

Sightline

Journal of Theatre Technology and Design

Autumn 2020

**Responses to COVID-19:
Corona and Theatre – a New Journey?
From Sprint to Marathon
Theatres raise awareness!**

**Theatre and Scenic Art
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*Cover photo: Chichester Festival Theatre, taking part in Light it in Red, July 2020,
courtesy of Chichester Festival Theatre.*

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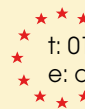
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Editorial

When I wrote the editorial for Summer *Sightline* back in May, I said that “we are now in a period of exceptional uncertainty, with – at the time of writing – no real end in sight”.

Sadly, this is still pretty much the case. And it is still an ever-changing scenario – meaning that this editorial is peppered with the phrases “at the time of writing” – by the time *Sightline* arrives through your letterboxes, no doubt the goalposts will have shifted again. We now have “roadmaps” for the re-opening of theatres in the United Kingdom, but with no definitive timelines attached. In England, we now know that the earliest review of when theatres can open without social distancing is at some point in November, meaning that – realistically – the earliest date for most re-openings will be 2021.

In response to this, every day is bringing news of show cancellations and postponements, and, sadly, potential job losses, with the ripple effect of these closures is being felt throughout the wider industry. Whilst the Government’s announcement of £1.57 billion for the cultural sector was hailed with relief in early July, it is taking time to be distributed, and it has to stretch a very long way. The main source of support for the theatre sector is likely to be the £500m Culture Recovery Fund – which again needs to cover many very different types of organisation and sectors (ranging from “community” to “crown jewels”). It notably fails to offer any support to the freelancers who make up 70% of the industry’s workforce and – at the time of writing – there is no government-led support for them.

So, not a very positive moment to be producing *Sightline*?

However, what the last few months have demonstrated is that theatre has within it amazing expertise, passion, innovation and a diversity of views and experience, and a willingness to come together to support each other through this period. Hopefully, *Sightline* can demonstrate some of that as well!

Within the wider theatre industry, there have been a series of campaigns highlighting the importance of theatres and the individuals who work within them. Two of the most notable ones were *Light It In Red!* And *Missing Live Theatre*, and when we put a call-out for any images from these campaigns we were inundated! We have therefore decided not only to dedicate our cover to one image, but also to fill the centre pages with a range of the theatres that took part. Many thanks to everyone who sent photos!

Theatre also has within it many individuals who are innovative and also practical, and are developing potential solutions to the challenges posed by Covid-19. I’m delighted that Richard Pilbrow has written a detailed article exploring how theatres could respond to this challenge. In addition, Anette Oleanshaw has written another despatch from the frontlines of Higher Education – *Performing Arts in Higher Education – From Sprint to Marathon*, where they are now planning for a new academic year where training will be very different.

We are not, however, dedicating the whole of *Sightline* to the present and possible future. We highlight the two ABTT Award winners – Technician of the Year and the winner of the new Award for Emerging Excellence – both demonstrating the skills and expertise that we have in our industry. In addition, John Faulkner has reviewed Raj Patel’s major book on Architecture and Acoustics, Michael Hall has drawn on his definitive work on the development of scenic art, to write *Theatre and Scenic Art* for us, while Rob Halliday has written an introduction to the Backstage Heritage Collection (which includes within it Richard Pilbrow’s Lighting Desk...). As he says “not the most important thing to worry about in these difficult times, but perhaps also able to provide some of the welcome distraction we all need”.

As always, it would be great to have comments and feedback.

Rebecca Morland
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Corona and Theatre

– A New Journey?

Richard Pilbrow

I guess I'm the luckiest lighting designer, ex-producer, and theatre design consultant that I ever met. From age 14 I loved theatre – a constant collaboration with so many brilliant colleagues – that has given me a good life: from Sir Laurence Olivier to Elizabeth Taylor, from Harold Prince to Julie Andrews. Today when, to my shocked surprise, I find myself an old man, our world of theatre faces an unprecedented crisis. Almost every one of the amazing people I have met over a 65-year career are without gainful employment. Our audiences too are bereft.

It is estimated that in Britain alone the theatre industry in 2020 saw a decline in revenue of £3 billion¹.

The coronavirus is an unfolding catastrophe for humankind.

For theatre – that relies upon the gathering of people – it is potentially a death knell.

Corona is deadly. It may be asymptomatic, giving no sign of its presence while secretly infecting all in its reach; it may injure your ability to breath, corrupt your blood, damage your brain, or kill you.

To date social distancing is the only known weapon capable of stopping the pandemic.

The search for a vaccine is on ... it may

take months ... or years. And then ... the next one?

Theatre has survived for thousands of years. It is our species answer to being alone.

It must do what it can to fight the virus.

But for live performance, social distancing can only be a temporary standby. Longer term it is an impossibility, financially and artistically. We depend upon congregation.

Theatre must prepare itself in three ways – employing three of its most basic attributes.

It must:

Contain – Clean – Communicate

Contain.

Live performance today occurs in a sheltered place. Over centuries theatre has developed buildings that can be isolated from the outside world.

Clean.

Theatre – and all the air within it – must be cleaned to destroy 99.9% of potential pathogens.

Communicate

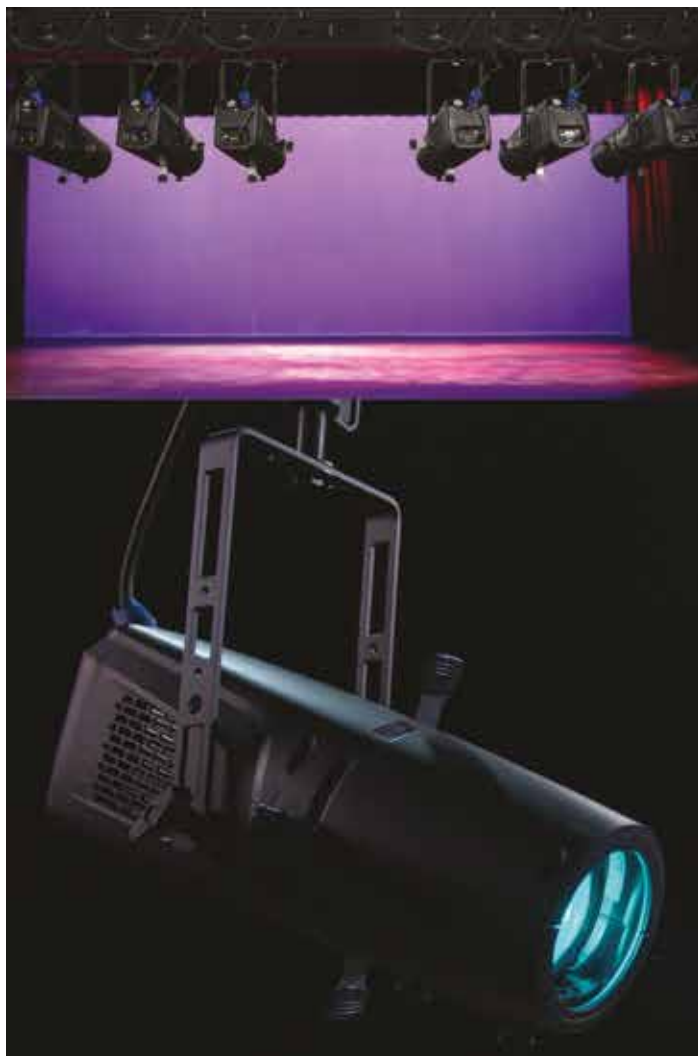
Theatre – performers and audience are all individuals.

Audiences book in advance. They are members of our community. Technology today allows us to know every one of them. They

¹ Oxford Economics. <https://officiallondontheatre.com/news/oxford-economics-reveals-latest-figures-for-uk-creative-industries/>



*The Berliner Ensemble,
in its Covid-19 layout*
© Moritz Haase



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Combination

An astute combination of these factors can perhaps allow theatre to provide safer space. Some of the following ideas are for short term solutions, some are long term. First the virus must be brought under control. Then with measures such as these, eventually theatres might be seen by our public to be “safe.”

A DEFENCE OF THEATRE TOWARD A COVID-19 SAFER THEATRE

An essential feature of theatre is the gathering together of live performers and a lively audience ... clustered in a space that encourages active participation. Theatre’s essence is storytelling ... to satisfy mankind’s most fundamental need to gather together in community.

Of course, this is the absolute opposite to ‘social distancing’ that is apparently required under the threat of the coronavirus. Social distancing presently requires 2m (6 feet) between persons (possibly reduced to 1m under certain circumstances) and/or family/social groups or “Bubbles.”

Theatre today faces a massive problem. Its fundamental need for its very existence is for human interaction. This must depend upon the public’s willingness to attend. It demands that the public accept that the theatre is a reasonably safe place to visit.

To achieve this change in public perception will be a formidable challenge.

Theatre must tell a new story to alter public perception ... And, of course, it must be a true story, based on secure scientific evidence.

How do we convert theatre from a perceived “place of danger” to a “safer place.” Any solution must require a multi-layered series of measures. No combination of steps will ensure absolute protection, but together might be sufficient to offer the public a sufficient degree of reassurance.

Happily, the essence of theatre may be something that contains the seeds of its salvation. Theatres are usually indoor, contained, physically controlled spaces. Our workers, artists, technicians and our audiences are also known to us. Our audiences can book in advance and we can be in close touch with each and every individual.

If we can control the space and every person within our theatre ... how to turn that to our advantage?

There are a series of measures that might

beneficially affect both the space and those people within that space.

THE RESULTS CANNOT PROVIDE PERFECT PROTECTION, BUT CAN OFFER A SUFFICIENT DEGREE OF MITIGATION.

While coronavirus remains a threat, personal protection measures will still be required;

- Face masks to reduce person-to-person transmission by air.
- Hand sanitisers and simply soap and water to reduce transmission by touch.
- Constant cleaning to reduce surface transmission.

The development and deployment of a vaccine will inevitably be step one. It must be accompanied by comprehensive test and contact tracing regimes.

Until an anti-virus vaccine is widely available public assembly must be constrained. But afterwards audiences will initially still be reluctant to mix in crowds.

How do we make this transition and encourage theatre participation sooner rather than later?

MEASURES TO EFFECT COVID-19 MITIGATION

A MULTI-LAYERED DEFENCE

Steps might include:

- Isolation of audience and stage chambers.
- Spaces occupied by the stage and auditorium are already isolated physically and acoustically. Successful mitigation of Covid-19 might require higher quality separation.

Control of Air

Modern theatres have control over the movement, humidity and frequency of changes of air. Quality mitigation will probably require significant upgrade in the control of air changes, humidity, positive pressure between auditorium and outside spaces, stage/pit to house, etc. Displacement ventilation, with fresh air from below, exhausted from above, enhances air circulation. Maintain indoor relative humidity between 40% and 60%. MERV-13² filtration, as standard theatre practice, only filters particulate matter in the airstream. HEPA³ (high-efficiency particulate air – at least 99.95% absorption) filters that ensure air inside an aircraft is either fresh or recirculated will likely be needed for true

2 MERV 13 Filters block 98% of airborne particles

3 HEPA (High Efficiency particulate air) air filters. Block 99.99% airborne particles

pathogen filtration. HEPA filters, with their added size and maintenance needs, will add cost. The best possible technologies to use in the fight against multiple drug resistant organisms and other pathogens will be necessary. Obviously every theatre will present different opportunities and restraints. Top-class engineering skills will be needed. The higher volume of outside air and improved filtration will increase operating costs through added equipment and higher energy costs.

Germicidal ultraviolet (GUV), risks, UV-C lamp sources.

UV-C light has been employed for over 80 years as a technique to disinfect water, air and surfaces. However, to be effective, UV-C light must be of a type that can be hazardous to human beings. Therefore it must principally be used in spaces beyond access to humans, such as the interior of ducts or unreachable upper part of spaces to purify air entering the theatre.

Frequent Cleaning and disinfection of Surfaces.

“Fomite” is a term (used since the 15th Century) that describes surfaces that may be “seeds of disease.” Fomite transmission can be reduced by minimising touchable objects, frequent cleaning of all potential surfaces, and frequent hand-washing. Frequent cleaning of the auditorium, all interior surfaces, furnishings and fittings by hand, by robotised cleaners, and/or disinfectant fogging (perhaps the most effective) will be required.

Intelligent Lobbies

Spaces containing the performance are already isolated and lobbied. Sophisticated temperature detection might improve the Covid-19 defence of the actual interior theatre space. Portal temperature, identification detection, and disinfection systems (described by Andrew Lloyd Webber for his Palladium Theatre in London, as ‘Disinfectant Arches’) might be incorporated for our incoming audience.

No Contact Infrastructure

“No contact” infrastructure must be maximised. Hands-free, auto-opening doors, computerised audience ticketing and programmes, (antibacterial seats covers, etc.) should be employed. The more shared objects or surfaces that are eliminated, the more risk is minimised.

Automated toilet facilities

Communal toilets that must be utilised in a short period of time will present a point of maximum danger. Increasing the quantity of touchless toilet facilities should be maximised. Hot-air hand dryers should be avoided. Portable air purifiers might be added. One-way circulation to be implemented where possible.

Advance-booked, controlled, timed access of virus-free audience.

We in theatre know our audience ... In advance. And our audience are enthusiastic participants. As detection techniques improve, advance ticketing might be combined with a ‘medical passport’ - Covid-19-free certification into an integrated audience database system. Such systems might be used to monitor every person within the theatre building in real time. Every patron will be identified with data on their seat location, health status, temperature, home and recent address, contact and tracing information. This might be linked to a national or state health information system when available. Efforts are underway internationally to develop such App-based systems with only mixed success so far. Many theatregoers are passionate supporters of live performance. Investigation into a “Theatre ID” card system, nationally or international, perhaps in collaboration with Google or Apple toolkit should be explored. This might model the holder’s health status in real time with Bluetooth alert capability if potential danger is identified. The implementation of temperature screening and coordinated testing protocols for

*Arriving at the London Palladium test performance, July 2020.
Photo by Andy Paradise*



theatres will be necessary. Theatres should be aware of the many current issues around testing accuracy, availability, and ethics that may be relevant to these strategies.

Control of timed arrival, discreet lobby division, one-way circulation, Plexiglass shielding in some locations, no-touch bathrooms, catering facilities, infra-red temperature inspection in pass-through sound and light lock spaces, with arrival testing must all be combined to ensure that everyone within the sterilized auditorium space is currently Covid-19 free.

Performers and Staff.

Clearly all necessary measures must be taken to ensure all backstage, orchestra, and FOH support personal are appropriately protected. A great deal of work has been undertaken by unions and organizations such as ABTT and USITT to establish safe protocols for backstage operations.

Actor's Equity has published four core principles to be observed:

1. The epidemic must be under control, with effective testing, few new cases in the area and contact tracing.
2. Individuals who may be infectious can be readily identified and isolated, with frequent, regular and accurate testing with speedy results.
3. The way we audition, rehearse, perform and stage manage may need to change and the venues we work in may need to undergo changes in order to reduce the risk.
4. Efforts to control COVID-19 exposure must be collaborative, involving Equity members, employers, the union and all others involved

in the production of theatre. There must be collective buy-in and ongoing evaluation and improvement of health and safety practices.

CONCLUSION

I stress these proposals are about changing the public perception of theatre in addition to actually achieving virus mitigation.

It would seem to me that any 'solution' must be comprehensive. The challenge in the future will be to overcome a widespread public perception of danger in public gathering places. A steep mountain to climb. But theatres, particularly new, or recent ones, are already enclosed spaces. How to 'virus-proof' our theatres?

How to turn the perception of closed space compared to open-air space, from dangerous to safe?

Our audiences want our theatre to return. We must work together, through investment, engineering, skilful management, and good common sense.

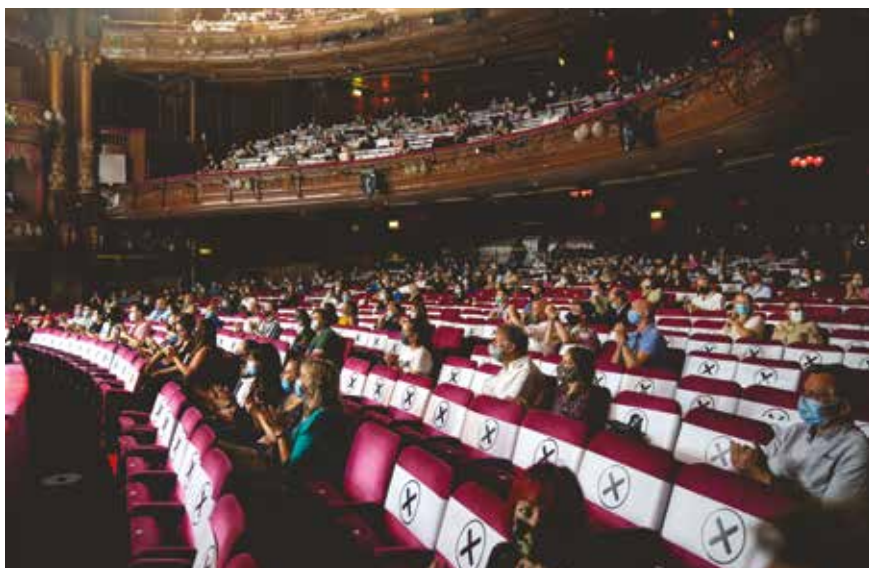
Many of the provisions related to engineering or architectural issues will be hard to achieve in a pre-1950s' building. For all theatres there will inevitable be added expense in both capital spend and added operational cost. Investment will be needed by already cash-strapped organisations. There are, of course, also a tidal wave of managerial, insurance and financial challenges to be considered.

But if a sufficient part of the above can be achieved, this might be the holy grail for future theatre. A dark, or 30% capacity, theatre will be far, far, far more expensive.

Meantime, in the UK, Government action is needed. Theatre needs a date by which full opening will be allowed. As Lloyd-Webber has said: "Give us a date, mate".

- Postscript 1. By the way friends: Global Warming is only just around the corner.
- Postscript 2. Other routes? My concern has been about theatre as we know it; West End, the regions, Broadway ... When Shakespeare's Globe was shut down for the plague, his company took to the road. They were well used to the roles of rogues and vagabonds. Strolling players would have found eager audiences in many country towns and villages. Shakespeare went home to Stratford and reportedly wrote King Lear. Our theatre workers today are passionate, committed and very ingenious. Maybe back to the road with a new informality and simplicity might find an enthusiastic public.

Socially distanced seating at the London Palladium test performance, July 2020. Photo by Andy Paradise



OTHER COMMENTS

Ken Davenport. Broadway. www.TheProducersPerspective.com. 22 June 2020.

"One of the reasons I think we're going to sit on the sidelines as other industries open up is that social distancing doesn't work for what we do.

Restaurants or airlines might be able to operate effectively with reduced capacity and social-distance between seats, but not theatre.

Here are three reasons why:

1. "It's the economy, stupid." Broadway Theatre (and theatre in general) has a very fragile economic model, because we are a very labour intensive industry. We require 100 people to show up every single night to make a product that can only exist in those few hours. Take seats out of the equation to allow for space between patrons, and your recoupment chart would be a fantasy novel. Good shows struggle to survive at 65% capacity in a non-pandemic world. And no, we're not going to raise prices to make up for it. Raising ticket prices in a pandemic is like Oliver asking for more food at the orphanage. "More???? You want MORE?????"

2. "It's not just the Audiences, it's everyone else (including the art)." What about our actors in their cramped dressing rooms? What about the musicians stuck in the pit? Ever try to navigate backstage at a theatre with those 100 people running around trying to make a show work? And what about onstage? Are you going to reblock Romeo & Juliet to take out the kiss? Doing so would change the art, which would change the experience. And the experience matters, which brings me to ...

3. "It's also the word-of-mouth." The theatre is a word-of-mouth industry. It's not reviews. It's not advertising. It's a friend telling another friend, "You must, must, MUST see this show!" Word-of-mouth only works when the experience is extraordinary. And part of what makes that experience extraordinary is a packed theater. So, while audiences may enjoy a show that is 25% full, they just aren't going to enjoy it as much as we need them to in order to recommend it to their friends. And not only will the word of mouth from reduced houses be less passionate, those less-sold houses mean fewer actual mouths!

That's why I'd rather be out longer – to come back stronger."

Andrew Lloyd Webber and the London Palladium. WhatsOnStage 2 July 2020

"They have thermal imaging cameras at stage door and as you come into the theatre. These can identify if people have temperatures extremely quickly. We've ordered silver ion self-cleaning door handles, these are completely effective against pathogens like coronavirus for a long period of time. Everybody going into the theatre is fogged with the anti-viral chemical, which lasts 30 days."

A test performance at the London Palladium on 23 July with social distancing had an audience of less than 1/3 capacity, about 650 people. Interestingly, despite way-marking on the floor to guide one-way movement the normal FOH staff of 45 had to be increased to 60. The disinfectant arches were in fact not used by suggestion of the government. The performance drew this response from Lloyd-Webber. "This proves why social distancing doesn't work . . . it's misery for performers." But of the air filtering system, he said: "We are safer here than you would be in Oxford Street."⁴

SUPPORT MATERIAL.

1. Steve Terry, director of standards at ETC, attended this IEE conference in NYC on germicidal disinfection.⁵

Germicidal Ultraviolet Disinfection in the Days of COVID-19

Description: The Illuminating Engineering Society (IES) has facilitated an educational program to provide a in-depth look at GUV Disinfection. Building upon the basics of photobiology, our presenters will provide insight into germicidal ultraviolet (GUV), carcinogenicity risks, UV-C lamp sources, and current relevant research.

The 2014 outbreak of the Ebola virus and the recent spread of the novel coronavirus disease 2019 (COVID-19) have renewed interest in germicidal ultraviolet (GUV) lamps for disinfection. UV radiant energy was first used for disinfecting surfaces in 1877, for water in 1910, and for air in 1935. GUV is being used in many countries to control airborne transmission of tuberculosis (TB). More-widespread use of GUV is often limited by safety concerns, but these are manageable and minor compared to potential infection prevention.

Germicidal ultraviolet (GUV) – refers to short-wavelength ultraviolet "light" (radiant energy) that has been shown to kill bacteria and spores and to inactivate viruses. Wavelengths

⁴ <https://www.theguardian.com/stage/2020/jul/23/london-palladium-opens-at-30-capacity>

⁵ https://elearning.ies.org/products/germicidal-ultraviolet-disinfection-in-the-days-of-covid-19#tab-product_tab_speaker_s

in the photo-biological ultraviolet spectral band known as the “UV-C,” from 200 to 280 nanometres (nm), have been shown to be the most effective for disinfection.

UV-C kills living bacteria, but viruses are technically not living organisms; thus, we should correctly say “inactivate viruses.” Individual, energetic UV-C photons photochemically interact with the RNA and DNA molecules in a virus or bacterium to render these microbes non-infectious. This all happens on the microscopic level^{6,7}

2. A study from ART Boston and Boston University has further useful information:

ROADMAP FOR RECOVERY AND RESILIENCE FOR THEATRE⁸

A Collaboration Between the American Repertory Theater at Harvard University and the Healthy Buildings Program at the Harvard T.H. Chan School of Public Health

The COVID-19 pandemic has forced theatres around the world to shut their doors and face existential questions about the future. This interdisciplinary collaboration seeks to imagine a path toward recovery and resilience for theatre following science-based public health principles.

A. A layered defence strategy is warranted.

There is no such thing as “zero risk,” and there is no singular solution to recovery and resilience. The goal is to minimise risk by pursuing a multi-layered defence integration strategy with shared responsibilities across staff, artists, and audiences.

B. Timelines will be determined by disease dynamics.

C. Recovery will require flexibility and agility.

There will be a learning curve for all theatres, and it will be crucial to acknowledge that approaches will vary from venue to venue, and to leave room for plans to be modified based on new insights and advances, including developments in screening and testing.

D. Acceptance of new norms.

This crisis will require staff, artists, and audiences to adapt to new behavioral norms.

E. Building trust will require transparency and open communication. While some

control methods may be immediately visible, others (such as ventilation changes) may not. Explaining all the steps, will go a long way in re-establishing confidence and trust.

F. Ethics and equity must inform all responses

3. Berliner Ensemble: Proposals for socially distant seat spacing appear to this author, to be disastrous. (see link below) No theatre could sustain itself financially on one-fifth audiences. Furthermore theatre as an art form must be decimated by such a socially scattered audience⁹

4. Covid control for an airline. (VirginAtlantic)

Airlines have a parallel challenge to ensure safety for the traveller. This brochure illustrates on approach include safe air at 35,000 feet.¹⁰

5. Bubbled auditoria – a path to artistic and financial disaster?¹¹

An architect’s view for social distancing theatre design. Bubbled auditorium – a path to artistic and financial disaster?

6. Dr. Erin Bromage (Comparative Immunologist and Professor of Biology, University of Massachusetts Dartmouth). Important discussion on the virus and mitigation. June 3, 2020. The following is my rough transcript of Dr. Erin’s broadcast.

“Understanding the risk. How to find a degree of normalcy.

This virus is 18 times more dangerous indoors than outdoors. In an indoor poorly ventilated space one person can be responsible for creating a super-spreader event. The virus must enter the body to establish infection. A larger number of people magnify the problem. The challenge is the ‘sub-clinical period’ where an infectious person may not carry any sign of infection. This can be as much as five days, during which time the infection is increasingly potent. Identifying such people is almost impossible. This is the period of extreme hazard.

Standard masks effectively may reduce risk by 50%. Better quality masks may be more effective. Tests too early may be deceptive until sufficient viral load has been accumulated in the body. In a space with no air circulation or filtration, 6’ separation is insufficient. In an aeroplane the entire interior air is changed every 4-5 minutes and HEPA filtration destroys

6 https://elearning.ies.org/products/germicidal-ultraviolet-disinfection-in-the-days-of-covid-19#tab-product_tab_speaker_s

7 <https://media.ies.org/docs/standards/IES-CR-2-20-V1-6d.pdf>

8 <https://americanrepertorytheater.org/roadmap-for-recovery-and-resilience-for-theater/table-of-contents/introduction/>

9 <https://www.designboom.com/architecture/berliner-ensemble-removes-seats-social-distancing-06-04-2020/>

10 <https://flywith.virginatlantic.com/gb/en/youre-in-safe-hands.html>

11 <https://www.auditoria-magazine.com/features/how-covid-19-could-impact-theatre-design.html>

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over 99% of any pathogen. Healthy Buildings (Harvard University) have demonstrated that more frequent air changes and more efficient filtration can reduce the risk significantly. UV-C can effectively disinfect surfaces but only in direct line of sight of the light. The correct size UV-C lamp in an air duct will destroy the pathogens passing by, and be a successful supplement to filtration.

Outdoor amphitheatres might be 18 times 'safer' with natural air flow. Orchestras: woodwind instruments can be worrisome. Other instruments might need N95-quality masks and improved ventilation.

Toilets. Faeces of infected person might be infectious. Lid on a toilet will contain a large part of the plume from flushing a toilet. Paper towels and sanitary facilities outside the toilet area to be preferred.

Maximise external air in indoor spaces and filtration and mask use will be most effective. A vaccine would be highly desirable to return to normalcy. You can't hurry. Fastest vaccine production so far has been over four years. Is the vaccine safe? This takes years of testing? During testing, can we purposefully infect people while there is no available treatment?

Groups of people together can be treated as a "pod" They should be kept as single pod with 6' separation. But are we testing enough? What is level of community transmission?¹²

7. Colorado State University Study Aerosols Emission Study.¹³

The goal of this research is to reduce the risk of human exposure and co-infection during performing arts events and rehearsals among musicians and performers. The impact of singing and use of wind instruments.

8. The Producer's Perspective – A Blog from Broadway Producer Ken Davenport's website.¹⁴

Ken Davenport reproduces comments on how the theatre in South Korea is coping with Covid-19 by Tom Gabbard, who has been CEO of Blumenthal Performing Arts in Charlotte North Carolina since 2003. (Theatre Projects was theatre design consultant on the Blumenthal in 1992).

9. The Situation in South Korea.¹⁵

Many theatres in South Korea have remained open with a rigid policy including universal temperature checks, frequent cleaning, health questionnaires and extensive disinfectant fogging.¹⁶

10. COVID-19 Broadway Theater Think Tank.¹⁷

Broadway working party to examine re-opening strategies.

11. The Event Safety Alliance Reopening Guide.¹⁸

For Event Professionals During the Covid-19 Pandemic. A highly detailed report on measures to be implemented to reduce dangers of infection in every aspect of the management of a performance facility. It emphasises the responsibility of every person involved and stresses "We are all in this together."

12. 'Gotham Refuses to Get Scared': In 1918, Theaters Stayed Open.¹⁹

NYTimes: Poll Shows One Hurdle to Reopening Broadway: Fear of Jerks.²⁰

14. British Government Advice to the Performing Arts on Covid-19.²¹

15. A Renewed Call-to-Action. A Covid Symptom Study App.²²

16. US Societies join to fight infections.²³

17. Phantom of the Opera in South Korea.²⁴

18. A UK Study into the Covid dangers from singing and playing woodwind and brass instruments.²⁵

19. Indoor Air Quality – Stantec.²⁶

16 https://www.instagram.com/tv/B_2DoKShU3U/?utm_source=ig_embed

17 <https://broadwaynews.com/2020/06/17/covid-19-theater-think-tank-looks-at-reopening-strategies/>

18 <https://static1.squarespace.com/static/5a6c979d3e2d09db8bcad475/t/5eb86f694a67d30048528163/1589145456606/2020-05-11+Event+Safety+Alliance+Reopening+Guide.pdf>

19 <https://www.nytimes.com/2020/07/14/theater/spanish-flu-1918-new-york-theater.html?>

20 <https://www.nytimes.com/2020/05/26/theater/broadway-coronavirus-poll.html?referringSource=articleShare>

21 <https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19/performing-arts>

22 <https://covid.joinzoe.com/us>

23 https://www.ies.org/lda/left-to-their-own-devices/?utm_source=IES&utm_medium=Email&utm_campaign=Client%20Updates&_zs=Wk2Ja&_zl=EJEB2

24 <https://www.nytimes.com/2020/06/01/theater/phantom-of-the-opera-seoul-virus.html?auth=login-email&login=email&searchResultPosition=1>

25 https://www.theguardian.com/music/2020/jul/22/sing-funnel-covid-19-lab-hoping-declare-singing-safe?CMP=fb_gu&utm_medium=Social&utm_source=Facebook&fbclid=IwAR3wgj4sFTthvRN-joUzEtRyKj0qItsx9QSpNPtaiAvKkLRR27av5h6oEvA#Echobox=1595414736

26 <https://www.abtt.org.uk/resources-guidance/covid19/>

12 <https://www.youtube.com/watch?v=HN4EGxbts1U&feature=youtu.be>

13 <https://smt.d.colostate.edu/reducing-bioaerosol-emissions-and-exposures-in-the-performing-arts/>

14 https://www.theproducersperspective.com/my_weblog/2020/06/guest-blog-what-we-can-learn-from-korean-theatre-on-theater-safety.html

15 <https://twulocal769.com/broadway-can-learn-from-south-koreas-theatre-market-during-covid-19/>

ABTT Awards

ABTT Technician of the Year 2020

Winner: Sarah Hemsley-Cole



The Technician of the Year Award is one of the most important accolades the Association bestows, as it recognises the achievement of an individual at the height of their career who consistently delivers technical excellence.

This year it has been awarded to Sarah Hemsley-Cole of SC Productions LTD. Sarah began her career after a 1-year Post Grad course at the Welsh College of Music and Drama in 1992, starting work as Technical Manager at Blackwood Miners Institute in Caerphilly. She then moved to Cardiff City Council before setting up her own company SC Productions which has become a massive success – most recently providing accreditation and site assistants for the building of the makeshift hospital at the Principality Stadium in Cardiff for Covid-19 patients.

Sarah is also in great demand as a Production Manager while also passing her knowledge onto the next generation, teaching at The Royal Welsh College of Music and Drama, along with taking placements on her shows and taking a risk with young people giving them a chance!"

The ABTT felt that Sarah's broad ranging achievements in our Industry highlighted everything that the ABTT Technician of the Year Award encompassed, and we are very proud to announce her as this year's winner.

ABTT Award for Emerging Excellence 2020

Winner – Jamie Vella



The ABTT Award for Emerging Excellence has been added to our Awards to recognise the achievements of individuals at the start of their career who consistently deliver excellence in all that they do.

This year this Award has been awarded to Derby Theatre's LX Technician, Jamie Vella.

At the age of 16 Jamie began touring as Lighting Designer with a medium scale tribute band, which toured into some of the largest theatre's in the UK outside London, whilst also studying 'Technical Events' at the Confetti Institute of Creative Technologies.

In addition to his full time role at Derby Theatre, Jamie also supports a number of local amateur performance companies, over a wide range of genres covering dance, musical theatre and plays.

Jamie is also fully engaged in supporting the students on the Technical Theatre degree courses, specifically helping to develop the practical skills of individuals who work as part of their casual team.

The ABTT felt that Jamie's already impressive achievements and wide ranging skills highlighted everything that the ABTT look for in the winner of the ABTT Award for Emerging Excellence, and we are very proud to announce him as this year's winner.

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THEATRE & SCENIC ART

Michael Hall

SCENIC ART TIMELINE			
1415	First use of linear perspective	1705	Growth of Colourmen
1499	Era of London Theatre building	1750	Multiple painted sets in German monastery
1530	First trompe l'oeil figures	1761	First pantomime in Drury Lane
1545	First formal stage design	1782	Robert Barker Panorama and long painted sets
1645	Inigo Jones pioneered painted shutters and wings	1800s	First gauzes for transformation scenes
1673	Garrick introduced 2 point perspective	1800s	Gas, carbon arc, lime and electric lamps were developed and used in theatre
1692	Classic Colour Guide by A Bogent	1875 - 1982	The D'Oyley Carte era
1705	Named scenic artists in programmes	1975	Dry pigments superseded by safe concentrated scenic paints

Our need to create images to help tell stories goes back deeply into pre-history and later to support and contribute to performances or to form a background for religious enactment, perhaps in flickering warm firelight. This is the forerunner of our scenic art skills.

Early paint was made from earth pigments mixed and then ground and a liquid created as a carrier medium. This was often linseed oil or by crushing flax, although these tended to have a slight yellow tint, so more expensive oils were used from walnut to poppy seeds, later lac or soya or tung. In China and Japan there was a 'varnish tree' which yielded a sap for a carrier.

The woad plant was used as a blue dye in England before the Romans came.

The Cochineal insect yielded a red dye, and was used so much by Renaissance artists it became known as the 'Scarlet Fever Period'. Indigo was a widely used dye from India. Most prized was an expensive blue which came from a mineral – lapis lazuli, meaning 'blue stone' mined in Afghanistan which was processed to become a deep blue colour, and was known as Ultramarine (from over the sea) and sometimes described as 'the colour from Heaven' and shipped to Europe on the Silk Road. It was used almost exclusively by Renaissance artists to depict the Virgin Mary's robe and cloaks.

In the reign of King Henry III (1216 – 1272) there are court records showing artists retained for work on pageants, banners and court events.

Little detail is known about scene painting as a craft until the early 16th century, although there was some earlier activity, but no examples remain and there was interest in

producing images, like the Camera Obscura for artists, shown in 1597.

Before that da Vinci experimented with anamorphic art and in 1530 the first Trompe l'oeil figures were produced, perhaps the beginnings of artists exploring changing perception of the viewer.

Before the 14th century there were no rules of perspective, but Duccio and others started to explore a sense of depth and illusion. But the key figure was Brunelleschi whose rules of 'vanishing points' stood for centuries and scenic artists were quick to follow.

In 1530 sets of scenery and set designs were published and frescoes in Florence and wall paintings do survive.

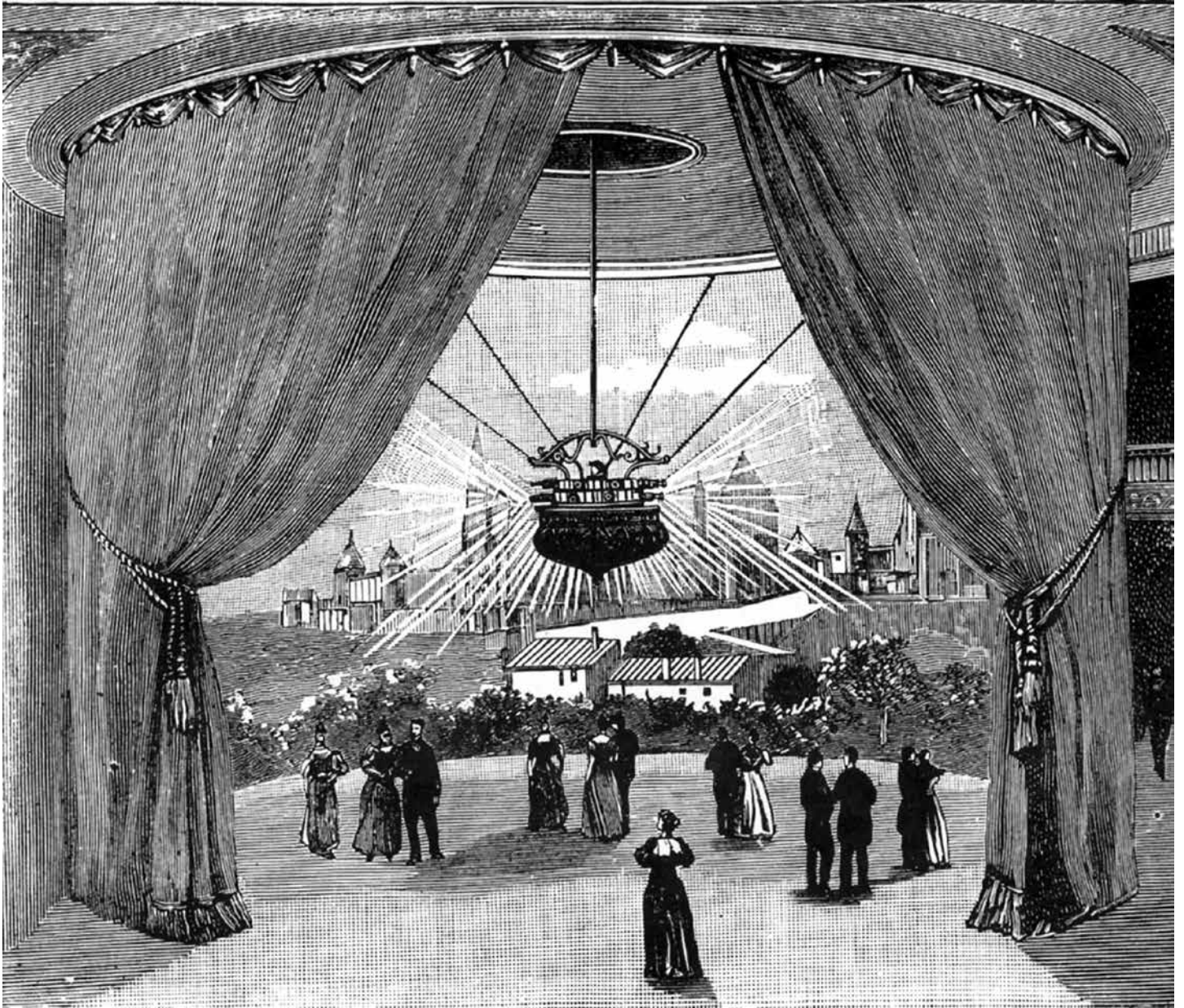
From 1587 onwards many theatres were built near the Clink and the Bear House on the South Bank of the Thames, followed by the Globe and Fortune Theatre and Shakespeare's 'Tragicall Hiftorie' of *Hamlet* was previewed in 1603.

All theatres were closed for two years in 1592 because of a Plague pandemic.

These theatres were mostly open to the sky, but closed roofs were made by 1633, with evening performances lit by candelabra and cressets.

Sir Christopher Wren's Drury Lane theatre of 1674 had space and facility for perspective painted scenery and backcloths. Inigo Jones introduced sliding wing flats and back shutters, and the tradition of spectacular finale scene changes.

Cloths were often used again and repainted and, with frequent theatre fires, no cloths survive.



A little known relic from 1750 has been rediscovered in a Cistercian Monastery (founded in 1287) in the Eastern part of today's Germany, close to the Polish border.

A theatrical presentation was mounted of 'The Passion of Christ': it comprised a painted proscenium arch, with side flats which were painted, and cut out free-standing figures added. A stage was raked up towards the back to help the illusion of greater depth. It has recently been carefully restored in a special museum.

The collection contained 240 painted panels, 200 of which survive, there were five acts in fifteen scenes portraying the betrayal of Christ to the Resurrection. The scenery was formed from wooden boards and stretched canvas and painted with distemper (i.e. pigment and size).

With better brighter light sources progressively available and continued search for more pigment colours and dyes plus cotton cloths, silk and gauzes, the need for scenic artists grew and more appreciation of their skills encouraged theatre managers to hire quality artists who often took curtain calls.

Another boost for scenic artists was the evolution of Pantomime, which started as an English version of the Italian Harlequinade, from Commedia dell' arte. Pantomime then known as Annual, or now perhaps 'Look behind you' first appeared at the second Drury Lane theatre in 1677, introduced by David Garrick.

The fairy tale and mystical style and high audience appeal used lavish scenery and often called for 12 or more back cloths (21 once for

Cyclorama Stereoptican Geneva in 1881, moved to a new rotunda in 1889, and carefully restored recently. The 112m long moving painted canvas is on the back wall

This woodland scene would have been painted between 1880-90. The greens and browns show signs of flaking, caused by insufficient size being mixed in the distemper to allow good adherence, or possibly because the canvas was not primed with size in advance of its painting. By courtesy of Raymond Walker.



Mr Joseph Harker's Scene-painting room at Camberwell Gate. Note the pipesmokers, they didn't like the smell of size. By courtesy of Raymond Walker

a single pantomime) and all ended in a grand finale involving elaborate trap appearances and transformation scene with painted gauzes. The pantomime tradition remains today, in London's West End, at the Palladium.

In 1789 there was a new experience, which was only possible through the skills of the scenic artists: people stood in a circular cylindrical building, with a 360° view of a moving painted vision on the inside wall.

David Garrick hired an accomplished scenic artist – Philippe de Loutherbourg from Paris, and he used a smaller version, an Eidophusikon – an 8' x 6' mini theatre with a moving painted series of scenes, typically Aurora, Noon and Moonlight at the London Exeter Change theatre.

Robert Barker, an Irish artist, created a rotunda which opened in Edinburgh showing canvases on rollers around the walls. Showmen presented shows as lecturers and the idea took off around the world, and Barker created the portmanteau word Panorama. Rotundas were built and by 1900 there were 200 around the world.

In 1881 a cyclorama was created by a Geneva artist, telling the story of the 1870/71 France – Prussian war, it was lost for 150 years but the 112 x 10m canvas has been restored and can be seen in Basel.

1875-1982 was a period sometimes called the d'Oyly Carte era, to present all 14 light operas of Gilbert and Sullivan. The d'Oyly Carte family favoured good painted scenery and accomplished designers and artists and paint frames and paint rooms sprang up. For instance, Drury Lane and Covent Garden had an in-house frame and retained 12 and 9 artists respectively.

The Carte family wrote published guide books setting out directions for professionals and amateurs: Libretti, vocal scores, stage movements hanging plots, lighting, dimming and a list of up to 30 paint colours. The ABTT Historic Research Committee, chaired by Roger Fox now keeps track of existing and new paintframes.

There were four changes of light sources for lighting stages during the 19th century all affecting scenic artists, so a review is worthwhile, probably not written before for scenic artists.

Candles and oil lamps were the only source for centuries, they were a fire hazard, and produced smoke and were low efficiency, so many were needed for adequate vision of painted scenery.

The light quality had the warm intimate feeling of firelight, biased to the red end of the spectrum and weak at the blue end – so artists painted with colour intuitively.

In 1789 coal gas was installed in the London Lyceum and at Covent Garden in 1817 to light the stage, side battens and footlights, or 'floats' – more light to see painting, but complaints on smoke, flicker and the yellowish light "a deadly hue to the complexion". Again changes for the artist to portray what he wanted.

In 1808 Sir Humphrey Davy invented the bright and intense carbon arc lamp and it was used in theatre in 1848. The colour was much cooler than gas so warm red paints on scenery appeared dull and darker and blues brightened and enhanced in appearance. It was powered by bulky batteries and the light emitted had a high level of hazardous UV energy.

Mr Joseph Harker at the New Drury Lane Theatre Paint Frame. April 15th 1922.



Limelight was used for theatre from around 1837. The light was said to have a greenish caste but really was cooler than candles and the sallow gas, so painters had to compensate. Critics complained that Henry Irving's lime as moonlight "gave a ghastly livor falling on the parting caresses of Romeo and Juliet".

By 1881, after years of research, a reliable tungsten filament lamp was used in the Savoy Theatre for Gilbert and Sullivan light operas.

Tungsten had a warm colour for reds and weak in the blues – more thought for the painter.

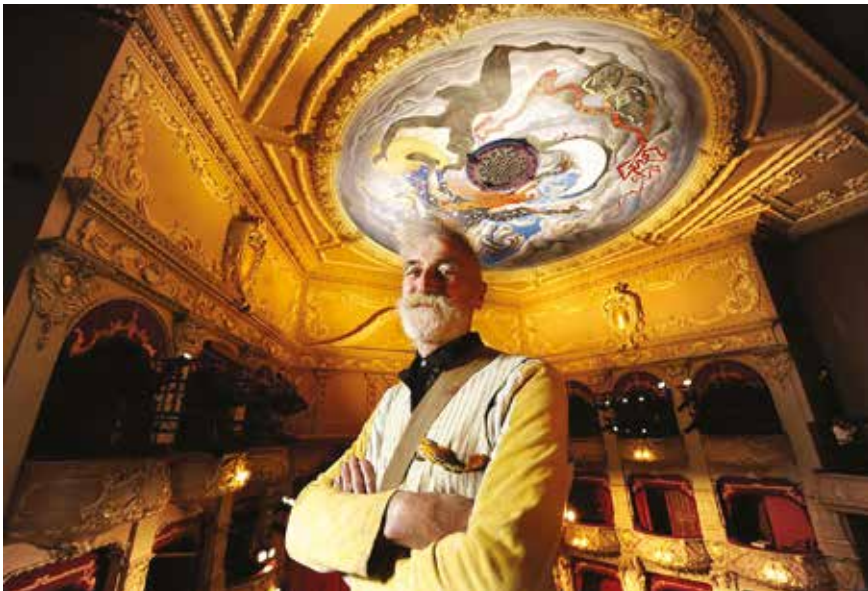
The new light source, LEDs are taking over, some have colour which is controllable, but the artist needs to liaise with the lighting designer.

So to present day. Training available today is good:- Scenic painting courses are available country wide, a selection is: RADA, Central School of Speech and Drama, Mountview, Rose Bruford, Bristol Old Vic Theatre School. All these Colleges invite senior artists like Chris Clark to guest lecture and adjudicate. Internationally: Hong Kong Academy of Performing Arts and the Gil Hemsley Foundation in New York, also have Scenic Art courses.

There are other technology methods of providing backdrops, but the art and skills of a scenic artist are still needed. A designer brief may be a postcard sized sketch from which an 8 x 15m backdrop is needed, with sightlines in mind and a perspective distortion made, and little time to execute, the artist interprets the concepts and help set the mood of the scene and their work influences the rhythm, continuity and spirit of design for the team of designers, and director of a writer's entity.

IF ALL THE WORLD'S A STAGE

The Dome in the Edinburgh King's Theatre



John Byrne, the artist and playwright, was commissioned to design the mural by the Festival City Theatre Trust

Designed by John Byrne, the 2D design had to translate to the 3D 85m² dome which Kevin Leary, the scenic artist, did with the help of specialised software and a short throw projector.

The theme of the design was a scene of theatricality and magic that included a black Harlequin carrying the sun through clouds, a celestial flame haired woman covers in a star cloth, pushing the moon and the line "If all the world's a stage" from Shakespeare's As You Like It, and the title of the mural is scribed though it in a bright red ribbon that streaks through the piece.

The artists worked 14 hour days in the available time of the 34 days allowed, meaning that they couldn't see the finished mural before the scaffolding came down – too late then for revisions.

Kevin used Rosco Supersat Paint, good for the clouds, strong colours diluting well, they could work at great speed, use a spray gun and the paint would dry quickly and be ready for the final coat of varnish.

AIDA 2006/2007.

An English National Opera co-production with Houston Grand Opera and Oslo Opera.

The Conductor was Edward Gardner.

It was directed by Jo Davies and designed by Zandra Rhodes.

The designs featured back-lit drops which required special techniques to realise Zandra Rhodes' charming calligraphic artwork.

Her bright gold line work was contrasted with brilliant, translucent colour.

The gilt areas were achieved by thoroughly blocking the canvas with flexible primers before adding the brightest gold paint.

A tedious process which paid off when the liquid gold hit the smooth surface!

The translucent parts were layered in bright dyes for maximum effect.



Scenic artist, Chris Clark

THE PRODUCERS 2006.

A production for Det Ny Teater, Copenhagen, designed by Paul Farnsworth.

For this Alpine scene, Paul created the most kitsch design he could possibly imagine; even coloured glitter was applied to almost everything before it was completed.

It was great fun to paint!



Scenic artist, Chris Clark

LIGHT IT IN RED/MISSING



*Above left: Robe lights
Northampton in Red – Royal
and Dergate,
Photo by Lindsay Cave*



*Above right: Theatre Royal
Stratford East.
Photo by Seamus Ryan*



*The Lowry, Salford.
Photo by Phil Maxim*

LIVE THEATRE, JULY 2020



*Theatr Clwyd.
Photo by Neil E Williams*

*Below left: Leeds
Playhouse.
Photo by Anthony Robbins*

*Below right: Buxton Opera
House.
Photo by Live LX*



Performing Arts in Higher Education – From Sprint to Marathon

Anette
Ollerearnshaw

As the first fully online term for Higher Education (HE) providers in lockdown draws to a close, staff and students as a community can look back on significant personal and professional development, strains and successes. Whilst the end of the academic year always feels like a great moment of joy, achievement and (let's be honest) relief, this summer term has been completed against all odds.

1. From Sprint to Marathon

It is now becoming clear that despite the initial sprint our community so readily took on: we now need to recognise that we are in fact running a marathon.

The make-or-break urgency that drove us to embrace this sudden shift requires a more strategically sustainable approach.

The preparations, redesign and communications for the autumn term and in truth the whole of the next academic year 20/21, are in most cases doubling the workload in comparison to the business as usual that we are so well-practised in. This full-scale change is actually more about creating anew and as such is a golden opportunity to sweep out the old, but creating new ways of working whilst still delivering an emergency response takes up a lot of energy. The effects on everyone's mental well-being are noticeable and widespread.

2. Industry under Threat

Across the HE and Performing Arts industries some staff had their fixed term contracts and freelance commitments honoured or were placed on furlough for periods of time.

The UK government announced a £1.57bn support package for arts, culture and heritage organisations in July 2020 but for many this was too little too late. The UK Culture Secretary has set out a 5-stage plan for reopening venues and there have been various industry pilots to demonstrate how we can get audiences back into our venues safely. This plan has yet to be given a clear timeline, and thus leaves us in a continued limbo.

In some countries the TV and film industry is taking careful steps into the new ways of working, with reduced crew, increased H&S measures for covid-safe practices and cautious strategic steps into the busy and thriving professional lives we once inhabited.

The Association of British Theatre Technicians (ABTT) community is tight-knit and now more than ever is brought together through a collective desire to support and promote best practice, safety and well-being.

We have held a series of free webinars on a range of relevant and urgent subjects in order to continue to unite and to provide a platform of support and visibility. Our collective presence has been strengthened through an extraordinary coming together of international colleagues, competitors and unlikely allies; we have seen unique determination to work together on formulating the foundations of our new realities.

3. Online and Off Site

Looking at how this global situation continues to affect the Performing Arts HE sector, I have gathered contributions of personal and professional experiences via interviews with staff from Royal Welsh College of Music & Drama (RWCMD), Mountview Academy of Theatre Arts (MATA), Hong Kong Academy for Performing Arts (HKAPA), Royal Conservatoire of Scotland (RCS), Guildford School of Acting (GSA), Guildhall School of Music & Drama (GSMD), Rose Bruford College of Theatre & Performance (RBC), Association of British Theatre Technicians (ABTT), University of the Arts London (UAL), Penn State College of Arts & Architecture (PSU).

In HE we work in parallel to the industry and in order to frame the academic experience, I will give a brief snapshot of our current landscape. The speed and progress that is made in shaping a life beyond lockdown is based on different geographical positions and related political and disease control decisions.

In the June article I talked about the initial effects of the transition from in-person teaching & learning (T&L) where the virtual learning environments (VLE) were primarily a resource hub for asynchronous access and assessment submissions, to working fully online with our digital selves maturing and gaining confidence operating on the various platforms. In most cases this is Zoom, Microsoft Teams and Moodle with other platforms such as Mahara, Panopto, Asimut, Skype, various social media and YouTube in the mix.

During lockdown students have benefited significantly from talks, webinars and discussions with world-famous designers, directors and heads of industry. This was a unique opportunity due the availability of international talent who would otherwise be busy travelling, in a rehearsal room or concentrating on producing the next show.

Covid graduating students on the whole have reacted dynamically, taken an agile stance to the change and embraced online study and learning from home (LFH). HE providers have

taken a variety of approaches to providing structure, focus and support; turning weekly production meetings into community forums and finding ways to make space for the informal and pastoral. In the case of RCS, staff have made a commitment to continuing these throughout the summer break and arranged the sessions into smaller groups for a more personalised approach.

Many staff have noted that for students who identify as neurologically diverse can find the in-person learning, making and presenting stressful and overwhelming; for them, the online course delivery has enhanced their ability to flourish and succeed. For others the distractions faced at home are less favourable conditions for engaging with T&L activity. All of these situations need to be given space and time in a different way to how we would normally approach them when on campus.

MATA and PSU for example have been able to send students unit-essential materials and equipment to their homes to be able to continue a mixed virtual learning and material making curriculum. Of course this cannot include sending hazardous materials to halls and homes for construction off site, much as we do in our studios, theatres and workshops, these processes need to be risk assessed carefully.

At UAL and RBC some students' work gained more of a sustainability flavour, with materials found in cupboards and lofts finding new life in a reinvent, redesign and recycle approach. Every cloud has a silver lining and with the Performing Arts needing to up the ante on sustainable practices, this may have inspired the next generation of makers and designers to embrace circular design with intent and passion.

In some technical and design subjects the whole basis of how theatre is delivered has had to jump beyond the traditional approach. Digital design and making disciplines have grown enormously, previously more time may have been spent on working with glue and clay, at GSMD for example costume and video students have been realising the costume designs for avatars in outfits purchased from 3D model websites. Students have also had the opportunity to design and have fabrics printed in order to physically make costumes.

GSMD 3rd Year students have gained refined skills in 3D workflow and learned how to put on a virtual opera and musical; this is a brave and uncompromising approach to bringing the performance arts HE practices into the digital sphere. The outcome was impressive and



Royal Welsh College of Music and Drama. Photo by Nick Guttridge, BFLS

being online it can be viewed across the globe, so in terms of reach, accessibility and exposure the benefits are undoubted. However, the jury is still out on the optimum balance between live performance and the evolution towards a future of increasingly technical, mixed reality and multimodal performance.

Whilst the savvy digital production team at GSMD states that productions can be made possible in a digital format with today's technology, this type of production process is more linear and misses the practical and collaborative elements, due to the different workflow.

Watching shows on screen, I miss the live-shared audience atmosphere and the visceral sense you get when a company of performers, artists and technicians trusts and connects with each other and ultimately us. I can go back to watch a show several times in a row and will be able to experience it in a different way each time, with a house full of fellow human souls whose laughter, cries and whoops are as much part of my experience as what is happening on and backstage.

So far a digital performance recording/production has not yet given me goose bumps, but I am thrilled to think that the next wave of technology enabled and truly immersive experiences can be borne out of our current adversity.

Access Creative College are the new training provider for UK theatrical apprenticeships and as part of this the ABTT provides learners with Bronze Award training. The observation of a real-life activity is the standardised element for this across the country and at present assessors are waiting for the awarding body to



Royal Conservatoire of Scotland's Renfrew Street building

approve temporarily replacing the observation with a remote presentation and questioning that uncovers real work situations. The second assessment element is a professional discussion that can be done by remote video or audio.

From a H&S point of view in all instances it is vital that we can ensure technical safe practice is achieved as muscle memory and not just a theoretical comprehension. Risk assessments and method statements for production work can only be signed off knowing that the technicians are competent.

4. Degree Show and Graduation Ceremony

Across the board universities have taken a variety of approaches; at RWCMD the graduate show has been rescheduled to August/September and moved online with a Designer a Day Instagram posts and stories. At UAL an online showcase has already gone live in collaboration with IBM; a physical show is pencilled in for January 2021 or as soon as possible after that.

GSMD students were consulted closely on their wishes for a degree show and as a cohort have decided that an online showcase this year would not provide them with the same level of industry exposure. Therefore, an industry networking event is planned to take place close to their graduation in March 2021. They have concentrated on online CVs and have been given intensive and individualised employability consultations and advice.

GSA are particularly early in holding their graduate shows, as they would normally transfer into a London venue. In this case they were fast to move productions into the digital

domain early in lockdown. Students have received their results already and the ceremony will be held as soon as circumstances allow; the Head of School has published a video recording for graduates as a message of ceremony and celebration.

At HKAPA the Graduation Ceremony may now be rescheduled to the spring on 2021, however transcripts can be provided before then if necessary. The graduation exhibition hasn't yet happened and is currently at risk; it is hoped that an industry event can be arranged at a later date.

5. Return to Campus

The RCS is the largest producing house in Scotland and with the usual 35 productions per year Conservatoire leaders have decided to start the term early and to reduce the numbers.

At HKAPA the second wave and subsequent lockdown are now a reality and the initial decision to simply postpone some shows with the view on producing them later in the term or early next year is now no longer an option. With students needing to meet all learning outcomes, course teams are in emergency meetings to develop alternative plans. The academy has produced a spreadsheet for each individual student with a record of what they need to achieve in order to be able to progress, and with a built in 10% contingency of unscheduled weeks for next academic year this should allow room for mop ups.

HKAPA's strategy for managing risk of continued disruption is the development of parallel timetables for physical and online activity, and with a full expectation of being on/off site throughout the year, this should allow smooth switching with ease. Having said this, the effect on everyone's mental health of stopping and starting a live production also needs to be given thought and consideration.

GSA is managed by Surrey University and whilst this provides support and established norms, staff also make sure to communicate and uphold the importance of the performing arts programme needing to align with industry practices.

The next academic year is in most cases redesigned as a hybrid/blended approach with different emphases placed on what has priority and how the restrictions of social distancing and covid-safe measures affect our programmes and courses. At RWCMD the concentration is on giving 60-70% campus access to first year students to allow them to build relationships and transition into university life.

Students in some cases can live in bubbles and this year more emphasis is put into doing so deliberately. It will make scheduling and risk of cross contamination easier; containment will of course also rely on the students' behaviour outside of their homes and off site. The fact may be that we will likely have to deal with bubbles and groups of staff and students having to self isolate and thus going fully online in pockets that may leave on site activity short staffed.

Control measures such as one way entry/exit for studios, track & trace, taking temperature, frequent hand washing, visors, face masks, detailed scheduling, individual work stations, frequent cleaning and Perspex screens are all in the mix and will be implemented to varying degrees.

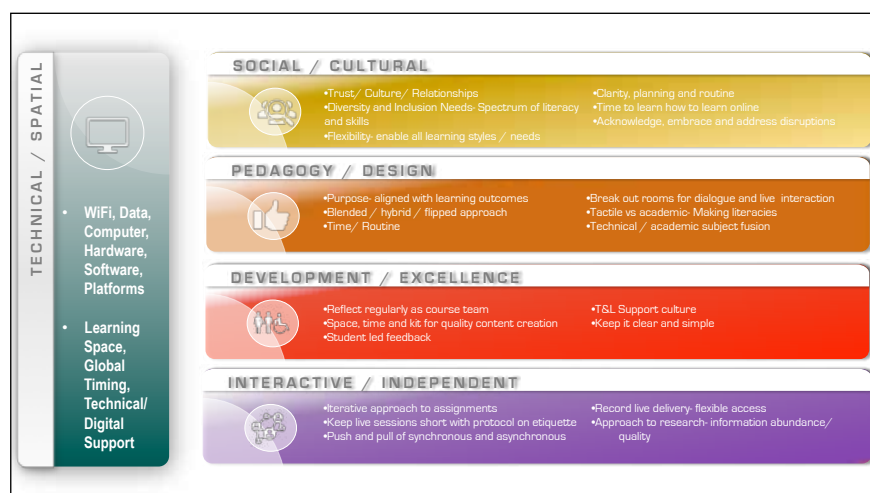
We could also look at the Social Model of Disability as a way of shaping our stance, where the concept is that what makes someone disabled is not their medical condition, but the attitudes and structures of society. As such we need to define what the obstacles of C-19 on society are and together make a plan on how we can change our environment, behaviours and culture for these to be overcome.

6. Online Teaching & Learning

To ensure fairness and equitability PSU has designed a questionnaire that is sent out to all students at the beginning of term, this provides staff clarity around technical, academic and social needs. It was noted that entering university is the time when many young people develop their real LGBTQ+ status and the physical shift of moving back home can be difficult; specific attention is given to the use of pronouns according to their gender identity.

The sudden move to fully working online has put a spotlight on the inequalities we all knew existed in terms of social and physical. Those who are from poorer backgrounds and living with impairments have, in most cases, had to work harder to achieve and reach their full potential. It is our responsibility to address this and help in all of the different ways we know are available to support their ambitions and overcome adversity.

At RBC it was recognised that the social interactions we have learned to read and navigate since we were born have not equipped us with an intuitive way of interacting and functioning online. We have to relearn how to draw attention to ourselves, influence or collaborate via a screen; this is taking a lot of concentration and flexibility.



7. Looking ahead

For 20/21 student numbers are looking favourable for most courses, some students have decided to defer for 1 year, others have taken this opportunity of industry hiatus to learn and develop. At RWCMD for example the MA Design for Performance course is very well subscribed as it is so closely linked to industry. Students undertake 1 year full time study in College with significant 1:1 practical contact time and up to 4 years to complete their professional practice portfolio in industry. This is a great way into both the wider professional theatre industry and specifically aligned to the burgeoning Welsh Film and television industry..

Over lockdown we have certainly been served a rich offer of companies across the globe showing their live-recorded stage work online and others developing lockdown versions of what the future of live performance could become, to consume on our various screens (for many this may be on their smart phone with intermittent data coverage).

The next generation of theatre makers are starting their professional lives in a totally new playing field, it seems that this would be the best time for those who are in decision making positions to empower and support more new talent to take to the stage and maximise this opportunity to embrace for a more inclusive, diverse and sustainable future. It is our job as educators to facilitate this by inspiring and guiding students to gain a set of professional and creative attributes that are rich in vision and with resilience at their core.

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 Arts.

Online T&L Matrix

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The Backstage Heritage Collection

There are right now of course many more urgent things to think about than a bunch of old technical theatre equipment...

...But the fact remains that there is a bunch of old theatre equipment out there, most no longer in use but nonetheless fascinating to behold, a real 'hands on' interactive history of the development of the technology of our industry. It would be very easy to let that equipment end up in a skip, lost to us forever. The Backstage Heritage Collection is an informal group of people who try to stop that happening, so that when you read about a Light Console or a 264 or a Panatropes there is a place to then find out more and, hopefully, a place to go and see it for real.

There have been many similar groups of people in the past, of course (remember, for two decades London even had an actual theatre museum!); in particular the ABTT's own Historical Research Committee has always done good work tracking where historical technical theatre items have ended up. There are other groups very like the Backstage Heritage Collection around the world. It is perhaps unsurprising: there is a nostalgia for these older products, so much more tactile, so much more interesting than the equivalents of today, coupled with a curiosity about how they actually worked, sometimes a wonder that they actually worked at all.

The collection that we really should just declare as our national museum of theatre technology is the raft of products and paperwork that sit in Jim Laws' barns in rural Suffolk – coupled of course with the raft of knowledge that sits in Jim's brain. Jim didn't set out to collect history, but rather just had a sharp eye for useable lights sold at bargain prices as newer, trendier products came along. It worked hard lighting shows. But over time, this bargain equipment has become historic equipment, now earning a living dressing period shows on stage, television and film. It is a vast, fascinating collection.

The Backstage Heritage Collection came into existence in 2014. It was a meeting of three worlds. Firstly, Jim's stuff, his awareness that time was passing, and his desire to make sure the important, and in many cases now unique, items in his care had homes once he could no longer look after them. Secondly, the related collection Jason Williams had been building up under the 'National Exhibition of Entertainment Technology' (NEET) banner. I think it's fair to say that Jim's interest in

lighting desks diminishes once computers move in; that's when Jason's interest started. He'd rescued the first and second generation of computerised lighting as it was replaced – but his priorities had changed and he wanted that equipment to have a new home. And thirdly, the sterling work that Jon Primrose of the University of Exeter had for years been doing to preserve the published history of entertainment technology and make it available online. Initially this was under the 'Strand Archive' banner; now that his treasure trove of documents covers much more than just Strand, you'll find it as 'TheatreCrafts' (www.theatre crafts.com). Jon, I think, wanted a connection between his virtual collection documenting the equipment – scans of magazines, brochures, spec sheets – and the real physical equipment itself.

The dream was, of course, a real, physical museum; in practice that was unlikely to happen. The model explored over a wonderful meeting-of-minds lunch in the summer of 2014 was of a virtual online museum linked to distributed exhibitions, long or short term, of the real equipment housed by any host who might be interested – rental companies, say, or colleges. The aim was for the online record to have as much information as possible – photos, brochures and spec sheets, of course, but also the oral history, the memories of the people who made the products, sold the products, used the products. Then a pointer to the location of actual examples in cases where such examples still existed.

Rob Halliday

Strand IDM memory console from the New London (now Gillian Lynne) theatre. The console and its Sperry memory drum are on display at White Light in Wimbledon.





One of the cutaway lanterns, a Patt 23N, used by Strand at their King Street demonstration theatre.

Things haven't worked out exactly like that - though in some ways they're not far off.

Jon has continued to receive, scan and upload documents – no longer just equipment, but old lighting plans and much more, all scanned at enough resolution you can read the hand-scribbled notes amongst the coffee stains. He's added videos of talks we've given, at PLASA and at the National Museum of Computing in Bletchley. In researching these talks a remarkable online group has formed, many of the key people in the evolution of lighting equipment from the 1960s onwards. Throw a question out to

that group and the replies are remarkable, some technical (did you know that the back of a Patt 123 was the same casting as the front of a Patt 23?), some as social history (Strand being paid for the MMS console installed in North Korea in cash in East Berlin then having to walk the suitcase full of money nonchalantly through Checkpoint Charlie...). We are working to collate all of that so you can find it, too, on the Theatrecrafts website.

Fewer people were keen to provide homes to real artefacts as one might have hoped or expected. But we have found two wonderful friends. The first, White Light, particularly their health and safety director Chris Nicholls, who has carved out space in their Wimbledon warehouse to form what is, in effect, a little museum housing key products that the Backstage Heritage Collection has taken over from or looks after for Jason or Jim or others. Amongst much else you'll find the organ-based Light Console from Drury Lane. Parts of Francis Reid's custom console from Glyndebourne. The IDM memory console from the New London, still bearing a Vauxhall sticker on the side from some long-ago car launch. A big MMS, from Chichester. Gemini. Galaxy. Consoles from Alderham, Avo, Celco, Colortran, Zero88 and others. My personal favourite, Richard Pilbrow's Lightboard. From further back, a gas plate – a lighting console for gaslight! Lighting fixtures, too. One hundred years of lighting history you are free to explore. One goal for this year



Jim Laws with a 'gas table' – a lighting desk for gas! Note the bypass valve to set a minimum 'off' level to ensure the flame stays lit even when faded out.

was to make this collection more accessible, with scheduled tours and talks but, y'know, Covid. That will come when some semblance of normality returns.

The other wonderful friend? Lucien Nunes, a gentleman whose fascination with the history of electrically-powered technology includes, but extends far beyond, stage lighting. He calls this project *Electrokinetica* (www.electrokinetica.org); after years of searching it now has a building that will be turned into a publicly accessible, hands-on display space. The work on this has also been interrupted by Covid, but when finished it will include an operational demonstration theatre where fixtures and control can be operated and their effects explored alongside electrically-powered items from every other area of life.

Plus there are other supporters of course, with perhaps a special thank-you going to AED in Belgium who have provided storage and transport for many of the other items that have not yet found homes.

You will notice that most of the talk here has been of lighting products, whereas the 'Backstage Heritage' name implies something wider. The ambition is, I think, everything – but if you start with predominantly lighting people, predominantly lighting is what you get. If you're interested in other areas, please do come and help. We also need to formally organise, probably as a Community Interest Company and some funding would always help. Life in normal times meant that there were probably sources for the latter, but work meant finding time to sort out the former was problematic. Now things are probably reversed, time available but money in short supply.

The ambition is always to do more, but more support is needed – in particular, more organisations willing to host mini-museums. That might sound like a waste of time or space, but I'm pretty sure White Light will tell you they've met people they've never met before who've been lured in by the collection there. If you're a company, it's history as a marketing opportunity; it doesn't feel like there's any harm in that. If you're a college, it's history as a learning opportunity – these products still guide and shape the products we use today. Beyond that, if you have old brochures, documents or even equipment hidden away in a garage or an attic or the depths of your theatre (or, more urgently, poised on the edge of a skip), get in touch.



Or if you have a colleague who's a gold-mine of historical anecdotes about shows, venues, innovations or technologies, we'd love to hear about it – collecting recorded interviews is high on the project list.

Channel selector tabs on the Strand Light Console from the Theatre Royal Drury Lane.

So that's the Backstage Heritage Collection – an introduction if you've never heard of it, a reminder if you at least recognise the name, an update if you've been following its progress. As I said, not the most important thing to worry about in these difficult times, but perhaps also able to provide some of the welcome distraction we all need from these difficult times.

Start online. But be warned, one link will lead to another and you'll wonder where your day, maybe even your week, has gone...

An Alderham Showboard 602 rock-and-roll console, predecessor to the big Avo consoles, on display at White Light.



Architectural Acoustics: A guide to integrated thinking

Review by John
Faulkner

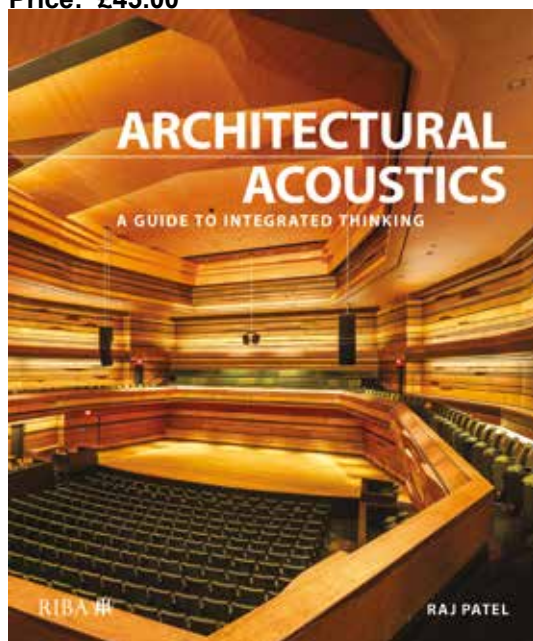
Architectural Acoustics: A Guide to integrated thinking

By Raj Patel

RIBA Publishing

ISBN-10: 1859466362

Price: £45.00



Raj Patel, curator, and principal author of *Architectural Acoustics – A guide to integrated thinking* must raise a silent cheer at Hamlet's crucial line 'Follow him friends; we'll hear a play tomorrow'. Reminding us that the sense of hearing reacts ten times more swiftly than sight, he takes us on an acoustic journey from the tantalising echoes of prehistory to the total sensory experience of immersive technology spaces.

Certainly since the founding of ABTT, the concept of the multi-disciplinary creative team has become an accepted way of organising projects, yet, without sectional griping, Patel argues that the acoustic environment is still not considered early enough or holistically enough in the process, with a corresponding potential loss to society, clients and end users.

Of course many readers of *Sightline* will have as their prime concern the acoustics of theatres, concert halls and other performing spaces; here they will find a firm and seriously argued case for the role of sound in the whole of the built environment. Soundscapes.

It is a thought-provoking journey

On the way we visit a comprehensive (and exquisitely photographed) array of spaces and environments: two dozen categories, ten of them performance related, but then branching into educational and

cultural, including civic, health and religious, workplace, (6), scientific and technical (3), and broadly commercial/infrastructure (5). The range is broad, from St Pancras International Station and the residential conversion of BBC Television Centre, to SFMOMA and the Kericho Cathedral, Kenya, via Sadler's Wells, Snape Maltings, the Stack at the Mirage restaurant, and Glyndebourne Opera House.

Each is introduced as a case study with a single page; What's important and why, which is a model of analytical method, and acts as a unifying device for the twenty-four case studies by twenty-eight expert contributors. This is followed by a Historical context section, a discussion of the architectural and societal context, as well as the impact of developing audio and acoustic technology.

For those who wish to delve deeper into technicalities, or to refresh their understanding of acoustic terms of art, there is an extensive and clearly illustrated section on Acoustic Terminology – although the introductory chapters on Acoustics and Architecture, Soundscapes, Sound and Architecture and The I and We In Architecture convey their message without heavy use of technical language. There are, as the author observes, highly technical books on the subject a-plenty – detailed in an informative Bibliography.

The aim of this book is to set acoustics in a broad socio-historical context, to advance the case for acoustics as an integrating factor in design and to reflect on its growing capabilities, as a result of technological advances, and its ability to enhance the experience of the end user.

Such a work (nigh on 300 pages) must necessarily long pre-date our current 'black swan' moment, so it seemed an opportune moment to speak to Raj Patel, currently leading Arup's global acoustics, audio-visual and theatre consultancy division from New York, for a postscript.

The book is cool and rational; in conversation his passion for design and the integration of the many skills which have to be marshalled in a project, to achieve the soundscape which will give the end user the best experience emerges strongly, as does his desire as an educator to welcome students thinking 'from the inside out' and 'from the outside in' and getting the balance right.

He has faith in the upcoming generation of students to deploy rapidly accelerating technological advances as a tool they have grown up with. In particular the judicious use

(i.e. not just 'pushing the button for the answer') of auralisation, which he considers has enabled clients, on occasion, to understand why a particular facility should not fall to the scythe of value engineering, or indeed to remove unnecessary over-design. The pace of advance in this tool means that it will be within the reach of any practitioner, not just large, well-resourced practices.

The challenge is to ensure that training and course construction incorporate new technology and methods so that new practitioners, architects as well as specialised consultants have it as part of their professional DNA.

As a musician, with both orchestral and groups background, he is also a natural to put in the word for the end user.

He describes the experience of moving, as a young player, from smaller acoustically benevolent halls to the (then) poor acoustic of the Royal Festival Hall as an eye opener (or possibly and ear-opener?). In the power structure of a project – a client with organisational preoccupation, an architect, perhaps thinking to be the eyes and ears of the artist, funding stakeholders with broad policy aims – the granular needs of the end user who will create content can slip down the priority list.

The generational theme is apparent again in considering soundscapes beyond performing spaces, which – as working lives grow longer – will have to serve the environmental and acoustic needs of multiple generations through the development of responsive materials, acoustics and architecture.

The current enforced public silence can be seen from different viewpoints: in the wider urban context it can reshape our perception of public space, and relationship with the natural world, which in weeks has filled the



acoustic void. Birdsong in Brooklyn!

In the particular case of performing spaces he sees this period as an opportunity for experiment, and, perhaps, to re-examine and redefine future use, looking to initiatives from the younger users who already move easily in the world of streaming, VR and AR. A new breaking of the fourth wall.

He instances the US Byzantine style choir which through use of variable technology recorded an album in the virtual acoustic of Hagia Sophia, and a jazz club which used a 3D microphone and players in a circle to allow a remote subscription audience to self-position – invitations to think big, not to be constrained by the Old Normal, not to accept as normal the return of ugly and unhealthy urban noise, to rediscover a sense of playfulness and delight in what we build and how it sounds.

It is a book that makes one think, and think again, and in a sector to which too few of us give proper attention. Raj Patel might well raise a second cheer at another crucial Shakespeare line "...lend me your ears!

Glyndebourne Opera House
© Arup

CallQ: All in the Timing

David McGraw

Stage managers value a good sense of timing, and British stage manager and educator Gail Pallin has demonstrated the best possible timing in producing CallQ. CallQ uses recordings of real shows to help improve the “quality, confidence, and consistency” in calling cues. Stage managers do much more than call cues, but cue calling is the most visible part of our profession. CallQ providing high quality training that is ideal during this pandemic and will remain a valuable tool even once live productions resume.



CallQ Trainer is an educational module and CallQ Studio is designed for production companies to import their own productions to train new show callers. Whether you practice with the CallQ Trainer, which includes its own productions, or select the CallQ Studio for an actual production you will be calling, the learning process is the same.



Print the calling script and use the ‘Watch’ mode to observe a performance while listening to the show caller and watching the cue lights. When you are ready to start calling on your own, you will be given the view of the show caller and a keyboard overlay for firing the cue lights. The software measures the accuracy of your call based on a timecode and, if you make a mistake, it will explain the mistake and reset to the previous cue for your next attempt.

I was impressed by the ease of the installation process and the user interface; the design has all the structure and organisation you would expect from an accomplished stage manager. The software is very intuitive and includes a thorough manual with screenshots. I was running the first simulation within ten minutes of installation.

CallQ delivers exactly what it promises: you can learn a show alone and at your own pace. One of the challenges calling a new show is to not be overwhelmed by its complexities while learning the cues. CallQ eliminates the variables of a live production to make a very straightforward path for the learner. But the simplicity that makes it an excellent training tool also limits its use. The learner only presses keys for standby and go cues, so there is no verbal cueing. The simulation stops at each error, so it is not possible to develop your stamina until you can call the cues perfectly. And, as a recorded simulation, the actors always say the lines the same way and cross at the same moments.

Experienced stage managers may become frustrated by the lack of verbal cueing, but it is important to remember that CallQ is the first step in learning a show. If you are like me, you will still call cues audibly even if your headset is unplugged. I applaud Pallin for bringing a solid stage management training tool to market. I look forward to seeing the evolution of CallQ and I encourage all of us to ‘stay in shape’ until we can return to the stage.

David J. McGraw is the creator of the Stage Manager Survey, a 14-year study of American stage managers that recorded 1,746 participants in its 7th edition (www.smsurvey.info). He serves on the board of the US-based SMA and is working with an international cohort of stage managers to create a global study of the profession.

Young Associates

Welcome to the tenth edition of the *Sightline* Young Members Page! Firstly, congratulations to Jamie Vella, the inaugural winner of the ABTT Award for Emerging Excellence! 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).

UK Theatre & Live Events Apprenticeship Network

Founded by ABTT Young Associate Representative Tamykha Patterson, this network aims to connect those who are past, current or future Apprentices; providing a dedicated space to ask questions and seek advice. If you would like to find out more and become involved, contact office@abtt.org.uk (FAO: Tamykha Patterson) expressing your interest.

Introducing New ABTT Young Associate Representative Ben Mills

I'm currently a student at Guildhall School of Music and Drama, with my focus being lighting and automation technology. I also have an interest in technical theatre training and making technical theatre a career path which is known about earlier in the education process, especially in schools. I look forward to co-editing this page with Matthew, and am currently looking at compiling a database of industry training opportunities for Young Members, so if you have some you can recommend please let me know". Ben can be contacted via office@abtt.org.uk (FAO: Ben Mills).

Interview with Anette Ollerearnshaw

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

What is your current position within the industry? "My current role is as Production & Digital Lab Manager for Performing Arts Programmes at Wimbledon College of Arts, which is part of the University of the Arts London. From 2014-18 I was Technical Manager at Camberwell College of Arts and from 2011-2014 I was Wigs & Make-up Manager at English National Opera. In 2018 I went on a one year sabbatical working as Head of Wigs & Make-up in Amsterdam at the Dutch National Opera & Ballet (DNOB).

How did you first become involved in the industry? "I went to London College of Fashion as a mature student at the start of the millennium and graduated with a BA Hons in Hair, Make-up

and Prosthetics for the Performing Arts. I am pleased to say that I have not stopped enjoying amazing professional opportunities since. My first job out of university was as Wigs, Hair and Make-up Artist on a show called The Black Rider at the Barbican. The production was directed by Robert Wilson with music by Tom Waits. This was a fantastic experience and little did I know at the time, that it placed me right at the centre of world-class theatre making."

What has been a highlight of your career so far? "Whilst at the DNOB, I got to work on a production called Aus Licht performed at Amsterdam's Gashouder as part of the Holland Festival. Each performance was three days long and we worked with a cast of 240 musicians and performers; it was directed by Pierre Audi with a score by the late grandfather of electronic music Karlheinz Stockhausen. I had put together a dream team of in-house and freelance artists and the creativity, technical expertise and commitment to the shared experience of collaboration made me immensely proud."

What advice would you give to young people interested in your specialism? "Having been recognised for a natural drive and ability to lead teams, I increasingly was sought out to supervise productions and head up departments to provide structure and strategy in the world of Wigs, Hair & Make-up. To formalise this, I decided to study for a PG Cert in Arts Policy & Management from Birkbeck University in 2009. My path through to technical and production leadership from a hair & make-up specialism to my knowledge has no precedence. As I continue to be true to my ambitions, I work on inspiring hiring managers to look beyond the established norm. The world as we know it is changing at such a pace that traditional career routes may no longer provide us with the diversity of thought and ideas we need to thrive. It's time to be bold and brave. I invest in developing my skills and knowledge with education, voluntary contributions to the wider industry and personal professional development; hard work always shows through on a CV."

Why do you think it is important for young industry professionals to be ABTT members? "The ABTT is a non-biased specialist community based around safety and well-being for everyone working in the performing arts industry and as we have seen especially in this pandemic, this is invaluable. Our *Technical Standards for Places of Entertainment* provide a baseline that can always be referred back to and if you need experienced help or advice, it is only a phone call away."



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Technical Standards

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

Tel: 020 7242 9200
Email: office@abtt.org.uk **Autumn 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 right-hand 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 1 July 2020. Key revisions

captured in the sixth reprint dated 1 July 2020 for Section B9 Conservation of Energy have already been published in this column. Below are further revisions mainly in Section F1 Electrical Installations. There were a number of other revisions in this reprint including more to Section F1 and to Sections 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.

REVISIONS & AMENDMENTS 1 JULY 2020 INCLUDING SECTION F1 ELECTRICAL INSTALLATIONS

Section	Part	Reference	Change
A4	References		Delete "BS 6207-3: Mineral insulated cables with a rated voltage not exceeding 750 V. Guide to use"
A4	References		Delete "BS 7919: Electric cables. Flexible cables rated up to 450/750 V for use with appliances and equipment intended for industrial and similar environments"
A4	References		<p>Change "BS EN 1995-1-x Eurocode 1: Action on structures</p> <p>BS EN 1991-1-1: Densities, self-weight, imposed loads for buildings</p> <p>BS EN 1991-1-7: Accidental actions</p> <p>BS EN 1995-1-x Eurocode 2: Design of concrete structures</p> <p>BS EN 1995-1-x Eurocode 3: Design of steel structures</p> <p>BS EN 1995-1-x Eurocode 4: Design of composite steel and concrete structures</p> <p>BS EN 1995-1-x Eurocode 5: Design of timber structures</p> <p>BS EN 1996-1-x Eurocode 6: Design of masonry structures</p> <p>BS EN 1997-1-x Eurocode 7: Geotechnical design</p> <p>BS EN 1998-1-x Eurocode 8: Design of structure for earthquake resistance</p> <p>BS EN 1999-1-x Eurocode 9: Design of aluminium structures</p> <p>See shop.bsigroup.com/eurocodes-plus or 0845 086 9001" to read</p> <p>"BS EN 1991-1-1: Eurocode 1. Actions on structures. General actions. Densities, self-weight, imposed loads for buildings</p> <p>NA to BS EN 1991-1-1: UK National Annex to Eurocode 1. Actions on structures. General actions. Densities, self-weight, imposed loads for buildings</p> <p>BS EN 1991-1-7: Eurocode 1. Actions on structures. General actions. Accidental actions</p> <p>BS EN 1992-4: Eurocode 2. Design of concrete structures. Design of fastenings for use in concrete</p> <p>BS EN 1993-1-1: Eurocode 3. Design of steel structures. General rules and rules for buildings</p> <p>BS EN 1994-1-1: Eurocode 4. Design of composite steel and concrete structures. General rules and rules for bridges</p> <p>BS EN 1995-1-1: Eurocode 5. Design of timber structures. General. Common rules and rules for buildings</p> <p>BS EN 1996-1-1: Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures</p> <p>BS EN 1997-1: Eurocode 7. Geotechnical design. General rules</p> <p>BS EN 1998-1: Eurocode 8: Design of structures for earthquake resistance. General rules, seismic actions and rules for buildings</p> <p>BS EN 1999-1-1: Eurocode 9: Design of aluminium structures. General structural rules"</p>
A4	References		Insert two new document titles after "BS EN 60669-2-6: Switches for household and similar fixed electrical installations. Particular requirements. Fireman's switches for exterior and interior signs and luminaires" to be "BS EN 60702-3: Mineral insulated cables and their terminations with a rated voltage not exceeding 750 V. Guidance for use" and "BS EN IEC 60721-3-3: Classification of environmental conditions. Classification of groups of environmental parameters and their severities. Stationary use at weatherprotected locations"
A4	References		Insert new document title after "BS EN ISO/IEC 17020: Conformity assessment. Requirements for the operation of various types of bodies performing inspection" to be "BS HD 60364-8-1: Low-voltage electrical installations. Part 8-1: Functional aspects – Energy efficiency"

D1	Stability	D1.02	<p>Change "...with long spanning elements (with a depth to length ratio exceeding 1:20) or cantilevered balconies. Specialist advice should always be sought if any doubt exists concerning the safety of the structure of the premises. Balcony or main floor spanning structures should be designed to achieve a natural sway frequency of less than 3Hz or a natural vertical frequency of less than 6Hz where it is important there is no significant vibration but it may be greater in some clubs or dance halls.</p> <p>Note 1: Vibration movement in floors and balconies often leads to complaints from audience, especially in theatres and concert halls; even walking in some cinemas has caused problems if the vibration is too much.</p> <p>Note 2: Further advice on dynamic loadings is given in <i>Dynamic performance requirements for permanent grandstands subject to crowd action. Advice on design and testing is given in Dynamic testing of grandstands and seating decks.</i> to read "...with long spanning elements (with a depth to length ratio exceeding 1:20) or cantilevered balconies. Dynamically sensitive structures should be designed to achieve a natural vertical frequency greater than 8.4Hz and a natural horizontal frequency greater than 4Hz as a way to maintain human comfort and prevent structural dynamic effects associated with the synchronized movement of an audience or performer/performance.</p> <p>Specialist advice should always be sought if any doubt exists concerning the safety of the structure of the premises. Balcony or main floor spanning structures should be designed to achieve a natural sway frequency of less than 3Hz or a natural vertical frequency of less than 6Hz where it is important there is no significant vibration but it may be greater in some clubs or dance halls.</p> <p>Note 1: Vibration movement in floors and balconies often leads to complaints from audience members, especially in theatres and concert halls; even walking in some cinemas has caused problems if the vibration is too much.</p> <p>Note 2: Further advice on dynamic loadings is given in <i>BS EN 1991-1-1: Eurocode 1: Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings in the National Annex to BS EN 1991-1-1: and in Dynamic performance requirements for permanent grandstands subject to crowd action. Advice on design and testing is given in Dynamic testing of grandstands and seating decks.</i>"</p>
F1	Electrical Installation	COMMENTARY	Change "Studies for new.." to "Various studies for many...."
F1	Electrical Installation	COMMENTARY	Change "... with a utility tariff that is too high." to "...with a utility tariff (Standing Charge) that is too high."
F1	Electrical Installation	COMMENTARY	Change "Guidance is available for: " to " The design should consider:"
F1	Electrical Installation	COMMENTARY	Change "Diversity of technical power " to "Diversity of technical power (avoid 'boilerplate' ratings)"
F1	Electrical Installation	COMMENTARY	Change "Note: Studies have shown that sine wave dimmers and motor inverters often consume appreciable power at idle, that is to say when operating at low or no load – guidance on how to deal with this should be sought from the manufacturer. Caution is advised when attempting Power Factor Correction (PFC) of these types of equipment. " to " Note: Increasingly, electronic equipment has appreciable stand-by power requirements. Power consumption analysis should consider operations and stand-by modes"
F1	Electrical Installation	COMMENTARY	Change "...and staff. Issues include the need for enhanced mechanical protection to cables, especially within stage and other technical areas, the need for parts of the installation to remain operational in the event of fire and the need to minimise interference by unqualified persons and the public. " to "...and staff as well as providing the necessary functionality. Issues include the need for enhanced mechanical protection to cables, especially within stage and other technical areas, the need for parts of the installation to remain operational in the event of fire, flexibility in design to accommodate changing production requirements and the need to minimise interference by unqualified persons and the public."
F1	Electrical Installation	COMMENTARY	Change "Backstage areas..." to "Onstage areas..."
F1	Electrical Installation	COMMENTARY	Change "...should be inaccessible to unauthorised persons." to "should be inaccessible to or inoperable by unauthorised persons and the public."
F1	Electrical Installation	COMMENTARY	Change "Lighting and sound equipment ..." to "Lighting, sound and video equipment..."

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

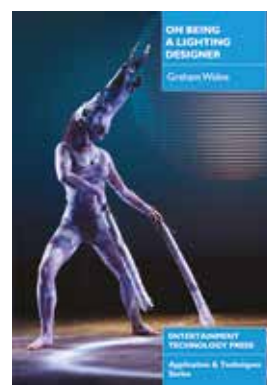
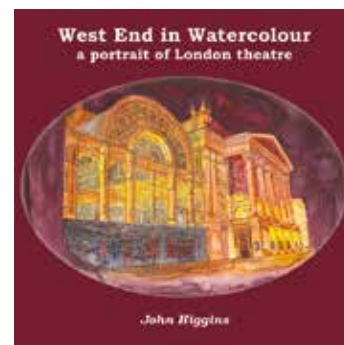
Paule Constable and Richard Pilbrow hosted a one-day Symposium on 30th October 2016 to celebrate the 40th Anniversary of the opening by Her Majesty the Queen of the National Theatre designed by Sir Denys Lasdun. The National Theatre: A Place for Plays, presented by the Association of British Theatre 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

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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 renewed for 2020. If you have not paid, 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.

New ISG Members:

The ABTT is extremely grateful to all the Industry Supporters who are supporting the ABTT in 2020. New members are always welcome. It's never too late to join this "go to" list of theatre and live performance expert suppliers, service providers and supporters.

NEW FULL MEMBERS

ABTT Associates Dave Agnew, Ross Anderson, Andreas Ayling, Jason Barnes, Gary Beestone, Chris Boyle, Jack Champion, Matt Drury, Ted Faragher, Sarah Hemsley-Sole, Callum Howie and Mark Noble have been admitted as Full Members of the ABTT by the Council of Trustee-Directors. Congratulations!

Voting Rights are only bestowed on Full MEMBERS, who also have the right to stand for election to ABTT Council. These are direct ways in which you can shape and influence the ABTT.

If you would like to apply for admission as a Full MEMBER, please send a current CV and contact details for two referees, to the ABTT Office via email to apply.

In the loop:

Big news items will always be included within *Sightline* or the ABTT Newsletter BUT for the latest news, follow us on social media, Facebook, Instagram and Twitter now.

ABTT NEWS

ABTT produce Guidance Notes for reopening Theatres

The ABTT has produced the first in a series of COVID Secure Guidance Notes, numbers 101, 102 and 103, to help guide practitioners in reopening places of entertainment. These include guidance on risk assessments and steps for returning to work following lockdowns.

These publications form part of the Code of Practice for the Theatre Industry produced by the Association of British Theatre Technicians with the support of the Theatre Safety Committee and should be read in conjunction with one another. Further Guidance Notes will be released shortly.

ABTT collate Covid-19 and other Industry Resources

The ABTT have been collating relevant COVID-19 Resources such as DCMS

Guidance, working documents, articles and roadmaps for recovery alongside financial resources, and details of campaigns and initiatives that need your help.

Other Industry relevant resources such as for Sustainability in Live Performance, Diversity and Inclusion and Mental Health and Well-being have also been collated to help our members' find the information they need to stay well and help bring about change.

These can be found via our Guidance and Resources page on the ABTT Website.

ABTT Annual Report 2019

The ABTT has released the Association's Annual Report and Financial Statements for 2019. This covers information on what the ABTT and its committees have achieved throughout the year, information on our Council and events that have run including the 2019 ABTT Theatre Show. This can be found on the ABTT Website.

ABTT Annual General Meeting 2020

The ABTT AGM will be held on Friday 4th September 2020 at 2:00pm. This will be an online event and further information will be available from the ABTT website.

ABTT launch UK Theatre & Live Events Apprenticeship Network

Founded by ABTT Young Associate Representative and past apprentice Tamykha Patterson, the UK Theatre & Live Events Apprenticeship Network will offer all past, current and prospective apprentices a much needed safe space to ask questions and to seek advice. Being an apprentice can sometimes be a lonely role – so this network will connect you with others who have been through the same experiences.

You can join the Apprenticeship Network via LinkedIn or further information is available on the ABTT website.

Your knowledge needed for PhD project about ABTT!

PhD research student, Paul Roberts is undertaking a project that explores the role of the ABTT in the professionalisation of technical practice across post war, civic, and subsidised theatre.

Paul is looking for members of the ABTT to help this research by responding to some interview questions and completing a consent form which can both be found on the ABTT News page. He is keen to hear your thoughts on the individuals, networks, and influences involved with the Association that enabled the ABTT to become a pre-eminent organisation in technical practice.

For more information you can contact Paul directly on 07894660321 or paul.roberts@cassd.ac.uk

ABTT Practical Training is back up and running:

Following further relaxation of lockdown, the ABTT has been preparing to run its courses once more around the UK.

ABTT TRAINING: Book now! 7th -11th September, Derby Theatre, Derby ABTT Bronze Award for Theatre Technicians

A five-day course covering Health & Safety, Manual Handling, Electrical Fundamentals, Knots & Splicing, Safe Use of Temporary Access Equipment and Fundamentals of Flying. Visit the website or contact the office for more information.

14th – 18th September Everyman Theatre, Cheltenham

ABTT Silver Award for Theatre Electricians

A five day course giving candidates more in-depth knowledge and understanding of best practice in theatre electrics. It allows candidates to specialise further and validate experience in a specific area whilst progressing on from the Bronze Award. Visit the ABTT website or contact the office for more information.

Online Course AutoCAD Online Training for Theatre Technicians

If you are on the technical drawing side of set or theatre design, this course is for you – it is specifically tailored to the needs of users in a theatrical environment. It consists of six parts and is structured so you can create simple drawings after Part 1. The course provides you with a foundation of skills, allowing you to use the program straight away and build your knowledge.

PAST ABTT EVENTS AVAILABLE FOR VIEWING

For those unable to attend our June or July Seminars, recordings are now available on the ABTT Website or via the ABTT YouTube Channel. Seminar Topics have included:

- Working Safe & Healthy Post COVID-19
- Sustainability
- Mental Health in Current Times
- Technical Training in the New World
- Hair, Make-up, and Costume in the Performing Arts
- 'CAD for Performance' & Vectorworks: '2D Plans from 3D Models'
- "ALD" spotlight on better conditions & the future of lighting
- Theatre then and now (Stephen Joseph Association)
- Challenging the Status Quo in the Sound Industry
- Diversity in the Arts: Rebuilding an Industry that works for all
- Creating Theatre in a COVID-19 landscape



Safety Matters

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

Tel: 020 7242 9200
Email: office@abtt.org.uk Autumn 2020

A THEATRE TECHNICIAN'S GUIDE TO 'UNLOCKING'

Many Theatres, Community Centres, Village & School Halls have mostly been lying idle for several months ... If equipment has not been used for an extended period of time due to the coronavirus (COVID-19) outbreak be warned: do not rush in and start moving equipment. Ease into your operation gently as some equipment may require extra force on start-up and you might inadvertently damage some parts.

Venues preparing to reopen must be risk-controlled and put health and safety first – to avoid becoming “places of transmission” of the coronavirus. Social distancing is fundamentally a public health measure introduced by Government to reduce the spread of infection. These are challenging and uncertain times and we recognise the serious personal and professional impacts for artists, practitioners and technicians during this period.

Consider the following:

- If your building has been in lockdown, rooms will require ventilating and a thorough cleaning and some areas decontaminating, especially common handling points such as door furniture and toilets, lifts etc. Some areas will need deep cleaning using anti-bacterial wipes.
- Toilets: Check each cistern and run a flush through several times.
- Legionella (Legionnaire's disease) are naturally occurring, common bacteria, which is found in water systems and requires important attention. Theatre installation generally presents a low risk however, it can present a greater risk if a number of factors are in place, which allow for rapid proliferation of the bacteria and these include; areas of stagnant water, presence of rust, sludge, scale or algae which are nutrients for the bacteria – water temperatures of between 20°C and 45°C. The formation and dispersal of fine water droplets or spray, such as shower heads and taps. In theatres where the shower or water system have been in lockdown, keep shower heads and taps clean and free from scale and run showers and taps for several minutes in dressing rooms.
- The HSE warns that there are safety issues from contamination of fluids and/or gases generated that can cause unexpected behaviour of the pressure elements of machinery leading to unintended outcomes, such as: water ingress – air ingress – due to seal degradation on hydraulic cylinders, etc permitting air to be drawn leading to creep or unintended movement of mechanical parts...

...Some control measures:

- Disinfect the systems with chlorine backed up with water sampling.
- Plant inspection...
- Carefully check valve operation.
- Run passenger lifts and check doors at each level and that doors open and close correctly.
- Mark out the floor to restrict the numbers carried.
- FOH Lifts might need policing and restricted to older patrons.
- Fire wardens should check that each fire door operates correctly and that its exit is free from any obstructions and is clear to fresh air.
- Carpets that have not been regularly cleaned will have collected dust and be harbouring some bacteria. Industrial cleaning should be considered.

Flying System

Be aware of pulleys sticking and bars 'bounce' / 'jumping'? – run each bar slowly through its entire run. Consider leaving bars at stage level for 24 hours if for no other reason to 'hang out'. Check all grid pulleys are running smoothly.

- Make sure you are using appropriate PPE, gloves, eyes and breathing mask.
- If you're a hemp house, or use hemp, these could be 'hung out', drop in and leave for 24 hours. For long closed periods consider lowering the hemp to its full extension until your lockdown is over.
- A good Hoover will be useful to pick up dust!

If your flying equipment is not in use and has a regular inspection system in place, then you don't need to carry out statutory inspection until the next 'used' inspection period. Testing and thorough examination of rigging equipment at this time as identified by the LOLER Regulations #9 (316).

A suitable visual inspection before use (upon return) should identify serious issues such as corrosion or the like. The same is true under PUWER!

Orchestra pits, elevators, stage traps etc:

- Ensure a full visual examination before attempting any mechanical movement.
- Grease or oil points must be checked for lubrication.
- Timber may have warped or hinges stiffened.
- Apparatus may have moved and therefore obstructing movement.

Ladders:

Maintain separation – wash your hands after use.



Dressing rooms:

Ensure all water systems are cleaned and flushed through for Legionella.

- Fully sanitise the room and Hoover ventilation grills.
- Operate the ventilation before room cleaning as dust and debris could be uncovered.
- Separate by marking each mirror position with suitable distance from each other.
- Clean all lights and shelves
- Consider a one-way system (marked on the floor) around the corridors.

Wardrobe and make up department will also need to adapt to social distancing.

Other considerations:

- Everyone to wash their hands when entering the building as well as after using the bathroom or after rehearsals.
- Personnel's cell phones and computers are cleaned with anti-bacterial wipes before entering the building.

- Any 'high touch' items such as books and magazines, advertising material etc. should be removed.
- For staff to be safe, ensure you have enough PPE to be effective and provide protection to the worker.
- Think about staff commuting to and from work.

All theatre FOH staff and ushers should wear gloves and masks. Vinyl gloves should be disposed of after every performance. In some public facing situations, theatre staff may consider there is a risk to themselves. There should therefore be available a fluid repellent mask for that individual to use.

Public facing staff should be provided with long sleeved uniforms. These should be regularly washed.

Finally, don't forget furloughed staff while not working can undertake formal training without any financial penalty.

REASONABLY PRACTICABLE MEASURES

A London-based relocation and refurbishment company has been fined after a worker was seriously injured when he fell from height.

Luton Crown Court heard that on 5 September 2016, an engineer was testing a sprinkler system for leaks at a site in Hemel Hempstead. He climbed onto an internal roof and was inspecting the leak from an extension ladder. The ladder slipped away from him and he fell almost three metres into the gap between the internal roof and the external wall. The worker suffered severe blood loss, amounting to around half of his bloodstream. He required a blood transfusion and needed 14 stitches to his head. He also sustained a fractured vertebrae and suffered soft tissue damage.

An investigation by the Health and Safety Executive (HSE) found that reasonably practicable measures had not been taken to prevent a fall from the internal roof for both the engineer and other contractors working on the roof. The investigation found that the principal contractor had failed to discharge its duty to ensure those not in their employment were not exposed to risks, in particular that of falling from height.

The Company was found guilty after a five-week trial of breaching Section 3 (1) of the Health and Safety at Work etc. Act 1974. The company was fined £1.1 million and ordered to pay costs of £68,116.18.

After the sentencing, the HSE inspector commented: "This case highlights the importance of taking reasonably practicable measures when planning and managing the risks regarding work at height within the construction industry.

"Falls from height remain one of the most common causes of work-related fatalities and injuries in this country and the risks and control measures associated with working at height are well known.

"The engineer's injuries were life changing and he could have easily been killed. This serious incident and devastation could have been avoided if basic safety measures had been put in place."

SCHOOLS' TECHNOLOGY WORKSHOP

Following an incident where a pupil using a band saw sustained a severe injury to his middle and index finger on his right hand, Edinburgh Sheriff Court heard that, between 1 September 2015 and 2 November 2017, in the Construction Design and Technology Workshop at a school, pupils made wooden boxes using a band saw which is classed as a dangerous machine

An investigation by the Health and Safety Executive (HSE) found that the School failed to make a suitable and sufficient

assessment of the risks arising out of or in connection with use of the band saw and failed to adequately supervise pupils while they were carrying out tasks using the band saw. The pupil was making a free hand cut on the band saw without adequate workpiece support and was not adequately supervised.

The Edinburgh school pleaded guilty to breaching Sections 3(1) of the Health and Safety at Work Act and was fined £3,350. After the hearing, HSE inspector, commented that "A band saw is considered a dangerous machine when used by adults, let alone children. This significant and very serious injury could have been prevented had the risk been identified and properly managed. All schools should take steps to ensure the safety of their pupils and HSE will not hesitate to take appropriate enforcement action against those that fall below the required standards."

HSE AND COVID-19 ADVICE

The HSE have recently issued guidance for employers in taking action during these extraordinary times. Although Social Distancing signs are not yet recognised as a standard requirement in the same way as a fire extinguisher sign or fire exit sign, employers have a responsibility to their workforce and individuals on their premises.

"Being proactive and having a social distancing and hygiene policy and procedure in place along with appropriate signage and other measures means you keep your teams safe and reduce the risks".

It also includes information on:

- How to maintain social distancing
- Advice on common areas, workstations, movement around buildings and more
- Air conditioning and ventilation
- The latest guidance on how to reduce the risk of spreading coronavirus
- PPE, fit testing and RPE
- Advice on PPE in health and social care and non-healthcare work

New From ETP

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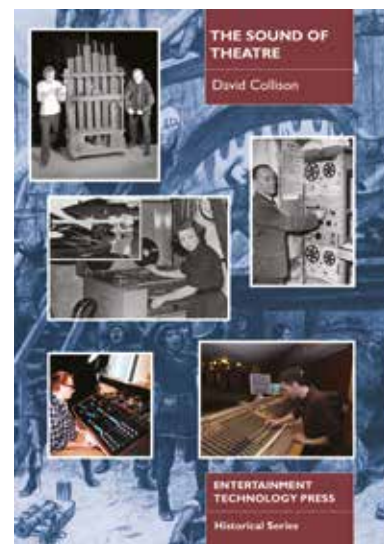
by **David Collison**

402pp £24.95 ISBN: 9781904031956

David Collison traces the history of theatre sound from Ancient Greece to the 20th century. Medieval sound effects are described, along with sound in Shakespeare's plays, and mechanical effects in the 18th and 19th centuries, including wind machines, thunder runs and battle effects. The sound for the famous 1925 play "The Ghost Train" is also explained.

A chronology of key inventions follows developments from cylinder and disc recording, tape machines and cassette recorders, through to audio systems in the digital age. Sound design for Broadway and West End musicals is extensively covered with anecdotes and personal recollections from many of the pioneers, including the author's 30 years as a leading sound designer.

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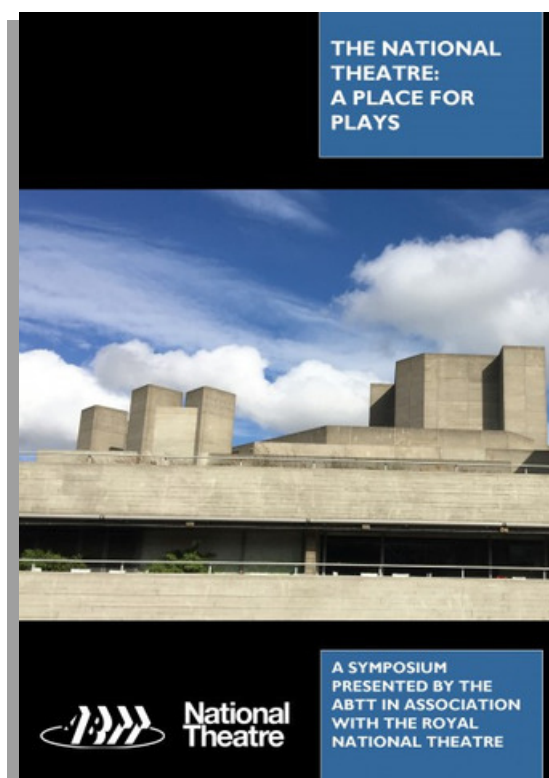
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About the Book:

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.





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
Bedaes 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
Cheshire College (South & West)	Ellesmere Port
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
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The Town Hall	Hamilton
The Winter Gardens	Margate
The Yard Theatre Limited	London
Theatr Genedlaethol Cymru	Carmarthen
Theatr Hafren	Newtown
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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
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