

Sightline

A photograph of a theatre backstage area. On the left, a large black tarp hangs vertically. In the center, a tall metal scaffolding structure is visible, with two bright stage lights at the top creating a starburst effect. To the right, a large, colorful mural is partially visible, depicting a landscape with trees and a body of water. The floor is dark and reflective.

Journal of Theatre Technology and Design

Summer 2020

**Responses to COVID-19:
Precedent for an Unprecedented Situation
An Unexpected Quick Change
An Inspector Calls**

**Backstage Mental Health and Blackout
Remembering Alan Jacobi
English National Ballet's new home**





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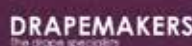
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Sightline

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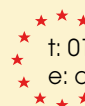
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Editorial

Well, it has been a unique and fast-changing few months since the last issue of *Sightline*. The time it takes to produce and distribute a magazine which only comes out quarterly makes it hard to be timely at the best of times, but between signing off the last edition, and it arriving on our doorsteps, the entire world – and our industry – had changed dramatically. And we are now in a period of exceptional uncertainty, with – at the time of writing – no real end in sight.

It would be a brave person who forecasts what the longer term impact of COVID-19 might be on the theatre industry, but Byron Harrison has done exactly that, finding interesting parallels from the Spanish Flu outbreak of 1918 and, closer in time, the SARS outbreak of 2003. I'm sure he'd want me to point out that he handed in the article on 4th May, and therefore there is a reasonable chance that by the time *Sightline* arrives on your doorstep the goalposts might well have moved again. In addition, Alan Lynagh, in another of his series of articles, *An Inspector Calls*, has gone into considerable detail about the practical implications that would result from trying to manage social distancing within theatre buildings. Comments and feedback on both articles would be very welcome, and will be published in the next edition.

The Higher Education (HE) sector has had its own particular challenges in recent months, and the impact on its theatre technical training provision has been quite considerable. Anette Ollerearnshaw is undertaking research over the next 6 months on this, and will be reporting back over several editions of *Sightline*. Her first article brings us up to date on how a range of colleges and conservatoires in the UK and further afield have risen to the challenge of changing their entire teaching method in a very short period of time.

It has been something of a loss not being able to visit any theatres during the period leading up to this edition, but we are lucky to have access to *Modern Theatres* – the soon to be published book on 20th Century theatres, edited by David Staples. In this edition, we come right up to date with short pieces on theatres built within the last 10

years. We were also lucky enough to have access to photos and information about the wonderful new home of English National Ballet on London City Island. We also hear from Iain Mackintosh, who muses on theatre capacity with particular reference to the Sondheim Theatre – a piece that was inspired by Julian Middleton's article on its refurbishment in the previous edition of *Sightline*. A response to Jonathan Brown's article on the early days of ABTT training, also inspired additional memories from Skip Mort, which are also included.

Theatre is, of course, as much about people as buildings, and this edition demonstrates this in several ways. Alan Jacobi's recent death elicited a number of lovely memories from other ABTT Fellows, which they were kind enough to let us share with a wider readership. We also celebrate the career of ABTT fellow, and "unsung hero" Peter Roberts. It was also very interesting (and perhaps timely) to hear from Mig Burgess, who has been advocating for improved mental health awareness in technical theatre. The recent research into backstage mental health that was supported by the ABTT and other technical associations showed worryingly high levels of mental health problems within the industry, and made a series of recommendations.

And, finally, congratulations are in order to three of the ABTT's Industry Supporters Group members who were awarded Queens Awards to Enterprise recently. As well as Clark Door Ltd (who feature in this edition, courtesy of an article on Powered Door Safety, written by Peter Ansell), Awards also went to Slingco Ltd, and to Charcoalblue LLP.

I'm sorry that I won't be seeing any of you at the ABTT Show this year – as looking forward to doing so is usually how I sign off the editorial for Summer Sightline. However, I very much hope there will be other opportunities in the not too distant future to meet in reality, not digitally. In the meantime, stay safe, and please do get in touch if you have anything you would like to contribute to future editions.

Rebecca Morland

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Precedent for an Unprecedented Situation

Byron Harrison

As venues across Europe, the UK, and North America were announcing closures due to the COVID-19 outbreak during the second week of March, the anxiety within the performing arts community was real and justified. The potential magnitude of impact on the arts sector, from my perspective living in Hong Kong, had already become apparent, however, as venues here had been closed for over six weeks. Even as a newcomer to this city, I could observe (and benefit from) the collective experience and lessons of SARS in 2003. And so, I began to bristle at words like “unprecedented” and phrases like “uncharted territory.” A refusal to look across cultural lines and to deny guidance from history would only allow us to repeat mistakes.

Precedent for an Unprecedented Situation

“On Thursday, the governor ordered Broadway’s theatres – which played through war and the 1918 Spanish flu – to close down as he forbade gatherings of more than 500 people.

from *New York City to close America’s biggest school system*, by Joshua Chaffin, Financial Times, 17 March 2020

I began to enquire into the effects and lessons learned from the so-called “Spanish” flu which ravaged the world between 1918 and 1920. Broadway theatres not shutting down in 1918 was being used to scale the response to COVID-19, often ignoring the nationwide and international response. Public entertainment

was widely closed in London and elsewhere in the UK. Blanket closure of venues occurred in almost every city in the US.

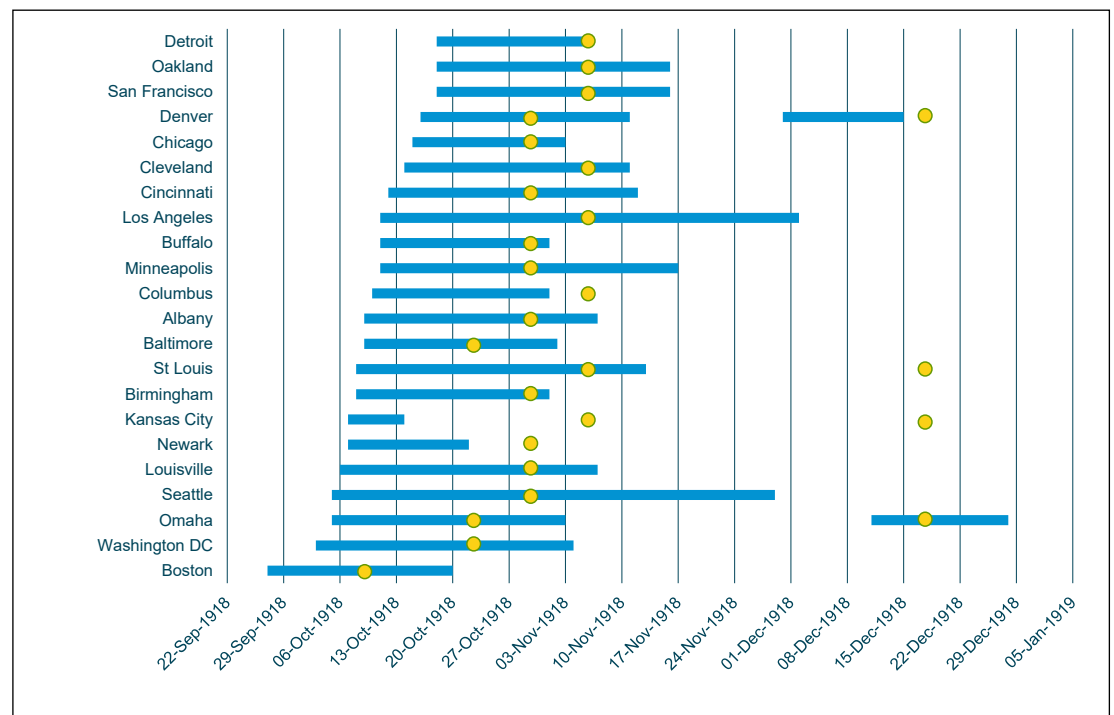
As an American, I was tuned to some excellent research and journalism on history of decisive (and sometimes greatly differing) responses from cities across the country, notably the slow response in Philadelphia and its disastrous effects, and the comparatively quick response in St Louis.

“The present calamity of the influenza plague which inspired the authorities to this action calls for drastic treatment, and through we regret exceedingly the deprivation which this suspension inflicts upon so many working under us, there is only cheerful compliance with orders to be considered.

“We adhere to our belief expressed to the officials of the Board of Health that the theatre is the least harmful of all places of gathering, and claim that the providing of amusements for the people would appear to be most necessary in these threatening times that portend panicky conditions.

From a joint statement by the Association of Theatre Managers of Boston and Motion Picture Exhibitors of Massachusetts, 26 September 1918.

With less understanding of the science of infectious disease than we have now, governments in 1918 arrived at generally the same policy prescriptions as those today: reducing crowding and modifying personal



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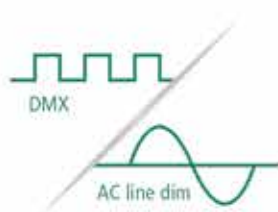
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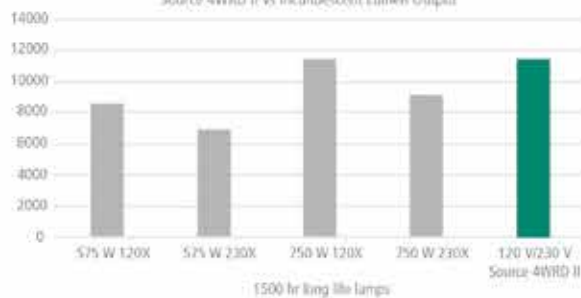


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hygiene to slow the spread and limit the number of people infected. Most theatres in the US were shut down for longer than three weeks, with some cities, especially in the West, enduring six- or seven-week closures. Generally, theatres reopened about ten days after the number of deaths peaked.

Multiple waves of the virus were experienced, with the second often being worse than the first. Omaha closed its theatres a second time after reopening for five weeks; Denver's theatres were open for three weeks before shuttering again.

Following the reopening of theatres, there was increased scrutiny of the health-worthiness of places for entertainment. In such Western cities as Fresno and Sacramento, patrons of motion picture houses were required to wear masks. Boards of health stepped up theatre inspections and enforcement of ventilation ordinances. Inspectors in Chicago, for instance, ordered some theatres to close because of non-compliance.

Public health was on the mind of the theatregoing public and, in advertisements, theatres began to boast about ventilation. Some statements were surprisingly detailed, such as this for the Vista Theatre in Chicago: "The air enters this theatre through 280 inlets and the entire atmosphere is completely changed every three minutes. The air passes through a 3" sheet of odourless disinfected water and by means of a 20HP motor is forced into the auditorium."

We can draw some guidance for today from the theatre industry of the 1918 flu era:

- Theatres should be prepared for a second wave of infections and even a second wave of closures, pending the success of antiviral treatments and a vaccine.
- Changes to codes and standards for ventilation and other safeguards of public health may result.
- Communication with the public will be required to provide assurances about the safety of venues.
- Sustained theatre closures and health concerns may contribute to labour-relations issues.

While some short-term changes were implemented, there is little evidence that theatre-going shortly after 1918 looked much different than it did before the flu outbreak. Perhaps the only codified changes were more stringent ventilation standards. There was a general heightened awareness of safety in public buildings at the time. We cannot attribute

all improvements in assembly buildings of that time period as reactions to the flu. The 1918 flu was, after all, just 15 years after the famous Iroquois Theatre fire in Chicago in which over 600 people died.

Lessons from SARS

The SARS outbreak of 2003 caused an economic recession in Hong Kong, already dealing with righting itself in post-handover period. SARS has had lasting social and cultural effects and entrenched a culture of personal responsibility over a mistrust of government. SARS led to nearly 300 deaths in Hong Kong; at the time of writing COVID-19 is attributable to 4 deaths in Hong Kong. The transmission of SARS is understood to have been more transmissible through aerosol and small droplets therefore more communicable with casual proximity than is understood for COVID-19.

Even given the seriousness of the outbreak and the highly contagious characteristics of the virus, far more public events continued through the SARS period than are happening now. The Rugby Sevens tournament was played with spectators. Many performances were cancelled, but those were mainly attributed to limited international travel. Following the March to April 2003 outbreak, a government-sponsored international arts festival continued as planned in mid-July with only a few groups withdrawing.

Changes to public health policy were, indeed, hastened by SARS, including contact tracing, school closures, and temperature checking which have informed the current response. While SARS has clearly influenced a culture of mask wearing, disinfecting commonly touched surfaces, and public toilet hygiene, there were no lasting changes to operations or practice in performance venues. Toronto, another city significantly affected by SARS, saw the production of *Mamma Mia!* cancelled, but this was the exception, not the rule.

During COVID-19, Hong Kong was quick to respond, but has never undertaken a full "lockdown." Museums, sport facilities, performance venues, and bars have been closed since late January. Some facilities had begun phased reopening in March but were quickly shut when a second wave of infections hit. At the time of writing, with only three infections in the last week, museums and some sport facilities are about to reopen.

The additional context of SARS suggests some additional guidance:



Sydney Theatre Company Wharf Renewal Project. Artist's impression of the two adjacent flexible theatres joined together, as designed by HASSEL and Charcoalblue. Image by Doug & Wolf.

- There will be an enduring and heightened sensitivity to public health.
- Preparedness for early action on future health events will help to sustain the industry through potential “second wave” events or future epidemics.

Timing

The biggest question we all want answered is “when?” When will we return to our seats, our dressing rooms, prompt desks, fly floors? The initial answers are that it’s going to be a while, for most of us. Paddy Hocken, London-based freelance production manager, explains: “I have one tour booked (from before COVID-19) still holding out to do their shows at the very end of autumn, everything else has been cancelled, postponed or re-scheduled.”

There is, however, a concern about the presumed autumn timeline, as the UK industry prepares for panto season. Pantos are “a fairly safe bet in terms of popularity, meaning most venues won’t be available to tours from late November until January,” states Simon Byford, Brighton-based production and event manager and consultant. “If [a plan for opening in] September slips to October, it suddenly becomes uneconomical to capitalise a tour knowing there will be a long hiatus. I think in reality this will push into 2021.”

The other condition affecting the timing of reopening, is the perception of not going ahead too soon. Mike Schleifer, General Manager, of the Alliance Theatre, reports that

in Atlanta there are plans for a consortium of “like-minded organisations to open at the same time.”

Planning Ahead

Many organisations with public support are partnering with government to establish reopening timings and expectations. In the meantime, very little information is forthcoming. Smaller companies which are looking to those larger groups for assurances aren’t yet getting any signs.

Only the largest commercial producers will make their own timelines, and they will, likely, be the first to return. There are some positive signs; set constructors are beginning to receive orders, while some long-running commercial productions have been able to keep casts employed running lines during the lockdown.

Uncertainties around travel are influencing production planning substantially, as appears to be the case in Australia, where travel restrictions are expected to last for some time. A spokesperson for the Arts Centre, Melbourne, offered: “Amongst our presenter stakeholders, there is optimism for presenting works, largely now focussed on local productions, from October 2020. A focus is remounting works that can be done easily and quickly with lower risk.”

Codes and Standards

The developments in public health following

1918 suggest that changes to codes and standards for ventilation and other safeguards may result. The theatre industry and specialist building designers should be at the forefront of this effort to ensure that any new guidance is relevant and doesn't threaten the viability of buildings and operations.

At Harvard University, the American Repertory Theatre and T.H. Chan School of Public Health have partnered together for a "Roadmap to Recovery and Resilience in Theatre" specifically addressing health issues in buildings. Charcoalblue and Haworth Tompkins, architects, are advising.

Communicating with the Public

There have already been opinion polls regarding the confidence of theatre-goers to return to venues and the results are sobering. The public relations efforts to assure audiences needs to begin now.

Planning for this disruption to the normal flow of audiences should be contemplated. Many venues are only marginally equipped for queuing for security checks and bag searches. Revised procedures for ticketing could also limit physical transactions, especially cash-based ones.

Food and beverage are critical revenue streams for many venues and will also face change. Potentially, pre-ordering for intervals will become compulsory. Single-serve options and disposable utensils may be perceived to be safer, contrary to environmental goals. Front-of-house facilities may also require substantial considerations, including using more easily cleaned surfaces, designing doorless entries and exits to washrooms, and expanding the use of touchless sanitary fittings. Given the importance of handwashing,

the debate over paper towels versus hand dryers, while incorporating environmental concerns, is likely to return.

Protecting artists

Returning shows to the stage without making compromises on safety is a preoccupation for many. Jono Perry, former Technical Director and current Wharf Renewal Project Manager at Sydney Theatre Company suggests: "Rehearsing and technical rehearsals will be the hardest thing to manage, with extended time spent in close proximity to others, and particularly for shows with interaction and intimacy required in blocking and precision in sequencing of scene changes."

The threat this poses for dance is explained by Australian technical director, Jon Buswell, "It might be easier for other disciplines of theatre but for us working in dance ... we can't stop dancers sweating or touching each other."

Protecting back-of-house teams will be as important as protecting audiences. Those working in costume and make-up will face the same risks as professions working in close physical proximity with others. Dressing areas may need to quickly adopt social distancing practices, including de-densifying rooms.

These concerns extend to technicians as well. Simon Byford explains, "with some relevant PPE and very careful coordination it might be deemed possible to get back to working. That said our industry generally means working physically close with one's colleagues... these things cannot be done with 2m distancing."

Using digital for resilience

During the brief period between restrictions on public assembly and full lockdown, orchestras and theatre companies began streaming live performances. Organisations that had already invested in digital technology found a straightforward path to their existing audience members and gaining new ones. After weeks of lockdown, the Berlin Philharmonic, using their "Digital Concert Hall" platform have now broadcast a socially distanced ensemble performing in their hall without an audience. An audience survey conducted by Scottish Opera has revealed "overwhelming preference" for a return to live performances over streamed productions as soon as it is safe to do so, reports Alex Reedijk, General Director. While there is conjecture about the demand for digital content after audiences return and about how digital delivery may be monetised, we can say, definitively, that digital infrastructure will allow organisations to be resilient to future threats.

*Digital Concert Hall
Courtesy of Berliner
Philharmoniker*



Capital expenditure

Organisations have only been able to achieve limited capital improvements, despite venues being closed. The Arts Centre, Melbourne explains their approach: “While a few individual activities were possible, such as recarpeting some very-high traffic foyers, this work soon stopped when the need to reduce non-essential costs became apparent. We placed a strong focus on people and maintaining engagement with as many team members as possible focusing our priorities on people rather than maintenance.” In many locations there were only a few days between venues being closed to the public and “stay-at-home” orders being issued. After that point, any activity other than essential maintenance and security became difficult or simply unlawful.

There are potential long-term silver linings specifically for organisations owning and operating performance buildings. Lower construction prices in a recessionary environment will be a benefit for arts organisations looking to refresh, renovate or expand. However, only organisations that are advanced enough in the design process will be able to take advantage of that dip.

Production schedules

Director of Production at Steppenwolf Theatre Company in Chicago, Tom Pearl, offers a view of what might be a streamlined and perhaps shorter production schedule. “[COVID-19] has pointed out to me ... just how rigid our producing model is. We have almost no ability to pivot in the face of a pause in the process... There was little we could do other than cancel productions when this occurred.” Tom says that Steppenwolf is working to “make our planning more flexible and establish more milestones that help us better understand when resources have to be committed so we can manage risk as conditions change.”

Lloyd Thomas, London-based freelance production manager, has a vision for improvements to the process of realising a production. “Commercial theatre is a fast-paced environment. However, short lead times and decisions made in haste with insufficient consideration make for a wasteful process in terms of human resource, physical resource, the environment and money. I hope that this hiatus may encourage us all to consider the benefits that could be reaped through increased lead times, wherever possible.”

Taking our metaphorical foot off the accelerator during COVID-19 has exposed another weakness in practice – the human



cost. “We were all starting to think that the scale of what we were doing was getting a little bit too intense and demanding,” confesses Paul Handley of the National Theatre. He asks: “Can we create something more sustainable in terms of welfare out the other side of this situation?”

Concluding thoughts

While performing arts organisations face huge challenges from the COVID-19 crisis, demand for meaningful cultural engagement shows no sign of diminishing and, in fact, may be enhanced as a result of the pandemic. While it may be difficult to accept from the throes of damage control, history suggests that the performing arts will be resilient. Reassuring audiences of their safety is not going to be an easy process, however people will be hungry for culture and engagement once lockdowns and self-isolation end.

As COVID-19 lockdowns began, the concrete frame was being completed for a new 400-seat theatre for Steppenwolf Theatre Company in Chicago. The Company, with their design team and advisors, initiated a forum for any infrastructure enhancements for future audience and performer safety that could be still be incorporated in the construction. Photo by Tom Pearl.

Modern Theatres –

Three theatres from 2011-2020

Harbin Opera House, Harbin,
China (2015)

David Staples

Many young architects have made the pilgrimage to a nondescript school building in Clerkenwell to work for Zaha Hadid Architects. Few have achieved such rapid success in their subsequent career as Ma Yonsong. Born in Beijing in 1975 he founded MAD Architects in 2004.

China has been a magnet for western architects drawn by the opportunities for major and signature buildings afforded by China's rapid development. In 2014 Ma was the first Chinese architect to win a competition and commission to design an overseas cultural landmark, The Lucas Museum of Narrative Art was originally planned for Chicago. It was subsequently redesigned when the museum benefactor George Lucas decided to build the project in Los Angeles.

The city of Harbin has a population of five million with over ten million in the metropolitan area making it the eighth most populous Chinese city. Its location in the far North

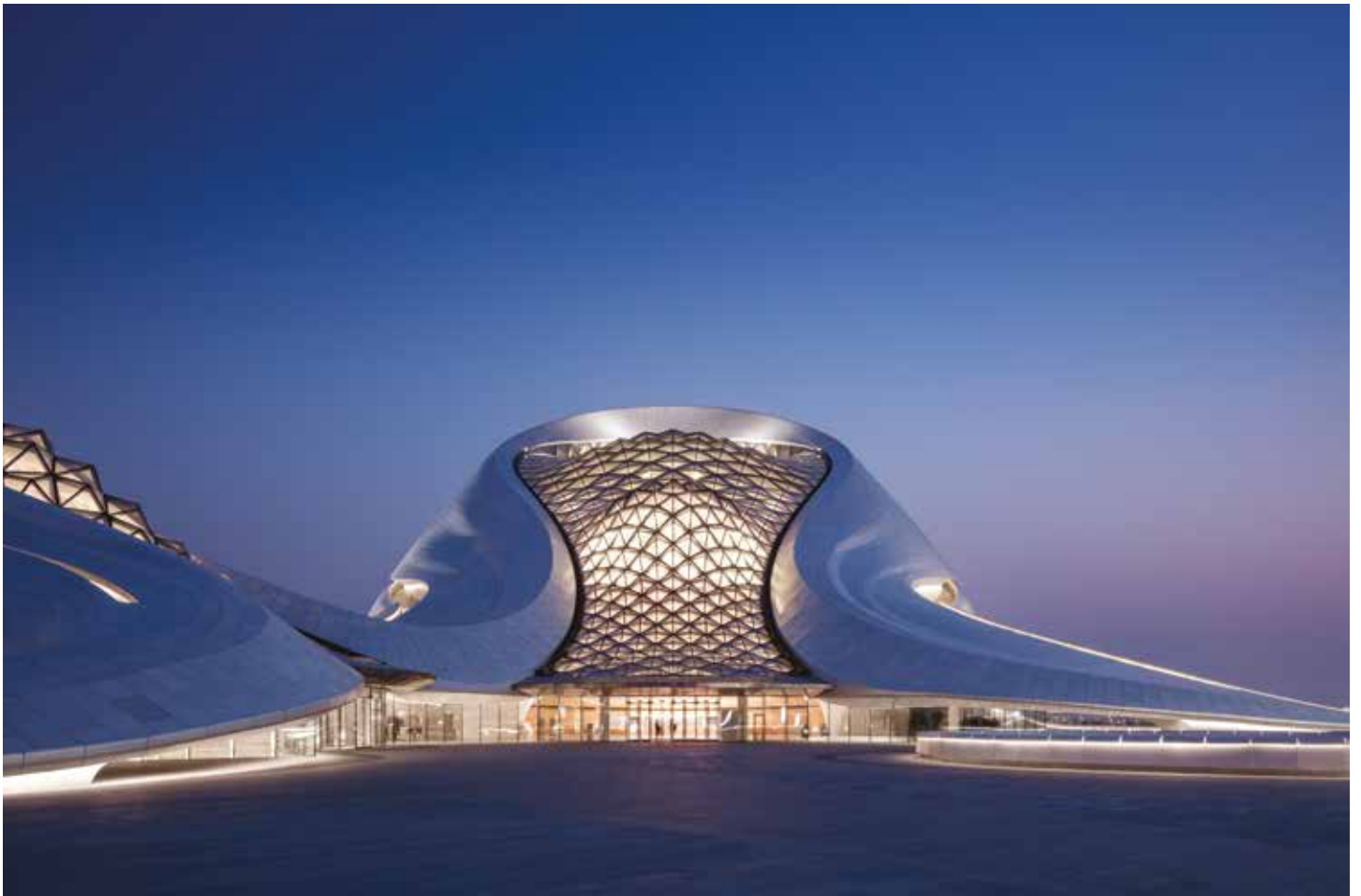
East of the country gives it the coldest and longest winter of any major Chinese city with an average daily winter temperature of -19.7°C (-3.5°F), temperatures below -35.0°C (-31.0°F) are not uncommon.

Harbin took advantage of this extreme climate by establishing a traditional ice lantern show which has grown into the Harbin International Ice and Snow Sculpture Festival, the largest annual ice and snow festival in the world featuring huge ice sculptures many the size of actual buildings. The 2017 festival attracted 18 million visitors.

MAD Architects won the international open competition for Harbin Cultural Island, to create a master plan for an opera house, a cultural centre, and the surrounding riverside, wetland landscape along Harbin's Songhua River. The site is surrounded by rivers and accessed by bridge.

The exterior of the building is a series of curvaceous, undulating forms clad in white aluminium panels reminiscent of snow-covered hills. The snow illusion is reinforced by a white plaza and entrance routes to the building.

*Harbin Opera House
Photo courtesy of
David Staples*



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Harbin Opera House
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The external language flows into the building where the floors, flowing walls and ceiling of the lobbies and public areas are also a stark white except for the walls surrounding the Grand Theatre which appear carved from warm rich wood. Audiences and the public can ascend staircases to a rooftop viewing platform and external performance space.

This wooden appearance carries into the 1,538 seat Grand Theatre where the audience is housed in 12 seating blocks. At stalls level a main body of seats is surrounded by five parterres. The circle and upper circle/boxes are let into the curving wooden walls. These walls merge into a sinuous ceiling and sweep down to the front of the room to create an unusual and somewhat dominant proscenium frame. Chinese planning authorities mandate a large stage with two side stages and a rear stage for new opera houses built in China. Harbin follows this model which seems to be based on a traditional central European concept of opera house staging. Hopefully, one day a project in China will break from this rigid view of what constitutes an opera house or Grand Theatre stage.

The smaller theatre seats 414 and is much more conventional with straight rows of seats facing a wide-open end stage without proscenium arch. The rear wall of this stage is a massive window that visually links the theatre and exterior.

Knowing that Ma Yonsong worked with the Zaha Hadid team it is easy to understand some of the inspirations for this building. A previous chapter [of *Modern Theatres*] commented on Zaha's Guangzhou Opera House where strong flowing external shapes are let down by poor execution. Harbin is a later building and much more successfully executed.

Dubai Opera (2016) **Karin Winkelsesser**

A Music Ship Drops Anchor

The opera house in Dubai was inaugurated in 2016 as the centre of a new quarter in the booming city state. Dubai had a population of only 90,000 in 1960 and was an underdeveloped sleepy desert sheikdom. Today it is one of the fastest growing countries in the world. At the moment, the population is about 2.8 million. A new quarter was built in one piece, Downtown Dubai. This is where the new opera house was built as a nucleus of this quarter.

While Dubai boomed the performing arts, entertainment and culture lagged some way behind. This is not to say the area is devoid of activity. In Dubai 37% of the population is of Indian origin and that community has many events based on traditional and contemporary Indian music and dance. International groups like Cirque de Soleil are presented regularly in the Emirate. Finally the city decided to build an opera house, however to be used as a

multi purpose building. Dubai has a number of large companies which are independent but closely related to the government and ruling family. One of the largest is Emaar Properties which has grown to become a global property development company. Its signature project is Downtown Dubai a mega-development covering 200 hectares. At its centre is Burj Khalifa the world's tallest building. Immediately adjacent is the Dubai Mall the world's largest shopping mall. These both adjoin the Dubai Fountain the world's largest choreographed fountain. The district houses several major hotels and extensive residential properties.

The internationally renowned architects Atkins in cooperation with architect John Rostock designed the opera house that is embedded in the new quarter. The outer shape of the building close to the sea has the form of a dhow, the traditional Arabian sailing boat. The large, oversailing roof creates a large field of shadow which also serves the surrounding area. The foyer is oriented towards the exterior, it is enclosed by a large glass wall, only "interrupted" by wooden panels to shade the sun.

The auditorium itself has been designed in a classical horseshoe shape. In the upper gallery, boxes with large floral decoration serve for local social purposes whereas Atkins has taken up the European theatre tradition in designing it with dark red seats and warm wooden materials covering the walls.

Emaar's vision for the opera house was to create one of the pre-eminent venues among the international touring circuit, competing with the likes of London and New York. The team was charged with creating a multi-purpose facility that can host not only spectacular shows, but also accommodate a wide range of performances from classical music and opera to more popular entertainment. Theatre Projects worked with Emaar and project managers Mirage to develop a sophisticated concept for the new project.

The auditorium and stage were conceived as having three different forms or modes. The theatre mode was anticipated as the most frequently used form. An auditorium with 1800 to 1900 seats depending on detailed configuration faces a large stage to house musicals, opera or ballets. A flexible proscenium arch allows the width and height to be varied, and in front of the stage two elevators can be used to create a small or large orchestra pit or extend an apron stage into the auditorium.

In concert mode for all types of music ranging from full symphony orchestras with choir



to soloists and traditional Arabic music, the proscenium arch can be opened or removed entirely to open the concert platform to the audience.

*Dubai Opera
Photo courtesy of
MAD architects*

A more unusual mode is flat floor. All the seating can be taken to storage below the auditorium creating a large flat floor extending unbroken from the rear wall of the stage to the back of the auditorium an area of over 1,800 m². This large space can be used for banquets, weddings, ceremonies, exhibitions, and any other event. The theatre technology, lighting, sound and acoustics had to be adapted to the multiple configurations of the auditorium, which led to a series of innovative solutions.

Feedback from audience and touring companies has been very positive. For Dubai the Opera House is a new landmark inviting tourists and the multi ethnic population to mingle.



*Dubai Opera
Photo courtesy of
MAD architects*

Boulez Saal, Berlin (2017) Karin Winkelsesser

The innovative Pierre Boulez hall in the historic centre of Berlin was inaugurated on 4 March 2017. It is the showplace for the Barenboim-Said Academy, housed in a converted part of the Berlin State Opera's former scenery store. Frank Gehry designed the hall, whose layout can be changed according to the requirements of different types of music performances.

The Barenboim-Said Academy is the brainchild of Daniel Barenboim, lifetime chief conductor of the Berlin State Opera, and Edward Said, a Palestinian literature and arts expert (1935 to 2003). They founded the East-Western Divan Orchestra in 1999, to bring together young musicians from Israel, Palestine and Arab countries for concerts each summer.

Following Edward Said's death, Barenboim founded the Academy, with the help of public and private funding, to extend the

orchestra's function to a permanent base for joint learning. The Academy is built within the shell of the Berlin Staatsoper's old scenery store. The 34-million-euro construction cost of the Academy was two-thirds funded by the German government, which also helps finance the running costs. It was realised within the cost and time limits.

The building has two parts – the Boulez Saal and The Barenboim Said Academy which has class rooms and studios that were placed within the former scenery storage space that was 20 m high. Architects HG Merz used the structure of the existent building to keep alive the ambiance of a theatre working place. Circulation galleries and huge steel doors remained. They are especially visible in the foyer linking the academy and the Pierre Boulez Hall.

The Pierre Boulez hall bears the hallmark of three friends and grandees of the arts world: Barenboim had the idea, while internationally

renowned architect Frank Gehry of Los Angeles created the design pro bono together with acoustics expert Yasuhisa Toyota. The hall is named after the composer and conductor Pierre Boulez (1925-2016), a close, lifelong friend of both Barenboim and Gehry.

An expressive sketch of ovals was the inspiration for this space, which encompasses a full sweep of 360 degrees. The two artfully interlocking ellipses of the tiers create an impression of awe-inspiring weightlessness. It is a modular construction which, by reconfiguring its tiers and the ground floor with a combination of fixed and flexible seating, can create a variety of spatial correlations.

The hall seats up to 682, and each guest is seamlessly integrated into the space. The setting can adapt to the number of musicians and, above all, to the repertoire being performed. Each vantage point offers a different take on the concert, and even the performing artists will constantly discover new perspectives within the space. The intimacy of the hall allows solo musicians to appear on stage with the same integrity as chamber music formations, while comfortably fitting a medium-sized orchestra.

Acoustics and Architecture

To create the necessary acoustic isolation, the hall was built according to the “box within a box” principle. Three windows each on the south- and east-facing facades forge a visual link with the outside world. In this way, the visitor has a sense of being in a room right in the middle of the city. Three openings along the west side link up the atrium and the music academy. On the ground and first floors, these are light- and soundproof, and on the second floor they form a visual connection between the hall and the atrium.

The upper circle is arranged like a bridge, set into the new concrete walls that are hidden behind the north and south-facing facades. The balcony consists of a steel support with a trapezoid cross-section. The openness factor for the acoustics is 35 percent. The open side of the construction is lined with acoustically transparent materials, like a loudspeaker grille, which allows sound through and reflects it from the main walls into the hall.

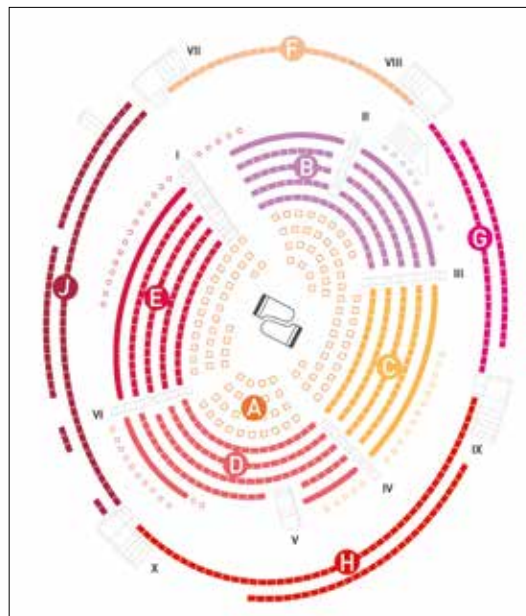
Outlook

Frank Gehry was so enthusiastic about this late work that he came over from Los Angeles to celebrate his 90th birthday at the Pierre Boulez hall in March 2019. Indeed, the hall has established itself as a lively place for music encounters and lectures. The intimacy



that the elliptical form offers however has its price. From the upper tiers one can hear well, but the sight is very restricted (partly due to German regulations on handrails) and the stairs are steep. The 360-degree stage means that more than half of the audience sees the performers from the back. In solo concerts, the performers (and the music instruments like pianos) turn by 180 degrees after the pauses to offer equal quality to all. However, the intimacy of the space and the experience of a close relationship between performers and visitors make the visit always a unique event.

*Boulez Saal
Courtesy of Volker Kreidler/
Boulez Saal*



*Boulez Saal – Auditorium
plan Courtesy of
Boulez Saal*

The Queen's revisited again and again and again

Iain Mackintosh



A drawing by Dana Gibson, from the collection of theatre scholar John Earl, who explains that it shows 'the not-quite-dearest and the not-quite-cheapest seats in a c.1894 London theatre just a few feet apart'. He adds 'In the London Baedeker for 1896 the still-new Duke of York's had a range from 6d in the rear of the pit and 1s for the forward pit and the far better sighted gallery, to 10s 6d for the stalls'. At the Queen's in 1912 it is recorded that the difference at the barrier halfway down the present stalls was less, only four to one: 2s 6d behind and 10s. 6d in front.

In *Sightline* Spring 2020 Julian Middleton gave us much useful and entertaining history in his account of the refurbishment of WGR Sprague's Queen's Theatre (now the Sondheim). Absent only was any discussion of the changes in capacity at the three principal dates: 1907 Sprague; 1959 Westwood and Casson; 2019 Aedas. Changes in capacity is a matter that sometimes makes for confusion when assessing many Victorian and Edwardian theatres. How, when and why capacities change can be significant.

Some examples of changes to capacity where the walls and ceiling have not (usually) moved. The Duke of York's now holds 640 but held 1,100 when *Peter Pan* premiered there in 1906. The Apollo Shaftesbury Avenue, where part of the gallery ceiling fell in 2013, now holds 775 but held 893 in 1901. The 1883 Royal Lyceum Edinburgh Lyceum held 1,880 in 1912 and, as recently as 1967, held over 1,300 when the Prospect Theatre Company (of which more anon) filled it during their weeks at the Edinburgh Festivals of both 1967 and 1968. It now holds only 658. At Edinburgh's Lyceum over the last fifty years 'improvements' have been made to audience comfort. Now nobody sits in the top of the four tiers or near a pillar in the levels below.

But at the Queen's/Sondheim the capacity

has hardly changed: 1,168 in 1912; 983 in 1971 and 1,088 today (most early capacities are from The Stage guides of 1912 and 1971). How and why?

Until after the First World War most theatres had a solid insurmountable barrier between the orchestra stalls, with comfortable seats as now, and the long-vanished pit, in which unreserved wooden benches were tightly packed. Pittites waited on stools, lined up either on the pavement or in the alley leading to the stage door, before being allowed to enter the building only by the pit door. That barrier was set some five or six rows from the footlights. Those who raced to the front benches in the pit had paid little and sat immediately behind the fashionable in the stalls who had paid a lot more to enter through the front door and to sip wine in the elegant saloons. The image here from 1894 tells it all. Densities today in these old theatres are almost always lower than they once were. But those of the Queen's/Sondheim buck that trend. Why?

I guess there are a number of reasons. First the back wall of the stalls level must have been pushed back in the post war rebuild. The large total of 22 rows of stalls was probably introduced then. I agree that, in Middleton's words, the 1959 rebuild, 'lacked aesthetic coherence'. But so it did in 1907 there being

no commercial reason to give those who paid a fraction of the price for a front stall the same level of decoration to that enjoyed by the well-heeled. The second reason is that by 2019 it had been proven that seats in the rear stalls in such theatres could be sold for around two thirds of the price of the front stalls. The cohesion of client Cameron Mackintosh, interior designer Claire Ferraby and architect Julian Middleton have now delivered on 'giving the theatre-goers the same quality of theatre-going experience wherever they are sitting in the auditorium'.

And the third reason is the arrival of the microphone and the loudspeaker which signalled the switch at the Queen's from four decades of mostly plays to the long running musical *Les Misérables*. This happened in 2004 when that show, the longest running musical ever in British theatre, transferred to the Queen's from the Palace Theatre where it had opened in 1985. Whether today's straight actors could reach the back of the stalls at the Sondheim without individual microphones, which today they wear for every play in the Olivier, Lyttelton and Chichester theatres, is a question it would be good to put to the test, though the chance of that will not be possible for a few years.

That once actors could project without assistance I know from my experience at the Queen's Theatre in the winter of 1967/68. Homeless Prospect Productions, latterly the Prospect Theatre Company, which I had co-founded in 1961 and at which I was soon to be joined by the late Toby

Robertson as Artistic Director and Richard Cottrell as Associate Director, had been the producers of *The Cherry Orchard* at the Royal Lyceum for the 1967 Edinburgh International Festival. (This incidentally was the first of a sequence of nine Prospect productions over six successive Festivals). *The Cherry Orchard* was a triple success for Richard. He translated the Chekhov. The production was his. He had persuaded Russian born Paris based film actress Lila Kedrova to play Madame Ranevskaya, despite she having never before played in English on any stage. She won the Evening Standard Award for Best Actress of 1967 and in those days the Evening Standard's awards were the only ones in town. We had a great Limited Season and in show reports which I saw there was never a mention of the audience not hearing.

Homeless Prospect thrived. I had got to know Binkie Beaumont of H M Tennent, the undisputed doyen of West End producers, who had his modest office over the auditorium of the Queen's. Sadly of the twelve in *The Cherry Orchard*, all billed over the title, only two are alive today. They are Marty Cruickshank who played Anya and Jan Carey who was Doonyasha. Any of you ABTT members who go to the annual Christmas part at the Gillian Lynne Theatre (formerly the New London) will recognise Jan (my wife these last 55 years) rattling the bucket as she collects for the Theatrical Guild, of which she is now chair. This is the charity which looks after back-stage and front of house staff and freelancers which does important work in these tough days.



Nearly half (44%) of the audience at the Sondheim sit in the 22 rows of the stalls where once were five or six rows orchestra stalls and the rest pit benches. Photography ©Peter Dazeley, from his book *London Theatres*

Performing Arts in Higher Education – An Unexpected Quick Change

Anette
Ollerearnshaw

In March 2020, ABTT held its first fully digital board meeting. As members precariously embraced unfamiliar video conferencing technology, whilst respecting etiquette of a productive digital meeting, it was clear that Covid-19 had forced life-changing effects upon each of us and our society as we know it.

By the end of the meeting however, everyone was more determined than ever to contribute in their own way in order to keep the work of this industry-facing organisation thriving, and supporting its members through these dark times in whatever way they knew they could. As I clicked 'Leave Meeting' my thoughts were very much filled with two worlds, one the Performing Arts and the other the Higher Education (HE) communities. Both are globally affected, if initially in very different ways.

The ABTT cares deeply about contributing towards a more diverse and sustainable future for the Performing Arts Industry and believes it is best placed to continue contributing to this transformation through its activities as an educators' custodian of best practice and industry ambassador.

This article is the first in a series of 3 that will follow the unfolding situation we are living through. Initially I shall consider the sudden change the HE sector experienced and its broad reaching effects, the human stories behind it and the remarkable efforts from everyone who is contributing to a continued period of growth for their students in the face of adversity.

In the autumn issue I shall seek to give some more statistics across the sectors in relation to graduations, new student intake and various aspects of the still uncertain medium-term future of education and the leisure and entertainment industries.

In the winter issue I plan to provide a celebration of innovation, graduate stories and sparks of hope for the future of our industry. (Anyone who would like to contribute to the next article in this series with their experiences is welcome to get in touch: office@abtt.org.uk).

Initially I have gathered contributions of personal and professional experiences during this time of transition via interviews with staff from University of the Arts London (UAL), Rose Bruford College (RBC), Arts University Bournemouth (AUB), Mountview, Royal Central School of Speech & Drama (RCSSD), Guildhall School of Music & Drama (GSMD), Royal Conservatoire Scotland (RCS) and Hong Kong Academy of Performance Arts (HKAPA).

1. Life as we knew it

We entered the new decade burdened with much political and ideological unrest and uncertainty; in the UK we had just gone through a snap general election, sustained Brexit disagreements and delays, and the HE sector was in the depth of industrial action with the University and College Union (UCU), which led to strikes affecting 74 universities, and which was already affecting the student experience across the country.

As we all witnessed how the corona virus affected life in China throughout December, January and February, the gravity of the situation still seemed somewhat disconnected from our own realities. Over the last few years working in London universities we had increasingly seen students, especially from the Asian communities, wear clinical face masks during their daily lives and this practice did somewhat become part of our college community.

As technicians we know that none of these face masks meet any kind of face fit testing or H&S compliance for air filtration, they do however protect others from ourselves should we be infected and sneeze or cough in public. As such wearing a mask or face covering is an act of kindness, a deed for the greater good and respectful to others, and we may well find ourselves back on our sites some time later this year with a whole new mentality towards such facial attire.

During the two weeks of acute uncertainty from 9th March to 22nd March, when reports on TV were increasingly alarming and the nation was stockpiling groceries, we felt very much left to deal with our own emergency response decisions. Some universities were in the middle of rehearsals at the end of term with a mixture of off-site as well as in-house theatre and studio productions.

The approach to and awareness of H&S compliance between technical and performance students in some universities differed; working in backstage roles the writing of risk assessments is part of our professional fibre. So the two weeks before lockdown increasingly and understandably felt like a personal conflict between wanting to complete end of term performances for the sake of student success and maintaining a safe environment for everyone.

RBC and RCS took a people centred approach to this challenge and guided staff and students through this decision-making process safely and collaboratively. In many

cases staff are based and have family outside of the UK, so access to crisis responses, information and guidance as to how and when to take action or book flights to travel home differed between nations and what we were advised to do in the UK.

Mountview reported introducing early attempts at social distancing measures whilst carrying on during these weeks of uncertainty, but how do you dance an intimate pas-de-deux whilst keeping a safe distance? Interestingly they had just dealt with a case of mumps amongst students and had closed the site for one week as a response and undergone a review of their infectious diseases policy.

The senior management and the board also clearly provided dynamic leadership and hands on collaboration; this is admirable and gives a strong foundation for this organisation to survive and eventually thrive again.

At Arts University Bournemouth staff foresaw the inevitability of online learning & teaching (L&T) becoming the reality in the spring term and responded with fleet footed agility by using this time of uncertainty to prepare all of their technical instruction videos for the upcoming units.

2. Lockdown

As the situation unfolded senior management across universities set up crisis management structures. Gold, silver and bronze teams were adopting plans and procedures; regular student and staff communications found a new significance in informing every one of the actions and support they would be able to receive to carry on their work.

Initially university staff teams did not know for certain if they would continue to be fully paid employees and if as businesses they could survive financially in the current format. However, Higher Education providers across the UK and internationally have firmly vouched to continue to provide students with a stimulating and academically awarding educational experience.

Once the instruction was to 'work from home' it became a matter of carving out some kind of office space amongst one's private life, getting up to date with remote technologies and developing new routines to adjust to the digital life in isolation.

3. Pedagogy & Academic Framework

We had been teaching students in a well-trodden path of a pedagogic model that we have fine-tuned over many years; this sudden change is putting many teaching staff who



were at the forefront of their profession into uncharted territory and this shift of power can feel very uncomfortable. In a way the field has been levelled and democratised.

*University of the Arts
London, Wimbledon College
of Arts.*

Previously in a minority and often on the outskirts of university operations, online pedagogy and technology has certainly come to be centre stage in this crisis. At HKAPA for example the i-Hub, which supports all digital teaching, has been well prepared in guiding staff through moving online. In general, it is clear that those universities who have already invested financially and strategically in digital L&T departments have enjoyed a head start.

The Pedagogy of Care, as championed by Massive Open Online Course (MOOC) guru Dave Cormier in his newly set up website www.oliah.ca (short for: Online Learning In A Hurry), became an integral part of the ethos and kind of free information sharing that was vitally important during this time of pedagogical adjustment during crisis teaching remotely.

At UAL Undergraduate (UG) 2019/20 term dates have been changed, with a 4-week extension into the summer to allow lost time due to the adjusted mode of delivery. The 20/21 autumn term has also been put back by 4 weeks with this time taken back from the usual break times throughout the academic year. I know that other universities have also amended term dates and cancelled all person to person collaboration until well into the summer.

At AUB it was noticed that the frameworks we function within do actually allow us to



Mountview
Photo by Tim Crocker

be surprisingly accommodating to students who need our support; applying mitigating circumstances and material irregularity procedures. With this realisation staff made a forward commitment to embrace these mechanisms with more generosity in the future.

HKAPA is standing firm in anticipating a return to classrooms and full production mode as previously planned over June, July and August 2020; they have effectively just taken a pause before picking things up again where they left off. With only 4 deaths in the city throughout the C-19 crisis (as of 4th May 2020), the public have benefited from a collective social discipline and respect for preventative measures borne out of recent memories of loss of life during the SARS outbreak in 2002. However, there is another uncertainty; the virus disruption came in the middle of a lengthy period of civil unrest led largely by the younger generation.

Most universities have made use of the no-detriment policy which allows students to be graded in their favour; marks will still be awarded for work created during lockdown and compared to the average marks received up to the Easter break. Whichever is the better mark, is the one they will be awarded, and this should encourage brave creative decisions to be taken during this next term.

4. Technology

A remarkable fact to note is that the internet as such hasn't broken. 10 years ago, IT systems may have not coped so well with the sudden surge in demand for total online working and

socialising. On day 1 of the 19/20 spring term Moodle the virtual learning environment (VLE) at UAL did grind to a temporary halt, but capacity and functionality was restored by the next day.

Our communities are grieving for what we lost; the heady hopes and ambitions for third year UG students squashed and stunted in the midst of a packed academic programme. We are now all navigating various digital conferencing platforms, with Microsoft Teams and VLEs used by most and some universities investing in Zoom licences. Importantly we needed to find out what the digital technical baseline is that students, who we teach across the globe, are working with. Universities have made hardship funds available in order to provide a level of equity amongst the cohorts.

Working to a global clock means 1-3pm UK time is ideal for group sessions, synchronous teaching or one-to-one tutorials. All the asynchronous material placed online is very useful for students to engage with in their own time; but platform usage must also be considered for participation in China for example, where access may be limited due to governmental controls.

Over recent years working in theatre, productions were aided and visualised by use of new and emerging technologies and have often been put on stage with an ever-increasing appetite for mixed realities. In fact, isn't theatre in its essence asking the audience to move between reality and imagination? As a collective we should be well prepared to shift our professional practices to the new challenge of yet another reality; generating solutions, teamwork and making things happen in creative ways is our business.

5. Collaboration & Making

At RCSSD it was noted that whilst some tactile making and collaborative activities had to be postponed for now, students are finding more time to take a deep dive into software products such as AutoCAD. Productions are planned, researched, costed and pitched as they would be usually, the only difference being that they are speculative instead of realised.

Teaching students to build stage flats, weld frames or construct a period costume can be deconstructed by preparing students with context, research skills and setting design objectives. The physical making can take place at a different time in the academic year and universities have pledged time in the early autumn to provide access to workshops and studios.

At RCS designers are still working on concepts, holding production meetings with directors and 2 productions are already rehearsing on Zoom with a desire to realise them as soon as possible. As the mode of working in the Conservatoire model is in smaller groups and often one-to-one, communication and staff / student collaboration is usually direct and personalised. In the music school however, taking home a harp for instance is not so easily facilitated and grants have been made available for digital technology needs.

At GSMD the Production Arts programmes and aligned technical resources have allowed significant production values to be continued. Opera and musical productions are being created using 3D pre-visualisation techniques and creating 'performers' as avatars by using a variety of Adobe and Notch One software real-time processes.

Professional creative teams are working alongside all production departments to realise these virtual productions. GSMD is also working in collaboration with Bild Studios, making powerful use also of D3 servers from Disguise, and pro lighting design software Capture.

6. Human experience

Mental health support and advice for staff and students in HE has become increasingly in demand in recent years and now more than ever do we need to show mindfulness and give each other reassurances that we are there for one another. We are all pushing through this crisis of survival with great resilience and determination, and this is admirable. The isolation for some has literally meant not stepping out of the four walls they call their home, for example some students remained in halls as they didn't have somewhere to travel 'home' to. For those who have school age children, especially single parents, their time for support and attention of those in their care, never mind themselves, has been stretched by these conflicting demands.

Student services and human resources departments have become much more aware and better resourced in terms of mental health and well-being; we now have better online signposting and remote support. As microcosms of culture and society, universities have come a long way in terms of diversity and inclusivity. This work cannot rest and especially because we are in a crisis we must continue to take positive actions.

7. Looking ahead

The current speed of adjustment in moving all L&T delivery online is a real credit to the adaptability of the HE staff community and undoubtedly a show of resilience. It is of course not the kind of product we would present if we had decided to run performance, technical or design courses online; this takes time, specialist guidance and development.

In performance terms we are building the set whilst the audience is taking their seats and our first rehearsal is the premiere. Staff are very aware that we do not want to be judged by current or prospective students on these amended versions of our courses. However, it is clear that some very good and innovative practice is coming to the fore. Predominantly this crisis feels like a setback, but it also reveals shoots of incredible growth.

In some instances, executives and staff are already observing fundamental changes and noting that these could be an opportunity to rethink where we might pick up again. Setting an improved direction once the immediate control measures are eased is of course an admirable stance; the elephant in the room is what this actually looks like and who it is designed to benefit.

Here is to a period of patience, determination and hope for all of us.

Anette Ollerearnshaw is a trustee director of the ABTT, has a background in technical theatre, and Higher Education, and since August 2019 has held the position of Production & Digital Lab Manager at UAL's Wimbledon College of Art.

Remembering Alan Jacobi

We have received the sad news of the death of Alan Jacobi LVO, Managing Director of Unusual Rigging Ltd.

Alan Jacobi (AJ) began his career in the lighting department of the National Theatre, under the directorship of Lord Olivier, and assisted in its subsequent move to the South Bank. He went on to tour the world as a freelance production electrician with theatre shows, music and concert production.

Forming Unusual Rigging in 1983, he expanded the company in 1990 to incorporate the production of large-scale national and international events.

During his career he inspired a whole generation of innovative rigging and engineering solutions in the theatre and events industry. In August 2002 AJ was appointed a Lieutenant of the Royal Victorian Order. AJ was a Fellow of the ABTT, and a great supporter and also a generous sponsor of ITEAC. We asked other Fellows of the ABTT for their thoughts and memories.

Alan was a truly extraordinary man, whose force of personality and drive for perfection made him unusual, indeed unique, in any company.

I was lucky to have met Alan when he was a boy. As Sir Laurence Olivier's lighting designer when the National Theatre was born at the Old Vic in 1962, I was blessed with the best electrics crew in Britain. Led by Lennie Tucker, it included Ronnie Cox, Peter Radmore, Brian Ridley, Laurie Clayton and then a very young, very bright boy named Alan Jacobi. I forget the exact year that Alan joined the team (those were crazy, hectic times in constant production – three consecutive weekends of tech, and continuous repertory) but even among his more senior peers he made a powerful impression. After the National moved to the South Bank, Alan eventually moved on to a wider world and in 1983 started his company Unusual Rigging.

Aptly named of course. To Alan the impossible was unknown, while the unusual was simply the spice of life. Few have done more to break through the boundaries of stagecraft than Alan. We all, and the entire world of theatre, are in his debt.

Richard Pilbrow.

I first met and worked with AJ way back in the very early days of our respective companies Delstar Engineering and Unusual Rigging following the incorporation of his in 1983 and this was on our first major "mechanical" west end show, we were installing the hydraulic systems and Alan was amazing us as a human fly high under the ceiling of The Apollo Victoria rigging the effects demanded of John Napier's complex design for the Starlight Express musical.

They were hard working and busy times and were happily succeeded by many such shows and events where our association with him and his staff has spanned well over thirty years and has seen Unusual constantly growing from those early years in South London, to their enhanced premises in Dalston Gardens Stanmore and ultimately to the now familiar Bugbrooke home and a fantastic history of courageous projects behind them.

In all this time we have held a great respect for AJ as a business associate, a larger than life character never afraid to take a bigger step, and always a friend with a big hug every time we met.

He has continued to lead his company all the way through and will be greatly missed by

*The young Alan with David Hersey and son. Approx 1976.
Courtesy of Rob Halliday*



many friends in the industry.

Paul Sadler

My contact with Alan was largely on new Garsington in 2011. Paul Getty invited old Garsington to build a demountable 600 set opera house on a marvellous but tricky site. They could stay for ten years but would have to take it down every September. Architect Robin Snell was head of the Design Team and Unusual built it. So quickly and so beautifully that Getty was delighted and said he would like to look at it in the winter.

It had style and so had Alan. It was a compliment he treasured.

Iain Macintosh

The majority of my dealings with Unusual in recent years have been with the team – with Simon, Jeremy, with Tom. I've always had the utmost respect for the company – when they are on the gig you know that there will be a level of professionalism that I have always valued. And aspired to.

That's the thing AJ gave me. I realised early on in my opportunities to work on larger projects that there was an element of having to reach their heights – that things weren't said lightly – that a rigour and professionalism was required.

I was in awe of that. And in awe of AJ creating that. He wasn't someone I dealt with much but someone I admired so much.

And then – over the past 5 years or so – we've had our moments. Moments when – I am proud to report – I realised that our respect for each other was mutual. It was one of the proudest moments of my career when I realised that he thought I was OK – that he admired how I fight the fight – how I have a non nonsense approach – and then – the icing on the cake – he talked to me about the work. About the art. About the fact that I could make a difference.

I have carried that support with me.

So I didn't know him well. But I respected him enormously. And – while he may not have realised it – his endorsement was one of the proudest gifts I have ever carried in my heart.

Paule Constable



Alan Jacobi: a stalwart supporter of the ABTT and in particular the International Theatre Engineering and Architecture Conference, here he addresses delegates at the 2014 event of which Unusual Rigging were top tier sponsors, a level of support they have provided since the inception of ITEAC in 2002.

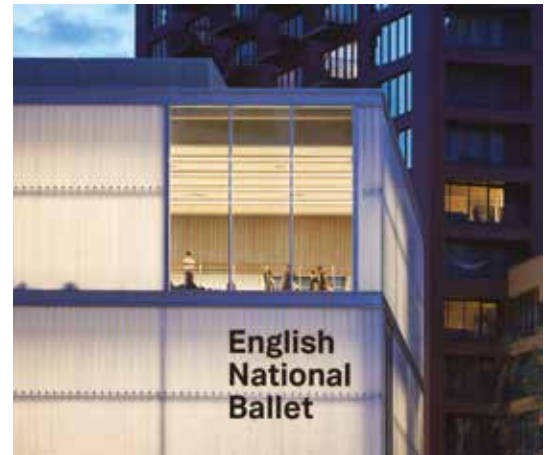
English National Ballet's new home

English National Ballet has now relocated to a new 93,000sq ft centre in the East of London, designed by Glenn Howells Architects (GHA). This brings together all ENB's activities onto one site for the first time in its 70 year history.

The new £27million building is located on London City Island, a peninsula on the Thames near Canning Town station that is being converted into a new neighbourhood by EcoWorld Ballymore. ENB is a key part of the overall vision for the area, a 'cultural anchor' that will serve as a catalyst for growth.

Wrapped in distinctive, translucent white cladding, the new dance centre provides world-class studio, costume, medical and production facilities. These include 7 full-sized rehearsal studios, dedicated engagement and learning spaces, as well as English National Ballet School – previously located in Chelsea – which is accommodated on the top two floors. In addition, the building includes offices for over 200 ENB staff.

Tamara Rojo CBE, Artistic Director of English National Ballet said: "Our new home is a hub for creativity, where imaginations will be ignited. It will be a springboard where artists from all disciplines can meet, grow,



exchange, and inspire each other, creating work that can be shared with audiences up and down the country and across the world. It is a space where everyone can feel welcome, where we can increase our engagement with our local community, and where people of all ages, young and old, from all backgrounds can enjoy our art form. I truly believe that this is the best ballet centre in the world, which will transform the way ballet is created."

Commissioned in 2014, GHA was briefed

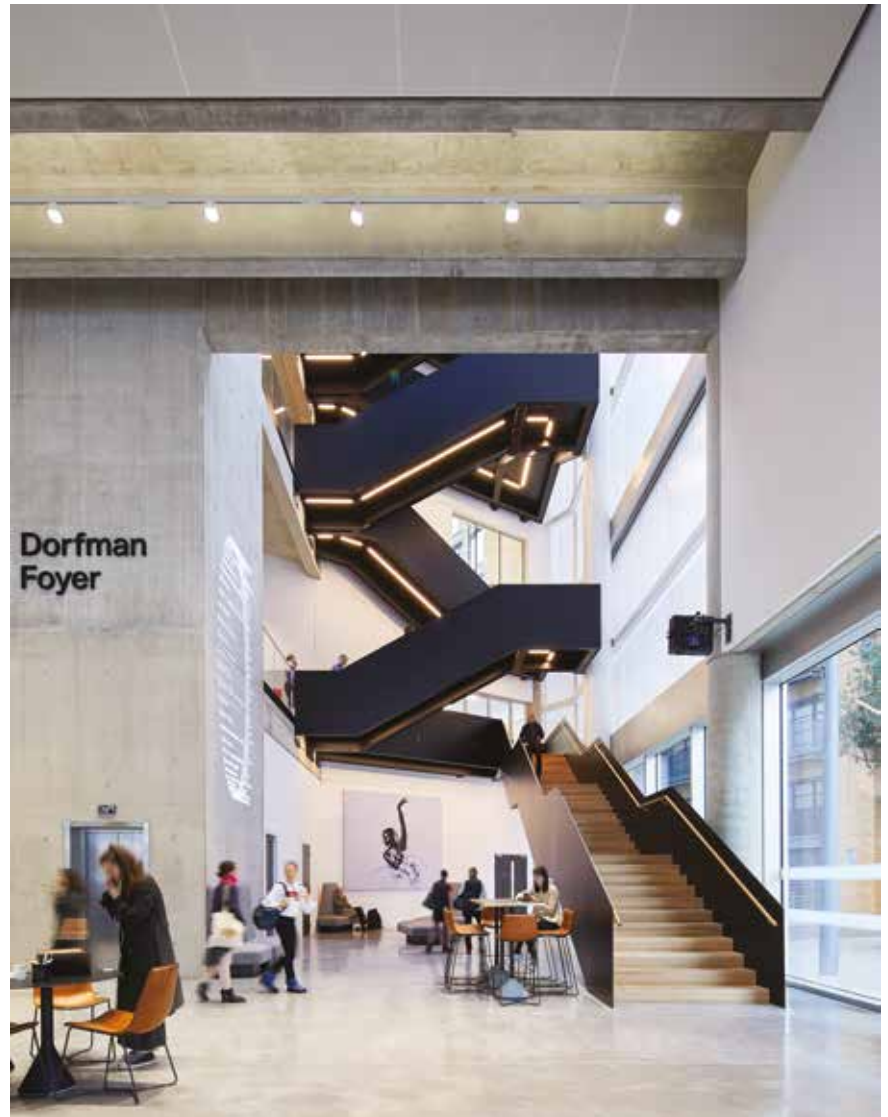


to design a creative space for making and dancing that will serve as a new focal point for ballet in London. The main challenge for the architect was providing the required extensive range of flexible, state-of-the-art facilities on a narrow site and with a comparatively challenging budget. “We achieved this by creating something that is elegant, pared-back and beautiful, but also hard working,” says Glenn Howells, director and founder of GHA. “The key has been designing the building so that its character is defined by a celebration of exposed raw materials such as concrete ceilings and translucent glass walls.”

ENB's new home is part of a cluster of three conjoined buildings positioned alongside Hopewell Square at the centre of London City Island. The ground floor is designed as a lively gathering and circulation space which acts as the soul of the building, with a public café and future exhibition space encouraging interaction between the school and the company. The building also houses a green room, treatment rooms and stretching areas for the company, and spaces for back-of-house specialists such as technicians, set builders and costume ateliers to work. New costume workshop facilities will enable the company to create and adjust costumes in-house for the very first time.

The main production studio features a 10m x 16m stage space and a 25m tall fly tower. The other facilities are arranged over three upper levels, and the building is topped with a green roof. Rehearsal studios are typically 15 x 15 x 15m wall-to-wall, and all include an external clear glazed viewing window to help welcome the outside in. Medical facilities including a hydrotherapy pool and ice bath are accommodated on the second floor. The office, education and retail parts of the building have been designed to achieve BREEAM ‘Very Good’ rating.

The translucent white cladding is a particular design feature, contrasting with the colourful surrounding buildings and allowing passers-by to catch glimpses of the professional dancers as they rehearse. This is achieved using 3,600sq m of Linit, an extra white translucent glass, which provides privacy whilst offering a hint of the dynamic movement of the dancers in the studios. Elsewhere in the building, glass and exposed concrete surfaces give the interiors a distinctive raw and pared-back appearance. The limited material palette and the use of standard, off the shelf, hard-working components has helped to ensure that the building can meet the challenging budget.



The Production Studio can also be used as an auditorium for ENB's outreach programme with local schools and other stakeholders, giving the ENB the ability to rent out spaces whilst touring and thus increasing the company's financial stability.

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On Being a Lighting Designer

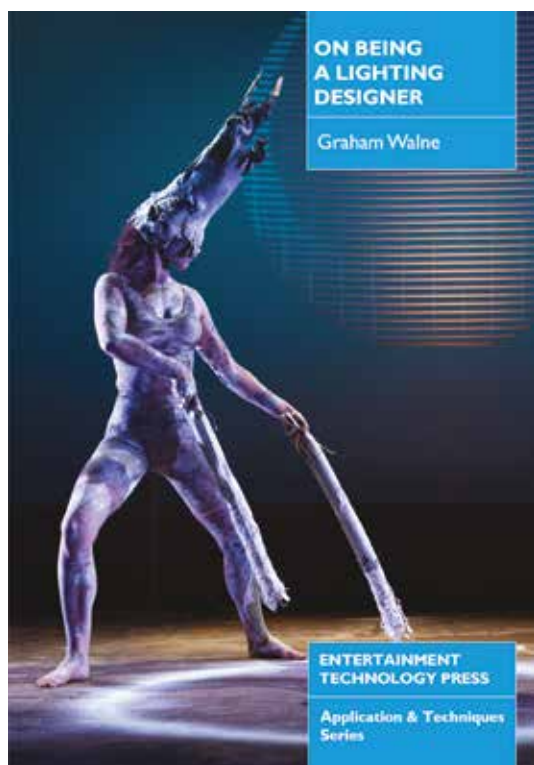
On Being a Lighting Designer

By Graham Walne

Entertainment Technology Press

ISBN 9781904031949

Price £12.95



“A Sense of Humour”. A sense of humour is what Graham Walne describes as one of the characteristics he looks for when recruiting his crew. This is one of the statements that stuck out for me when reading Graham’s book, *On Being a Lighting Designer*, it demonstrates that there is so much more to think about, than just the technical side of lighting.

The book gives great insight into what the role of a Lighting Designer entails throughout your career and how to get there. Graham talks about the vast amount of subject knowledge required as well as interpersonal skills needed to fulfil the job.

One of the great things, I think that’s talked about in the book as a reader that is relatively new to the industry is all of the tips and tricks Graham talks about. From processes used, to equipment required, to how to handle a budget. All of this information is extremely valuable and welcome to a reader like myself.

One of the pleasant sides of the book is all of the anecdotes of Graham’s career and history of working in the industry. His varied portfolio makes for enjoyable and interesting

reading for anyone interesting in Lighting for Theatre. I found Graham’s story from lighting for the Bolshoi Ballet at the Royal Albert Hall in 1993 particularly intriguing, reading about the challenges faced. It’s very powerful how the story finishes off with the statement “but the process should never become more important than the result”, which I found to be very poignant.

I would say this is a must-read for any new and emerging designers as well as any lighting professionals (or unprofessional). It contains some great advice and wisdom on all aspects of being a lighting designer, from getting to the job on time to how to communicate with your programmers. Above all, it is a fantastic read!

Lastly, I’d like to mention the Ten Commandments of lighting design as described in the book, which makes the book entirely worthwhile reading. This one, in particular, stood out to me; “Thou shalt give thanks for working in some beautiful building with beautiful words and music, much of which was first conceived decades ago, and, for being able to contribute to more valuable work.”

Liam Sayer is a 3rd Year student from Guildhall School, specialising in Production Electrics and very interested in all things Lighting.

Review by Liam Sayer



Herbert Senn and Helen Pond’s setting (and stunning scene painting) for the Opera Company of Boston’s ‘Don Pasquale’ (1987). Directed by Sarah Caldwell, lighting design by Graham Walne.

Olivier Awards, Special Recognition Winner: ABTT Fellow, Peter Roberts



Alongside the awards to actors, directors and designers, the Olivier Awards also recognise outstanding contributions to the theatre industry through its Special Recognition Awards. Since these are decided in advance, they were announced on 15 March 2020, despite the postponement of the Awards this year. Peter Roberts, ABTT Fellow, theatre consultant and former Delfont Mackintosh Technical Director, was one of this year's winners.

Peter Roberts is often described an unsung hero of the entertainment industry's backstage sector. He worked for 30 years as first Stage Manager then Production Manager and finally Technical Director and Board Director of Bernard Delfont Ltd, and following the death of Lord Delfont with Cameron Mackintosh Ltd., for a further seventeen years but has also contributed much more widely to the theatre industry through a variety of other roles.

Most notable (and cited in his Special Recognition Award) was his participation in the long-running negotiations and lobbying for the reallocation of radio frequencies (Radio Mics) for live entertainment, especially musical theatre. The eventual outcome took 14 years of lobbying and negotiation with Ofcom, requiring sustained and diligent representation during the ongoing changeover from analogue to digital technologies and the search for a viable alternative radio spectrum. Peter added that this had been a challenging process, where the goalposts had changed several times! In the end persistence and lobbying had ended up with a good deal for the industry.

He had also had a long-standing involvement

in SOLT, where he was Chair of the newly formed Industrial Affairs Committee, and was therefore involved in union negotiations for many years, often during difficult periods.

Peter has held several other roles, most notably Deputy Chair of the Board of Governors of Royal Central School of Speech & Drama, and Trustee of Theatres Trust (which is where I first encountered him). I asked him what had attracted him to the role at the Theatres Trust, and he explained that he had an interest in theatre buildings which went back to his time touring in the 1960s and 70s - the Trust was quite frequently dealing with theatre buildings that he had visited then.

The early years of his career, after training at Italia Conti in the late 1950s, indeed involved much touring – first as an ASM on a couple of rock & roll tours for the producer Larry Parnes, and a 20 week Summer Season for Harold Fielding, and subsequently with Delfont. His first show was a tour with Harry Secombe – and he then rose through a succession of behind-the-scenes roles, from deputy stage manager to company manager, to eventually join the board of Bernard Delfont Productions.

After Lord Bernard Delfont's death in 1994, Sir Cameron Mackintosh took full ownership of the Prince Edward and Prince of Wales theatres, in which he already held a 50% stake. Along with the two venues, he acquired the services of Richard Mills – who ran both theatres – and technical director Roberts. Peter's workload increased dramatically, as not only did Mackintosh's hit shows travel the world, but there were also a number of theatres to renovate. He acted as Project Director in the refurbishment of six out of seven of the theatres then under the Delfont Mackintosh banner – the Prince Edward, Prince of Wales, Albery (now Coward), Wyndhams, The Strand (now Novello) and Queens (now Sondheim). His role in these various projects was to represent Cameron Mackintosh and (ideally) make sure the projects met key dates and agreed standards. As we discussed, Cameron has always been very involved in capital projects in his theatres, and has invested considerable amounts of time and money in these over the years with great success. His latest project at the Sondheim is, of course, the second time that theatre has been worked on under his ownership.

I asked Peter what the greatest technical change had been during his time in theatre. He identified the mechanisation of scenery, and cited Sean Kenny, who he felt had changed the face of scenic design – he had worked

with him on many shows including *Pickwick*, *Maggie May*, *The Four Musketeers* and *Treasure Island*.

A further development had, in addition to mechanisation of course, been computer control in almost every department, and its role in making shows such as *Phantom of the Opera*, *Les Miserables*, and *Miss Saigon*, possible. Peter cited *Martin Guerre*, designed by Nick Ormerod, as a project which was only made possible by technological innovation. It required large scenic trucks roaming freely

around the stage, without guide tracks and programmed with tolerances of 6-10mm. This was made possible by collaboration with Delstar/Stage Technologies in their workshop near Ipswich, where Mark Ager adapted the technology used for radio controlled spotlights. Roberts added that Cameron Mackintosh's American involvement at the time, had made the transatlantic exchange of knowledge much easier where from time to time one side was ahead of the other, but always to the mutual benefit of both.

Letter to the Editor

I read with interest the article 'Lighting Up' by Jonathan Brown with regards to the early days of ABTT training for technicians. It reminded me that my great friend and colleague Maurice Marshal who was chief electrician at the Northcott Theatre, who founded and ran a two year apprentice scheme that trained 56 stage electricians.

I was interested that some of these apprentices went on to work in senior positions at Stage Electrics including David who founded the company with Maurice. It seemed fitting that Maurice finally set up a trust (<http://www.mauricemarshaltrust.org/>) before he died to support apprentices and that has inaugurated a scheme with the Chichester Festival Theatre. I believe that Maurice also served on the ABTT training committee with Ken Smalley.

When I took early retirement from teaching I returned to my life long interest in theatre and Maurice & David invited me to work at Stage Electrics initially on the projects dept and subsequently encouraged me to develop a educational consultancy providing training and support for schools that the company sponsored. This led to developing lighting workshops for students and INSET for teachers and eventually producing 'Give me some Light!', three lighting workshops on DVD accompanied by student workbooks and teacher resources. This was financially sponsored by number of companies in the industry including Stage Electrics in which Maurice took a personal interest.

This led to an approach by Methuen Drama to write a "nuts and bolts" guide to stage lighting to complement the Francis Reid book

that they had on their list. David Whitehead generously offered to proofread the script for me and ultimately I came to regard him as a technical editor and advisor. Sadly Maurice only saw incomplete parts of the script in the later stages of his illness but still made some very positive comments even confirming that the original Strand Part 45 didn't have a reflector that had been questioned by a peer reviewer. *Stage Lighting – The Technicians' Guide*, has sold over 6,000 hard copies and 125 e-copies.

Personally I attribute what I have achieved to both Maurice and David and the personal interest that they took and the direction that they gave. They both complimented me in that both the DVDs and the book gave a great service in training to the industry. The 2nd edition of my book is dedicated *Stage Lighting – The Technicians' Guide for Maurice and David* that seems fitting for two people who gave so much to training many who have worked in the industry.

I am afraid that this has ended up as a personal meander but my real point was to acknowledge the contribution that Maurice made to apprenticeships and training that I thought might provide an interesting post-script to the recent article 'Lighting Up'.

Skip Mort



Maurice Marshal, MBE, on the day that he received his award for Services for Theatre.

UK Live Performance Production Declares Climate & Biodiversity Emergency

'Live Performance Production Declares' is a global petition uniting all strands of the Live Performance Production industry. It is both a public declaration of our planet's environmental crises and a commitment to take positive action in response to climate breakdown and biodiversity collapse.



The crises of climate breakdown and biodiversity loss are two of the most serious issues of our time. Live Performance has been branded the 'eco-vandal of the arts' with lavish sets, global tours and energy consuming venues. Sets are scrapped after tours which rack-up hotel nights and transport miles. Audiences travel for hours to see stars who fly across continents. As one of the sectors that contributes to art-forms with some of the greatest social and political influence, Live Performance Production must lead in promoting the transformation to a circular economic model by demonstrating positive measures in its own practice.

For everyone working in the presentation of live performance, operating a place of entertainment or supplying productions, meeting the needs of our society without breaching the earth's ecological boundaries will demand a paradigm shift in our behaviour. Together with our creative partners, performers, patrons and clients, we shall need to run our buildings, create our performances, source and manage our resources in order to serve our communities as indivisible elements of a larger, constantly regenerating and self-sustaining system.

The research, technology and solutions exist for us to begin the transformation to a circular model now, but there must be a collective will. Recognising this, we are committing to strengthen our working practices and redesign our business activities, operational processes, use of resources, organisational policy and overall governance in order to create and present live performance in a way that has a more positive impact on the world around us.

We will seek to:

- Raise awareness of the climate and biodiversity emergencies and the urgent need for action amongst our partners,

collaborators, stakeholders, customers and supply chains.

- Advocate for faster change in our industry towards circular design practices and a higher Governmental funding priority to support this.
- Establish climate and biodiversity mitigation principles as an inclusive and highest priority measure of our industry's success: demonstrated through awards, prizes and listings.
- Share knowledge and research on an open source basis.
- Evaluate all new productions against the aspiration to contribute positively to mitigating climate breakdown, and encourage our partners, collaborators, stakeholders, customers and suppliers to adopt this approach.
- Upgrade, reuse and re-purpose existing production resources to achieve extended use as a more carbon efficient alternative to limited use and new build approaches whenever there is a viable choice.
- Include a natural resources budget in all production, product planning or design development in order to reduce both embodied and operational resource use.
- Adopt design, production management or product development principles with the aim of creating productions or products that embrace the framework of a circular economy and wherever possible are restorative.
- Collaborate with partners, collaborators, stakeholders, customers and suppliers to further reduce production waste.
- Accelerate the shift to reduced consumption and the use of regenerative practices and materials.
- Minimise wasteful use of resources in the presentation of live performance both in quantum and in detail.

This declaration was inaugurated by:

Association of British Theatre Technicians, Sustainability in Production Alliance.

To become a supporting organisation please contact: office@abtt.org.uk.

We hope that every UK live performance supplier, producer, venue, practitioner, student and educator will join us in making this commitment.

To sign, practices must provide the email address for their CEO, Chairperson or appropriate Board Member. Approval will be sought via this email before the company name is added to the declaration.

An Inspector Calls

I always look forward to writing these articles and as you will know I tend to have a light-hearted approach to the subject matter. It is however hard to be light-hearted currently when the theatre and general leisure and entertainment industry is facing such a huge and evolving challenge.

The months prior to the lockdown were full, as always, of interesting challenges in Westminster, robotic bar tenders and inflatable bananas just to name a couple but rather than go through those now I thought it would be most beneficial to look at the future and what Social Distancing (SD) may mean from a venue perspective and how if at all it can be achieved. I am aware that this article does not always present answers but often just flags up questions. However, the hope is that by highlighting the challenges, this will lead to discussion across the industry and a combined sharing of ideas and best practice to try and find the answers to those questions.

It is worth pointing out that SD is likely to be in place in some shape or form for 12-18 months. So, any measures put in place are hopefully temporary although it may not feel like it. Biotech apps that are in place in parts of Asia will likely play a role also in how the lockdown measures are gradually eased. It seems that if you are in the green zone you can move around unhindered but if you are in the yellow and red then you can't. Could it be that venues only admit "greens" for the foreseeable future? We are clearly entering an episode of "Black Mirror" territory if this approach is taken and could it be that members of the "greens" become revered and idolised in society the same way as sorcerers and pub landlords? Clearly vital questions but either way SD is here to stay until we have a vaccine so let's try and look at some of the issues.

Social Distancing – Current Guidelines

At the time of writing this article (beginning of May) we are about a week away from the government releasing several positioning papers aimed at reopening the economy. The hope is they will provide new guidance on what the government feels will need to be in place to allow different sections of the economy to begin opening up again. My understanding is the economy has been split into seven general areas, with the hope being each will come online in sequence. The reality is the leisure and entertainment industry is likely to be at the very bottom of the list and theatre may be a specific sector identified for its particular challenges even within the wider definition. My feeling is any guidance will be fairly generic

with responsibility being placed back on the industry to carry out their own assessments on how they feel they can achieve SD. So, what does the current guidance say?

The current UK government guidance on SD is aimed at people living in their own homes (there is separate advice for care homes). Therefore, there is little that can be taken from the current guidance and translated to entertainment venues at present with the possible exception of:

1. Maintain a 2m distance to anyone you meet outside of your household.
2. Washing hands regularly and the various guidance around not touching eyes/nose/mouth with unwashed hands and cover your cough or sneeze with a tissue.
3. Clean and disinfect frequently touched objects and surfaces in the home

Numbers 2 and 3 are relatively straight forward in that number 2 will hopefully become self-regulating with people accepting this as the new normal. It can be supported with additional sanitisation points in venues as is commonplace on hospital wards and the cleaning regime can be increased as required, both will require additional financial resources though (a recurring theme).

Number one however is the real challenge and I am sure it has been giving all those involved across the entertainment and leisure industry sleepless nights.

It is worth highlighting that the WHO (World Health Organisation) states on its website that keeping a 1m distance to others is recommended. This could be an important difference and if the UK government in its guidance when it arrives accepts that this figure is still acceptable in tandem with other measures (maybe face masks etc) then this will certainly make maintaining SD in venues easier albeit still a challenge. Let's focus on capacity as clearly this will be critical for the viability of premises and then I will highlight other considerations.

General Premises Capacity

To clarify maximum capacities the main criteria is going to be floor space. Means of escape should not be a factor as capacities are going to be reduced no matter what so these should always be adequate.

Let's start with open floor/bar areas. It would be nice to simply apply a floor space factor of perhaps 3m² per person for any given area. However, this will not necessarily equate to 2m between each person. To facilitate this

Alan Lynagh

each person needs a theoretical cylinder with a 2m diameter (3.14 m²) around them and this needs to be replicated across the available floor space. In maths they call this circle packing and it is one of the most complex and problematical areas of maths. Logistics companies spend vast amounts of time and money working out the most efficient way to pack containers with goods on this same principle.

Unfortunately, you can't simply apply a floor space factor as we normally would as every shaped room (even if it is the same floor area) may have a different capacity. For example, a 4m x 4m square would allow 9 people if you plotted it out on graph paper and maintained 2m between dots/people. If you make the same area L shaped, you get 10 people. The reality is maintaining 2m SD will generally mean a floor space factor of around 2.5-2.75m² per person. Foyers bars are normally acceptable at 0.3m² per person and even applying a more comfortable 0.5 m² per person the difference is clearly significant. Applying 2m SD rigidly will most likely see capacities reduced by 70-80% in open foyer/bar areas.

However, this assumes we count the capacity as individuals, and this becomes an important point and one that will hopefully be clarified by the government. How do we confirm people who buy tickets are co-habiting? Do we need to get confirmation from them of this? These are all important points that need consideration. Let's assume we can allow ticketed groups to stand together without the need for the 2m SD in place.

If you are in a group (family of 4 for example) it may be reasonable to apply a floor space factor of 0.5m² per person for those individuals (some may suggest the current 0.3m² per person is acceptable for a foyer). A group of 2 similarly and so on and so forth. If you knew the full break down of the groups attending an event you could then use those figures and work out the maximum capacity in a foyer/bar area. For example, if we had our same 4 x 4m square and had a group of 8, one group of 4 and a group of 2 and allowed a 1.5m gap in between separate groups we could get up to 14 people in our 16sqm. If we applied the WHO guidance of 1m SD between groups, this figure would increase again. This assumes a perfect square and as detailed above would vary dependent on the shape of the room. This ratio is at least a little bit more viable if it could be maintained but the reality is how would that be achieved. The break down of groups and tickets sold would need to feed into operations so they could calculate bar capacities but in

large multi-space venues such as theatres with multiple bars there is no way of predicting those groups will all disperse themselves in line with your calculations and go where you want them to.

Maybe floor markings in open bar/foyer areas could work? I know it sounds ridiculous, but it may be a solution. Groups of 4 stand in pre-marked zones, groups of 2 in other pre marked zones. These could all be at the higher density factors of 0.5m² per person (or 0.3m²). As long as there was then adequate spacing in between each zone (1.5m seems reasonable to me as this assumes people will be 25cm inside their own zone so should maintain the required 2m), staff could just allot a group the appropriate space as they enter the bar and when all zones are occupied there is no further entry to that bar or space. Markings could be based on the likely group make-up for that event. While aesthetically it is not pretty it would probably be the easiest way to manage it for staff and would allow operators to work out maximum bar capacities in advance and decide how feasible these are. If the guidance allows 1m SD between groups, the floor markings could be tweaked to reflect that.

Auditoria

So, we now have a giant hopscotch marked out in our foyer and bars let's look at the auditoria. The fixed nature of the seating should make this a more straightforward exercise, but it could be that this will be the most restrictive calculation if sticking firmly to the 2m SD requirements. Assuming minimum seat dimensions as set out in the *Technical Standards* of 760mm deep by 500mm wide (assuming chairs with arms) this would mean to seat a group of 4 in a row you would need to leave 4 seats empty each side of the group horizontally and 2 seats empty in front of and behind each patron and finally 1 diagonally in each direction at the end of a group (4 in total). So, this would be 28 empty seats for a group of 4 or 20 for a group of 2. It may be that diagonally you would need to leave 2 in each direction also dependent on seat dimensions. This is depressing reading and it is hard to see how any auditorium based activity would remain viable with such low capacities. If we moved to the WHO recommendation of 1m SD this ratio is almost halved with a group of 4 requiring 16 empty seats and a group of 2, 12 empty seats.

This again all assumes we can seat groups together. If as I believe has been muted in Ireland, you need to provide 2m between all

individuals then for every seat you lose 16 along the same lines as detailed above and this is being kind diagonally. If the same was applied at 1m between individuals again it would be a loss of 8 seats for every one sold.

So, using the harshest calculation at 2m SD between individuals the capacity would reduce by approximately 93.5%. If applying 2m SD between groups, the capacity would reduce by approximately 85.5%. Applying the harshest calculation at 1m SD between individuals the capacity would reduce by approximately 87.5% and if applying 1m SD between groups (the most positive interpretation) the capacity would reduce by circa 75%. This would fluctuate slightly up and down dependent on group size. The larger the group the more positive the ratio and the smaller the group the more negative. Therefore, my feeling is even with the most positive outcome above and considering boxes and some clever fiddling around with offset seating the best scenario will still be around 25% of the current capacity.

It is difficult to know how any venue with a closely seated audience could make those figures stack up. While the current situation is difficult and challenging if the government does say theatres can reopen but need to maintain social distancing my feeling is that will be an even more challenging and difficult time as it could leave operators bereft of the current financial support provided during lockdown and with a 75% hole in their potential capacity.

The entry and egress from these new seating/bar layouts will need to be controlled also and that in itself will be a massive challenge. One-way systems will have to feature heavily I assume, and this will require a reasonable number of staff to manage and enforce (more cost).

My feeling is small single use rooms with seated capacities such as restaurants will be best placed to come up with floor layouts that may be viable financially. It may be possible to use partitioning strategically in these types of venues also to provide physical protection between tables, which may mitigate the need for 2m/1m SD between all tables. However, as the venue becomes larger and as you start adding multiple areas and rooms the difficulty seems to grow exponentially to me. Unfortunately, theatres/cinemas and live music style venues all sit in this category and are undoubtedly the most challenging when it comes maintaining SD.

Other areas that present particular problems are:

- Toilets; - Fixed capacities? Management of

ingress and egress? How will patrons know when they are occupied? Management of queues? Cleaning regimes – between each use?

- Serving points: - Management of queuing for bar service: 0.3m² per person occupation not acceptable? /Screens needed at server points? /Reduction of cash handling and interaction by Apps for remote service? / How will orders be delivered/collected? / How can staff achieve SD serving behind a bar?
- Staff welfare areas: - Will they be big enough to maintain SD? Can break times be staggered? Can use of welfare facility areas be allocated by rota?
- Lifts; - Use by one person at a time? How will this be managed? Will there be room for SD queue? How will patrons who need assistance be accommodated?
- Disabled audience members; - How will the ingress and egress of disabled patrons be managed?
- On Stage/backstage; - How will actors and crew maintain SD where required?
- Emergency evacuation. – Will SD be required in an emergency evacuation? If maintaining SD during evacuation will take longer will two stage alert need to be abandoned for a single stage evacuation from the auditoria?

I am sure this article has probably not covered a quarter of the issues you are all facing but I hope it has maybe shone a little light on some of my thoughts around the technical challenges. I feel premises will need to carry out system assessments (policies/documentation) and site assessments (physical inspections) to come up with a list of actions required. These assessments will hopefully highlight the work required and most importantly the viability of reopening with those measures in place. I know several live music venue operators who are not even going to consider reopening while 2m SD is in place.

What I do know is this last few months has made me even more aware of what a wonderful, magical industry we work in and how sorely it is missed. Personally, I can't wait to be whinging at Production Managers again, disagreeing with Safety Consultants and laughing in the face of Architects ... happy days they were! I also know this industry is all about creativity so hopefully working together we will find novel ways to manage these problems. If anyone has these answers, please email me asap!

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Backstage Mental Health and Blackout

The report entitled *UK Technical Backstage Entertainment Industry – Mental Health Evaluation* was produced earlier in 2020. Authored by Dr Paul Hanna, from the University of Surrey, the report was produced in the context of general concerns about mental health problems in the wider workplace, and some findings that the “Technical Backstage Entertainment Industry” was one of the more problematic industries.

One of the driving forces behind this report was Mig Burgess. Mig, Lighting Tutor at Guildford School of Acting, and an ABTT Trustee, has a bipolar 2 diagnosis, and is passionate about promoting mental health awareness.

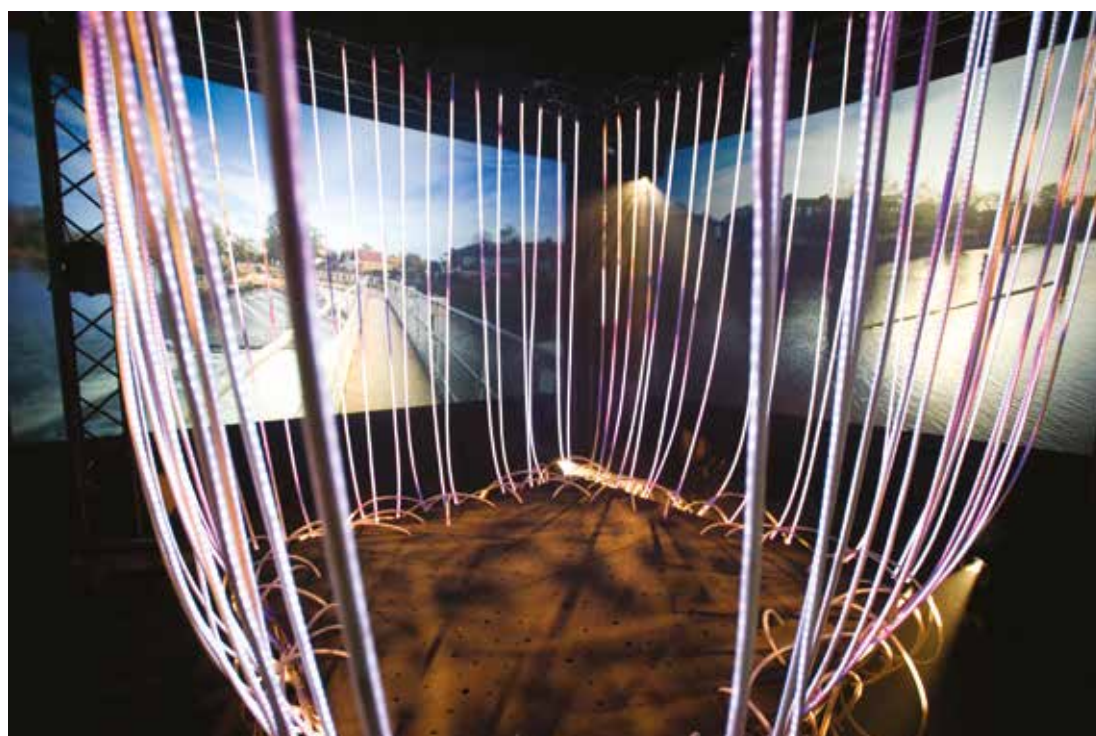
Mig has created *Blackout*, a fully immersive installation charting the experience of going through a bipolar cycle, including the highs and lows. This 6-minute piece involves video/light and sound as well as effects such as smoke and a vibrating platform, and provides an immersive experience for one person. It uses cutting-edge lighting, projection and sound equipment, provided by support in kind from manufacturers. Mig and her colleagues developed the piece during a standard length production week, and it premiered at Guildford School of Acting between 1-4 May 2019.

Guildford School of Acting is part of the University of Surrey, and the work involved a partnership with the psychology department which concentrated on whether experiencing

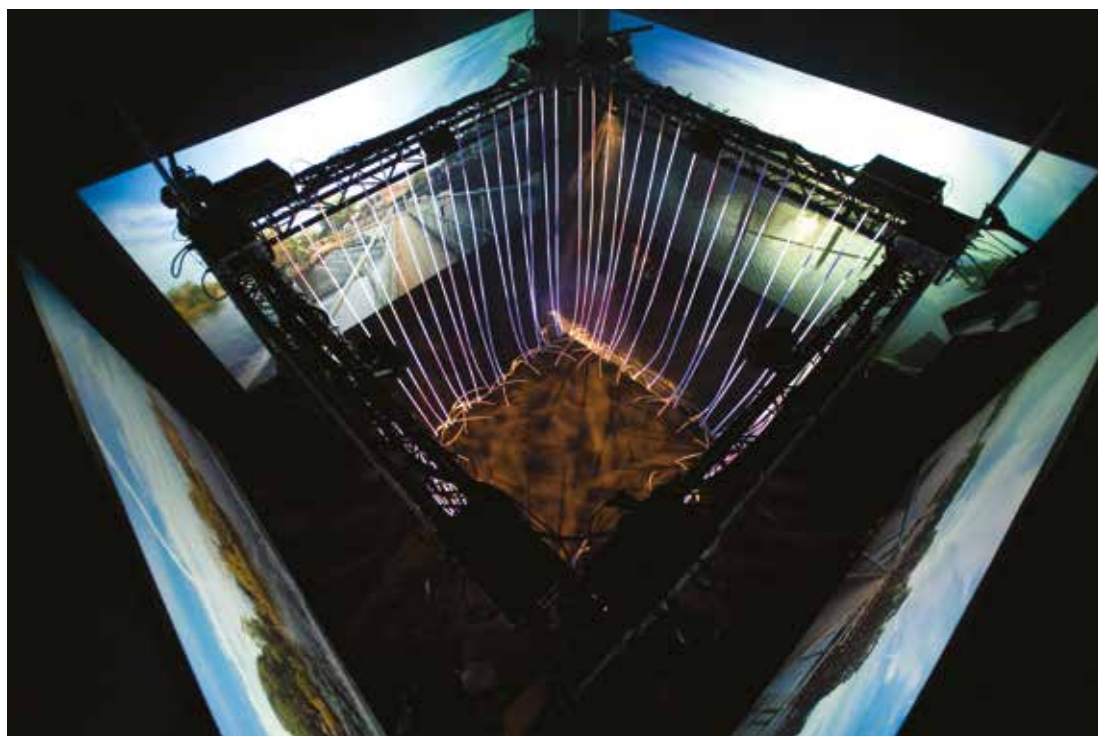
the work had an impact on preconceptions of mental health. Questionnaires were completed immediately before, immediately afterwards, and 11-12 weeks later, and what was particularly interesting to psychologists was that these positive changes in perceptions were maintained 11-12 weeks later. This was less of a surprise to the theatre professionals involved, who were used to how audiences react to productions, often taking some time to work through their reactions.

This unique partnership between the arts and academia led to the ambition to do more research within the industry. Five technical bodies: the Association of British Theatre Technicians (ABTT), Association of Sound Designers (ASD), Association of Lighting Designers (ALD), Production Services Association (PSA) and PLASA agreed to commission research. A roundtable meeting established priorities and developed a questionnaire, with two different paths – one for individuals that currently or previously experienced mental health difficulties and one for those who had not.

The evaluation was initially launched at PLASA London, 15-17 September 2019, alongside a revival of *Blackout*. In addition to the promotion of the evaluation at the trade show, all the bodies involved received an individual QR code and web link to distribute to their membership and social media was utilised to promote a general QR code and web link. The survey stayed open until Friday 18th



Photos of the Blackout installation, courtesy of Mig Burgess



October, so there was a total 5-week period for data collection.

In total the questionnaire was completed by 1302, of whom 945 (72.6%) were male, 347 (26.7%) were female, with the remaining 10 (0.8%) participants selecting 'other' or 'prefer not to say'. In terms of age, there were more participants in the 25-34 age bracket than any other, and overall 91.9% of the sample were under 55 years old.

The findings of the evaluation can be summarised as follows:

- 58.7% of the sample stated that they currently, or have previously had, a mental health problem.
- Mental health disproportionately affected more females (71.1%) than males (54.2%).
- Individuals under the age of 45 reported proportionately more current or previous mental health problems than any other age group.
- 54.5% of participants stated that they had their mental health issue before starting work in the industry
- Working conditions within the industry were seen to contribute to mental health problems.
- Participants reported high rates of mental health stigma (69.8%) and experiences of negative attitudes (59.8%) towards mental health within the industry.
- Those with a current or previous mental health issue reported higher rates of stigma

and negative attitudes than those without mental health issues.

- The NHS and private healthcare providers were the main source of support for mental health issues with little awareness of industry specific support.
- Access to support was seen as the most important factor to enable individuals to cope with mental health difficulties.
- 69.5% of individuals felt that they would be able to recognise if a colleague was suffering from mental health difficulties.
- 66.6% felt capable to help a colleague if they disclosed a mental health issue to them.
- Understanding, awareness and education were also seen as most important factors to enable helping others.
- 50% of the sample were aware of mental health first aid training, 80 participants had undertaken the training.

Next Steps

The report concluded with a large number of recommendations:

- Further research is needed to establish the gendered difference in mental health prevalence, including in depth qualitative research exploring experiences of being male and female in the industry.
- An evaluation is needed specifically focusing

on substance misuse and addictive behaviours within the industry.

- Further work is needed to explore in more detail the link between mental health, working conditions, and the possibility that the industry attracts individuals with existing mental health problems.
- There is a need for the development of industry strategies to promote positive mental health and well-being – to reduce the 45.5% rate of individuals developing mental health problems since joining the industry.
- Industry level initiatives are needed to tackle stigma and negative attitudes towards mental health.
- Further investigation should be carried out into the complexities surrounding those without a mental health problem feeling that stigma and negative attitudes are not as prominent as those with a mental health problem.
- Initiatives are needed to enhance communication of mental health problems with managers.
- There should be a policy that ensures time off for mental health problems is granted and not viewed in a negative light.
- A communication campaign should raise awareness of the current industry mental health support provision.
- The group should explore the possibility of developing industry specific computerised CBT.
- The group should explore the possibility of offering industry funded group therapy sessions.
- Understanding, education and awareness of mental health within the industry should be increased through communication campaigns.
- The group should conduct a full evaluation of mental health first aid training within the industry in terms of mental health education, awareness, stigma reduction, helping behaviours and effectiveness for recipients of the support.

Following the report's presentation, there have been two follow-up meetings, which have discussed which recommendations should be prioritised in terms of action. The intention has always been that priorities should cover policy and practical, but also education, and there is a recognition that not everything can be achieved at once. Priorities agreed so far have been:

- Producing a template for the industry

funded group therapy sessions that have been recommended.

- Producing guidance on well-being that builds on existing guidance for other areas.
- Developing a consortium of training institutions, including apprentice providers, to ensure that good mental health provision and practices are in place at the start of an individual's career.

In addition, more work clearly needs to be done to dissect the data around the gender imbalance – as the percentage of women with mental health issues at 71% is very concerning. This will be initially be done through further crunching of the data that is now held.

Mig is also working with the Blackout team to discuss what they can create during Lockdown – with the ambition of producing a web-based/digital project in time for Mental Health Awareness Week (w/c 18th May). It is also hoped that there will be some webinar content as part of the (virtual) ABTT show.

Theatre Buildings: A Design Guide

Tim Foster

Introduction

The ABTT is pleased to announce that a decision has been made to produce a revised and updated edition of its publication *Theatre Buildings: A Design Guide*. This book was first published by Routledge in 2010, as a successor to *Theatre Planning*, edited by Roderick Ham, which first appeared in 1972 and was revised and updated in 1985. During the 25 years between publications much had changed in the design, procurement and technical demands of theatres. The book was divided into nine sections which covered general planning principles and the key areas of a theatre building, from the auditorium to the foyers to backstage, as well as technical sections dealing with stage engineering, lighting and sound. It also included 28 reference projects, providing scale drawings, photographs and vital statistics for a range of theatre buildings, ranging from large-scale new projects to smaller scale conversions and restorations of existing buildings. The book was edited by Judith Strong, supported by many experts who contributed to the text.

Why is a new edition needed?

Changes in theatrical presentation, the way buildings are used and in particular their response to the climate emergency and current thinking on access and diversity, have developed at an increasingly rapid rate as has the technology which serves them. The ABTT is recognised as the leader in theatre safety through its custodianship of the *Technical Standards*, which are constantly updated, whereas the design guidance provided by

Theatre Buildings has remained static. It is therefore now time to update this publication to reflect current developments and new ways of doing things. The intention is that this will be an updated not a new book, which seeks to keep what is still relevant, replace what is outdated or inadequate and introduce new content on issues which were not covered previously, as well as a revised set of reference projects, including projects completed in the last 10 years.

Next Steps

In February 2020 a consultation meeting was held to discuss how the book should be developed, attended by representatives of all the main theatre architects, theatre consultants and other specialists involved in designing theatres in the UK. Particular issues raised included the need for a response to the climate emergency, greater diversity and the changing nature of theatre buildings as cultural hubs, which are open all day and rely increasingly on non-ticketed income. Lighting and video technology has also changed enormously in the last 10 years. It was agreed the content should provide practical guidance but not be too prescriptive. It should be a resource not only for designers but also for clients, many of whom will probably be planning a new facility for the first time.

I am delighted that Margaret Shewring has agreed to act as editor for the new edition. We are currently finalising the section editors, who will make up the Editorial Board under my chairmanship.

The target date for publication will be summer 2022, with the intention of launching the book at the ABTT's next International Theatre Engineering and Architecture Conference (ITEAC) in London.

If you have any comments on the current edition or would like to make suggestions for new topics or projects you would like to see covered in the new edition please send them to the ABTT at office@abtt.org.uk

Storyhouse, Chester,
© Peter Cook



Ensuring powered doors are safe

Power operated doors can make life a lot easier getting equipment and scenery into Performing Arts venues. They are used in Theatres, Opera Houses and Music Venues, and can make our lives easier, but what happens when they are not maintained? If doors are not installed correctly or regularly maintained, they can be unreliable which can impact on the venue's operations or can fail and cause serious harm.

This was the case in 2013 when two members of a band died after being hit by a falling overhead metal door in Guildford. The door, manufactured by Express Hi Fold Door Ltd was a power operated two section overhead bi-fold door made of a steel frame, clad in aluminium. It was around 12 metres high and weighed in excess of two tonnes.

So how can you ensure your doors are safe?

HSE (Health and Safety Executive) give the following advice on powered doors and gates:



Peter Ansell

*Horizontal sliding acoustic door
courtesy of Clark Doors*

Maintaining for Safety

Component parts can wear and fail, sometimes catastrophically. Like most machinery, powered doors and gates need to be maintained to remain safe. Powered gates forming parts of workplaces or in common parts of residential complexes will be subject to health and safety law. Owners, occupiers, landlords and managing agents will have ongoing responsibilities for the safety of all users and all those who may encounter the gate.

Those undertaking work on powered gates are responsible for what they do, and for leaving the machinery in a safe condition, which may include switching off and isolating from power if it needs to be left in an unsafe condition. Substantial modifications may require re-assessment, in some cases re-CE marking by the person undertaking the modifications.

Those working with powered gates need various competencies depending on their role. Often different members of a team will bring different skills to the job, e.g. electricians for wiring up and checking the basic safety of the electrical components. In some cases to evaluate component performance specific equipment or instruments may be required. For example, where force limitation is the primary means of safety some form of objective force testing (e.g. along the lines of EN12445) will be required to ensure the final product as delivered is within safe limits, and to subsequently check the product remains safe. This may require additional specific competencies, and suitable record keeping.

All owners, occupiers, landlords and managing agents of venues are responsible for maintaining their facilities to industry wide standards, to seek proper routine maintenance, and provide daily inspections of their door and gate systems.

As well as helping to ensure safe and reliable operation, it is a legal requirement to carry out regular service on Industrial and powered doors. Persons or companies with legal responsibilities in the field of repair maintenance and modification of existing door systems fall into two distinct groups:

1. Maintenance contractors, this group includes any company or person maintaining, repairing or modifying an existing system.

2. System managers, this group includes: Owners & Directors / Workplace managers / Landlords / Managing agents / Facilities managers.

The following training requirements are the minimum acceptable for the roles identified:

- Unsupervised installer / maintainer:
- Basic health and safety – CSCS or similar
- Manual handling – certificate

- DHF Industrial Door Safety Diploma (or Domestic Garage Door Safety Diploma for garage door work)
- Locating underground services (where ground is broken) – certificate
- Asbestos awareness – certificate (when working in buildings)
- Work at height training – certificate (when working at height)
- Manufacturer's product training or company in-house product training – certificates

A system manager or person with ownership/management responsibilities for a system has various responsibilities for its safety under criminal and/or civil law, depending on the nature of the site. An effective maintenance programme can help ensure duty holders are legally compliant, increase productivity and reduce overall expenditure.

Planned maintenance should be carried out at the frequency recommended by the original door manufacturers. In the absence of that information, the frequency must be agreed by the system owner and the system maintainer depending on number of operations, the environment and criticality of the opening.

In the event of an incident with a Door system, the ensuing investigation will assess the input and actions of all parties associated and no guarantee of the outcome can be given. Any investigation will ask who did what, what did those involved know about the condition of the offending system and then, what action

could they have reasonably taken, or did they take to prevent the occurrence. Did they adopt best practice?

In the Guildford case, the doors had been manufactured and serviced by Express Hi Fold Door Ltd. In 2015, David Naylor of Express Hi Fold Door Ltd was charged with two counts of manslaughter by gross negligence. The company was summonsed for breaches of duty imposed by the Health and Safety at Work Act, accused of failing to ensure equipment was safe. In 2016, Naylor was cleared of manslaughter and Express Hi-Fold Doors Limited was fined £30,000 for breaches of health and safety. The court heard the business barely traded in 2015 and was essentially liquidated.

Legal requirements & guidance documents

- Workplace (Health, Safety and Welfare) Regulations 1992 (applies to all doors)
- The Provision and Use of Work Equipment Regulations 1998 (applies to powered doors & shutters)
- Regulatory Reform (Fire Safety) Order 2005 (applies to fire resisting and emergency escape doors)

Other useful standards are listed below:

LPS1271, the BRE standard for Fire doors, Shutters and Installers of Fire doors.

EN 12635, Installation and safe use of industrial, commercial and garage doors.

EN13241, the Product Standard for powered doors and gates

EN 12453 Safety in use of power operated Doors.

DHF Code of Practice DHF TS 012:2019

Additionally, for doors sold in Europe & the UK a declaration of performance should be supplied ensuring that all safety requirements are met in the design of the door.

For further advice on Planned Preventative Maintenance and Service of all door types please contact Peter Ansell: peter.ansell@clarkdoor.com



*Princeton Acoustic Black
Box Theatre
courtesy of Clark Doors*

Young Associates

Welcome to the ninth edition of the *Sightline* Young Members Page! We hope all of our readers are OK during these difficult times. If you are a Young or Student Associate and have a story, opinion or experience you wish to share with likeminded others – we want to hear from you! Submit content to sightline@abtt.org.uk (FAO: Matthew Freeman).

Fred Foster Student Mentorship Programme

ETC is dedicated to helping early-career practitioners, carrying on the legacy of ETC Founder and CEO Fred Foster who had a great passion for education. ETC run the Fred Foster Student Mentorship Programme, and recipients of the sponsorship get an all-expense-paid trip to the LDI2020 trade show, taking place from the 23rd – 25th October 2020 in Las Vegas. You will be paired with an industry mentor, attend an exclusive student reception to meet experienced lighting professionals and receive a full LDI conference pass amongst many other things. For students from outside of North America, you can apply if you are studying lighting design, theatre technology or a related field at university level at the time of LDI2020. Applications are due by 5th June 2020. To learn more and submit an application, please visit www.etcconnect.com/StudentMentorship.

ABTT Award for Emerging Excellence

The ABTT Awards are one of the highlights of the year – it is important that those making a difference to our industry are acknowledged! The ABTT Theatre Show is postponed this year so the Product Awards cannot take place, the ABTT is launching a brand new award – the ‘ABTT Award for Emerging Excellence’. Together with the ‘ABTT Technician of the Year Award’, these awards recognise the achievements of both individuals starting out in the industry and those who are well-established in their backstage careers. If you know someone at the start of their backstage career but who consistently delivers excellence in all that they do, recognise their achievements by nominating them for the ‘ABTT Award for Emerging Excellence’ before the 5th June 2020. Further details can be found at: www.abtt.org.uk/get-involved/submit-award-nomination.

Interview with Emma Wilson

Continuing our series of interviews with industry professionals, in this edition it is the turn of ABTT Trustee Director Emma Wilson.

What is your current position within the

industry? “I am the Technical Operations Director at the Royal Opera House. I’m responsible for the Technical teams in the department, broadly speaking the ones who stage the shows, that includes stage, lighting, flies and automation, stage management, sound and broadcast, engineering, surtitles and so on. I work closely with the Production Director and his teams; we are all under the banner of the Technical Production Department.”

How did you first become involved in the industry? “I loved working backstage at University but I didn’t study theatre and didn’t intend to make a career in it. When I came to London to pursue my postgraduate studies I worked backstage again to support myself, predominantly in lighting, working in clubs and on festivals, in performance art and dance, doing a lot of small-scale European touring and (because I was doing a lot of climbing at The Castle in Stoke Newington) I also trained in rope access. I had a patchwork of freelance work that I loved – I learned a lot and made a career of it – and that led eventually to the role I’m in now.”

What has been a highlight of your career so far? “There are so many highlights it’s impossible to choose. Is it the people I have worked with? The shows I’ve worked on? The artists who I am in awe of? The venues I’ve worked? The teams I am part of? The countries I have toured to? It’s all of these and more and there will never be just one highlight, there is always another one just around the corner.”

What advice would you give to young people interested in your specialism? “I’m a Technical Director and that’s because management suits me – it’s about people, money, planning, temperament, leadership – all these things suit me and my skills; but you do not train at the outset in management, you learn and grow and apply your management skills to whichever area you start with. First and foremost I loved lighting and everything about it. Find the area you love, keep your mind open and keep learning, so you can make the most of the opportunities when they arise.”

Why do you think it is important for young industry professionals to be ABTT members? “It’s important to connect to new colleagues and networks, to career advice and training opportunities. But you will also have access to professional advice and guidance in safety and compliance, in good working practice and in technical excellence.”



Conservatory of Music and Ballet, Ljubljana, Slovenia

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Technical Standards

Association of British Theatre Technicians
55 Farringdon Road, London EC1M 3JB

Tel: 020 7242 9200
Fax: 020 7242 9303

Summer 2020

UPDATES, AMENDMENTS AND CORRECTIONS

The current edition of Technical Standards for Places of Entertainment was published in 2015 and has the year 2015 printed on the top righthand corner of the cover. However, there have been six reprints with revisions to this edition published on 29 April 2016; 1 February 2017; 1 April 2017; 1 September 2018; 1 April 2019 and and to be published

on 1 July 2020. Below are the key revisions captured in the sixth reprint dated 1 June 2020 for Section B9 Conservation of Energy. There will be a number of other revisions in this reprint including to Sections F1 Electrical Installations; F2 Lighting including Emergency Lighting and M12 Electrical installation and permanent electrical equipment.

New copies of Technical Standards may be purchased from the ABTT website or Office and anyone with ABTT membership receives the best discount.

REVISIONS & AMENDMENTS 1 JULY 2020 FOR SECTION B9 CONSERVATION OF ENERGY

Section	Part	Reference	Change
A3	Definitions and Explanations	Safety factor	Change "In UK the stage rigging systems..." to "In the UK stage rigging systems..."
B9	Conservation of Energy	COMMENTARY	Change "...the authority developing policies," to "... planning authority development policies."
B9	Conservation of Energy	COMMENTARY	Change "...for example with cooling of rack rooms." to "... for example, the over-cooling of rack rooms."
B9	Conservation of Energy	COMMENTARY	Change "...for instance thermal wheels and/or lifts." to "...such as thermal wheels and/or energy recovery passenger lifts. There is guidance for designing energy efficiency into electrical installations in <i>BS HD 60364-8-1:2015</i> Low-voltage Electrical Installations: Energy Efficiency and <i>BS 7671:2018 Requirements for Electrical Installations IET Wiring Regulations 18th Edition</i> also has design guidance in <i>Appendix 17</i> ."
B9	Conservation of Energy	COMMENTARY	Change "Maintenance and monitoring is..." to "Both maintenance and monitoring are..."
B9	Conservation of Energy	COMMENTARY	Change "...some people might think..." to "...it might be thought that..."
B9	Conservation of Energy	COMMENTARY	Change "...enough money..." to "...cost savings sufficient..."
B9	Conservation of Energy	COMMENTARY	Change "...average place of entertainment live." to "...typical place of entertainment commercially viable."
B9	Conservation of Energy	COMMENTARY	Change "Legislation requires an 80% reduction in national CO2 emission by 2050 with the shorter goal of 34% by 2020" to "UK legislation requires national greenhouse gas emission to be net zero by 2050."
B9	Conservation of Energy	COMMENTARY	Change "...develop..." to "...require..."
B9	Conservation of Energy	COMMENTARY	Change "For instance on electricity consider general lighting, FoH and auditorium lighting, stage lights, catering, use of heat, fans, pumps and cooling" to "For instance, on electricity, consider general lighting, FoH and auditorium lighting, production and stage working lights, catering, use of heat, fans, pumps and cooling."
B9	Conservation of Energy	COMMENTARY	Add "...to be developed" to read "...and end use loads to be developed."
B9	Conservation of Energy	COMMENTARY	Change "... and presence..." to "...along with presence and absence..."
B9	Conservation of Energy	Energy efficiencies	Delete "...be..."
B9	Conservation of Energy	Energy efficiencies	Change ".../ annually/..." to ".../annually/..."

B9	Conservation of Energy	Energy efficiencies	Change "...careful reconsideration..." to "...careful and continuing consideration both of time of day and time of year"
B9	Conservation of Energy	Building fabric	Change "...energy whilst..." to "...energy efficiency whilst..."
B9	Conservation of Energy	Sub-metering of electricity	Change "... (this could be via a smart meter)..." to "... (this could be via a smart meter, power logger or installed metering)..."
B9	Conservation of Energy	Sub-metering of electricity	Change "However the scales of electricity usage available with the diverse nature of theatres make it difficult to identify further potential savings and associated wastage. Nevertheless where sub-metering is used there is usually a reduction of 15%. And with care of re-commissioning using sub-meters, health checks with corrective measures, and efficient controls and lighting should reduce consumption by about 21% electricity, 19% gas and 18% CO ₂ in a large theatre. One organisation is said to have improved both its environmental and financial performance, achieving a 31% reduction in electricity, gas and water in two years along with a 40% reduction in CO ₂ emissions." to "With care of re-commissioning using appropriate sub-metering, health checks with corrective measures, efficient controls and energy efficient lighting savings can be achieved."
B9	Conservation of Energy	Lighting	Change "Until recently most front of house areas have used a lot of energy, typical example being up to 2,000 50 watt halogen down-lighters both for aesthetic effect and lighting colour temperature. However suitable LED lamps are now available. A recent direct replacement for one theatre was 7 watt LED lamps. This became 45% energy saving with LED lamps even after increased energy tariffs." to "Significant savings can be made particularly in Front of House areas by using LED lamps in place of tungsten and other light sources. LED sources do not emit a continuous colour spectrum and the apparently simple descriptor such as 'warm white' will exhibit significant differences between manufacturers"
B9	Conservation of Energy	Water saving	Change "Half-hourly water meters showed that overnight usage was high mainly caused by male urinals with flushing when the building is closed. Water use was reduced by 50% after installing a combined water management and urinal dosing system and maintaining a healthy drain system which eliminated malodours and excessive scaling." to "Half-hourly water meters help to identify waste such as high overnight usage caused by male urinals which continue flushing when a building is closed. Water use can then be reduced by installing appropriate systems such as a combined water management and urinal dosing system."
B9	Conservation of Energy	Cooling	Change "...be needed winter and summer." to "...may sometimes be needed."
B9	Conservation of Energy	Cooling	Change "...dimmers and computers..." to "...dimmer and equipment rooms,..."
B9	Conservation of Energy	Cooling	Change "Evaluation of half hourly data may show that a significant saving could be made by investing in separate air conditioning units for these areas." to "Evaluation of half hourly data may show that a significant saving could be made by investing in separate air conditioning units for these areas. However, these rooms can be significantly over-cooled by using simple 'boiler plate' ratings on equipment such as computer servers. For example, a computer with a 500 watt power supply rarely consumes more than 150 watts. The venue management should be consulted to ensure occupied areas, such as auditoria have appropriate settings and controls for audience comfort."
B9	Conservation of Energy	Waste management	Insert a new paragraph between the paragraph Waste Management ending "With a new waste contractor and segregating around 56% on-site the centre has achieved a recycling rate of about 90%." and the TECHNICAL STANDARDS text box to read " Electrical Installations For new electrical installations there are many opportunities for including energy efficiency measures. There will be scope to make improvements when electrical installations are renewed or upgraded, although it might be more limited in scale. When planning improvements, consideration should be given to improving electrical energy efficiency through: - Limiting volt drop within cabling by increasing cross-sectional areas of conductors - Installing power factor correction and harmonic mitigation measures - Installing lighting control systems such as occupancy sensors or ambient light sensors - Motor sizing and controls"

MAKING CONTRIBUTIONS TO TECHNICAL STANDARDS

If you wish to contact the Standing Committee about any matter to do with Technical Standards, you may email standards@abtt.org.uk. You may wish to suggest an

amendment, clarification, new reference or explanation. The Standing Committee would be interested to consider any recommendation. Please do get in touch.

Previous editions of this Technical Standards column may be found on the ABTT website.

Latest Titles

West End in Watercolour by John Higgins – A Portrait of London Theatre
260pp £28.95 ISBN: 9781904031925

Today London is widely regarded as the theatrical epicentre of the English-speaking world, its 'West End' closely rivalled by New York's Broadway, and provides a rich array of theatres, opera houses, concert halls and cinemas which, alongside the delights of restaurants, cafes, pubs, bars, nightclubs and shops, create a glitteringly exciting playground for the would-be theatregoer.

While John Higgins considers the West End and its fashionable rise from earlier beginnings, he also looks closely at the concurrent vigorous entertainment scene around the East End and neighbouring working-class suburbs, and their subsequent metamorphosis into the prolific operation that has today become the trendy Off-West-End London Fringe.

And so as the typical famous grand 'Up West' houses are paraded in their glittering surroundings of glamour and razzamatazz, their fascinating 'Off-West' counterparts have their own exciting tales to tell ... and John says one thing is for sure: they have all been delicious to paint!

The National Theatre: A Place for Plays by ABTT 130pp £11.95 ISBN: 9781904031932

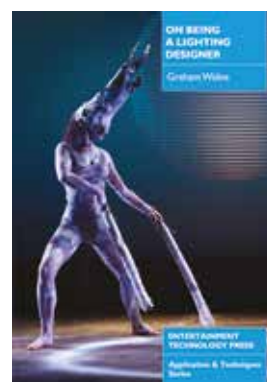
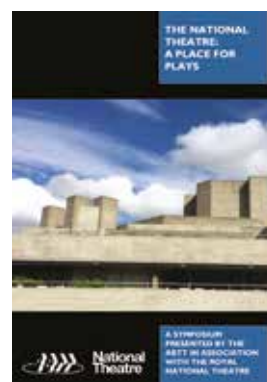
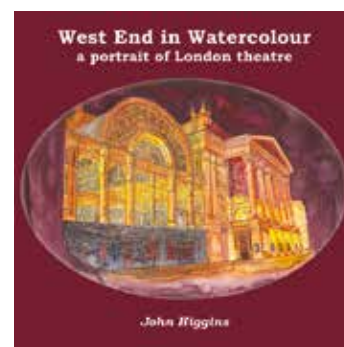
Paule Constable and Richard Pilbrow hosted a one-day Symposium on 30th October 2016 to celebrate the 40th Anniversary of the opening by Her Majesty the Queen of the National Theatre designed by Sir Denys Lasdun. The National Theatre: A Place for Plays, presented by the Association of British Theatre Technicians in association with the National Theatre, was about Theatre and Architecture: a discussion, a confrontation, a misunderstanding or a collaboration?

This book contains a transcription of the discourse, debate and dissent that took place on the day.

On Being a Lighting Designer by Graham Walne 116pp £12.75 ISBN: 9781904031949

Graham Walne's latest book chronicles the processes which a lighting designer goes through to deliver a design. The book covers engagement, relationships, discipline, skill, knowledge and deliverables, and includes anecdotes from the author's own considerable experience as a lighting designer across three continents.

Available now, along with all of ETP's titles at: www.etbooks.co.uk



TECHNICAL STANDARDS FOR PLACES OF ENTERTAINMENT

Revised in April 2019

Available now from www.etbooks.co.uk

2015

TECHNICAL STANDARDS
FOR
PLACES OF
ENTERTAINMENT

The Association of British Theatre Technicians
The Chartered Institute of Environmental Health
The District Surveyors Association
The Institute of Licensing

Members News

MEMBERSHIP RENEWALS FOR 2020

Thank you to all who have already completed their membership renewal for 2020. For those who still have to do so, please be aware that Subscriptions for this year are now overdue and membership benefits will cease this month for any unpaid members. The ABTT is a charity and as such we do not receive any government subsidy, or regular financial help from local authorities or the Arts Council. Every penny we need to set and uphold standards in technical excellence, safety, and compliance for live performance; to assist technicians and support relevant industry projects we have to raise ourselves. We do this largely through our membership subscriptions. We understand that this is a difficult time for many and some of you may be under financial pressures, especially if you are a freelancer. For those of you who are able, we would greatly appreciate your continued support of the ABTT through the renewal of your ABTT Membership Subscription for 2020. Please do get in contact with the ABTT Office or renew your membership at www.abtt.org.uk via direct debit, credit or debit card to avoid losing access to your membership benefits. If you are currently unable to renew but would like to retain access to membership benefits at this time please do get in contact and we shall assist as best we can.

ISG MEMBERS RENEWALS

The ABTT is extremely grateful to the Industry Supporters who have continued their support into 2020. If you have not renewed please contact the ABTT Office. New members are still able to join for 2020. It's never too late to join this "go to" list of theatre and live performance expert suppliers, service providers and supporters.

DONATIONS

Last year we received some generous donations which were an immense help in ensuring that the ABTT continued with its work throughout 2019. Please consider giving an additional donation when renewing your membership or at any point throughout the year. Your donations are essential for the ABTT to continue to meet its charitable objectives. If you would like to make a donation to support the ABTT in surviving in these incredibly challenging times, we would be extraordinarily grateful. This can be done on the ABTT Website Homepage drop down menu or here: <https://www.abtt.org.uk/get-involved/donate/>

NEW MEMBERS

Since January we have already had

many applications from Associate members seeking admission as Full MEMBERS of the ABTT. To be admitted as a full MEMBER of the Association costs nothing and acknowledges that you have gained relevant experience and that you demonstrate a manifest commitment to the technical subjects of the art of theatre. All you need do is submit a CV and contact details for two referees: please consider applying for admission as a full MEMBER TODAY! The next Council meeting is being held virtually on 24th June so there is still time to submit an application.

TRAINING: BOOKING NOW

ABTT 2020 Summer School Courses

Currently the ABTT is still hoping to run its Summer School courses at the end of July and start of August. We are currently taking reservations for places on these courses and will only take payment once the courses have been confirmed.

Warwick Arts Centre, Coventry: NOW BOOKING

Visit our website or contact the office for booking forms and details of individual CPD modules as well as the programmes listed below.

27th – 31st July 2020, Bronze Award for Theatre Technicians – 5 Day Course

The following courses are open to applications from any who have gained the ABTT Bronze Award or can demonstrate equivalent learning.

27th July – 1st August 2020, Silver Award for Theatre Sound Technicians – 6 Day Course

27th July – 1st August 2020, Silver Award for Theatre Stage Electricians – 6 Day Course

27th July – 1st August 2020, Silver Award for Theatre Stage Technicians – 6 Day Course

25th - 26th July 2020, ABTT Gold Award for Technical Supervisors and Managers – 2 Day Course

The Award is designed to support the candidate for a role in which they will have responsibility for the management of the working environment and the practices pursued therein. The Gold Award assumes candidates have achieved equivalent skills and knowledge to those delivered by the ABTT Bronze and Silver Awards.

OTHER NEWS

ABTT Theatre Show 2020

10th – 11th June

The 42nd outing of The ABTT Theatre Show at Alexandra Palace has been postponed

to June 2021. Plans are underway for constant and ongoing behind the scenes support with the hope of a collaborative coming together when the time is right.

Find out more about the postponement on the ABTT Theatre Show website or here: <https://www.abtt.org.uk/abtt-theatre-show-postponement/>

ABTT AWARDS: 2020

Although the ABTT Theatre Show and our annual Product Awards may not be going ahead this year due to Covid-19, the ABTT will still be celebrating their People Awards!

This year we are accepting nominations for "ABTT Technician of the Year Award" and our "ABTT Emerging Excellence Award". Nominations may be submitted up until 17:00 on Tuesday 9th June and should be sent to the ABTT Office: office@abtt.org.uk

These Awards winners will be announced via the ABTT's Social Media and on our Website at 17:00 Wednesday 10th June.

More information on the specifications for these awards can be found on the ABTT Website here: <https://www.abtt.org.uk/get-involved/submit-award-nomination/>

ABTT COVID Resources:

The ABTT has been putting together a handy list of relevant resources, guidance, training events and activities that people are offering remotely, via Skype, phone or live streamed for our members to enjoy. Please feel free to share. If you have anything you would like us to add please email office@abtt.org.uk

You can find these here:

ABTT Covid-19 Training Resources: <https://www.abtt.org.uk/free-training/>

ABTT Covid-19 Financial Resources and Health and Well-being Support:

<https://www.abtt.org.uk/financial-resources/>

ABTT COVID 19 Community Engagement: How you can get involved!: <https://www.abtt.org.uk/community-engagement/>

ABTT COVID 19 Streamed/ Interactive Events, Blogs, Activities: <https://www.abtt.org.uk/covid-events-and-resources/>



Safety Matters

Association of British Theatre Technicians
55 Farringdon Road, London EC1M 3JB

Tel: 020 7242 9200
Fax: 020 7242 9303

Summer 2020

PARLIAMENT AMENDMENT?

The Regulatory Reform (Fire Safety) Order, from October 2005, probably represented the biggest reform of fire safety law in over 30 years. The stated aim of the Fire Safety Order is to simplify, rationalise and consolidate the law with respect to fire safety in a building.

For example, it amends more than 50 different items of primary legislation which refers to fire safety. It should be noted, however, that that Fire Safety Order applies only in England and Wales. Similar reforms in Scotland came into force on 2 August 2005.

In the entertainment industry this removed the mandatory licensing fire inspection and replaced the responsibility onto a 'responsible person'.

To take account of recent incidents the Regulation is currently passing through Parliament for amendment. Your correspondent suggests that the term 'responsible person' could be a cause of some confusion. The 'responsible person' is defined as meaning 'the employer', if the workplace is under his control or, 'the occupier' as the person who has control of the premises or 'the owner' 'where the person in control of the premises does not have control'...

Under the RRO the premises as a whole are under the control of the premises owner or operator and an incoming Company/Show should have a suitable Fire Risk Assessment for the additional fire loading and hazards they are bringing into the building that identifies appropriate controls that will be put into place to manage such a risk – it cannot be delegated to another as one affects the other.

'General fire precautions' is defined to reduce the risk and spread of fire – for escape; to ensure the escape route can be used at all times; to detect fire and warn people of a fire; and for training.

There is a likely change to the categorisation of materials for flammability under BS476 – all parts but particularly for 'linings', e.g. any material that finishes a surface where standards are likely to increase. Production Managers and Designers should note that it is being discussed whether there should be stricter controls over the use of Flambar and similar products as there is no 'guarantee' that a quick spray will make a product safer and safer for long enough!

FIRE SAFETY PRECAUTIONS

A school has been recently been fined £10,000 after admitting shortfalls with its fire safety precautions. The school's former fire risk assessor was also fined £10,000 for failing to make suitable and sufficient fire risk assessments. The failings came to light after a routine inspection by the Fire Service because the school was planning to carry out works on an extension.

Concerns were raised by Fire Service inspectors that coat hooks lined escape routes and there was also a partially obstructed fire exit door. Cloakrooms are deemed 'high risk' areas under national guidance issued by the government due to the potential for rapid fire spread and so should not be open to circulation spaces or a means of escape.

Essential fire doors had been removed from cloakrooms affecting the means of escape from these areas and putting

pupils at risk should a fire occur. Further inspections found issues with fire doors which did not close properly.

The court heard that once the concerns were raised the foundation acted quickly to rectify them. The school has since upgraded its fire precautions and instructed a new fire risk assessor.

The Fire Protection Manager for the area Fire and Rescue Service commented: "This case highlights the importance of not only the duty placed on those responsible for the building, but also those contracted to carry out specialist services such as the Fire Risk Assessment. It is a fundamental pillar in the principles of Fire Safety and anyone appointing someone to carrying out such an assessment or other specialist service needs to ensure they hold the relevant competence."

*Schools do have some opt-outs for compliance and a special set of guidance is used. They require higher standards in some areas and lower in others to account for open corridors with cloakrooms within but separated from the corridor (most Schools from 1850-1950).

RISK ASSESSMENTS

Whilst in lockdown, Safety Matters received an email from a technician who was reviewing his Risk Assessments and wanting some advice. A worthwhile exercise as tasks and personnel change over time. As an example I suggested he looks at the Work at Height Regulation 2005 (WAH).

One might have a general Method Statement on the Regulations: What is work at height? And how do these Regulations apply to theatres? E.g. (Reg. 2.1) 'Work at height' covers all work activities where there is a possibility that a fall involving a distance liable to cause injury could occur: this is regardless of the work equipment being used, the duration the person is at a height or the height at which the work is performed. The regulation specifically includes access to and exit from a place of work involving a risk of a person falling a distance liable to cause injury.

Next look at the areas and tasks within your theatre where WAH might occur:

a) scenic artists, painting a set using a stepladder – risk assessment might incorporate inspection of the ladder: spilling paint on the ladder: three points of contact: lighting: short duration work, etc...

b) a lighting technician focusing on a gantry – can the technician fall through the gap between the guard rails? Does the lighting unit offer some protection in itself: restraint harness, etc.?

c) working on the back of a lorry – slips and trips: falling off: use of a tail-lift: level get off, crushing, etc?

d) rehearsing on stage – falling into the orchestra pit: protection: environment: temporary warning across the proscenium opening?

The same regulation but all the above require different considered solutions. The criteria of your risk assessment now become clear, but don't write an essay and above all it should lead to the importance of a staff briefing, awareness of the issues and an opportunity to practice precautions that you might introduce.

If you do employ Personnel Protection Equipment (PPE)

you must be able to demonstrate that PPE for work at height has a current record of inspection. If you're unclear or don't understand your responsibility join the ABTT Bronze & Silver training which will help demonstrate how to operate a safe systems of work.

SAFE HANDLING OF CHEMICALS

If you use a workshop or prop room, a wardrobe or cleaning cupboard, another area of risk assessing should be your COSHH assessment. Chemicals can: cause you and others harm: cause skin allergies and asthma: cause skin burns and eye damage. You will also be surprised what you have lurking in the back of the store?

- Store chemicals safely: keep them clean, cool and dry. Keep chemicals in their original containers secure storage to prevent access by unauthorised people.
- Don't store chemicals in bottles or containers designed for other uses (for example food and drink containers).
- Chemicals should always be in marked containers. Do not mix chemical products this could lead to an adverse reaction within a closed cabinet. Keep the location and cabinet well ventilated.

Use the correct PPE, such as hand and eye protection. Practice good hand care – remove contamination promptly, wash hands after use. Know what to do if you accidentally spill the chemical on yourself or others – a good first aid kit with eye wash and access to water should be available close by.

Why not test your knowledge on these signs?













1. Flammable
2. Hazardous to the Environment
3. Health Hazard
4. Acute Toxicity
5. Serious Health Hazard
6. Corrosive

CARRYING OUT THOROUGH EXAMINATION AND TESTING OF LIFTING AND PRESSURE EQUIPMENT DURING THE CORONAVIRUS OUTBREAK

An emerging consequence of the coronavirus pandemic are the challenges faced by industry in meeting the requirements to complete statutory thorough examination and testing of plant and equipment. This comes under the Lifting Operations and Lifting Equipment Regulations (LOLER) and Pressure Systems Safety Regulations (PSSR). The HSE are mindful of these problems and will be sympathetic.

Difficulties in completing thorough examination and testing (TE&T) may arise due to four key issues:

- Reduced availability of engineers to complete TE&T due to sickness absence or self-isolation as a direct result of COVID-19;
- Owners of plant and equipment (duty holders) refusing access to premises for TE&T as they feel unable to accommodate visiting engineers while maintaining social distancing (SD) in the workplace;
- Refusal of engineers to enter premises to carry out TE&T due to concerns over SD arrangements being adequate;
- Plant and equipment being unavailable for TE&T if a workplace or site is closed due to COVID-19 SD restrictions.

Effectively in these cases TE&T may not be taking place due to either unavailability of or unwillingness of competent persons to deliver the service, or due to duty holder's inability to give access to the equipment for testing.

The HSE has therefore issued this Guidance note:

<https://www.hse.gov.uk/news/assets/docs/lole-pssr-during-outbreak.pdf>



COMING SOON!

THE SOUND OF THEATRE *by* DAVID COLLISON

The Sound of Theatre is a history of sound and acoustics in the Ancient Greek, Roman and Medieval theatre, plus the music and sound effects in Shakespeare's plays and the mechanical sound effects used in melodramas and stage spectacles. Wind and rain machines, thunder sheets and drums, thunder runs, battle effects and the creation of animal noises are all described. The sound for the famous 1925 play "The Ghost Train" is also explained.

There are details of early cylinder and disc recording, the emergence of the tape machine and cassette recorder, right through to audio systems in the digital age. Sound design for Broadway and West End musicals is extensively covered with contributions from many pioneers of stage sound.

Some reviews and comments

"It is the most comprehensive book on this subject yet produced, and is likely to remain a standard reference for years to come."

The Stage & Television Today

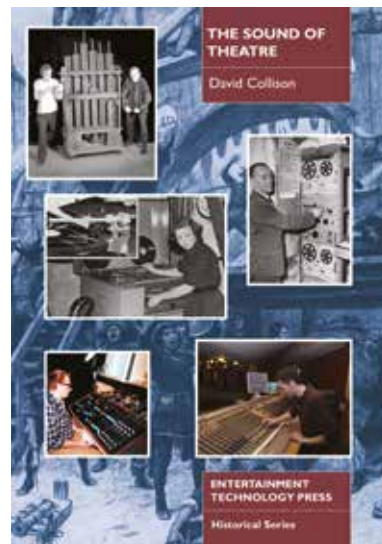
"Endlessly interesting. The whole book is such an informative and generous record of its subject."

Hal Prince – Broadway Producer and Director

"An absolutely captivating read. What a tour de force!"

David E. Smith – Director of Sound

School of Design & Production, North Carolina School of the Arts



YOU ARE IN THE SPOTLIGHT WE COVER YOUR EXPOSURE

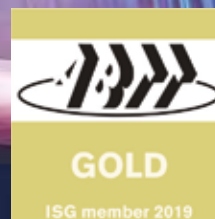
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COLLECTIVE STRENGTH

Organisations Affiliated to the ABTT

Are you listed?

Any non-profit organisation is qualified to be affiliated to the Association of British Theatre Technicians. Please contact the Office to enquire about benefits and affiliation:
020 7242 9200 or office@abtt.org.uk



www.abtt.org.uk

Large Affiliate



ORGANISATION	LOCATION
Abbey Theatre Trust Ltd	St Albans
Aberystwyth Arts Centre	Aberystwyth
Alhambra Theatre	Bradford
Alleyns School	London
Arts Educational Schools	London
Arts University Bournemouth	Poole
Attenborough Arts Centre	Leicester
Barbican Centre	London
Barn Theatre Trust Ltd	Welwyn Garden City
Bath Spa University	Bath
Battersea Arts Centre	London
Bedales Olivier Theatre	Petersfield
Belgrade Theatre	Coventry
Bibliothèque Nationale de France	France
Birmingham Hippodrome	Birmingham
Birmingham Repertory Theatre	Birmingham
Birmingham Royal Ballet	Birmingham
Blackpool Grand Theatre	Blackpool
Blackwood Miners Institute	Blackwood
Bloomsbury Theatre and Studio	London
Bristol Old Vic Theatre	Bristol
Bristol Old Vic Theatre School	Bristol
Broadway Cinema and Theatre	Letchworth Garden City
Bryanston School	Blandford
Buxton Opera House	Buxton
Byre Theatre	St Andrews
Cambridge Arts Theatre	Cambridge
Cambridge Junction	Cambridge
Capital Theatres	Edinburgh
CAST	Doncaster
Central and Brook Theatres	Chatham
Central Saint Martins UAL	London
Century Theatre	Markfield
Chapter	Cardiff
Chichester College	Chichester
Chichester Festival Theatre	Chichester
Citizens Theatre	Glasgow
City College Norwich	Norwich
Civic Centre Craigavon	Craigavon, N Ireland
Civic Theatre Chelmsford	Chelmsford
Clwyd Theatr Cymru	N Wales
Concordia Theatre	Hinckley
Connaught Theatre	Worthing
Contact Theatre	Manchester
Cork Opera House	Cork, Ireland

Corn Exchange Newbury	Newbury
Cornwall College - St Austell	St Austell
Coventry City of Culture Trust	Coventry
Cranleigh School	Cranleigh
Curve Theatre	Leicester
Darlington Hippodrome	Darlington
De Montfort Hall	Leicester
Derby Theatre	Derby
East 15 Acting School	Loughton
Eden Court Theatre	Inverness
English National Ballet	London
Entertainment Technology New Zealand (ETNZ)	Wellington, New Zealand
Epsom Playhouse	Epsom
Equity	London
Everyman Theatre -Cheltenham	Cheltenham
Fife College	Kircaldy, Scotland
Giggleswick School	Settle
Glyndebourne Productions Limited	Lewes
Goldsmiths, University of London	London
Grand Opera House	Belfast, N Ireland
Greenwood Theatre	London
Grove Theatre	Dunstable
Guildford School of Acting	Guildford
Guildhall School of Music & Drama	London
Harlow Playhouse	Essex
Harrogate Convention Centre	Harrogate
Harrogate Theatre	Harrogate
Huddersfield University	Huddersfield
Hull College	Hull
Hull New Theatre	Hull
Hull Truck Theatre	Hull
Island Arts Centre	Lisburn
Kenneth More Theatre	Ilford
Kings College London	London
Kings Lynn Corn Exchange	Kings Lynn
Korea Testing Laboratory	Seoul, South Korea
Lakeside Arts Centre	Nottingham
LAMDA	London
Leeds Playhouse	Leeds
Leisure and Cultural Service Dept	Tsim Sha Tsui, Hong Kong
Lighthouse Theatre	Kettering
Lighthouse, Poole's Centre for the Arts	Poole
Lincoln Performing Arts Centre	Lincoln
Little Angel Theatre Company	London
Live Theatre	Newcastle Upon Tyne
Liverpool Everyman & Playhouse	Liverpool
Liverpool Institute for Performing Arts	Liverpool
Loughborough Town Hall	Loughborough
LSO Production Ltd	London
Lyric Theatre	Belfast
Lyric Theatre Hammersmith	London
Malvern St James	Great Malvern
Malvern Theatres Trust Ltd	Malvern
Manchester Grammar School	Manchester
Manchester Metropolitan University	Crewe
Marina Theatre	Lowestoft
Market Harborough Drama Society	Market Harborough
Melton Theatre at Brooksby Melton College	Melton Mowbray
Mercury Theatre	Colchester
Millfield Arts Centre	London
Mounts Bay Academy	Penzance
Mountview Academy of Theatre Arts	London
National Dance Company Wales	Cardiff
National Theatre of Scotland	Glasgow
National Theatre Wales	Cardiff

New Victoria Theatre	Newcastle Under Lyme
New Wolsey Theatre	Ipswich
North East Scotland College	Aberdeen
Northbrook Metropolitan College	Worthing
Northern Ballet Ltd	Leeds
Northern Stage	Newcastle Upon Tyne
Northumberland Theatre Company	Amble, Northumberland
Northumbria University	Newcastle Upon Tyne
Nottingham Playhouse	Nottingham
Nottingham Trent University	Nottingham
Nuffield Theatre	Southampton
Octagon Theatre - Bolton	Bolton
Octagon Theatre - Yeovil	Yeovil
Old Vic Theatre Company	London
Oldham Coliseum Theatre	Oldham
Oldham College	Oldham
Opera North	Leeds
Palace Theatre Mansfield	Mansfield
Palace Theatre Watford	Watford
Perth College UHI	Perth
Petersfield Town Council	Petersfield
Plymouth Theatre Royal	Plymouth
Pontio	Bangor
Queen Mary University of London	London
Queen's Theatre Hornchurch	Hornchurch
Queensland University of Technology	Kelvin Gore, Australia
RADA	London
Redbridge Drama Centre	London
Regents College	London
Riverside Studios	London
Roedean School	Brighton
Roehampton University	London
Rose Bruford College	Sidcup
Rotherham College	Rotherham
Royal Albert Hall	London
Royal & Derngate Theatres	Northampton
Royal Birmingham Conservatoire	Birmingham
Royal Conservatoire of Scotland	Glasgow
Royal Holloway University of London	Egham
Royal Lyceum Theatre	Edinburgh
Royal National Theatre	London
Royal Northern College of Music	Manchester
Royal Opera House	London
Royal Shakespeare Company	Stratford Upon Avon
Rugby Theatre	Rugby
RWCMD	Cardiff
Saffron Hall Trust	Saffron Walden, UK
Salisbury Playhouse	Salisbury
Scottish Opera	Glasgow
Sharjah Performing Arts Academy	Sharjah
Sheffield Theatres	Sheffield
Sheringham Little Theatre	Sheringham
Sherman Theatre	Cardiff
Snape Maltings	Saxmundham
Soho Theatre	London
Stafford Gatehouse Theatre	Stafford
Stockton Riverside College	Stockton-On-Tees
The Abbey Theatre	Dublin, Ireland
The Albany	London
The Albany Theatre	Coventry
The Almeida Theatre	London
The Anvil Arts	Basingstoke
The Backstage Centre	Purfleet

The BRIT School for Performing Arts & Technology	Croydon
The Broadway Theatre	Barking
The Courtyard	Hereford
The Electric Theatre	Guildford
The English Stage Co Ltd	London
The Exchange	Sturminster Newton
The Forum	Barrow-in-Furness
The Green A Team	Petersfield
The Hexagon	Reading
The Kings School	Worcester
The Kings Theatre	Southsea
The Leys School	Cambridge
The Lowry	Salford
The Market Place Theatre and Arts Centre	Armagh, N Ireland
The Northern School of Art	Hartlepool
The Performance Centre	Penryn
The Perse School	Cambridge
The Point Theatre	Eastleigh
The Riverfront	Newport
The Roundhouse	London
The Royal Central School of Speech & Drama	London
The Royal Exchange Theatre	Manchester
The Ryan Theatre	Harrow
The South Bank Centre	London
The Stahl Theatre	Peterborough
The Town Hall	Hamilton
The Winter Gardens	Margate
The Yard Theatre Limited	London
Theatr Genedlaethol Cymru	Carmarthen
Theatr Hafren	Newtown
Theatre by the Lake	Keswick
Theatre Royal and Royal Concert Hall	Nottingham
Theatre Royal Bath	Bath
Theatre Royal Dumfries	Dumfries
Theatre Royal Norwich	Norwich
Theatre Royal Stratford East	London
Theatre Royal Wakefield	Wakefield
Theatre Severn	Shrewsbury
Trinity Laban Conservatoire of Music and Dance	London
Trinity Theatre	Tunbridge Wells
Unicorn Theatre/Caryl Jenner Productions Ltd	London
University of Central Lancashire	Preston
University of Derby	Derby
University of East Anglia	Norwich
University of Hertfordshire	Hatfield
University of Hull	Hull
University of Wales, Trinity St David	Carmarthen
Venue Cymru	Llandudno
Vivacity Key Theatre	Peterborough
Wales Millennium Centre	Cardiff
Warwick Arts Centre	Coventry
Wellington College	Crowthorne
Welsh National Opera	Cardiff
West Kowloon Cultural District Authority	Kowloon, Hong Kong
Whitchurch Civic Centre	Whitchurch
Wokingham Theatre	Wokingham
Woolwich Works	London
Wycombe Arts Management	High Wycombe
York St John University	York
York Theatre Royal	York
Young Vic Theatre	London
Zuni Icosahedron	Happy Valley, Hong Kong

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