasingly think like commercial developers as they determine how best to attract students and develop their campus strategy?

PM: Yes, in many cases they are, and you see a lot of universities recruiting commercial development folk to support this. This is particularly relevant when universities expand 'beyond the palisade fence' and/or where a development will support new income streams for loan or lease payments. On campus, student housing is the classic example. Other types of university buildings are also being developed commercially where they support growth in student or research income.

As universities expand beyond their boundaries, they are increasingly looking at whether

they need to fund, develop, own and operate buildings, especially when they aren't highly specialised. Of course, non-asset solutions, such as various forms of online learning, are often the most economical and agile solution where they align with a university's strategy.

JS: What approaches are you seeing in Australia in terms of how universities are tackling the question of expansion?

PM: An interesting example in Sydney is Western Sydney University, which serves a geographically spread-out, diverse and growing population. They inherited a significant portfolio of campuses when they were formed from several smaller institutions in 1988. Their strategy appears to be to dispose

of and develop surplus property to generate capital and income streams to invest in their core campuses and other strategic priorities, and to partner with developers to develop satellite campuses in various town centres in Western Sydney by entering into long-term leases.

By taking education to their catchment population, they are facilitating access to higher education, which has many benefits for both the university and its students. While these campuses could be mistaken for commercial office buildings, the university has taken a very practical, responsible and egalitarian approach to the

JS: Is the need to build in flexibility a key requirement?

PM: Increasingly so, yes. In fact, I'd say it is essential. The big risk is that you invest in infrastructure that can't be adapted economically and easily over its life as needs change. This often results in buildings being demolished and replaced after only a few decades, which is not sustainable economically or environmentally.

JS: How can universities achieve this?

PM: What I always say is get the structure, plant rooms and services

“The big risk is that you invest in infrastructure that can't be adapted economically and easily as needs change.”

provision of higher education, which appears to be highly successful.

JS: Does that approach limit the ability of the university to manage the brand or the experience they want to curate?

PM: That is an interesting and ongoing debate. For some universities, their campus is an important part of their brand. For others this is less so; they focus on a service delivery model that meets their students' needs. The less wealthy and often newer universities are often very innovative.

risers right throughout the building, and you will have more flexibility in the future. The base build is key – if you don't get the bones of the building right, it will limit your ability to adapt the building to changing needs over the life of the building. This may mean that you might pay a premium for your base build cost, as you may allow for heavier future live loads, larger column spans, and you may have higher floor-to-ceiling heights.

Ultimate flexibility, however, can come at a too high price, so it's about finding the right balance.

Conclusion

We can't predict the future. A fact illustrated perfectly in the creation of this edition of Exchange: it was started before we'd even heard of COVID-19 but was delivered at the height of the pandemic. This moment in time therefore hugely shaped the contributions and direction of our conversations and interviews, colouring opinions on everything from sustainability to the direction of campus design.

Despite being undertaken at a time of real impermanence, the pandemic's effect has been to accelerate issues that were being discussed anyway. The future of estates could well be shaped around a new form of hybrid learning - home and university - and if so, what impact does this have on the built environment of universities? How will spaces be used if not for lectures? How can flexibility be baked into the design of Universities to enable them to respond to future shocks and evolutions?

There seemed to be a consensus from our contributors that Higher Education estates are thinking on how to create more robust, flexible, sustainable building stock, how to attract the best talent and the changing requirements of campus environments - and all framed by shrinking budgets and ambitious plan to be net carbon zero.

There seems to be a real blurring of lines in our architectural discourse and approach to both commercial and academic sectors, both examining

the dwell time and how we can bring in more amenity, social space and outside space and to broaden and enrich the experiences of those people using them.

Whether it's on the immediate horizon or more of a long term aim, ultimately it's fair to say that Universities are rethinking priorities when it comes to their estates.

Credits

Exchange team

Sean Affleck, Liam Bonner, Kyly Bird, Tom Featherby, Martina Ferrera, Joanna Griffiths, Daire Hearne, Ben Hutchings, Emily Lauffer, Simon Lincoln, Pete Matcham, David Patterson, James Redman, Ken Shuttleworth, Emma Thomas, Giuditta Turchi, Sara Veale, Greg Willis, Sarah Worth

With special thanks to

Victoria Bolton, Prof Michael Hebbert, Alex Lawlor, Siu Man Fung, Peter McGeorge, Nicole Marchhart, Julian Robinson, Jennifer So, Ziona Strelitz, Stephen Talboys, Polly Tootal, Dr Julie Wells, Joseph Wong, Tonia Zemek

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p. 145:3 – Jack Hobhouse
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JULIAN ROBINSON is Director of Estates at the London School of Economics and Political Science and the former chair of the UK's Higher Education Design Quality Forum.

JACK SALLABANK is the Founder of Future Places Studio, a place-based research and strategy studio that specialises in exploring the macro and micro trends impacting the built environment.

JENNIFER SO worked at Make from 2016–2019 and contributed to our proposal for the University of Sydney masterplan.

ZIONA STRELITZ is the Founder-Director of ZZA Responsive User Environments, a distinctive research and strategy practice focusing on users' experience of built settings. She has worked with numerous universities to help evolve and develop their built environment strategies.

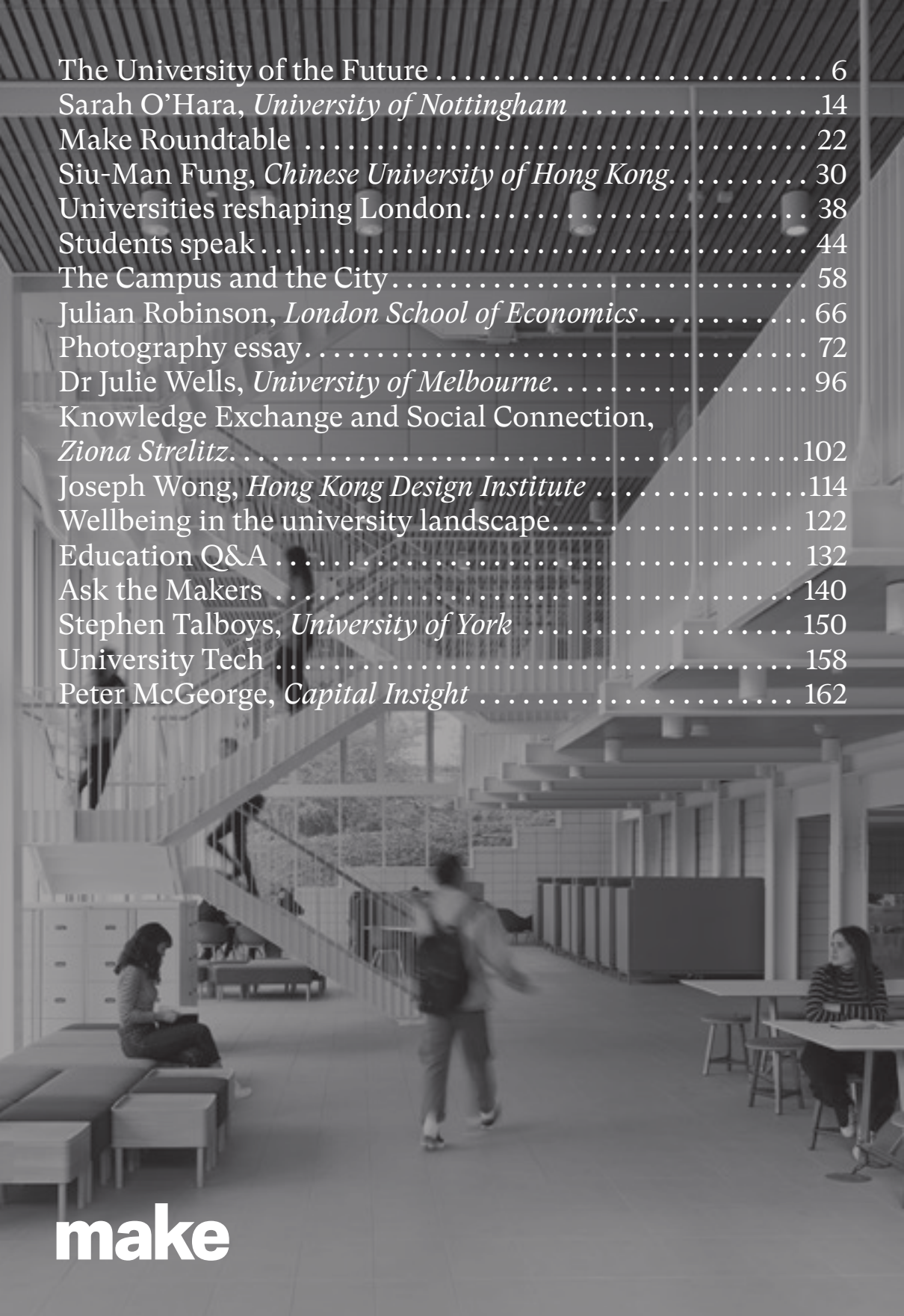
STEPHEN TALBOYS is Executive Director at the University of York, where he is responsible for IT, Estate, Campus and Commercial Services, overseeing the creation and development of the university's virtual and physical environment.

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