

Sightline

Journal of Theatre Technology and Design

Spring 2021

David Adams – a life in theatre
Ten Top Tips for outdoor working from Wildworks
Modern Theatres: An interview with David Staples
Creation Theatre – a digital transformation
All the virtual world's a stage





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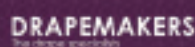
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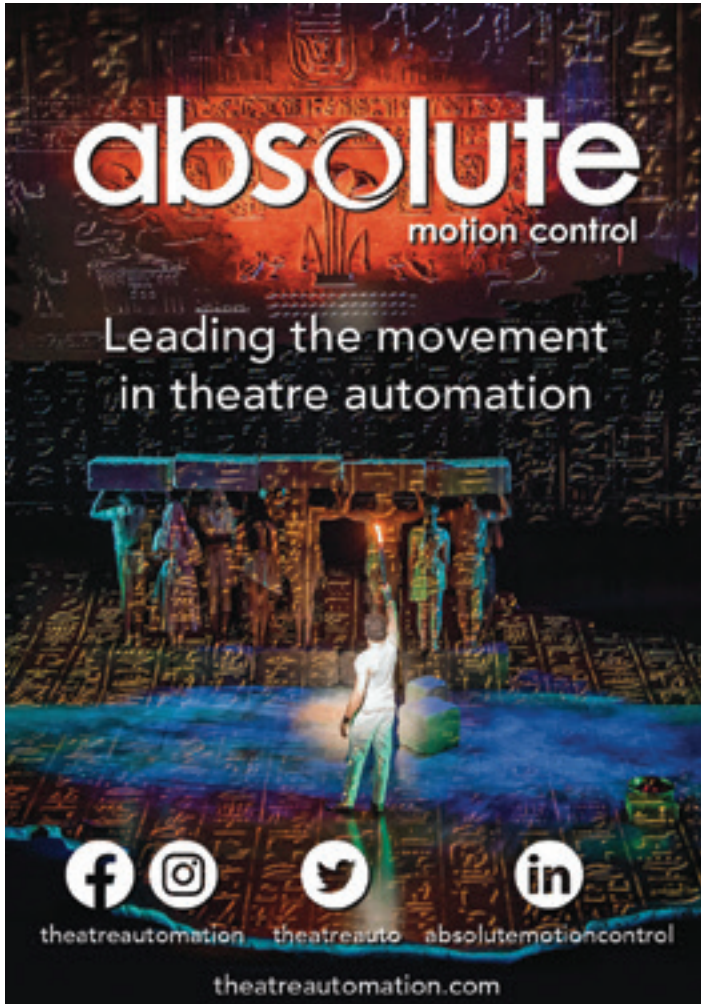
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Editorial

At this point a year ago I was pulling together content for the Spring 2020 edition of *Sightline*. By the time it had been published and circulated, the world had changed, and all theatres had closed. A very long year later, it does now seem that there's a way ahead, which could lead to the re-opening of theatres in England over the spring and summer. However, the "roadmap" ahead is hedged with provisos, and – after the brief re-opening in the autumn – there is understandable caution. Quite clearly conditions in the sector will remain incredibly challenging for quite some time.

And yet, because we are a creative and agile industry, there are continuing examples of innovation where companies and individuals find new ways forward, and I'm delighted to be able to highlight some of these in this edition. Creation Theatre – who have many years of experience of site specific theatre mainly in and around Oxford – pivoted with remarkable speed to deliver their work digitally via zoom. Researchers from the University of Exeter have delivered a detailed report and digital toolkit based on their achievements over the last year, and we are including extracts from this which may well be of use to anyone else wanting to go down this route. Another digital pioneer is White Light whose Smart Studio is breaking new ground in the area of extended reality (xR). This technology started as a way of revolutionising sports broadcasts (through blending the physical and virtual worlds) and now has much to offer the theatre world, as Alicia Earls explains.

Last summer, Wildworks – a company who specialise in landscape theatre – put together a series of Top Ten Tips on Twitter – to share their expertise with many who were venturing into that way of working for the first time. They have generously allowed us to re-issue those tips, and have also shared more of their knowledge in an interview. I would also urge anyone with the time to spare to seek out the original short films on twitter, however! As they acknowledge, outdoor work can have health and safety challenge, and Alan

Lynagh in the latest of his columns *An Inspector Calls*, provides some detailed advice, based on some of the cases he has been dealing with recently.

This year marks the 60th anniversary of the foundation of ABTT, and we are looking back at its history in two articles. Firstly, and very sadly, through celebrating the life of David Adams, who became involved at the very beginning, and has played a major role throughout the entire period. As Editor of the Publications Committee, *Technical Standards for Places of Public Entertainment* (The Yellow Book) was probably his greatest achievement, but he will also be remembered for much else, as his many friends and colleagues remember. Particular thanks to Roger Fox for his dogged research on this piece, tracking down evidence behind many stories!

We also look back to the 1961 Conference on Adaptable Theatres the first international conference in Britain dedicated to the subject of modern theatre technology, design, and innovation. As Paul Roberts explains, this had all sorts of implications for the theatre industry. Paul's PhD is on the role of the ABTT in the development of post-war British technical theatre, and he makes a very convincing case for the pivotal role of this particular conference.

Another notable date is April 2021 – when *Modern Theatres*, edited by David Staples, and published by Routledge in association with ABTT, is finally published! We have been running extracts from this major work since 2016, but there is much more to discover within the book, which reviews performance buildings built since 1950. To mark its publication, we feature an interview David Staples who explains where the motivation for the book came from, and how it ties in with his exceptionally long career as a consultant.

As always, please do get in touch if you want to comment on anything featured, or if you have any ideas for future articles.

Rebecca Morland
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Creation Theatre

– a Digital Transformation

Creation Theatre has a reputation for performing classic texts in extraordinary locations, especially outdoors. In March 2020, in response to Covid-19, they quickly took their productions online – broadcasting live via Zoom. They have refined and developed that way of working since then, and in November 2020 were awarded Innovate UK funding in to further develop radical and innovative digital projects.

Their projects have involved actors broadcasting live from their homes, with the help of virtual backgrounds, props and costumes. Their theatre is live and interactive, and is enjoyed by audiences from across the country, and, increasingly, the world. Productions produced since the start of the pandemic started with *The Tempest* and have since included *The Time Machine*, *Alice: A Virtual Theme Park* and *The Wonderful Wizard of Oz*.



Annabelle Terry in *The Wonderful Wizard of Oz*

Their innovations have resulted in a **Case Study and Digital Toolkit**, researched by Pascale Aebischer and Rachael Nicholas, from the University of Exeter, and funded by AHRC. We are very grateful for them for permission to summarise excerpts from that piece of work for the benefit of Sightline readers. These particular extracts concentrate on the practical and technical implications of this way of working but the full study which can be found on the Creation Theatre website <https://www.creationtheatre.co.uk/about/innovation/> covers all aspects of the work, ranging from audience research to implications for their business model.

Creation/Big Telly's co-production of *The Tempest* in April/May 2020 had previously been mounted outdoors as a site-specific, immersive 'game theatre' production in 2019. The show was rapidly adapted for Zoom, reuniting the director and the bulk of the cast of the 2019

production. This production, like subsequent productions, was live throughout save for a single broadcast in the context of the research project. All Creation's productions include interactive elements with, for example, *Alice: A Virtual Theme Park* including audiences designing their own hedgehog avatar on their mobile phones and using their drawing to play a game. Their Christmas show *The Wonderful Wizard of Oz* ran for two live performances a day and included within it a very a very special cameo appearance from iconic drag artist Le Gateau Chocolat as The Good Witch. With their development of a new performance platform in 2020-21, Creation Theatre are creating a bespoke 'digital theatre' venue that will enable them to continue with such experimentation with the medium.

One of the more interesting implications of the shift to digital has been the shift in responsibilities of various members of the design and production team, especially the Production Manager and Stage Manager.

The Production Manager role expanded and shifted significantly, becoming much more technical. Giles Stoakley, Production Manager, describes his work on the Zoom production as 'just monitoring things' and as being the one in rehearsals to ensure the financial and technical feasibility of ideas. This does not however, lead to a reduction in the production manager's workload, as 'the other stuff becomes much more difficult, just because you can't access people, because it's incredibly difficult to teach an actor who isn't technological and has no basis of knowledge of this, to use a relatively complicated software programme, and to not only teach it to them, but to teach it to them remotely.'

His remit also extended to organising the logistics of shipping costumes, props, and elements of set design to performers' homes and organise their return at the end of the run, and to thinking through the impact of rehearsals and performances on performers' lives and the people with whom they shared their homes. New strategies had to be devised for remote risk assessments of performers' home studio sets, and new challenges arose to square the production's budget with performers' needs for loans of tech equipment.

The Stage Manager's role underwent the most significant shift. All physical aspects of the role were dropped and made way for an entirely technical role which combined 'elements of television producer and Deputy Stage Manager'. The change brought with it opportunities to work with a new set of people



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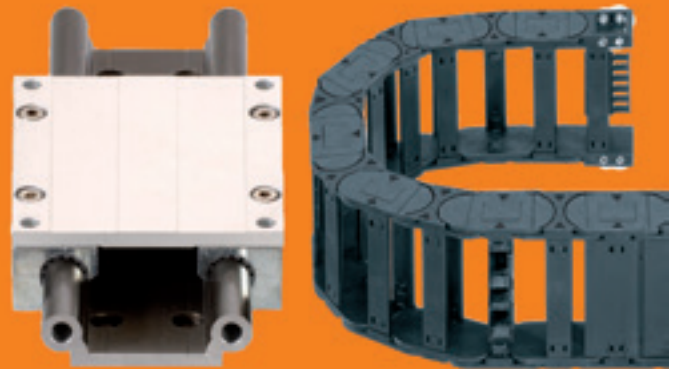
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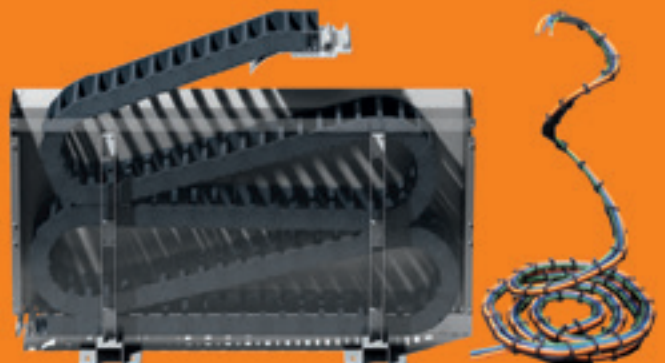
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Rhodri Lewis, in *The Time Machine*

and 'huge opportunities to upskill as a result of working online'. The process of technical upskilling involved taking online tutorials on how to use the Zoom platform, a lot of 'playing around' with the software, as well as experiments in and between rehearsals to work out the platform's compatibility with other types of software that could amplify Zoom's affordances, work around its constraints, and adapt it for performance. With the shift in the Stage Manager's role came a tongue-in-cheek re-naming of Sinéad Owens' credit for the Zoom Tempest, which identified her as 'Zoom Wizard'.

Much of the work of the Stage Manager on Zoom involves live vision mixing, using the platform's 'spotlighting' function to select which screen to show to the audience. When all performers are designated 'co-hosts' for the Zoom call, they are automatically presented at the top of the list of call participants, making it easier for the Stage Manager to find and spotlight them on cue. A function that was available in April/May 2020 but which has since been disabled by the platform was the ability of the Zoom host to mute and unmute the audience; by July 2020, the ability to unmute had been disabled as a safeguarding measure to prevent eavesdropping on participants without their consent. For *The Tempest*'s moments of audience interaction that involved the collective creation of sound effects by all participants (e.g. the rain of the opening tempest, or the cry of the birds pursuing the shipwrecked courtiers), the Stage Manager was responsible for unmuting and muting audience microphones and spotlighting and thus integrating in the production members of the audience who were participating with particular enthusiasm.

The Stage Manager was also responsible for operating the sound effects for the show. Because Zoom is designed as a videoconferencing platform, it privileges the sound of the human voice over other sounds, which presents challenges for the use of music and other sound effects. The platform is also designed to automatically spotlight whoever is speaking, so that unmuted performers could, by making a noise before starting to speak their next line, have their screen spotlighted without the Stage Manager's input, making it possible for the Stage Manager to work on other cues in the background. The Stage Manager furthermore was in charge of spotlighting whoever was not speaking but was either listening to the speaker and responding in interesting way or doing something else to which the audience needed to pay attention.

The additional requirements regarding sound and vision mixing were effected by using pieces of software that were compatible with Zoom. Vision mixing was done by using ManyCam, which Zoom recognises as one of the camera options and which allows the Stage Manager and performers to switch between the different cameras of individual performers (where applicable). For sound, the company settled on QLab, which was operated as QLab Remote via the Stage Manager's smartphone. This was connected to Zoom on her laptop through the use of a shared IP address, allowing the Stage Manager to spotlight a performer on the Zoom screen while also cueing sound via QLab Remote. For sound editing, Owens used Adobe Audition, which allowed her to feed in sound effects even during rehearsals.

Throughout, the Stage Manager maintained her normal role of people management within the creative team, looking after the performers' welfare and acting as a go-between between the actors and the company. This was more challenging without face-to-face conversations and opportunities, in the margins of rehearsals, to catch up with individual performers.

What has been learnt about the process as a whole can be summarised as follows:

Digital Theatre Transformation

- Digital transformation of creative work was facilitated by Creation Theatre's prior experience of site-specific immersive modes of working and the adaptability of the creative team
- Digital theatre is related to live film and live gaming, with a palette of genres it can draw on and combine, involving various levels of audience participation

- Digital theatre is much faster to produce than physical theatre and requires fewer core members of backstage creative staff

Changes to Roles and Skills sets

- The roles that have been most affected by the digital transformation are those of the production manager and stage manager, with lesser but still significant changes for the director, designer and the performers.
- All members of the creative team have developed new digital skills sets and required training

Equipment Requirements

- All members of the creative team have needed additional computing hardware, software and applications, and performers have needed additional studio equipment (lights, green screen)

Performing on Zoom

- Performers had to adapt their performance style to Zoom and learn to work with cameras, microphones, and do virtual blocking to establish eyelines and exchanges of props.
- Performing for Zoom puts a high cognitive burden on performers who have to operate their own technical cues and be ready to improvise to cover up connectivity glitches

Designing for Zoom

- For backgrounds: using chroma key and green screens for virtual backgrounds which may be static or moving, establishing spatial depth through virtual background design/props/positioning within the frame, guiding performers through the physical transformation of their home studios using accessories

Costumes and props that are complementary to the green screens

- Lighting individual studio sets, which involves separate diffuse lighting of green screens and diagonal lighting on actors
- Sound design, including use of underscoring music, microphones, and volume control

Directing for Zoom

- Recognising the hybridity and specific affordances of the platform as a performance medium
- Establishing a dramaturgy that affects running time and script editing, audience participation, pre-recorded video content, storytelling, and creating a strong sense of liveness and community, with a focus on the curtain call



Chloe Lemonius, in The Wonderful Wizard of Oz

Challenges of the Zoom platform

- Its design as a videoconferencing platform
- Tiny lags that make synchronisation of sound and movement impossible in live performance
- Compatibility with software and hardware
- Connectivity

Opportunities from performing on Zoom

- Reduction in overheads (no venue, rehearsal room, theatre lighting, physical set design, travel, accommodation, physical adaptation for accessibility)
- Inclusivity in terms of audiences – accessible for neurodiverse, people with disabilities, but also no geographical limits to where audiences can originate
- Environmental gains including 99% reduction in carbon cost from audiences not travelling to a venue

Adaptable Theatres

The third biennial congress of the Association internationale des techniciens de theatre

Paul Roberts

When it opened in June 1961, the Association Internationale des techniciens de Theatre (AITT) 'Adaptable Theatres' Colloquium, London, was the first international conference in Britain dedicated to the subject of modern theatre technology, design, and innovation. As host, the colloquium heralded the emergence of the Association of British Theatre Technicians (ABTT) on both a national and international stage, providing a forum for architects, designers, and technicians to debate the technical requirements of modern theatre. Described as an opportunity to counter the lack of informed representation from the UK, which was so noticeable to those in attendance of the first AITT conference in Paris (1958), and the second in Berlin (1960), the 1961 colloquium was designed to highlight British technical expertise.

Previous colloquia had given rise to a transnational consciousness within British technical theatre, particularly manifest through the importing of continental techniques, styles and on-stage innovations, each of which influenced a growing specialisation of backstage labour. A desire amongst British experts grew for international recognition, to provide validation of advances made in post-war technical theatre that had emerged as a consequence of new technology, an increase in skilled professionals, and a growing collective knowledge of stage techniques. However, technical theatre lacked representation or a means of representing itself, with the absence of a professional body denying British specialists the opportunity to present ideas on design, practice and modernisation to contemporaries. This sense of collective failure was the backdrop to the formation of the ABTT, which, as a consequence, went on to shift individual action to a collective, yet disjointed, force majeure.

The subject chosen for the conference was the planning of adaptable theatres, with

particular reference to civic projects and theatres seating up to 1,000 spectators. The recently formed ABTT chose the conference topic – relating to the civic orientation of the association – sponsored the congress and published a report of the proceedings. The report, edited by Stephen Joseph, provided a list of key speakers, a review of the papers delivered, and a summary of the discussions that followed. Delegates came from all over the world, and although the subject of the congress had a special relevance to those from the UK, the conference provided 'a rare opportunity and an invaluable experience' for those in attendance to discuss the condition of technical theatre, particularly in a British context (Stephen Joseph: Adaptable Theatres p.3).

Themes included the construction of new auditoria, technical requirements for stage, the rise of specialisms within backstage labour, the failings of current architecture, and the role of health, safety and regulations in modern theatre. With twenty-three speakers, fifteen of whom being ABTT members, Adaptable Theatres opened with an introductory address from Peter Hall, at the time Artistic Director and creator of the Royal Shakespeare Company, who quickly established the need for such an organisation to bring a modernisation to technical thinking and machinery.

I would like to welcome delegates from overseas. We in the English theatre often feel rather left out of things: I know that the delegates will bring us some much-needed stimulation.

Our new English Association of theatre technicians is mainly aimed at breaking down our isolation. Our technical life in the theatre is very disorganised, and it will clearly be the duty of the ABTT to pull us together [...]. The ABTT is the first sign of a new cohesion (Stephen Joseph: Adaptable Theatres p.8).

Hall described a British technical sector that was chaotic, lacking in structure and governance, for which he saw the formation of the ABTT as an opportunity to develop guidance, collaboration and improved standards. Importantly, he asserted a national need for a new kind of theatre – one that was adaptable at a technical level thus offering greater opportunities for creative experimentation. Hall believed the ABTT should be concerned with a new architectural style, one which removed divisions between auditorium and stage and improved both backstage facilities and the front of house experience. For the audience, now well-accustomed to the technical marvels



of Technicolor cinema, theatre's simple effects were no-longer enough, and needed an alternate offer. Hall placed an emphasis on newly developing technical specialisms such as stage lighting, arguing that storms and lightning must be realistic on stage, and that is why 'the age of the technical expert is here' (Stephen Joseph: *Adaptable Theatres* p.8). In concluding his talk, Hall advocated for the greater awareness of an emerging division of specialist labour in the production of theatre but placed clearly within a wider matrix of hierarchical production, at the zenith of which he saw both Director and Actor (thus affirming a strict dichotomy between technical and creative theatre):

We are at war in the theatre. The writer writes his play, and the director promptly cuts it. The scene designer is horrified at what he is expected to design; the lighting designer doesn't like the set he has to light. The poor director is in the midst of it all. I can understand why Directors would dearly love to do everything – write, design, light, act. It is perhaps fortunate that this is not possible. But in this age of the necessary expert, we must all work together towards the same end. I believe our purpose is to make the actor function in the best possible way, so that he can get the full meaning of the play over to the audience. That is what the ABTT should be for (Stephen Joseph: *Adaptable Theatres* p.8).

Hall's use of the word 'expert' is important, as is the idea of a group of experts with different skills and specialisms 'working together' to produce the 'same end'. Implicit in Hall's statement and the development of the ABTT is the emerging sense - not just of the fact of new divisions in labour in theatrical production – but that of a hierarchisation of work, wedded to the assumption that technical theatre is not creative, but supports the creative process – a proletarianisation of technical theatre differentiating it from the creative labour of the actor and director.

Richard Pilbrow, leading protagonist in the formation of the ABTT and eventual colleague of Hall at the National Theatre, spoke on the possibilities of stage lighting, not just as a specialist amongst backstage roles, but positioned 'ambivalently between artist and engineer, yet subservient to the play's author' (Stephen Joseph: *Adaptable Theatres* p.51). Sean Kenny, provocative in his paper on Stage Design, volunteered, 'too often today [theatre] is just a box of tricks filled with directors, actors, producers, designers, and stage-hands, which stand between the man who writes

the story and the man who listens' (Stephen Joseph: *Adaptable Theatres* p.49). Frederick Bentham, pioneer of modern entertainment lighting, argued the need to redesign stages to incorporate new technology and avoid scenarios of 'lighting versus architecture' (Stephen Joseph: *Adaptable Theatres* p.55). Richard Southern, who the ITI had initially looked to for support in hosting an event, as lecturer of theatre architecture at the University of Bristol, provided an outline on how new design could shape theatres of the future. Architect, Peter Moro, discussed new civic builds in Britain and his project in Nottingham, The Playhouse. The roll call of speakers at the conference was impressive. Of the many papers given, twenty-three in total, all were firmly based in acting upon and influencing, advanced forms of theatre design, labour, and stage technology.

This range of topics provides evidence suggestive of the compartmentalising of duties, roles and responsibilities in the period of the ABTT's emergence, with a division in labour forming across technical theatre, and, later, within the association. Greater London Council theatre safety specialist, Eric Jordan, aware of his intervention into the conference with statutory frameworks and punitive authority, opened his paper on fire regulations with diffidence and trepidation saying, 'up until



Peter Hall—"If cinemas were run like most theatres, they would go out of business."



A group of members of the ABTT—Left to Right: Dorothea Alexander, Gordon Hewlett, Francis Reid and Dr. Richard Southern.

now I have been one of you, now I appear in my true colours. I represent that dreadful body of authority whose sole objective appears to be to frustrate your beautiful ideas' (Stephen Joseph: *Adaptable Theatres* p.61). Jordan, embodying state power, is an example of the growing dialogue that quickly formed between the ABTT and more legislative bodies – providing a non-statutory but nonetheless important voice (as an association of experts) within the overall governance of theatre from the 1960's onwards. The conference themes are representative of the need from which the ABTT formed, developing as an advisory body to the sector, which proved essential to the professionalisation of technical theatre in the emergence of a codification of specialisms, areas of expertise, and before long, the training and qualifications required in order to practice professionally. Following the success of *Adaptable Theatres*, the ABTT quickly grew and established itself as one of British theatre's preeminent consultative organisations; advising on the professionalisation of technical theatre in the UK; supporting the expansion of training through the introduction of specialist programmes (light, stage and sound); advising on civic and subsidised theatre planning; supporting the development of administration and standardisation of backstage labour, practice and design.

It is during this period, then, the 1960s, as the British theatre of the post-war years is transformed into a civic institution, that we see a more formal splintering of labour, a desire for international and governmental recognition, and which consolidated, with the formation of united, but not union representation, through organisations such as the ABTT. The conference report was distributed to over forty regional council and civic institutions across

the UK – during a period of increased public subsidy for the arts – supporting a paradigm shift in theatre building and stage design. *Adaptable Theatres* provided the platform for a technical narrative to progress beyond its previous individual sequestration: now it was a collective voice, louder, and with a common purpose. During the next three decades more than sixty major new projects were constructed across Britain with ABTT support, many through public subsidies, representing a new kind of theatre based on civic pride, urbanity, and community.

The ABTT promptly became an advisory body, providing expertise, knowledge and support to an evolving entertainment industry. In 1975, the ABTT formalised its mission to focus on the advancement of public education in the technical subjects associated with theatre and theatrical presentation, and the promotion for the benefit of the public, of excellence in theatre design and technical presentation of theatrical work. Although not a governing authority, it has no statutory power, the ABTT has become the principal locus for the development of a technical profession, arising from a chaotic post-war industry through standardisation and specialisation. Today, an association made up of over 2043 members, the ABTT continues to advise across all areas of backstage labour, working alongside a range of institutions to help regulate, and thus support governance to, technical standards in theatre and live performance. Just as was first proclaimed, on the stage of the National Film Theatre some sixty years earlier, this remains the concern of the ABTT. Sixty years on, the *Adaptable Theatres* conference should be celebrated far beyond the technical realm, recognised for its influence and importance upon a radically changing Britain, celebrated for the transformative role it played in theatre design, culture, and practice.

References taken from *Adaptable Theatres: a report of the proceedings at the third biennial congress of the Association internationale des techniciens de theatre*. Joseph, Stephen (ed) (Scarborough: Pindar, 1962).

Paul Roberts
Staging Professionalism:
The role of the ABTT in the development of post-war British technical theatre
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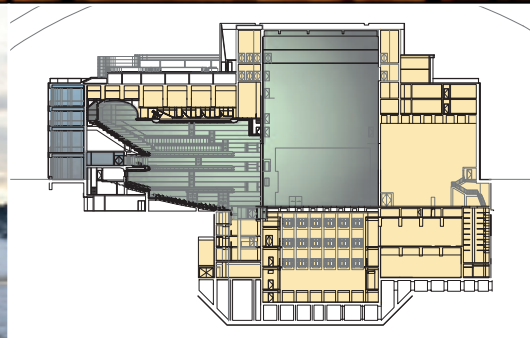
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David Adams – a life in theatre

Photo courtesy of
Mark White



David Adams' life in theatre was intertwined with the ABTT – he played a key role in its early years, was behind its most notable publication, and remained a stalwart of its committees and events throughout. He was a very early member of the ABTT, joining on 23 March 1962, and was made a Fellow in 2001 in recognition of his services to the Association. His contributions reduced in recent years due to declining health. He died on 12 December 2020. At his funeral service in January a host of friends and colleagues paid tribute to his remarkable career. This article draws very heavily on their contributions and on subsequent contributions and research.

David Adams was born on 27 Feb 1938 to Walter Leonard Adams and Elsie Henrietta Adams who lived in Surbiton.

He attended Surbiton County Grammar School, where he was not only academically gifted, but also much involved in theatre. He was a lighting designer for school productions, a drama critic and assistant editor of the school magazine. He built a new lighting switchboard and is mentioned in the school magazine as knocking a hole in the library wall, perhaps to provide a lighting control position.

David won an open scholarship to Cambridge and went up to Kings College in October 1957 initially to read History. Finding that history and him were incompatible, David switched to read Architecture and Fine Art, completing his B.A. in 1962. His art studies took him to Italy which kindled a love of the country which he re-visited many times in later years. David threw himself

into Cambridge life. In 1958 he exercised a scholars right to play marbles on the steps of the Senate House, something recorded in the Varsity newspaper. Both players used pseudonyms, probably to avoid identification by the Proctors (university police).

Theatre lighting played an important part in David's university life where he was a member of the Amateur Dramatic Club, home of The Footlights. There his path crossed with Peter Angier, a fellow undergraduate and now an ABTT Fellow and theatre consultant. In May 1960 David led a strike threat by ADC technicians in which he was joined by another ABTT name, Martin Moore (ADC scenic director). They were aggrieved that their efforts to make the theatre more efficient were being thwarted. The ADC President said that David was a dissident unsupported agitator.

Peter Angier remembers: *An extra year or two of seniority makes a lot of difference at that age but we were also impressed by David's knowledge of West End theatre practice, his keen, often caustic, wit and determination to achieve professional standards in the amateur student work we did ... David was always able to attract loyalty and respect. His devotion to the theatre and the highest possible standards was never in doubt and he did light some*



notable productions. In particular I remember Blood Wedding and Bartholomew Fayre in the ADC, Oedipus in the Guildhall with Miriam Margolyes and John Shrapnel and As You Like It directed by Trevor Nunn which we took to the Oxford Playhouse.

Peter remembers also that David's commitment to professionalism was demonstrated in the creation of STAGEWORK which he formed with one or two others to provide scenic and lighting design services to anybody who wanted to put on a show. Members had to be given programme credit as 'xxx is a member of Stagework'. The intention was to bridge the gap between amateur enthusiasts and paid professionals.

Stagework was active on shows taken from Cambridge for the Edinburgh Festival and worked on setting up a cabaret bar near the castle in James Court called The Sphinx which quickly evolved into the first home of the Traverse Theatre.

However, Stagework never developed into an organisation which could provide a living, and those of us who wanted to work in the professional theatre had to find our own different ways.

David came down from Cambridge and found work in the West End, including as a dayman electrician working for the RSC at the Aldwych Theatre. David used to say quite proudly that he had been sacked by Peter Hall, something impossible to verify.

He joined Bernard Miles' company at the Mermaid Theatre around 1963 and by 1965 his name appears in the Mermaid programmes as Chief Electrician / Lighting designer / Chief Engineer.

In 1971 David moved to the Greenwich Theatre initially as the Production Manager and then as General Manager – he served until 1998, working with artistic directors including Ewan Hooper, Alan Strachan and Matthew Francis. He continued to work as a freelance lighting and set designer in the West End, including Caught in the Act at the Garrick, and Come When You Like at the Shaw Theatre.

It was while he was at Greenwich that he met Fiona MacLean who had joined as the Assistant Administrator in 1973. He commenced a 'usually harmonious' relationship with her in 1975 which lasted 45 years until his death in 2020. However, in his new-found role of General Manager he had to make Fiona redundant in 1976, something for which she never really forgave him.

There were challenges, as Allan MacCarthy,

former Chairman of the Greenwich Board, recalls:

The board in those earliest days was cumbersome. Its issues always, it seemed, were dominated by not having enough money. The former eventually changed, the latter never did! As a producing house the theatre had a wonderful artistic vision.

That was the climate in which David worked as its General Manager.

I came to know David gradually and thought of him as a good friend. I always had great respect for his many skills, all of which were very important, vital even, to the theatre. He had so much valuable experience in so many departments.

And he was a man of ideas.

An example: when lottery awards were new, large sums were being given to the arts for bold and exciting projects. So David developed one and made a bid. We could buy the pub next door, very closely connected anyway, and create a small studio theatre as well as the main house. We could support these with additional income from a restaurant built on the flat roof.

We reached RIBA Stage 3 before the loss of the London Arts Board grant in 1997 scuppered everything.

Greenwich Theatre had a huge crisis after that grant was lost, but with David's help and considerable knowledge, for some weeks bills and so on were very carefully, and legally managed. We kept going. No one sought to close us ...

Eventually the theatre's lease was sold back to Greenwich Council, who subsequently closed the theatre, making all staff, including David, redundant.

David then concentrated essentially on full time but often unpaid work in various pivotal roles at the ABTT, where he was Chairman of the Safety Committee for many years, Company Secretary, and latterly Deputy Company Secretary. He led the move of the ABTT offices three times: into Great Pulteney Street, to The Stage Offices, and to Farringdon Road. On each occasion he took responsibility for design and construction work.

Former Chairman Richard York recalls:

The Association had always squatted in other people's premises and the staff – those memorable stalwarts Ethel Langstreth and Ken Smalley, had been based in the offices of the British Drama League, while meetings, committees and training events took place

Photo courtesy of Roger Fox, September 2019



wherever premises could be borrowed. It was agreed that the Association needed a home of its own and it was David who found Great Pulteney Street – one floor of a former clothing factory just north of the Piccadilly Theatre with enough room for offices, a committee room and a meeting room big enough to house events. David also negotiated the lease, the permissions to alter the building and took a major role in the conversion work, which was carried out and financed by a large cross-section of individual and corporate members. It was a significant triumph and changed the dynamics of the organisation for the better, particularly by enabling the expansion of the training programme. The ending though was not a happy one, since a year or two later the Arts Council published the 'Glory of the Garden', reversing its policy of funding organisations which supported the theatre. It cut off the ABTT's revenue funding and its training grant which made the premises financially unviable. It was David who negotiated with the landlord for consent to sublet the meeting room and found a tenant for it.

Over the years David became an essential

part of the organisational backbone of the Association. If a subsidiary company was needed to manage a commercial activity, then David was your man. If advice was needed from a lawyer then David not only knew the perfect one for the task, but he also had a happy knack of getting the advice either on very reasonable terms or better still, pro bono. If the charitable objectives needed to be adjusted or a contract read through, then David was the one who put his glasses on and stayed up late. Administration is often underestimated but it is an essential support of all activity and David combined his mastery of it with a keen regard for good governance.

David had important input into the launch in 1976 of the Technician of the Year Award and in 1978, The ABTT Trade Show.

Roger Fox recalls:

Together we created The ABTT Technician of the Year Award in 1976. It took place at the Strand Lecture Theatre in Covent Garden with David responsible for the lighting design. At the time he was working with Max Wall who he invited to be the Guest of Honour. Max agreed, but on the night there was a problem. Max only consumed Guinness and we only had wine. Consequently David made quite a lot of trips ferrying pints of the black stuff from a nearby pub. It was a successful debut for an event which continues to this day.

Around the same time the ABTT first looked at the idea of a trade exhibition to showcase the growing number of suppliers in the technical side of the theatre industry. After unsuccessful enquiries to find a commercial organiser, an opportunity arose to use the Donmar Rehearsal Room for just such an exhibition. It was agreed that we would stage the event ourselves and at very short notice in March 1978 David, myself, Richard York, Joe Aveline and others agreed to organise what was imaginatively titled "The ABTT Trade Show". David was responsible for the sourcing and construction of the stands. He had great knowledge of materials and used thick flame retardant cardboard "Triwall" for the job. It proved to be a very successful choice and David went on to use it for the office partitions when the ABTT moved to offices in Great Pulteney Street.

David's principal and lasting legacy in his work for ABTT is the documentation that formed the basis of the ABTT Code of Practice, most particularly *Technical Standards for Places of Entertainment* (The Yellow Book), which he was Editor of from its first edition in 2001 until 2015. He was

also the author/compiler/editor of around 20 ABTT Guidance notes and numerous other advice papers.

Mark White, who worked closely with him on publications, remembers:

I don't know how many thousands of hours David spent on compiling, researching, editing, laying out pages, but it must have been many.

But the Yellow Book was not the only publication that David produced. He was the author/compiler/editor of around 20 ABTT Guidance notes with their distinctive dark blue covers. Not that David did it all by himself, he managed a veritable platoon of seriously knowledgeable people like Ray Carter, Chris Higgs, Michael Anderson, Bob Anderson, Roger Fox, Peter Angier, Rob Weaver, Geoff Weaver, David Spink, Ron Brooks, Mike Timlin, Vaughn Melsom, Frank Wenzel and so many others.

David spent many hours as a due and diligent member of various British Standards Committees and could always be relied upon for plucking obscure pieces of legislation apparently out of thin air. Now these were really obscure rules, none of your pub quiz questions about which year it was that the legislation banning the throwing of dead dogs into the Thames was repealed, ah no, David was in a much higher league than that.

I had the benefit of being mentored by him in the art of editing and compiling technical publications. I thought I was pedantic, but David opened up a whole new world of pedantry to which I could only aspire.

And finally, a few more memories of David:

Laurie Blackmore, former ABTT Treasurer:

Bumping into David – and Fiona – became one of the nice things in life that didn't happen all that often but was lovely when it did. These bumpings could happen anywhere from Charing Cross Road where I live, to, on one occasion in Railway Street – I have no idea what I was doing there but it was close to the mooring – and there was David, who had just popped out for a paper. I was on my bike and was greeted with "I suppose you know this is a one way street and you're going the wrong way" Always concerned with safety. Latterly I somehow managed to go to ABTT trade shows on the same day as David and Fiona and at some time during the visit we would come face to face, go through all the greetings and pleasantries, catch up with events and part having had the pleasure of renewing an old acquaintance.

Roger Fox:

Smoking was the norm at meetings and two of our number, Ethel Langstreth and David, were world leaders in smoke production. David was addicted to menthol cigarettes, which to me they were quite a rarity. Indeed I think that he is the only person who I have known to smoke them.

Later, he decided to cure his addiction, but to those around him his attempts seemed worse than the smoking as he chewed peppermints endlessly. Ultimately his determination succeeded but the profits of Trebor Mints must have plunged when he succeeded.

Richard York, former ABTT Chairman:

David and Fiona have been canal enthusiasts for many years and lived on an historic narrowboat at King's Cross. We also shared this enthusiasm for the canal system and, while Joy and I never boated with them we did meet once on the Grand Union. They, in company with Caroline and Roger Fox, bobbed out of a lock in their two boats on their way north while Joy and I were heading south on ours to Stoke Bruerne.

Many individuals have made significant contributions to the ABTT during its 60-year history, but none has given more than David. It was a privilege to work with him and it is another to remember him.

Many thanks to:

Peter Angier
Laurie Blackmore
Roger Fox
Allan MacCarthy
Mark White
Richard York

Ten Top Tips for outdoor working from Wildworks

These appeared on Twitter last summer, from Wildworks – the Cornish-based Landscape theatre company – as their way of supporting the many theatre companies venturing into outdoor theatre for the first time. Tips were by members of the Wildworks team and took the form of one minute films, beautifully illustrated by images from their extensive back catalogue. Wildworks have kindly agreed that we can reproduce their Top Tips here, but to get their full impact, it is also worth seeking them out on Twitter @WILD_WORKS – starting from 21/07/20. We also interviewed Emma Hogg, Executive Director, and Josh Pharo, Lighting Designer, to find out more about the background to these tips.

There's a brilliant balance in these tips between artistic vision and pragmatism – I'm assuming this is based on your working practice?

The whole process is a mixture of artistic vision, creative ambition and the reality of working in a real, often wild environment. It's important to address both with the same amount of sensitivity and pragmatism – both will inform each other when it comes to problem solving. You have to really listen and respond to a site – it will tell you what it wants to happen and you have to find the gems in amongst the many practicalities. Quite often there is a solution staring you in the face and you just have to keep open to it – even in the most challenging of times. It also really helps to have a strong company ethic that you can all turn to when you need to find a solution.

I assume you have to be very fleet of foot – e.g. responding to changes in the weather on a daily/hourly basis – do you have any systems/ways of working that help with this – e.g. alternate schedules for windy days/wet days?

Absolutely – the event plan is the key to this – the planning starts at the inception of the idea or project, evolving organically as the creative body of the show grows and also as the site materialises and how you want to use the site. Assessing the impact of weather on every element is intrinsic to the show happening as much as possible. That covers audience and viewpoints through to lighting, video and sound equipment, aerial rigging, set pieces and most importantly costume. We have various scenarios for different weathers-artistically the biggest effect is on costume and aerial work, but it even affects lighting plots, smoke and fire effects. Some of the most memorable, dramatic moments we have had in our history have been in adverse rain,

fog and winds – it is always a huge discovery to see how the atmosphere can be entirely heightened by some dramatically timed rain and fog.

We will only cancel a show if it is unsafe to continue and this is very rare. handful of times we have cancelled have mostly been due to high wind whilst working in woodlands and there was a risk of falling branches. We have changed audience routes if underground conditions have become a risk and had a 'show pause' for a thunderstorm. The key thing in each scenario is that the company know what will happen and respond accordingly.

How do you deal with access in your performances – especially for audiences – any top tips?

It's a constant balance and an ever-evolving conversation within the company. It's something we take very seriously and try very hard to marry the conflict between a challenging site and making it accessible to all. We tend to work strongly with our partners and organisations who often have an access plan for their sites already – that we evolve and integrate into the show plot – we make sure that our front of house team are well versed in the access plan and often will dedicate a steward each to our audience members that need specific support. In the last few shows we have integrated BSL performers into our performance schedule, which has been a hugely exciting development for our work. We are constantly looking at access in our future work and highly recommend working with an access consultant and networks to develop how access can help audiences that might not consider a site-specific production is for them. As each project is bespoke to the new site and conditions, the access plan is bespoke as well and we have to find ways to communicate this to an audience each time.

How do you persuade landowners to allow you to use their land?

We are approached by organisations and landowners as well as us approaching them with an idea. A key principle we work to is about respect for their space and land- being very open and transparent about what our needs are as well as tending to their needs as clearly and thoroughly as we can. The nature of our work is it gathers momentum as we develop the show – so it's vital that we keep them in the loop at all times and above all, make them feel involved and excited about the magic that can happen! Our work is based on partnership and the landowner/venue is part of

that partnership. There partnerships take time and energy and we take these very seriously in the creation of the work. The result is a relationship built on trust and understanding.

Planning ahead is particularly challenging at the moment. How long does it usually take you from the moment when you think of a project, to actually delivering it?

For the most part our projects take at least 12 months – ideally 18 months – and often longer. There are many reasons for this, but the top 3 are:

1. The work we do with the project partnership, as mentioned above, takes time to develop.
2. The community in the project location are a key part of that partnership and it also takes time to build and develop. The work is co-created, we arrive to each new place with ears open, ready to listen, making no assumptions about that place or the people that live there. Through this community engagement process we begin to understand who this community is, what are their values and we allow the project narrative to be fed and grow.
3. We like to experience the site at the same time of year the work will take place – a location can look very different at different times of year; sightlines can be different, colours of the landscape change dramatically and activity in and around the space also changes.

And what are you planning to do next?

Like everyone we have had to postpone a lot of our work over the last 12 months. We are hoping to deliver a new show this summer in Cornwall and we're waiting on a funding decision to make this possible so we've got our fingers crossed and it's a case of watch this space!

We created a small show last September on the cliffs in Cornwall called *Meet Me at the Edge*. The project responded to our collective isolation and need for human connection yet also reflected on those in our society who always feel isolated. The show included a binaural soundscape that audiences experienced through headphones. We are using the creative assets captured during the live show and new assets to create a new digital version responding to this latest lockdown and will be sharing this free of charge in April. Anyone interested can sign up to our newsletter, follow us on all the usual social media platforms or subscribe to our YouTube channel www.youtube.com/wildworkstheatre



TIP ONE – WEATHER

NO SUCH THING AS BAD WEATHER, JUST BAD CLOTHING.

– Bill Mitchell

Inclement weather can create incredible atmosphere. Embrace it!

Always design your set and costumes to be waterproof and functional.

Be prepared for every scenario and include it in your event management plans and risk assessments.

We've only cancelled two (and a half) shows in 15 years.

– Emma Hogg

Meet Me at the Edge, 2020
Wildworks/Ian Kingsworth

Choir in the Woods, 100
UnEarth 2018.
Wildworks/Steve Tanner



TIP TWO – LANDSCAPE

Don't fight with the landscape, it's bigger than you. What already exists there is a gift not a problem.

– Mydd Pharo

Look for the assets in the landscape, what do you get for free?

Look for features you can use.

Own the landscape and the things that happen in it.

Don't let surprises break the 'world' you have made ... incorporate them.

– Sue Hill

TIP THREE – WORDS

Words can be lost in the landscape, use them sparingly and make every single one matter.

Naturalistic dialogue behaves differently outside and can be lost on the breeze, there are so many distractions.

Be succinct and apply intense focus as everything depends on what is being said.

Make poetry and use it as another layer to create meaning.

– Mercedes Kemp

TIP FOUR – RISK

Be brave, be bold, don't let risk limit your ideas.

Starting health and safety thinking early on in the process leads to magical moments with simple solutions.

Take the people you need permission from on the journey with you.

You'll find people very helpful if they hear

about a project at the start of a process rather than towards the end.

– Charlie Bunker

TIP FIVE – MUSIC

Music for landscape theatre has to be adaptable. The musicians even more so. Avoid electrics.

There's a reason why processional music throughout history uses horns, pipes and drums; they're tough, resilient and fill the landscape.

– Seamas Carey

The music should be bold and primal. It can tell story without words. A trumpet call or drum beat on the breeze can say much more than a band up close.

– Mydd Pharo

TIP SIX – SUSTAINABILITY

Be green and clean ... your stage is borrowed from the natural world ...

Consider the placement and impact of any set or structures you create. Are there environmental factors to address and weave into your designs?

Ask advice. Make sure that recycling and waste disposal is in place for each stage of the process and be meticulous as you de-rig – scour the land for litter and leave nothing but brilliant memories.

– Ellie Williams

TIP SEVEN – FOOD

Being outdoors is very demanding on your team.

The hot water urn is the first thing switched on. And the last thing switched off.

Food should be nutritious and plentiful, chilled drinks delivered on hot days ... warm meals and refuge on cold days.

The vital tasks of 'mother' should always be incorporated into someone's role.

– Emma Hogg

TIP EIGHT – SOUND AND LIGHT

Think outside the black box in your approach to designing sound and light.

Make big statements and tiny moments of magic.

Embrace new and wireless technology

– yet know it's limitations.

Take the audience on a sonic journey as well as a physical one.

– Helen Atkinson, Sound Designer

Wolf's Child, Cornwall, 2017
Wildworks/ Steve Tanner





Work with the sun, not against it. Colour can be a brilliant tool to work with or in contrast to sunlight. Sometimes the poetry of a torch can out bid a full rig. Know when to allow the sun to take the stage.

– Joshua Pharo, Lighting Designer

TIP NINE – PERFORMANCE

Always allow performers lots of time to play in the landscape. When a cast fully inhabit the scenery – individually and as a community – the characters can unlock new dimensions to the storytelling. Actors must own every part of the undergrowth, mud and weather. Let it lead your discoveries.

– Kyla Goodey, Director and Performer

Always have the ‘safety net’ of dry clothes to change into after a wet and cold show. – Peter Elliot, Performer

Use your whole body, right to the tips of your fingers to tell the story. Your performance won’t be based in naturalism, but it is still essential to be truthful.

– Rebecca Hulbert, Director and performer

TIP 10 – COLLABORATION

Collaboration is key! Seek collaborators that complement your own skills or gaps in knowledge. Work together to make the work happen. Find the skills, knowledge, stories.

Let’s search for the meaning of our narratives in the emotional attachment between people and place. There is no predetermined path. We make our path by walking.

– Mercedes Kemp

Hades chatting in the underworld, 100 UnEarth, 2018

Wildworks/Steve Tanner

Modern Theatres 1950-2020:

An Interview with David Staples

Karin Winkelsesser



Extracts from the major publication, *Modern Theatres*, have been running in *Sightline* since 2016. They have also been running in fellow publications, Germany's **Bühnentechnische Rundschau** (BTR) and the USA's **Theatre Design and Technology Journal** (TD&T). *Modern Theatres* will be published by Routledge, in association with ABTT, in April 2021, and to mark its publication, we are delighted to feature this interview with the editor and originator, David Staples.

The interview is by Karin Winkelsesser, and has previously been published in BTR.

Modern Theatres is the culmination of more than 40 years of work as a theatre consultant. What led to you becoming a theatre consultant?

I first got involved with theatre doing the lighting for school plays at the age of 11. I went through school and college with a passion for theatre. Rather more prosaically at Polytechnic I studied business administration and management.

My professional involvement in theatre buildings dates back to 1975 when Richard Brett recruited me to Theatre Projects Consultants. I was subsequently mentored and inspired by Richard Pilbrow, one of the luminaries of our industry. I joined Theatre Projects in my early twenties and I thought it might keep me interested for four or five years, before I moved onto something else. Forty-four years on, I can think of no job that could have been more varied and rewarding.

What was your role at Theatre Projects and how did it evolve?

My career evolved over time. When I joined Theatre Projects it was a UK consulting company with no overseas work. At that time the work was mainly on smaller scale

UK theatre buildings and my role was as a relatively junior consultant.

I think the reason I effectively made my life at Theatre Projects was the many ways in which the company evolved and my growing role in that development. There were probably three aspects of that development: geography, type of project and services offered.

Geography – having started as a UK-centred company as the business and its reputation developed there were increasing opportunities to work on international projects – initially in former British influenced territories – Hong Kong, West Africa, etc. The oil price boom brought interest in theatres in the Middle East. A significant project in Calgary, Alberta was our first consulting project in North America and it became apparent that our expertise and services might be attractive to clients in the USA. Since then the team has spread across the globe.

There are a wide variety of different theatre buildings – playhouse, concert hall, dance venue, opera house, recital rooms, etc. Each type presents differing challenges as the client and design team search for a solution for that particular community.

When theatre consultancy first emerged as a discipline in the UK, USA and Germany it was initially focussed on the equipment – getting the lights, rigging, sound systems, etc. in the correct place and working. But over time there was a realisation that while the equipment might be very good some fundamental errors were occurring in the planning of the buildings and especially auditoria and stages. So as a team we developed what became known as theatre planning services to work with the architect, client and users to produce an excellent building and equipment.

There was a further development into the initial planning, development of concepts, feasibility studies and generally working with clients to assemble a viable and achievable project. These 'front end' studies and assignments became my natural home working with a client, city, Ministry of Culture, etc. to plan a new project assisting in pulling together the project – land, site, design team, etc. My management training helped in these assignments and I became not only a theatre consultant but also a Fellow of the UK and US Institutes of Management Consultants. Eventually becoming a Chartered Fellow of the Chartered Management Institute (CMgr FCMI).



What has been the most fascinating aspect of your work as a consultant?

Occasionally someone has asked me what is my best or most interesting project to which I'd reply "The next one!" I've always believed very strongly that every situation, every city and every client or user is unique. The team should be working to develop a creative, exceptional solution for every project. That is the most exciting part of my work over the past 40 years. I never want to repeat myself. Yes, learn from previous projects but strive to create something distinctive and exclusive for each client.

You have worked in many countries, mostly English speaking, but also in China, Saudi Arabia, and Oman – different cultures and political systems. How did you find collaboration and working conditions in these very different countries?

I was born and brought up in the North of England with very little exposure to other cultures, religions or political systems. The past 45 years have changed that radically, I have worked in 67 countries with every political system from democracy through communism, fascism, Monarchy, etc. I've encountered and enjoyed trying to understand every major religion in the world. Working in the performing arts it is inevitable you will come across every conceivable gender identity and sexual orientation. These experiences have enriched my life in incalculable ways.

Almost every project has been brought to fruition by a project champion, be that person a citizen, community leader, government minister, president, sheikh, sultan, emir or communist party secretary. Some have been effective dictators, others more subtle

motivators, and it has been fascinating to see how many different ways there are to get such things done.

I have been involved in many projects that have successfully reached opening night. But, I have been involved in many more that did not make it. I wish now I'd kept a record but the projects that crashed and burned considerably outnumber those that succeed. If you want an easy and comfortable life do not embark on a theatre building project.

Many different types of group – citizens, government, municipality, etc – initiate building projects. They need one person or a small core group with the determination, energy and influence to fight for the dream and force it through to reality. Some project champions are effective at generating support and building consensus for the project. Others are dictators who simply force everything through to a conclusion.

In your view, does the relationship between the consultant and the architect seem to vary throughout the world?

The influence held by a theatre consultant depends on the team or practice, on the individual and the context. Some teams or practices take a quite narrow approach to the role of the theatre consultant looking at only one aspect of the work, often the technologies. Other teams take a broader more holistic view looking at all aspects of the project – auditorium, public spaces, business planning, city context, as well as the technologies.

There are many knowledgeable, strong individuals in the consulting world who have developed specific interests or areas of expertise and may espouse a particular design philosophy.

Every project is different and the context differs. Design teams have become ever larger and more complex often to the detriment of a project. Some design teams come together well and are successful at developing innovative, creative ideas. Other teams have difficulties with clashes of ego or personalities. The client needs to be aware of this in assembling a team for their project.

You have not had many projects in Continental Europe and especially in Germany. Are there reasons for this?

Germany and Central Europe has a very well developed design and construction industry with standards, procedures, and methodologies that can wrap a project (not just theatres) in an overwhelming cloak of studies, analysis and bureaucracy. It is no coincidence



Auditório Ibirapuera, São Paulo.

Photo: Nelson Kon

that almost every significant project in Germany is either behind schedule, over budget or both. Before a project commences there is a need for innumerable studies and reports on economics, environment, viability, planning regulations, etc. etc. The brief and documentation for a new building in Central Europe will be interminable and weigh many kilos.

By contrast many countries have significantly more freedom with a need for minimal studies. In the Middle East or Asia the brief may simply say “We need a theatre of 2,000 seats.” There are risks in such an unregulated environment but the project will probably be completed in half or one third of the time needed in Central Europe. The growth in the number of consultants involved in projects has contributed to this inertia. Projects have become slower and more expensive and the risk of failure is increased.

*This brings us to your book, **Modern Theatres**. You have said that the book should not only highlight the best theatres of the world, but also the worst – in terms of practical use. How did you get the idea to write a book about good and bad theatre construction?*

There was no one, over-riding inspiration – rather a number of factors. Edwin Sachs and his work were important, being asked to Chair the Editorial board for ITEAC 2018 got me thinking and my imminent retirement from full time consulting work meant I probably had the time to create a book. One hundred and twenty years ago Edwin Sachs produced three volumes on theatre buildings across Europe. This eminent Victorian, who at various times in his career performed the roles of architect, stagehand, engineer, and fireman, wrote the classic work *Modern Theatres and Opera Houses*, completed in 1898 when he

was just 28 years old. Published in the earliest days of photography, the book contains a few black-and-white photographs; its strength are the detailed drawings of European opera houses and theatres. It also reproduces many of the European fire codes that then applied to theatres while a fascinating section lists all the theatres damaged or destroyed by fire in the 19th century. During this period of gas and candle lighting the average theatre was destroyed by fire every 12 years.

Many other books have been published on the historic opera houses and theatres of Europe and the world, but remarkably few deal with theatres from the second half of the 20th century.

How did you develop the project?

A more recent influence on me and my collaborators has been Richard Brett, the consultant who in 2002 initiated a series of conferences about theatre buildings, their engineering, and technologies the Theatre Engineering and Architecture Conference (TEAC). It grew and added the word International to become (ITEAC) and was repeated in 2006 and 2010, with Richard at the helm as Director. Following his untimely death, two further conferences were held in 2014 and 2018 for which I chaired the editorial boards.

Planning for the 2018 event began in 2015, when it was discussed how the conference might benefit from speakers who had undertaken research and analysis on specific topics and theatres. Two ideas emerged:

To ask leading thinkers and experts in their fields to write essays on specific topics – with a view to using these to inform conference sessions.

To ask architects, theatre people, consultants, etc. to re-appraise 30 “significant” theatres that had opened between 1950 and 2010.

This book is a development of those ideas, and it needed the recruitment of experienced men and women as collaborators. This could have been a complex, lengthy task with many rejections, but amazingly, the process was surprisingly smooth. A mock-up was prepared and almost all those approached were enthusiastic and willing to be involved. Some 39 talented people from 14 countries have contributed chapters to the book.

Three magazines – **Bühnentechnische Rundschau** (BTR) and **Theatre Design and Technology Journal** (TD&T) and *Sightline* – were especially supportive and agreed to publish articles as they became available from 2015-2020.

More than 30 articles have appeared in these journals, in either English, German or American English leading up to the publication of this book. It has reassured me to think that many of the classic novels of Charles Dickens and other great writers first appeared, in similar fashion, as partworks.

Just as the world of publishing has changed out of all recognition since Dickens' day, so change has come to the performing arts. Orchestras may continue to perform Bach, Brahms, and Beethoven but they also embrace new music that challenges traditional forms. Performing arts spaces have been transformed. Concert halls in 2020 are radically different from those constructed in the 1950s, although opera houses have seen rather less change. Thousands of found spaces have been pressed into performance use.

What does the title 'modern' refer to?

This book is entitled *Modern Theatres*. By 'modern' we mean theatres that opened between 1950 and 2020, and we have used the word 'theatre' to embrace all types of performing arts building – playhouses or drama theatres, opera houses, concert halls and recital rooms, dance theatres, studios, educational and community performing arts spaces. A more comprehensive but ungainly title would have been "*Modern Theatres, opera houses, concert halls, playhouses, dance venues and other spaces for live performance*".

The book is in three sections:

Essays. Several people have written essays on topics relating to the cities, buildings, architecture, and technologies associated with theatre buildings.

Thirty significant theatres 1950 to 2010. The original intention was to review 30 significant theatres that opened between 1950 and 2010. We wanted to allow sufficient time after opening for a fair evaluation and appreciation of each building to be made. So, the list was cut at 2010.

Theatres 2011 to 2020. The subsequent ten years proved a rich period for new theatres of all scales and types, so it was decided to add snapshots of 20 further buildings – a selection of those completed between 2011 and 2020.

What conclusions can you draw from the book about the future of theatre buildings - what do you think are the most important points to consider?

Some observations based on the book:

Theatres can be hugely successful and

receive international acclaim but be terrible theatre buildings – the Sydney Opera House being probably the best example, it has bad acoustics and poor functionality which have been considerably improved only recently.

Sydney was one of the first buildings to reject the straight line and rectangle and embrace curved forms. Sydney began work by Gehry, Zaha Hadid, MAD Architects, etc.

Selecting a famous architect or "Starchitect" does not guarantee success. Frank Lloyd Wright was one of the most acclaimed architects of the 20th C but his only theatre, the Kalita Humphreys in Dallas, is a disaster.

A lot of small and very exquisite recital halls have, and are, being built around the world. They are rectangular with high ceilings for good acoustics. They are panelled in elegant pale wood and are fundamentally rather boring. The Boulez Saal in Berlin by Frank Gehry breaks the mould.

The Philharmonie in Berlin is probably the most influential performing arts building of the last 70 years. Before then, halls were conventional shoe boxes. Scharoun invented the vineyard hall derivatives of which are being built everywhere. But while the vineyard is a more visually interesting room it is possibly not quite as good acoustically as the best shoe box halls.

And finally: Do you have a favourite theatre or opera house or concert hall?

What a difficult question. I have had some wonderful experiences in found spaces. The great European opera houses are great. Smaller venues are generally better than bigger. On occasion I have told clients the two secrets of a successful new theatre are lots of car parking and adequate women's toilets to avoid queues. So, I think I am going to dodge the question.

*Sydney Opera House.
Photo: Kristina D.C.
Hoepfner*



An Inspector Calls

Alan Lynagh

It remains true that I am an Inspector of sorts but over the last 6 months there has been very little calling, certainly with regard to theatre inspections at least. Westminster work rolls on however ... street tables and chair licensing issues (how do you clear all the infrastructure from Old Compton Street quick enough for the London Fire Brigade to access the fire that's developed in the property located smack bang in the middle of the street?); planning for the 10,000 capacity Football Euros fan zone in Trafalgar Square this summer (all three of us in the meeting know the chances of it happening range from slim, to you must be joking, but we need to have the meeting and minute it for contractual reasons at the very least); and a host of queries around social distancing best practice, my favourite being are there any face masks that allow a straw to be inserted so patrons can sip on their tippie without the need to unmask ... if only I knew the answer!

So while initially I felt producing an informative and interesting article at this time was beyond me (some would say its beyond me most of the time) in retrospect the last 6 months have probably been one of the most varied and intense periods of learning I have had over the course of my 23+ District Surveyor career. Especially with regard to my consultancy work, where keen operators are pushing forward with new concepts and ideas. One of the main trends has been trying to bring entertainment in all its wider forms to outdoor settings as the perceived financial risk for planning an event for this coming summer outdoors as opposed to indoors feels distinctly lower. There is also clearly an appetite for this as the sold out *Jesus Christ Superstar* at the Open Air Theatre in Regents Park showed last summer.

So I thought it may be useful to touch on a few of the considerations that have occupied my mind over the last few months with regard to various types of events (mostly outdoors) to show that I have indeed continued to "Call" albeit via Zoom mostly.

Drive Ins

Last summer and early autumn these types of events became a go to for a lot of frustrated promoters as they offered the opportunity to provide a ready made social bubble in the form of your own car, had relatively minimal set up costs depending on what entertainment was opted for, and took advantage of any empty appropriate external space. We had the classic drive in cinema at various locations across the country and the ENO put on a drive in opera experience at Alexandra Palace. So what did we learn?

A 2017 Vauxhall Meriva is not a 1958 Buick Special – I know that may seem an obvious point but the downsides of the wonderful progressions in car safety and roll bar technology has been that it really plays havoc with your sightlines. The wide open front vistas of a 1958 Buick were fantastic for seeing all of the screen or stage but modern cars don't always offer quite the same experience. So planning the layout with this in mind is key and a wide and shallow site in relation to the screen/stage as opposed to a long and deep one will often provide the best results.

What did they say? – That classic image of a convertible cars hood down on a balmy summer night doesn't always translate to a wet Thursday evening at Wolverhampton racecourse. This, coupled with restrictive noise conditions on premises licences and the need to not annoy any neighbours, can sometimes make the sound quality provision a huge challenge. The sound provision plan should always underpin the site design so that any relay towers or similar if used are facing away from the nearest noise sensitive properties. However most events of this nature now use some form of FM radio broadcast technology, which car occupants can tune in to. The most complicated issue with this can be syncing the noise with the images on screen so that it is seamless. This challenge can be multiplied where you have live theatre events with large orchestras and conductors. One event I was involved in last year had the band located remote from the stage due to the tight footprint in the stage area and social distancing restrictions with their performance streamed in live (avoiding issues around recorded sound being used). Could it be that this approach is used to solve issues in internal venues as things progress as well?

A hooting ovation – While managing the sound is simplified with FM Broadcast technology in place as opposed to the classic hard wired listening posts everywhere from the 1950's, what you can't always plan for is human behaviour. One event I was involved in last year saw the car occupants deciding that the best way to show their appreciation for the entertainment was to hoot their horn regularly. This was particularly troublesome for the curtain call and led to a raft of complaints from local residents.

Fire safety issues – While the external nature of such events certainly reduces some of the normal risks linked to fire there are still a number of things that need to be considered:

- Adequate perimeter fire lanes for a fire

brigade tender to access the site. This should be at least 3.7m wide for a roadway and 3.1m at any entry gate. There should also be a minimum head height of 3.7m.

- Any surface that is accessed by the tender should also have the ability to carry at least a 12.5 tonne load.
- Turning circle for vehicle if required should have a 16.8 minimum diameter.
- No part of the event site where firefighting may be required should be more than 50m from a fire lane
- Ground conditions should be adequate for any vehicular access and if that is not the case then a suitable aluminium trackway or similar should be provided.

The cars themselves should be laid out with adequate spacing so that there are clear gangways and access routes in between cars to allow evacuation as required and also to act as a fire break between cars. While the risk of a fire in an individual car should be relatively low with good management and monitoring of the event site the risk should still be considered. While petrol cars are higher risk than diesel this shouldn't make that much difference to any fire response, however staff should ideally note and indicate any electric/hybrid cars as these have batteries so the firefighting response may need to be adapted (I am sure you have seen videos online of how rapidly they burn). As part of any rendezvous with the fire brigade the locations of these cars should therefore be detailed to them as part of any briefing in an emergency and particular consideration should be given to the new electric cell cars, which may have a propane cell so could cause a potential explosion risk.

Evacuation plans should be based on a management procedure, which includes the ability to initially move adjacent vehicles (to a potential incident vehicle) to minimise any potential spread of fire from vehicle to vehicle. Messaging regarding leaving keys in cars may therefore be needed in certain scenarios.

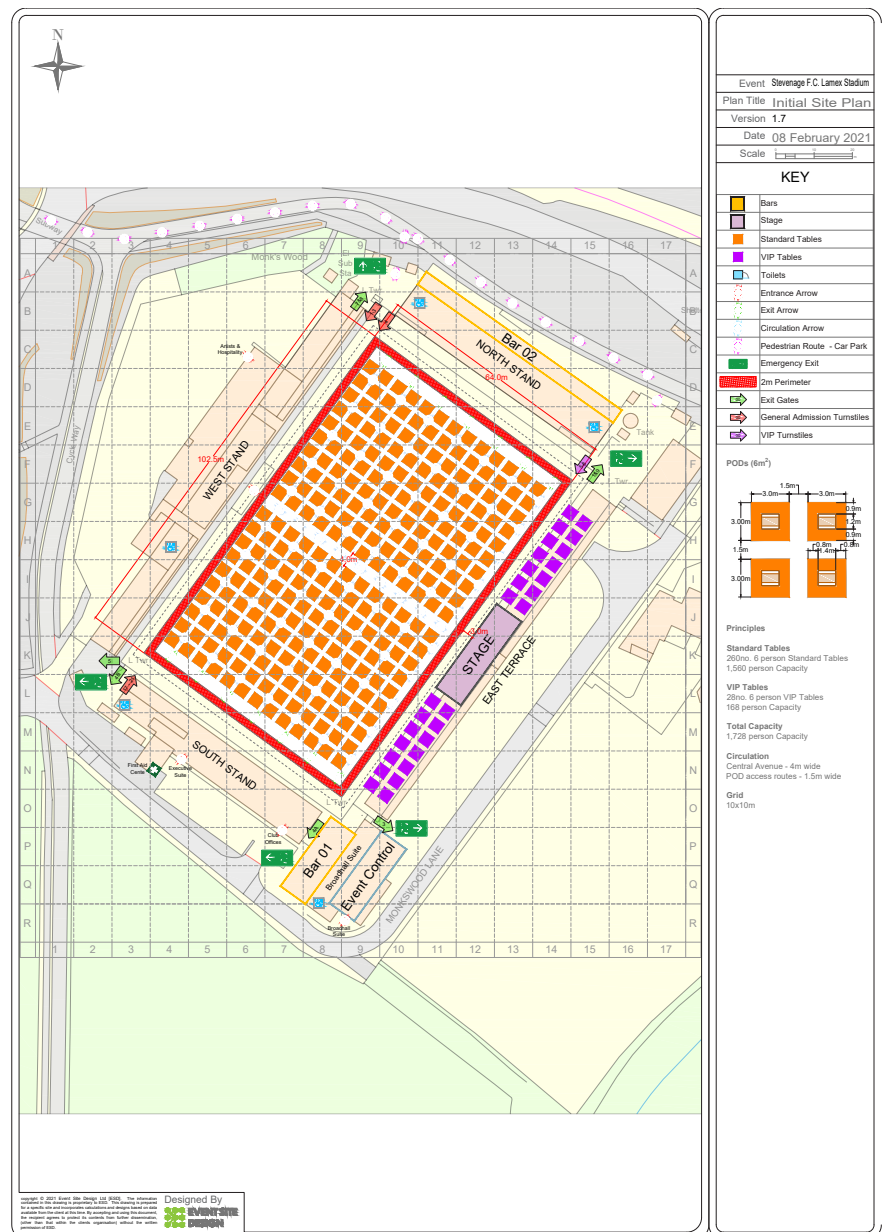
Rush Hour – The cars should have a separate access in and egress out route for vehicles to assist with rapid dispersal and mitigate any risks linked with cars needing to turn unnecessarily on the event site. These routes then all need to be assessed with vehicle movement in mind and it may be that any key locations or structures on the routes are suitably protected from accidental damage from wayward drivers. Once cars are in situ the engines should be turned off and handbrakes turned on and this instruction should be suitably communicated to patrons and on this

point a good PA system is key for all kinds of messaging. Finally if you are intending to have a designated smoking area, ensure it is located remotely from the car risk area!

Sports Grounds

I am currently involved in several proposed events for Summer 2021 where existing sports stadia are being repurposed to provide a venue for socially distanced musical events. These generally involve the construction of socially distanced pods on the pitch surface and a socially distanced audience in the existing stands with a stage providing the entertainment located in one of the stands. With clever pod design these can allow up to 1,600 people on a standard size football pitch (approx. 100m x 70m) and generally 20-30% capacity in the stands. See generic

Fig 1.0: Generic site plan for staged entertainment in a sports stadium



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site plan in Fig 1.0 showing a standard layout for reference purposes. While these events are generally limited to live music or recorded music (DJ) sets at present, could we see more theatrical entertainment planned in this type of environment? Some of the key safety/logistical measures to consider for such events are:

Licensing Issues: Most sports grounds will have a Safety Certificate in place under the Safety at Sports Ground Act 1975 and when putting the sports ground to an alternative use you will need to generally apply for a Special Safety Certificate to cover the event and to support such an application will need to provide full RAMS documentation and plans including occupancy assessments. In addition there may be a requirement to apply for additional approvals under the Licensing Act 2003 if the proposed site infrastructure and activities does not fit within the existing licence in place. If the proposals do fit within the current licences approvals there will still usually be a range of conditions to be satisfied that require documentation and plans to be submitted often up to three months prior to any major event.

Capacities and Flow Rates: The capacities within the ground would normally need to be assessed against the guidance contained in the Green Guide to Safety at Sports Grounds. This stipulates flow rate calculations for a standard eight minute evacuation over flat ground (82 people per metre per minute) and over stepped ground (66 people per metre per minute) and further floor space calculations for stands and concourse areas. However this guidance has been supplemented with a new document called SG02 (Social Distancing at Sports Grounds), which revises all the existing calculations based on social distancing requirements. In essence the 82 figure has been reduced to 72 and the 66 figure to 54 and every exit route under 1.6m is treated as a single channel flow (1) to maintain social distancing and routes over 1.6m as a double channel flow (2). As a comparison of the impact see the calculations below for a 1.5 metre exit and a 1.9 metre exit:

Normal Green Guide Flow Rate Calculations for a 1.5m exit – 1.5 (width) x 82 (flow rate) x 8 (evacuation time) = 984

SGO2 Flow Rate Calculations for a 1.5m Exit – 1 (single channel flow) x 72 (flow rate) x 8 = 576

Normal Green Guide Flow Rate Calculations for a 1.9m exit – 1.9 (width) x 82 (flow rate) x 8 (evacuation time) = 1246

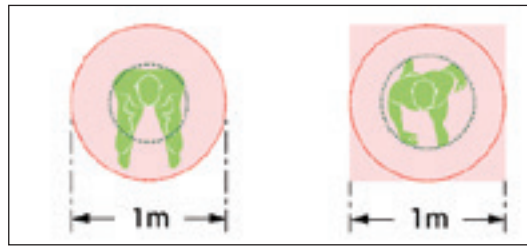


Fig 2.0: 1m diameter social distancing

SGO2 Flow Rate Calculations for a 1.9m Exit – 2 (double channel flow) x 72 (flow rate) x 8 = 1152

As you can see the SG02 guidance can have a large impact on the potential capacity but this impact varies dependent on the widths and the ability to calculate double channel flows or single channel flows. Currently normal capacity calculations in theatres are based generally on 5mm per person through the designated width (1200mm ÷ 5 = 240). Could we see revisions to these calculations based on the principles of SG02 to allow for revised flow rates considering social distancing?

Floor Space: In stadia SG02 applies similar principles to seating layouts and movement around the venue as theatres apply in auditoria. Generally there needs to be a circle measuring 1m diameter centred on the body as per fig 2.0 below:

In essence this means a two seat gap in between separate groups and every other row unoccupied or a checkerboard pattern adopted. In addition this also impacts gangway use as unless the gangway is over 1.6m any seat adjacent to a gangway would need to be removed from sale also. There is also a requirement to set maximum capacities for the concourses and other holding areas using 1m² per person as the defining figure. As this can often be the most restrictive figure many events will employ waiter and waitress service to all areas to mitigate any crowd movement apart from trips to toilets etc.

Temporary Structures: Stage procurement and design needs to be in line with the provisions of the IStructE's guidance document "Temporary Demountable Structures 4th Edition". Rather than go into detail here I would highly recommend a read particularly if you have masochistic tendencies: it will not disappoint on that front. Key things for consideration in sports ground are issues where the stage overlays any existing stand barrier construction as these barriers are load tested yearly as part of the safety certificate's requirements and if you have to interact with them in any way you will then need to redo their load testing certification post event, which isn't cheap!

General Safety Concerns: As with any outdoor event there is then a range of other site safety considerations such as:

- **Concessions and use of LPG** – flash back arrestors, proper clips, piping lengths, storage of LPG on site, FFE provision, gas safe contractor sign off;
- **Generator use** – earthing requirements, remote locations, secure barriers around units, FFE provision;
- **Emergency lighting** – use of temporary tower units, coverage to any temporary structures, should cover up to place of ultimate safety (which was challenging when dealing with a greenfield site that delivered into Hackney Marshes with the road surface about 1.5 miles away);
- **Touch points** – turnstiles for example are a nightmare for touch points but useful for a controlled access flow so if removing them for Covid purposes the entry flow will still need to be suitably controlled;
- **Alcohol** – Whereas the management of alcohol intake is not always a huge factor for traditional theatre productions (am sure some would say for certain shows it is) for outdoor events that often go on for several hours managing this can be a key consideration for any licensing application especially if you have waiter/waitress service to booths where assessing all of the patrons ability to stand up and converse can be difficult. This is then clearly tied up in the Covid risk assessment also as the risk of patrons not complying with site restrictions generally increases in line with the level of red bull and vodka in the blood stream.

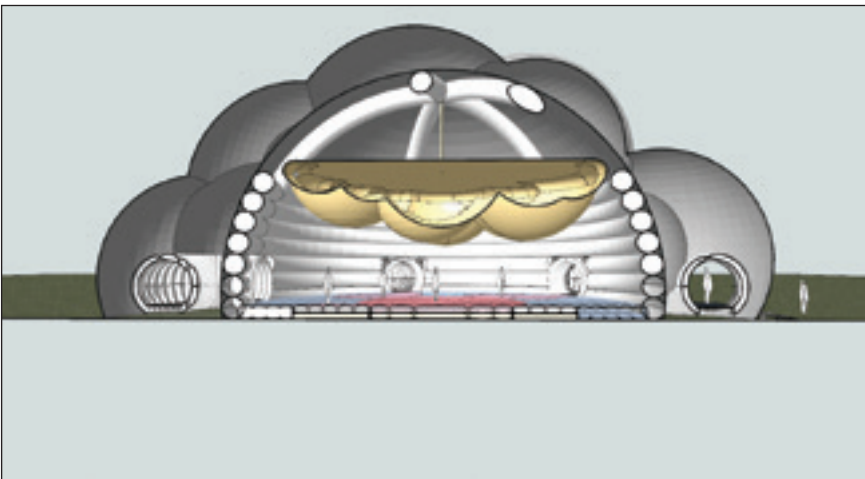
I have probably gone on for far too long but I hope that flags up a few interesting points for consideration, especially given the current trend to look for outdoor solutions for events of all types. I have also just become involved in

a very interesting proposed inflatable theatre concept that is being commissioned by an Australian firm and currently being built in China. In essence it is an inflatable structure that will accommodate approximately 100 people in 4 separate experience groups. Access will be via 4 separate tunnels into the main central deflated performance area, which will then be inflated so all groups suddenly see each other and performers then perform in the central raised performance zone.

After the performance the four corner zones containing the public are inflated to the same level as the stage and then the public become part of the performance also ... yes I know, I am having sleepless nights already but I like a challenge. See a sneak peek below in Fig 3.0 and next time I hope to be in a position to write a piece all about the wonderful world of inflatable structure safety ... wish me luck.

As always I am at alynagh@westminster.gov.uk or on 07805 362095 for technical discussion and pleasantries.

Fig 3.0: Project Bounce



The Theatre Green Book

Theatre has been talking for some years about how to move towards more sustainable practice. Julie's Bicycle, Creative Carbon Scotland, Ecostage, SiPA and many others have raised awareness, educated and campaigned. Theatre-makers and organisations have trialled new materials and practices.

During the pandemic, the Theatre Green Book initiative has emerged to pull together existing guidance and create a shared standard for environmentally responsible theatre.

It's an urgent need. The climate crisis will change everything we do – and theatre is no exception. If theatre is to have a voice in addressing the most urgent challenge we face, it has to move beyond a traditional practice that makes shows from new materials and – all too often – leaves them in a skip after the final curtain.

The Green Book will have three volumes: Sustainable Productions, Sustainable Buildings and Sustainable Operations. Together, they will provide guidance to move the whole sector towards sustainability.

Sustainable Productions is based on the collaborative input of producers, directors, scenic artists, lighting designers and technicians, set-builders, designers, production managers – and many others, working across the UK, on theatre of all scales. With the

encouragement of Julie's Bicycle, Creative Carbon Scotland, SiPA, Ecostage, the Society of British Theatre Designers, the Association of Lighting Designers, Scene Change and others, sustainability professionals Buro Happold have built on theatre's collective expertise to create the Green Book. Theatre-makers have generously donated their time. Any costs have been funded from within theatre.

Like the Yellow Book, the Theatre Green Book is sponsored by the Theatres Trust and ABTT, alongside UK Theatre / SoLT, Federation of Scottish Theatres, Theatre and Dance NI, Creu Cymru and others. Like the Yellow Book, it provides a unified standard for the industry. The Theatre Green Book : Sustainable Productions sets clear targets, and gives clear guidance to everyone involved in a production of how to achieve them.

Sustainable Productions will shortly be available through the websites of the organisations listed above, as a 'Beta' version for theatres to trial on re-opening shows. We need that practical feedback to hone the guidance for final release towards the end of the year.

Meanwhile the other volumes, Sustainable Buildings, giving guidance on how to make theatre buildings more sustainable, and Sustainable Operations, covering front of house, catering, offices etc, are in preparation.

Paddy Dillon,
Green Book
Co-ordinator



Photo by Daniel Bound

All the virtual world's a stage

Alicia Earls

The unprecedented events of the past year have rapidly transported us all into a predominantly virtual existence for most of our personal and professional lives. With strict limitations on social interaction in its truest sense, it is unsurprising that a widespread adoption of technology has been keeping us all connected during this difficult time. Despite a surge in the range of platforms enabling this at a basic level, achieving meaningful and authentic engagement in the virtual world has posed more of a challenge.

One particular technology that this new reality of communication has brought to the fore, is that of extended reality (xR). Although this concept seems relatively new to many, as a leading technical solutions specialist, White Light (WL) first began pioneering xR to revolutionise sports broadcast, back in 2017. xR harnesses the power of mixed-reality technologies to blend the physical and virtual worlds like never before, creating a truly immersive environment, which presenters and performers can engage with naturally. With the Royal Shakespeare Company recently revealing plans to stage a live online virtual reality performance, we are starting to see the theatre world embrace the potential of this technology. This shift will enable producers to present their content in exciting and previously unimaginable new ways.

Drawing on fifty years of experience in delivering excellence in production, the roots of which lie firmly in theatre, we have been paving the way for advances in technological innovation. For many years we have applied a unique method of alchemy to utilise learnings

from projects in our core markets, to push boundaries of solutions development for customers in others. This has taken us on an exciting path of diversification and evolution, which began six years ago, when we acquired video and lighting firm Shock Solutions. With Shock's Managing Director Andy Hook joining the WL family as Technical Solutions Director, along with his team, there began our journey of discovery into new realms.

Our xR solution was first seen in 2018, when we delivered 'The Cube' for Discovery and Eurosport's coverage of the *Olympic Winter Games PyeongChang*. This was the first global project to produce an immersive xR environment for broadcast and was considered truly ground-breaking, subsequently scooping numerous awards for innovation. Informed by the learnings of 'The Cube' and other projects we were working on at the time, our Innovations team partnered with disguise technology platform, to conduct an intense period of R&D. Another key partner on this journey was content provider MalfMedia, whose work added a heightened level of creative potential to a vast range of our xR projects. The objective was to design a more unified and comprehensive workflow to elevate the future potential of the technology. This led to the creation of a game-changing new intuitive workflow, based on a robust broadcast-grade infrastructure, and designed to meet the challenging demands of 24/7 live operation. SmartStage® was born.

Over the following years, SmartStage® was deployed globally to revolutionise not just the broadcast sector, but also the corporate and education markets. The xR technology and workflow powering the solution far transcends the capabilities of green screen, bringing content to life for users to naturally interact with in an authentic virtual world. This proved a game-changer for remote learning, when The University of Michigan's Stephen M. Ross School of Business invested in SmartStage® to offer an immersive virtual classroom for their new online MBA programme.

Fast forward (with caution) to 2020, when due to the Coronavirus pandemic, theatres and venues were forced to close and live events ground to a halt. Our significantly evolved SmartStage® was uniquely poised to help brands and artists pivot to fully virtual delivery, to maintain a meaningful connection with their audiences remotely. Among its many benefits, xR enables the creation of limitless virtual worlds in-camera, even when constrained to a small studio space. By enabling real-time graphics to be mapped onto LED surfaces, xR places performers and presenters into computer-generated environments, allowing

SmartStage® R&D began back in 2017



them to 'step inside' and experience content from the inside out.

Internally, we began utilising SmartStage® to host virtual Town Hall meetings, helping to maintain vital and effective communication with all staff. During such times of uncertainty and worry, the heightened level of presentation and engagement this allowed really helped to reconnect everyone and provide some comfort when it was most needed. The technology also enabled artists to provide some much-needed light relief when we joined forces with Gasoline Productions to launch the Brave New World comedy pilot. An exclusive, socially distanced audience of keyworkers were invited to attend the live recording, which saw renowned circuit comedians Matt Price, Susan Murray and Tony Cowards deliver stand-up performances. Another collaboration, this time with Bug Productions, allowed King Nun's frontman Theo Polyzoides to perform an intimate gig for a group of fans, following cancellation of the band's US tour.

Over the past year, we have taken this cutting-edge broadcast technology and made it even more robust, cost-effective, and easy to use, creating a range of turnkey products to make xR accessible to the masses. At the start of the pandemic, we built our first rental SmartStage® at our London HQ, providing a COVID-secure virtual solution for clients to safely deliver their broadcasts and events. This has revolutionised how virtual production can be delivered and will continue to do so even when live entertainment and events return.

A true insight into how xR can bring content to vivid life was presented by ScanLAB Projects, as part of the annual Beyond Conference. Beyond, which gathers the current and future innovators in Research and Development across the Creative Industries, was delivered virtually in November 2020. Hosted via SmartStage®, ScanLAB's 'Deep Dive: FRAMERATE', session explored some of their mind-blowing work, created from thousands of daily 3D scans and hundreds of billions of precisely measured points. This content observes change on a spatial and temporal scale impossible to see with the human eye or the lens of traditional cameras.

Back in the broadcast world in 2020, we delivered the Eurosport Cube 2.0 via SmartStage®, as seen on Eurosport's coverage of the US Open and French Open. Since the first iteration of 'The Cube', the team reverted to the drawing board prior to designing the new version, which was then built with a footprint of just 3.5m x 3.5m and housed at our HQ.



One of the major technical overhauls was the graphics workflow, which was re-designed to be a lot more streamlined and render-engine agnostic, enabling content to be produced in a wider range of real-time engines. This allowed a brand-new, dynamic, and lifelike set to be built using the Unreal Engine, with additional layers of content seamlessly added from other engines where necessary. One of the Cube's physical walls was removed to expand the studio, vastly improving the camera angles and sight lines. Added virtual set extensions, powered by disguise xR, made it possible for the camera to operate beyond just the realms of the LED environment.

FLUX presents Theo Polyzoides

Multiple remote contributors were virtually transported into the studio via video conferencing platforms and positioned within the environment as if they were physically present. Eurosport also wanted to utilise the United States Tennis Association's green screen facility located at Flushing Meadows to teleport the athletes into the Cube for post-match interviews with host Barbara Schett-Eagle.

Another feature of the Cube's new design was the seamless integration of lighting for the real and virtual worlds. This allowed the lighting operator to control both the in-studio lights and the lighting within the virtual set, as though they were one and the same, further merging the boundaries of reality.

xR is here to stay and our newly launched SmartStage® rental studio at The Mermaid London is a testament to this. This facility is the pinnacle of xR technology, designed specifically for the new normal hybrid world and offering the very latest iteration of technology and workflow. Our Innovations team continue to push the boundaries of xR and real-time content production, building solutions for the future which incorporate scalable render power,

hybrid audiences and teleportation.

So, what do these advances in technology mean for the future of theatre production? Once we begin to see the long-awaited re-opening of venues, if social distancing must continue to be maintained, how will audience reach be maximised if not as a hybrid solution? In the spheres of corporate communications and education, we have already seen how xR has elevated meetings and distance learning to the highest level of interactivity and engagement ever achieved. This creates a wealth of yet to be explored opportunity for the theatre world. And with leading names such as the Royal Shakespeare Company setting the trail ablaze with the adoption of virtual reality, this trajectory can only propel immersive productions ever more forward.

SmartStage® – a timeline:

- 2017: development of 'The Cube' for Eurosport begins.
- 2018: delivery of the 'The Cube' – the first xR immersive production studio broadcasting globally for Eurosport's coverage of the Olympic Winter Games.
- 2018: delivery of the world's first dynamic virtual set extension for the ITV Studio coverage of the football World Cup in Russia, in collaboration with Deltatre.
- 2018: preview of our turn-key, fully integrated xR solution in the Future Zone at IBC in Amsterdam to great acclaim. Extensive collaboration with disguise, to design and develop an xR workflow.
- 2019: design and installation of the world's first xR education environment for The University of Michigan's Stephen M. Ross School of Business.
- 2020: Methodist Central Hall Westminster pivot their Sunday church services to virtual delivery for a global audience during the earliest days of national lockdown, via SmartStage®.
- 2020: delivery of the world's first fully live xR broadcast for the Global Cycling Network (GCN), from a COVID-secure Studio 15 at WL HQ, during the height of the Coronavirus pandemic.
- 2020: first live full-body teleportation into an xR environment for the Eurosport coverage of the US Open.
- 2020: ScanLAB Projects present their 'Deep Dive: FRAMERATE' session via SmartStage®, during the annual Beyond Conference. First use of an xR environment to transport a presenter and guest inside a VR project, usually confined within a headset.
- 2020: University of Portsmouth invests in SmartStage® for their brand-new CCIXR centre, a ground-breaking new educational facility to train the next generation of students in creative xR.
- 2020: SmartStage® and disguise are featured on Channel 5's The Gadget Show, in an episode about xR technology.
- 2021: first terrestrial television broadcast using xR for BBC1's new entertainment show Bamous.

To date, SmartStage® has enabled 1000 hours of live broadcast, 1000 hours of distance learning and over 500 hours of live corporate events.

All images courtesy of White Light



Young Associates

Welcome to the twelfth edition of the *Sightline* Young Members Page! In this edition, we introduce a new ABTT Young Associate Representative, discuss how you can get involved in the 2021 ABTT Awards, we ask for your seminar suggestions and highlight some training opportunities if you want to develop your lighting knowledge. Be sure to keep an eye on the ABTT website and social media (@TheABTT on Facebook, Twitter and Instagram), as well as on your emails for monthly Member's Newsletters, for details of opportunities and resources. If you are a Young Associate or Early Career Member 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).

Introducing New ABTT Young Associate Representative Jessica Nicholls

"I have wanted to work in theatre since I was eight years old, even if I didn't realise that working backstage was my true calling until a couple of years ago when I started to pursue a career in this field through an apprenticeship. I'm looking forward to working with Matthew, Ben and the rest of the ABTT to help support the young members of our industry. I'm currently completing a Creative Venue Technician Apprenticeship with Ambassador Theatre Group (ATG) and the National College Creative Industries. I am passionate about Sustainability within our industry and love seeing the strides being made towards a cleaner future, I also feel it is important to encourage other young members of our industry to get informed about and involved with Sustainability. I have really enjoyed being part of the UK Theatre & Live Events Apprenticeship Network and I am looking forward to helping this grow, developing awareness about apprenticeships and encouraging others to participate." If you would like to speak to Jessica about Sustainability or the UK Theatre & Live Events Apprenticeship Network, she can be contacted via office@abtt.org.uk (FAO: Jessica Nicholls).

The 2021 ABTT Awards

The ABTT Awards is one of the key schemes the ABTT runs to recognise those making a contribution to our industry. These are normally presented in June at the ABTT Theatre Show but were presented online in 2020. Here we will focus on two awards that you can nominate individuals for. The 'ABTT Technician of the Year Award' is presented to an individual at the heart of their career who consistently delivers technical excellence and who has

been pursuing full-employment in a backstage career for a minimum of 10 years. They will have predominantly worked in the presentation of live performance in places of entertainment, achieved a mastery of their chosen discipline and will be an expert practitioner. Do you have a teacher, colleague or mentor who meets these criteria? The 'ABTT Award for Emerging Excellence' was launched last year and is presented to someone who is pursuing employment in a backstage discipline, predominantly working in the presentation of live performance in places of entertainment, they will have used their working experience to further their mastery of their chosen discipline and they will have consistently demonstrated excellence in the work they have undertaken. Do you have a peer, colleague or student who meets these criteria? If you said yes to either of the questions above, then nominate that person for an ABTT Award in 2021. Nominations normally open in April. Contact the ABTT Office (office@abtt.org.uk) for more information about the ABTT Awards and what you need to do to nominate someone. Also be sure to check out the ABTT website for details about the Stephen Joseph Award, which is being launched this year!

Seminar Suggestions

The ABTT Young Associate Representatives are currently planning some online seminars for later this year. We want your suggestions. Who do you want to hear from? What subjects interest you? What should the ABTT be discussing? Send an email to office@abtt.org.uk (FAO: Matthew Freeman) with your suggestion – we would love to hear from you. Also, be sure to keep a look out on ABTT social media and the ABTT website for seminars being run throughout 2021. The Stephen Joseph Committee are running a seminar every month up until June, so be sure to come along to one of those. If you're an apprentice then the UK Theatre & Live Events Apprenticeship Network is always looking for more members.

Lighting Resources and Training

There are some great online resources for those wanting to develop their lighting skills. Check out ETC's online training at courses.etcconnect.com where you can learn about subjects including Networking Fundamentals, System Maintenance and Troubleshooting Techniques for a small fee. Also be sure to take a look at the recently launched ALD Academy at www.aldacademy.co.uk where you can learn about a range of topics, complete an online bootcamp and more.

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Technical Standards

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Spring 2021

UPDATES, AMENDMENTS AND CORRECTIONS

The current edition of *Technical Standards for Places of Entertainment* was published in 2015 and has the year 2015 printed on the top righthand corner of the cover. However there have been six reprints with revisions to this edition published on 29 April 2016; 1 February 2017; 1 April 2017; 1 September 2018; 1 April 2019 and 1 July 2020. Key revisions captured in the sixth reprint dated 1 July 2020 for

Section B9 Conservation of Energy and some in Section F1 Electrical Installations have already been published in this column. Below are further revisions in Section F1. There were a number of other revisions in this reprint including more to Sections F1 Electrical Installations, F2 Lighting including Emergency Lighting and M12 Electrical installation and permanent electrical equipment.

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

REVISIONS & AMENDMENTS 1 JULY 2020: SECTION F1 ELECTRICAL INSTALLATIONS (part thereof)

Section	Part	Reference	Change
F1	Electrical Installation	COMMENTARY <i>Power Quality</i>	Change "Places of entertainment often contain electronic equipment (for example amplifiers and computers) that is susceptible to disturbances in the mains electricity supply." to "Places of entertainment often contain electronic equipment that is susceptible to disturbances in the mains electricity supply."
F1	Electrical Installation	COMMENTARY <i>Power Quality</i>	Change "...erratic operation of dimmers, MCBs & RCDs, overheating motors" to "...erratic operation of dimmers, MCBs & RCDs, overheating motors... and failure of equipment such as lift motors and air handling plant..."
F1	Electrical Installation	COMMENTARY <i>Power Quality</i>	Change "The <i>Power Quality Guide AG2/2000</i> " to "The <i>BSRIA Power Quality Guide AG2/2000</i> ..."
F1	Recommendations	F1.02	Change "...licensed for..." to "...operated for the presentation of..."
F1	Recommendations	F1.03	Add following "...2100mm below the luminaire. a further sentence to read "Any pendant luminaire weighing more than 5kg should be provided with a secondary means of suspension."
F1	Recommendations	F1.04	Delete "Any pendant luminaire weighing more than 1kg should be provided with a secondary means of suspension. "
F1	Recommendations	F1.07	Change "...in emergency to any equipment used for deep fat frying should be provided in a readily accessible position adjacent to an exit from the kitchen. The device should be clearly labelled, for example Emergency electricity Cut off for deep fat fryer , and the 'off' position or method of operation clearly indicated. " to read "...to installed and portable equipment should be provided in a readily accessible position, for example by the main exit door and the 'off' position or method of operation clearly indicated."
F1	Recommendations	F1.08	Change to "A legible and up-to-date schematic diagram of the electrical installation including a schedule of the circuits detailing the positions of the distribution boards and the sizes of the cables should be displayed adjacent to the main electrical control apparatus position. The diagram or schedules should be protected from loss or damage and an electronic copy kept on file."
F1	Recommendations	F1.13	Change "...provided adjacent..." to "...provided on or adjacent..." and add following "... with Recommendation J2.45." to read "...with Recommendation J2.45. Note: Danger 230 volts signs are not normally required on or adjacent to single-phase mains equipment or appliances. See F1.33 below.
F1	Recommendations	F1.18	Change "...not within the licensed premises unless..." to "...not within the premises of the place of entertainment unless..." and change "...control of the Licensee and also..." to "... control of the management and also..."
F1	Recommendations	F1.19	Change "...the licensed premises." to "...the place of entertainment."
F1	Recommendations	F1.21 Note:	Change "...be installed in normal and ..." to "...be installed in management or..."
F1	Recommendations	F1.23	Add following and below "14. Kitchens" as a new sentence "Care should be taken when dividing circuits to avoid introducing noise into audio and video systems by providing appropriate earthing arrangements. See <i>BS 7671 Section 144</i> "
F1	Recommendations	F1.25 b)	Change "...BS 6207-3; or..." to " <i>BS EN 60702-3:2016</i> ; or..."
F1	Recommendations	F1.25 c)	Change "c) insulated cables protected by..." to "c) LS&F insulated cables protected by earthed..." and change " <i>BS EN 61368-21</i> ;" to " <i>BS EN 61386-21</i> ;"

F1	Recommendations	F1.25 d)	Change "d) insulated cables protected by type AH rigid PVS conduit with <i>BS EN 61386-21</i> " to "d) LS&F insulated cables in earthed metal trunking or ducting which complies with <i>BS EN 50085-2-1</i> ; or" and delete "Note: PVC conduit may not be suitable for use on some stages without additional mechanical protection; or "
F1	Recommendations	F1.25 e)	Change "e) insulated cables protected by trunking with a heavy gauge (or higher) mechanical classification complying with <i>BS 4678-2</i> or <i>BS EN 50085-1</i> ; or" to "e) LS&F insulated cables protected by type AH rigid PVS conduit complying with <i>BS EN 61386-21</i> Note: PVC conduit may not be suitable for use on some stages without additional mechanical protection; or "
F1	Recommendations	F1.25 f) & g)	Insert a new item and renumber to read " f) LS&F insulated cables protected by trunking with a heavy gauge (or higher) mechanical classification complying with <i>BS 4678-2</i> or <i>BS EN 50085-1</i> ; or g) any other system of wiring which can be shown to have mechanical strength equivalent to or greater than one of the above systems."
F1	Recommendations	F1.27	Change "...be considered in small premises and in other premises where..." to "...be locally where..." and add to read "are unlikely to be damaged for the foreseeable life of the installation."
F1	Recommendations	F1.28	Change "...should be avoided..." to "...should not be used for permanent wiring..."
F1	Recommendations	F1.29	Delete "Consideration should be given for operational convenience to the provision of switches or neon/LED 'mains on' indicators on sockets." and replace with "Switches or indicators including those on socket-outlets should only be used where this will not be detrimental to the use of spaces within the premises."
F1	Recommendations	F1.32 & Note:	Change "All sockets supplying mains voltage should be protected by residual current devices (RCDs) of 30 milliamps/40 milliseconds sensitivity complying variously with BS EN 61008-1 or BS EN 61009-1. For convenience each socket may have an integral RCD other than where the supply to the socket is fed from a dimmer." to "All sockets up to 32A should be protected by residual current devices (RCDs). For convenience each socket may have an integral RCD rated at 30mA." and delete "Note: Where the risk is very low and the sockets cannot be used for equipment that could conceivably be used outdoors, for example in first-floor offices, and the inspection and maintenance regimes likely to be good, it may be inappropriate to provide RCD protection. "
F1	Recommendations	F1.37	Change "...and harmonic filtration equipment..." to "...and harmonic mitigation or filtration equipment..."
F1	Recommendations	F1.39	Add sentence following "...subject to frequent changes of positions." to read "...subject to frequent changes of positions. Designers of electrical installations should take into account the requirement to meet short-circuit disconnection times on sockets where long extension leads may be connected."
F1	Recommendations	F1.41	Delete "Residual current devices (RCDs) should have 30 milliamps/40milliseconds sensitivity and comply with <i>BS EN 61008-1</i> or <i>BS IEC 1008-2-2</i> . RCD protection should be provided to all sockets supplying mains voltage located on stages and in technical areas on the following basis: Sockets intended for the connection of stage lighting luminaires and controlled by dimming equipment should be protected by RCDs on the basis of one RCD to no more than 12 final sub-circuits. (The actual number of sockets protected will depend upon the design of dimmer racks installed.) The RCDs should be fitted on the dimmer racks and not on the individual sockets irrespective of the ratio of sockets to RCDs. Integral RCDs should be provided on all other sockets supplying mains voltage installed in technical areas except where groups of sockets, supplying permanently installed equipment, are fed from sub-circuits with RCD protection. Any socket intended to supply portable electrical or electronic equipment or instruments for use by performers or musicians should be protected by an integral RCD." and replace with "Sockets intended for the connection of stage lighting luminaires and controlled by dimming equipment should be protected by RCDs on the basis of one RCD to no more than 6 final sub-circuits. (The actual number of sockets protected will depend upon the design of the dimmer racks installed.) The RCDs should be fitted on the dimmer racks and not on the individual sockets irrespective of the ratio of sockets to RCDs."
F1	Recommendations	F1.44	Change "...flexible cables in the stage area." to read "...flexible cables in the stage area for circuits up to 16A."
F1	Recommendations	F1.44 a) i)	Change "...BS 7919 ..." to "... BS EN 50525-2-21..."
F1	Recommendations	F1.44 a) ii)	Change "...in BS 6004 or equal, with a minimum voltage designation of 450/750 (Ordinary Duty Flexible as defined in BS 7540-3)." to "...in BS 6004 or equivalent."
F1	Recommendations	F1.44 b) iii)	Change "...BS 7919 ..." to "... BS EN 50525-2-21..."
F1	Recommendations	F1.44 b) iv)	Change "...for existing cables may be rubber insulated and sheathed as specified in BS 6007 or equal, with a minimum voltage designation of 450/750. (Heavy Duty Flexible as defined in BS 7540-3)." to "... existing cables may be rubber insulated and sheathed as specified in BS EN 50525 or equal, with a minimum voltage designation of 450/750."

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@abt.org.uk. You may wish to suggest an

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

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

Latest Titles

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

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

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

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



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

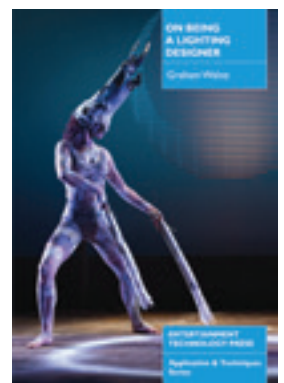
Paule Constable and Richard Pilbrow hosted a one-day Symposium on 30th October 2016 to celebrate the 40th Anniversary of the opening by Her Majesty the Queen of the National Theatre designed by Sir Denys Lasdun. The National Theatre: A Place for Plays, presented by the Association of British Theatre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

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

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

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

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



TECHNICAL STANDARDS FOR PLACES OF ENTERTAINMENT

Revised in April 2019

Available now from www.etbooks.co.uk

2015

TECHNICAL STANDARDS FOR PLACES OF ENTERTAINMENT

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

Members News

The ABTT recognises the very severe impact that the Coronavirus pandemic and the measures being implemented to deal with it are having on all our members and supporters. We understand how difficult it will be for individuals, theatres and companies during these exceptional circumstances. It will be very important that the theatre industry acts as one and in concert to support and care for everyone who contributes to it. With this aim, the ABTT will do its utmost to work with all other industry organisations and to serve, support and inform during these onerous times.

Membership Renewals for 2021

Thank you to all who have already completed their membership renewal for 2021. For those who still have to do so, please be aware that Subscriptions for this year are now overdue. Membership runs from the 1st January - 31st December. We understand the uncertainties facing our industry, so we have made renewing membership with the ABTT as easy and cost-effective as possible.

You are now able to pay for membership via monthly instalments over 10 months or 4 consecutive months. There is no difference in benefits if you choose the monthly payment option or the annual one-time payment. By renewing your membership, you will be assisting us in achieving our charitable aims and in continuing to support you during this trying time. Your ABTT membership also qualifies for Gift Aid increasing the value by 25%. We thank all who have made a Gift Aid declaration: if eligible, please do consider doing so.

Given the current circumstance the minimum subscriptions have been held unchanged for 2021. *Members & Associates: £80; Early Career (26-30): £50; Young (25 and under): £25; Retired: £35; Affiliated Organisations: £250 and Large Affiliated Organisations £500.* Overseas renewals should add £7.50 for postage. As always, should you have any questions do contact the office.

The ABTT continues to work in setting and upholding standards in technical excellence, safety and compliance for live performance. We are supporting technical and production practitioners in all disciplines most recently by releasing various COVID-19 Guidance Notes, resources and information.

In addition we continue to provide the opportunity for you to develop and maintain your professional competence and networks by presenting ABTT online events and for you to shape the future of your Industry through participation in the ABTT Committees. For those with FULL

Membership there is also the opportunity to stand as or nominate a candidate for election to the Council – the ABTT's Board of Trustee-Directors. The ABTT is committed to producing new and innovative online seminars and webinars. From 2021 there will be more than 50 hours of online content available exclusively for ABTT members!

ISG Members' Renewals

The ABTT is extremely grateful for the on-going support throughout 2020 of all the ABTT Industry Supporters Group members. A full list of these benefactors is to be found on our website and on the first three pages of this edition of *Sightline*. The contribution that the ABTT Industry Supporters provide will be critical to the ABTT in 2021. Renewals are now due and we thank everyone who has already been in contact. We understand the challenges everyone in our industry is facing. Please do contact us about your ISG membership for 2021. We are always pleased to hear from you; if you are seeking to renew but would like to discuss how that might be managed for this year we would be very happy to understand how we can help and if circumstances dictate that you will need to pause your support we would much rather know than hear nothing. In any of these circumstances or if for any reason your company is not listed yet please do contact the ABTT office. New members can still join for 2021. It is always possible to join this "go to" list of theatre and live performance expert suppliers, service providers and supporters.

New Members

ABTT Associate Members Oliver Brown, Beatrice Banionyte, Matthew Noddings and Martin Radmall have been admitted as Full MEMBERS of the ABTT by the Council of Trustee-Directors. Congratulations!

To be admitted as a Full MEMBER of the Association costs nothing and acknowledges that you have gained relevant experience and demonstrate a manifest commitment to the technical subjects of the art of theatre. All you need do is submit a CV and contact details for two referees: please consider applying for admission as a Full Member TODAY!

New Young Associate Representative:

We would also like to congratulate Jessica Nicholls on her appointment as a Young Associate Representative to the ABTT Council. The ABTT's younger membership will drive the future of technical and production practice in the United Kingdom's theatre industry. The ABTT considers it of crucial importance to support and

harness the energy and innovation of this generation. We welcome and encourage anyone who is interested in the technical and production disciplines and under 26 to join as a Young Associate. You will be responsible for the future governance of the ABTT and your support and engagement are essential if the ABTT is to continue its vital work in the future.

To be appointed a Young Associate Representative to the ABTT Council costs nothing, all you need do is submit a CV, brief explanation of your reasons for applying and contact details for two referees: please consider applying TODAY! If you would like to talk to someone about the role please contact the ABTT Office.

Request a course at your venue:

Many of our courses are available to be run on-demand via peripatetic delivery. Courses may be delivered anywhere within the UK, or abroad and the ABTT welcomes interested theatres or organisations who wish to act as a host venue to get in contact.

If you are interested in finding out more, please contact us on training@abt.org.uk with the following information: 1. the course you wish to run; 2. venue location; 3. number of candidates and 4; availability in your calendar.

Other News:

ABTT's 60th Anniversary!

2021 sees the Association of British Theatre Technicians celebrate the diamond jubilee of its foundation. The Association will be marking this milestone with a year of online activities, and a resumption of the popular face to face in-person events when restrictions allow. It will also take the opportunity to dip into the rich depths of the ABTT Archive in order to share videos and interviews. There will also be more seminars, new awards and innovative events throughout the year.

ABTT and PLASA join forces for 2021 event

The ABTT and PLASA (the association for the live entertainment technology industry) are pleased to announce a collaboration that will bring the 2021 editions of both the ABTT Theatre Show and the PLASA Show under one roof from 5-7 September at Olympia London.

For 2021 only, this partnership between the two established associations aims to reduce pressure on the exhibition calendar as the industry's eco-system recovers from the impacts of the pandemic and will bring the broad sector together for one landmark event. More information can be found on the ABTT Website.



Safety Matters

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

Tel: 020 7242 9200

Email: office@abtt.org.uk

Spring 2021

WORKING FROM HOME

With working from home set to continue for many months, research by the Royal Society for Public Health (RSPH) shows that there are key health and wellbeing disparities between different groups of people who made the move to home working as a result of Covid-19. The most common: feeling less connected to colleagues (67%), taking less exercise (46%) and developing back problems (39%) – see below for more details.

Home working introduces a new set of challenging working patterns. Work has to fit in with home life, children, animals etc. Also, your employers 'Duty of Care' still applies. To help with these issues consider these new risks and assess the impact upon your life and others around you.

Where a skeleton staff might be left alone in your workplace this can also potentially cause problems. Self-assessment of risk might be a temporary solution and also being able to communicate with a colleague or manager.

R.S.I. AND W.R.U.L.D.

R.S.I. (Repetitive Strain Injury) and W.R.U.L.D. (Work Related Upper Limb Disorder) are terms given to conditions related to repetitive movements performed for long periods of time, often found in offices workers but which can also affect theatre technicians when operating keyboards.

As most theatres are closed at this time, many employees believe that remote working is having serious effects on health and well-being.

How many theatre technicians and DSMs are dealing with awkward sitting positions whether at work or at home?

Just take a look at the following:

- Production desks – the occupants sitting on top of bunker seats?
- Sound operators often stand up (a good position), but when sitting down, are many sitting on a flightcase with no back support?
- The lighting operator perched on top of an audience seat or flightcase, obstructing the blood flow to their legs?
- For the DSM secured at the side of stage, having to control the technical rehearsals and ensure the cues are correctly given, the tension and anxiety which builds up in a twisting body, craning to see the completed cue, can be mind blowing!

Symptoms of RSI which you should be alert to:

- Tingling in the fingers. The sensation is usually due to compression on a nerve, such as in wrist (Carpal Tunnel Syndrome). Poor wrist posture while operating can reduce the space in the carpal tunnel and the repetitive action of typing leads to irritation of the median nerve. This causes the classic symptoms of tingling in the tips of the fingers of the thumb, index finger and middle finger.
- Deep aching pain in the wrist – this occurs especially in people who type a lot and is often worse at the end of the day. The person often feels stiff in the morning, the wrist loosens up by lunchtime and then aches in the afternoon. This ebb and flow of symptoms continues as the condition worsens and may develop into constant pain, even at rest.
- Aching over the outside of the elbow – brought about by lifting light objects. Tennis elbow often presents in this way. There is often tenderness (pain when pressing) on the outer tip of the elbow, and other symptoms include a deep aching pain

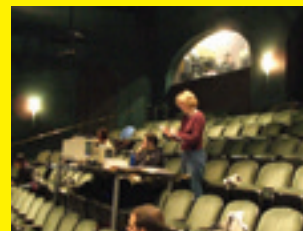
along the back of the forearm when typing or lifting objects. You don't have to play tennis to develop tennis elbow! It develops because the small muscles in the back of the forearm, which help us lift objects when we pick them up, become overloaded.

Shoulder impingement can affect other theatre departments – a catching pain when performing certain movements, e.g., lifting an object into an overhead position can affect technicians such as painters and electricians who frequently work above shoulder height, rigging light fittings. Stage crews performing manual tasks – shoulder impingement can affect anyone whose working pattern involves lifting and carrying.

Consider:

- Taking regular breaks from repetitive tasks:
- Stretch regularly – stand and stretch if you can
- Hold a good posture and don't slouch. Ideally your head and back should form a straight line from your ears to your pelvis:
- When typing try to keep fingers pointing forwards – touch type if you can avoid using the same fingers over and over again.
- Do not hold the phone between your ear and your shoulder – if you are a regular user of the phone, use a headset?

It can't be stressed enough that if you believe that you or your colleagues are experiencing RSI conditions, then take a look at your seating arrangements during a performance.



A CONFERENCE VENUE FINED

Birmingham City Council prosecuted the National Exhibition Centre after this incident in January 2019 at the International Convention Centre (ICC), which it owns.

A freelance stage manager was struck on the head by a scenery counterbalance weight which had fallen from a high-level stage platform. The victim suffered a serious head injury, requiring surgery. The falling weight also hit another person on the stage, who was not seriously hurt.

The court heard how the stage manager was assisting in the set-up of scenery ropes on the stage for a performance by Chinese dance company Shen Yun, when the 11.5kg weight fell from the platform 11 metres above him.

Investigators found that the measures in place on the stage's fly-platform were inadequate to deal with scenery weights, in particular they should never be stored higher than the toe board to prevent them falling off. The risk assessment failed to address the risk of scenery weights falling from that side of the platform, if stored higher than the toe board.

The National Exhibition Centre Ltd was fined £400,000 with costs of £8,864 after pleading guilty to breaching section 2(1) of the Health and Safety at Work Act. Following the incident, the National Exhibition Centre appointed a

contractor to install fencing on the fly platform to ensure the incident could not happen again.

Councillor Philip Davis, chair of the city council's Licensing and Public Protection Committee, said: 'This shows what can happen if a business fails to ensure that adequate control measures are in place proportionate to the potential risk of harm. 'Heavy objects falling from height are well known to cause serious or fatal injuries. The council will continue to act where minimum standards of health and safety are not met or flouted...'

The stage manager has since returned to work.

ABTT BLUE BOOK: CODE OF PRACTICE FOR FLYING

Operating Principles

Counterweight Flying

Ensure there is appropriate guarding below all levels at which counterweights are handled suitable to contain a falling counterweight. This may take the form of panels, rigid mesh or flexible nets.

Exclude non-essential personnel from the areas below the galleries.

Do not allow counterweights to be stacked above the height of any kick or restraint plate.

To avoid overload ensure that unused counterweights are stacked not to exceed the load capacity of the gallery and in accordance with the loading plan. The gallery floor should be marked with the loading plan giving load capacities per square metre.

TWO WORKSHOP HEALTH AND SAFETY FINES:

First – a precision tool manufacturer has been fined after an employee's index finger was severed and his thumb deeply lacerated in an incident involving a radial arm drilling machine. The saw operator was using a radial arm drilling machine when his glove became entangled, resulting in the injuries.

The Health and Safety Executive (HSE) issued two improvement notices to the company following the incident for failing to provide employees with appropriate training on the use of the radial arm drill and failing to carry out a suitable and sufficient risk assessment of the drill. This should have included informing employees not to wear gloves when using this type of machinery.

The company pleaded guilty to breaching Section 2(1) of the Health and Safety at Work, etc Act 1974 and was fined £100,000. The HSE inspector: "This incident could so easily have been avoided by simply carrying out the correct control measures and safe working practices. Companies should be aware that HSE will not hesitate to take appropriate enforcement action against those that fall below the required standards."

Second – an engineering company has been fined after a worker developed hypersensitive pneumonitis, a serious and irreversible respiratory illness, as a result of occupational exposure to welding fumes and metal working fluid over a 30-year period. Liverpool Magistrates' Court heard how the welder-fabricator was at risk of inhalation of welding fumes and metal working fluid mists, potentially containing harmful bacteria. This exposure over his 30-year career with the company led to the development of the condition, which has seriously impacted the employee's life, preventing work and making oxygen necessary for day-to-day tasks. He is currently being assessed to ascertain whether a lung transplant would be beneficial.

An investigation by the Health and Safety Executive (HSE) found the company had failed to implement industry standard control measures such as Local Exhaust Ventilation (LEV), Respiratory Protective Equipment and a management system for the metal working fluids.

Fluid systems which contain water or water-mixes can become highly contaminated with harmful bacteria and must be monitored and controlled. Had these measures been observed, development of the illness could have been prevented. The Company pleaded guilty to a breach of Section 2(1) of the Health and Safety at Work etc. Act 1974. It was fined £10,000 and ordered to pay costs of £9,555.29. The HSE inspector commented "Companies should be aware of the need for a management regime in order to prevent occupational ill health, and that failure to control exposure to metal working fluids and welding fumes can result in serious and irreversible respiratory illness."

CHANGES TO THE BRITISH STANDARD GOVERNING POWDER EXTINGUISHERS

CHANGES TO the British standard governing class D powder have seen the colour code changes from blue to signal violet, with a 'clearer differentiation' the reason for the change. The Fire Industry Association (FIA) reported that amendments were to BS 5306-10: 2019 Fire extinguishing installations and equipment on premises. Colour coding is used to indicate the extinguishing medium contained in portable fire extinguishers. Code of practice – which came into effect on 31 October 2019 – were published in October 2020, with the 'major change' being the colour code for class D powder extinguishers for metal fires.

The change of colour 'reflects the characteristics' of such powders, 'which are often very different to other powders'. The FIA noted that the 'clearer differentiation was felt to be necessary for the safety of the operator', and as a result all newly manufactured class D extinguishers 'will exhibit the new colour', with colours used for all other media 'unchanged'



New From ETP



THE SOUND OF THEATRE

From the Ancient Greeks to the Digital Age

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.

Available from www.etbooks.co.uk and www.amazon.co.uk



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WITH THE ROYAL NATIONAL THEATRE

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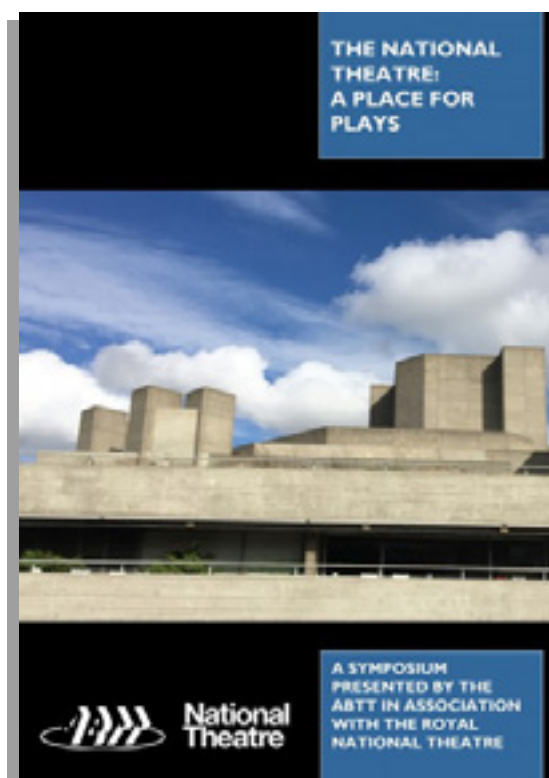
ABTT MEMBERSHIP PRICE: £8.95

www.abtt.org.uk

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
CAST	Doncaster
Central and Brook Theatres	Chatham
Central Saint Martins UAL	London
Century Theatre	Markfield
Chapter	Cardiff
Chichester College	Chichester
Chichester Festival Theatre	Chichester
Chroma-Q Theatre	Leeds
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
Kiln Theatre	Kilburn
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
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
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
Southport Dramatic Club	Southport
Snape Maltings	Saxmundham
Soho Theatre	London
Stafford Gatehouse Theatre	Stafford
St Mary's University	Twickenham
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

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

TECHNICAL STANDARDS FOR PLACES OF ENTERTAINMENT

NEW FOR 2020

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*The Health and Safety Executive acknowledges that these
Technical Standards have been developed by an entertainment industry
Standing Committee to help make improvements in building, maintaining,
managing and operating places of entertainment.*

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