

April / May 2010

In the blue LEDs this issue:

Is Technology a Distraction? • Lighting a 'Die Fledermaus' as never seen before • Are blue and white LEDs our lighting salvation? • David W. Kidd lights on crutches... and much more...

Price to non-members £5.00

*Jim Woodley had lit 'Die Fledermaus' many times in the past. He knew it well. Or so he thought - see p16.
Photo: Andrew Blackholly.*

FOCUS

The Journal of the Association of Lighting Designers

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#

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Rick's Reflections

I am working in the US on the touring version of *Billy Elliot*. One of the more enjoyable yet daunting challenges of a show this size, that is destined to be replicated, is the role of documenting and notating every aspect of the specification, rigging, focus, cueing and running of the lighting. To that end I am just one of a fantastic team that includes an Associate Designer, an Assistant Designer, a Programmer, Production Electrician and their team who run the show and the followspots and maintain everything from lights, smoke and the usual array of extras that get loaded on the Electrics. All of them creatively contribute to the success of the lighting design and the repeatability of what we do here in Chicago on the upcoming tour. All are full time professionals with a passion for lighting in all its forms.

Under the new ALD membership categories, which are now in effect, all these people can be either Professional Designers or Professional Members. We have so many interests in common and we are all involved in the lighting design, which is why membership of the ALD is appropriate to all these different highly skilled and committed lighting professionals.

Rarely in the UK do we work as part of such a large team, but as you move from job to job, please act as an ALD ambassador to let the lighting folk you encounter know that ALD membership is for them and of real interest and benefit.

I want to draw everyone's attention to a few important dates. First will be **By Design Day**, which is the new international name for *Light Relief Day*. Once again we are asking everyone in

the industry to remember those in our very freelance and precarious business who may have had some bad luck or found themselves in a difficult situation due the illness of family members. *By Design Day* on April 24th is the time when those of us on royalties are asked to donate one day's royalty for the benefit of *Light Relief* or if you have something running in the US or Canada you can have the contribution credited to *Behind the Scenes*. But please do not hesitate to make a donation even if you are not on royalties. I am pleased that *Light Relief* has recently been able to respond very quickly to help people in the industry and April 24 is the perfect day to support *Light Relief*.

I also want to ask as many members as possible to attend the AGM this year on May 15th. We will advise you of the venue but it is the best way to help us shape what priorities the ALD has for the next year.

As a professional association we continue

to share information, offer individual support and strengthen the understanding of lighting design. I can think of few people who have done more for the cause of lighting than Francis Reid who through out his long career as designer, educator, author, symposium organiser and general ambassador at large for lighting across the globe. He has been in our thoughts as he has not been in such good health but I am pleased, as you will read in *Focus* that he is doing better.

Francis is already a Fellow of the ALD, which is our highest honour but the Executive thought we would like to celebrate Francis' unique contribution to our industry in an appropriate way.

The Michael Northen Bursary is given annually to a student at PLASA, and the ALD has recently sponsored an additional award. It gives me great pleasure to announce that we will now annually make that award in honour of Francis Reid.

regards, Rick 🍀



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Stardate Sunday February 21st 2010....

Mark Jonathan boldly goes where no man has gone before.

In the distance, the hills were snow covered and the sun was shining but I wasn't in my usual winter Alpine haunt; this was Stratford-upon-Avon. Former RSC casts and creative teams had been invited by Michael Boyd, Artistic Director, and Vikki Heywood, Executive Director, to view the progress of their new RSC theatres, and very impressive they were too.



Me and my new skis. I did ask them if they could spray them black.



In his welcome speech, Michael Boyd paid tribute to the work that Vince Herbert (Head of Lighting) was doing – promising various inventions. I have no doubt the new installation will be a treat for the LDs. It's certainly a brave step to completely re-configure the main theatre from a traditional 'end-stage' to a dramatic thrust. Michael made a convincing argument for placing the actor in the midst of the audience; He reminded us that this was what Shakespeare experienced when he wrote his plays. While the old fly tower and stage remains, the tiered seating now grows out from the sides of the old proscenium forming a pronounced thrust stage.

Clearly, the relationship between actor and audience will be much closer than in the old theatre; what compromises this may make

for set designs we have yet to see... Low cross light looks unlikely but contrary to most existing thrust stages, flying over the main thrust area will be possible if desired. Outside, there is a new landmark – a tall observation tower which replaces the old water tower while many of the cherished features of the old exterior remain.

Now, I'll fast forward a month and I'll segue neatly to snow covered mountains, sunshine, blue skies and a cool breeze... having opened a play, an opera and a ballet I had to get away from the sometimes stressful, often sedentary, production desks and get back to my other passion...

As you know, LDs don't usually get paid 'holiday pay' and it's unlikely that the regular fees we earn will finance much in the way of holiday frolics. So it's always

nice to dream of, or even actually receive, royalties from a show. I'm disturbed to hear that producers are trying to negotiate no royalties at all into some West End contracts and tours.

I'm afraid in my case a year doesn't seem to go by without the disappointing letter from a producer saying that, although he'd agreed in the contract to pay a royalty, as the show hadn't done so well he was sure we would understand that he won't be paying us the promised royalty... The letter is always retrospective and the original fee was never enough to cover all the time we spent on the show. Bang goes the 'holiday money'... While I'm used to this happening in

commercial theatre it came as a bit of a surprise to find two major ballet companies (not British) making a bold attempt in colluding to steal my work without payment.

I'll be discreet in not mentioning names in print but imagine a full length ballet that has been successfully presented by a number of leading ballet companies in Europe and the USA. By chance, I bump into the director who says: "Have the Japanese been in touch?"

I say "No"... We investigate. The German state company for whom I lit the production has made a rental agreement with a ballet company in Japan. We contact the Germans, who reply, saying I have no rights over the 'physical' aspects of the production. We refer the new administrator to his contract with us (in German) which clearly states the situation

over rights and further exploitation. Meanwhile, we raise it with the Japanese company who inadvertently confirm that they have all the lighting data they need so they won't need me, besides they also admit that they can just watch the DVD of the production which is on sale worldwide... We told them how much they would have to pay. Suddenly, I was filling in tax papers for the Japanese. It really does amaze me that avoiding paying us for our intellectual property is going to make that much difference to the budget.

The next British designers' exhibition is approaching and we are looking at an ALD members' entry. I think it's really important to be a part of this exhibition and to be in the excellent catalogue. Please keep your eyes open for further information and think about participating.

By the way, in the last issue of *Focus*, Janine Davies wrote to us about Michael Billington's article which came out of the LDs talking to the Critics' Circle. Janine (along with others) quite rightly took issue with Michael's point that suggested we always earn a fee of £3,800...

Rest assured that while Michael didn't think that was very much, of course, it was a bit of a mis-understanding between what the National Theatre was paying, which got reported as the general 'regular' fee that we earn. However, I did rather hope that regional managements that are paying less than the quoted £3,800 might wake up and say "We must pay our LDs more."

Ok, in my dreams... 🚫

"Beam me up Gavin!" Paul Anderson, me and Wayne Dowdeswell pose for Timothy-John Kirk backstage just seconds before Andy Hayles was teleported back to Charcoalblue HQ.



Office Oracle

Latest news from Ian's production desk



2010 AGM

The Executive is pleased to announce that this year's Annual General Meeting will take place on **Saturday 15th May 2010**.

The venue for the meeting has yet to be decided, but will be in London. Final details will follow via an email bulletin. If you do not receive these, then please feel free to contact the office nearer the date of the meeting itself.

Subscription Fees

2010 / 11 subscription fees were due on April 1st for all members.

Those members who do not pay their subscriptions by standing order should have by now received a letter stating how much they owe to retain their membership for another year. If you have not yet received this, or you have not informed us of a change of address, please contact the office as soon as possible.

Those members who do pay by standing order, will receive their new membership card sticker as soon as we have checked that full payment has been received by our bank. Please be patient during this process as we receive over 350 standing order payments

into the account within 6 days at the start of April, amounting to some £12,000. To help speed up this process we ask members to include their membership number as a payment reference.

Professional and Designer members who have still not changed their standing order to £75 for 2010/11 and have not paid the overdue amount before 1st July 2010 will be assumed to wish to change to their membership to the Associate category and their membership will change to reflect this. So please ensure your payment instruction matches the rate for the membership category you wish to have.

Those Associate members who have still not updated their standing order ahead of the payment date will be

contacted in due course to pay the remainder owing. Chasing up members' payments is a time consuming exercise which means that we cannot be working on members' behalf to improve the other services we offer you.

Please remember that a standing order is an arrangement between you and your bank, the ALD cannot change the details of such an arrangement for you.

Please see previous issues of *Focus* or the website for the current subscription rates.

Whatsonstage Theatre Awards

The Whatsonstage.com Awards are the only major theatre prize-giving decided by the public. The Best Lighting Designer Award is



sponsored by ALD Corporate Member White Light, and the 2010 winner was **Natasha Katz** for *Sister Act* at the London Palladium

Other designers nominated were: **Johanna Town** – *Speaking in Tongues* at the Duke of York's; **Kevin Adams** – *Spring Awakening* at the Lyric Hammersmith & Novello; **Mark Henderson** – *Enron* at the Royal Court; **Mike Robertson** – *On the Waterfront* at the Theatre Royal Haymarket; **Neil Austin** – *Life Is a Dream* at the Donmar Warehouse & *Madame de Sade*, Donmar West End at Wyndham's.

Olivier Awards

ALD members have been at the forefront of the nominations of the theatrical awards this season.

Congratulations to **Mark Henderson** who has won the Best Lighting Design Award at the 2010 Olivier Awards for *Burnt by the Sun* at the National Theatre. (see p. 10-11).

Mark was also nominated for *Enron* at Royal Court Downstairs and now showing at the Noel Coward Theatre. ALD member Jon Clark was nominated for *Three days of Rain* at the Apollo Theatre and *Spring Awakening's* Kevin Adams was the final nomination for his work at the Novello Theatre.

Knight of Illumination Awards

The Knight of Illumination Awards, organized by the ALD, STLD, and Clay Paky, and sponsored by Osram, provide public recognition for outstanding achievements in lighting design by UK-based designers, in a number of professional areas.



At the same time, the Knight of Illumination Awards forge much closer ties between the worlds of lighting design and the lighting industry as a whole.

The Awards for "The Knight of the Illumination" will be judged by a panel of professional reviewers working in the specific categories, selected and coordinated entirely by STLD and ALD. Our associations of lighting designers ensure that these awards go to recipients showing professionalism and integrity of lighting design each year.

Registration closes on 31st May and the awards will be presented on 12th September. For further details and to submit a nomination, please visit www.knight-of-illumination.com.

PLASA Focus 2010

PLASA Focus takes place on 27th - 28th April 2010 at The Royal Armouries in Leeds. More details are given on pages 12-13.

The ALD will once again be in attendance in the Royal Armouries Hall at stand RA-C7. Pop along to say hello and allow us to put a face to a database entry! We will even accept payment for your 2010/2011 subscriptions by cash or cheque!!



Website News

If you log into your profile page of the ALD website, you will now see an option in the menu list in the left hand column entitled 'Members Page'. Here you will find a new range of information and forms to be able to download or reference, as well as a link to the online payments page and to the Charities Buying Group and other members' benefits as they come online. We are also looking into the logistics of how to be able to offer back copies of *Focus* to view online in this area, and we'll let you know more as and when we know more!

The ALD Filing Cabinet contains the standing order form, a guide to payments, the fees database feedback form for Professional Designers, the ALD Contract rider, suggested fees document and Equity minimums. We hope to add more in the future.

We are also trying out a Jobs page. So whether you are looking for a full time job, part time job or some casual work or looking for

someone to fill a position within your company, then drop the office a line with the relevant details.

As mentioned in the last issue, there is also an area for members' feedback about the future of the Association that has been sent into the office. For a more live and interactive version of this, there is the ALD Forum as run for us by the Blue Room (see details in the last issue).

So log into the site, update your details directly to the database, utilise the facility to upload your pictures to support your show credits and renew your membership in one easy on-line session.

And don't forget to give us your feedback or suggestions for other features, and we'll see what we can do!

It's no fool's joke!
ALD subs were due
1st April
True!

Office Oracle

Members Visit to *Love Never Dies*

Members are invited to visit the Adelphi Theatre for a look at the lighting of *Love Never Dies* lit by Paule Constable.

The principal characters of *The Phantom of the Opera* continue their stories in Andrew Lloyd Webber's *Love Never Dies*.

This brand-new show is a roller coaster ride of obsession and intrigue... in which music and memory can play cruel tricks... and the Phantom sets out to prove that, indeed, *Love Never Dies*.

Lit by Paule Constable, designed by Bob Crowley and directed by Jack O'Brien this visit should prove to be an invaluable insight into large scale West End Theatre for all members.

The visit will take place some time in late May/early June and we will email all members when a firm date and time has been arranged.

Focus in 'Colour'

Some readers may have spotted that this issue of *Focus* has a new 'feel'. After several years of excellent service from our digital printers, we have reached a circulation where litho printing makes economic sense, and with it comes the benefit of full colour on each and every page. No longer will the editor have to spend long evenings juggling words and pages and author's feelings (sorry MJ) to make

sure the balance between production photographs in colour appear appropriately sandwiched by text in black on the mono-only pages. No longer will hours be spent in 'pre-flight' checking each page for an errant semi-colon hanging on in colour.

In order to test the veracity and perspicacity of the new printing method, we commissioned a colour test card (reproduced below) for the enjoyment of some and embarrassment of others. 🍷



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Focus Magazine ISSN: 1364-9299

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To submit ideas for articles, information, correspondence, corrections and any comments about *Focus*, please email editor@ald.org.uk. Owing to space restrictions, we regret that we do not accept press releases for publication in *Focus*. However, Corporate members of the ALD may send press releases to the ALD office (office@ald.org.uk) so that they can be posted on the News section of the ALD website for immediate and wider coverage. Corporate members only may advertise in *Focus*, please contact the office for details. Editorial guidelines for authors are available on request from the editor.

The opinions published within Focus are not necessarily those of the ALD. E&OE.

New Members

welcome to...

Professional Member

Martin Chisnall,
New Malden

Dave Dickinson*,
Southampton

Alan Luxford*, Brighton

Ben Pickersgill*, Chichester

Associate

Dan Young, London

Chris Howcroft, Romford

George Russell,
Leicestershire

Student

Mika Haaranen,
Helsinki, Finland

Richard De Vere White,
Hertfordshire

Natalie Davey, Guildford

* from Associate

Dates for your diaries

24th April

'By Design Day' (previously 'Light Relief Day')

27-28th April

PLASA Focus 2009, Leeds *

15th May

ALD Annual general Meeting.

31st May

Registration closes for Knight of Illumination Awards

13-15th June

Theatre Engineering and Architecture Conference, London www.theatre-event.com/conference

16-17th June

ABTT Theatre Show*

1st July

Deadline for subscription payments

12-15th September

PLASA 2010*

12th September

Knight of Illumination Awards ceremony

1st November

Deadline for 2011 Yearbook info submissions.

**the ALD will have a presence at these events.*

ALD # WANTED

Keen and talented LD to work on the ALD's contribution to the **National Exhibition of Theatre Design** and join the creative team for **The UK National Exhibit at PQ2012** on a voluntary basis

Commitment and creative flare are essential.

The national exhibit starts its life in Cardiff January 2011 as an open exhibition. A juried version then goes to Prague in June 2011, where the LD will work with Peter Farley to create an immersive environment that will be as much about the process of creating design on stage as the end product.

A larger version of the Prague exhibit may tour the UK in the Autumn of 2011, before being installed in the V&A in 2012.

Apply to: office@ald.org.uk

Mark Henderson wins with *Burnt by the Sun*

Mark Henderson won Best Lighting Design at the 34th Laurence Olivier Awards for *Burnt By The Sun* at the National's Lyttelton Theatre. This is his fifth Olivier, and this year he also received a second nomination for *Enron*. Other designers nominated were Kevin Adams for *Spring Awakening* and Jon Clark for *Three Days of Rain*. Congratulations Mark, Kevin and Jon!

For full details of all the 2010 Olivier Award nominations and winners, visit: www.officiallondontheatre.co.uk/olivier_awards/



LAURENCE
OLIVIER
AWARDS



Left: Ciarán Hinds – Kotov, Michelle Dockery – Maroussia in *BURNT BY THE SUN* by Peter Flannery. From the screenplay by Nikita Mikhalkov and Rustam Ibragimbekov at the National Theatre – Lyttelton. Directed by Howard Davies, lit by Mark Henderson. Photographs: Catherine Ashmore.

Right: Michelle Dockery, Holly Gibbs – Nadia, Ciarán Hinds and Rory Kinnear – Mitia.





PLASA FOCUS 2009. Photo: Chris Toulmin

Focus in Focus 27-28 April

PLASA's industry show in the north is the place to meet!



New style networking event offers chance to see host of new products

some of the 31 new exhibitors who have signed up to PLASA Focus since the first show last year – leading to a completely sold out event.

Lighting and video launches from new exhibitors include the AC-ET stand, which will feature pioneering new LED lighting, video and control systems from Chroma-Q, InnovaLED and Jands; Artistic Licence

will show its latest lighting control technologies including DALI & DMX, RDM & Art-Net, Colour-Tramp and interfacing solutions; Chauvet will highlight its new products for production – COLORado 1 Tour, COLORado 2 Tour, COLORado Batten 72 Tour with 72 1W RGBWA LEDs and Q-Spot 260-LED high power moving yoke; and SGM will show its new family of 'Idea' moving heads with different beam apertures - giving them the capabilities of high powered profile and

wash lighting with superior colour mixing.

There will be many more new products on show, too, from the 85 exhibitors returning from last year's inaugural PLASA Focus - underlining the unique qualities of the show and its place at the heart of the industry in the north of England.

The two-day Education & Learning Programme, which runs alongside the exhibition, proved a major success last year, and will cover an equally diverse range of topics in a series of seminars presented by some of the industry's leading bodies.

The ALD will again be represented by Nigel Lawson Dick (above) who did such a sterling job upholding the reputation of the non-existent ALD pool team last year at the exhibitors' evening bash. So please go and visit Nigel on stand RA-C7 with your advice for winning this year's pool competition, or just meet up with fellow ALD members, some brandishing chequebooks, we hope!

Full details of seminars, an exhibitor list and a floor plan are at www.plasafocus.com/leeds. Like the show, admission to all seminars is free; however, visitors must register to reserve a place as space is limited. 🍷

31 new exhibitors among swathe of new product launches

PLASA Focus: Leeds 2010 – which takes place on Tuesday 27 & Wednesday 28 April at the Royal Armouries – is fast building its profile as a show for new products as well as networking, with a host of new products launching in Frankfurt scheduled to make their first UK appearance in Leeds. Among these are the latest developments from

PLASA FOCUS

LEEDS 2010
TUESDAY 27 & WEDNESDAY 28 APRIL

www.plasafocus.com/leeds

Maximise your business opportunities - join key industry players for two days of regional networking and learning.

PLASA Focus is the established industry show for lighting and sound communities in the North. Taking place across two halls at the Royal Armouries, Leeds, on Tuesday 27 & Wednesday 28 April, PLASA Focus is a highly informative annual industry forum where you can meet face-to-face with over 100 leading manufacturers and suppliers for the entertainment and installation technology industries.

As well as two halls packed with manufacturers and distributors of the latest technology, there is a comprehensive Education and Learning Programme (see website for details). Added to which entry to the show is FREE, lunch on the day(s) you attend is FREE and attendance to the Education & Learning Programme is FREE – simply pre-register NOW at www.plasafocus.com/leeds

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**RE-INVESTING
IN THE INDUSTRY.**

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Francis Reid sets his trigger cards back to normal

Following a recently unwelcomed change in his 'retirement fade' to square law, *Focus* is delighted to report that Francis has been tweaked back to his normal, more gentle, S-Law.



Francis at the 2009 ALD AGM. Photo: Nick Moran.

Some of you may be aware that Francis Reid's health has been below par over the last year, and others may even have noticed his absence from the usual gatherings, including the 2008 & 2009 Drury Lane Christmas jollies. He did make it briefly to PLASA and the AGM (and was, of course, captured by John Offord's and Nick Moran's cameras) but he is aware that he has been dealing with correspondence on an erratic reactive rather than a proactive basis.

Breathing problems have brought him to a halt every few yards and his figure, although never slender, had swollen to Falstaffian proportions with an exponential rise in February. Two weeks in a cardiology hospital ward on intravenous diuretics removed 20 kilos (plus another 5 kilos on his first week home on tablets), while sonic, CT & MRI Scans plus an Angiogram revealed the cause as a hardening of the protective sac around a perfectly good heart. There

are hopes of stabilising it with medication.

He now feels infinitely better than he has felt for months and months. So although his fade may still be underway (the dimmers may be analogue but the trigger cards are still firing fine!), there is absolutely no sign of a DBO on the Cue Sheet. He is still writing and, having got the keep-a-journal habit in the year that became *Fading Light*, he is 5 years into a sequel (working title = *Carry on Fading*) and on

some other projects such as deciphering Edward Gordon Craig's spidery entries in a notebook that he kept on lighting history and was languishing in the the Paris Bibliotheque National until a librarian heard a Reid powerpoint on "*How did the lighting look - interpreting the evidence*" at the 2008 SIBMAS Congress.

So Francis is now looking forward to an April celebration of his 79th birthday and 53rd wedding anniversary (he is under no dietary restrictions

apart from a 1.5 litre cap on fluids - but that includes a small glass of wine at lunch)... and to once again raising his head above the parapet to be amazed by the latest developments in LEDs and to reminisce about the Patt.23.



~~ALD~~ # WANTED

The ALD needs
YOUR FEEDBACK!

The organisation will only be vibrant
and meet your needs if you inject your
thoughts, feedback and ideas...

So, please contribute your ideas to the
ALD WEBSITE

What do you want to read in Focus?

What's your view about Equity as your
Union?

What would you like ALD meetings to be
about and where?

What do you want from your association?

Have you got a great idea that would
benefit the ALD?

Join the Feedback page on
www.ald.org.uk/feedback

April / May 2010

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When is a Bat not a Bat?

When it's *Die Fledermaus* (with a hint of 'drag, transvestites and the ilk')... A sensibly dressed Jim Woodley enthuses.

Now, a fair few of us will have encountered *Die Fledermaus* at some time or other in our careers. One of the stalwarts of operatic societies this is, good music and lyrics from that nice Mr. Strauss (not to be confused by the equally lovely Mr. Strousse) and is easy on the eye as regards lighting. Words like 'light' and 'fluffy' spring to mind. So, imagine my own pleasure at being staged at The Palace Theatre in Westcliff – a delightful Matcham-esque theatre, which was also my very first Repertory tenure. I would have been a fool to decline.

There again...

I was down in the area some time before the show was to open, on Panto

business ("Oh yes I was!") and managed to meet with the director, and see some rehearsals. I have to point out here that this would be my third 'Bat', so I was not unduly worried – how much different could this one be? I had lit it before at The Palace, and was almost expecting to see the same set I had had some 25 years previously. During the meeting with the director, I happened to mention that I'd done the show before. "Ahh" she smiled, "I've taken a few liberties."

My brain sent messages like, "how different can this one be?" as I leaned forward to hear her 'concept'.

"I've re-set it in the 1930s, and moved it to Berlin."

Little alarm bells began to tinkle here.

"I'm going for one simple set, with furniture and 'bits'. Act One is now in *Rosalinda's*

garden, Act Two is a raunchy, fancy-dress party at Orlovsky's, but Act Three is still in the Prison."

More alarm bells, and the odd siren, are now jostling in my brain – Act Two is traditionally the proverbial Masked Ball, to allow the mistaken identities to happen easily. The director continued...

"Yes, the party will be full of drag, transvestites and the ilk."

My mug of coffee began to shake.

"Right, we're just going to run Act Two – perhaps you would like to come in and watch?"

Mumble mumble, weak smile, and in I went! Rehearsal rooms are, by nature, often cramped, but this one was even more so, with an operatic cast. Did I mention the robotic dancer? Now, I know what readers are

"Sometimes, shadows can be fun...."

“... listen carefully, for I will tell you this only once...”

thinking -“Robotics in 1930?” Flashes of *Metropolis* wing their way through my brain, but I let them wing on...

I watched, and it all came flooding back, phew; even the robotic dancer didn't get in the way... though it DID make me write a note for a punchy downlight on him – the two seem to go together.

After the rehearsal broke for a decent break, my Associate, Paul, and I made our excuses and repaired to the nearest hostelry. After a glass or two of Merlot, I was back in the land of the semi-sane, and ready for Bat number three – never let it be said that a ‘modern take’ on an old favourite would deter ME.

I have to say, here, that this production used the script from a recent ENO Production – hence the subtle changes.

The production schedule



duly arrived, and looked exceedingly sensible: little get-in on the Sunday, Monday stage and LX fitup, alongside the orchestra sort out. The Palace has a small pit area, which would

be mostly covered over to hide the 14-piece orchestra. Monday evening would see a ‘walkthrough’ to set the show, and also let the MD, and orchestra, work with the company. Tuesday was

given over to lighting during the day (bliss) ready for a proper dress rehearsal in the evening. That still left all day Wednesday to tweak/tart up the plotting. Looked good to me.

Sadly, a revised schedule arrived three weeks before the production get in, and I found that as well as losing the Sunday, the Monday had also gone to the wall.

When is a Bat not a Bat?

Jim Woodley

“Oh look, not only a robotic dancer, but Orlovsky now has his/her own bodyguard - and with a body like that....why not?”

The reason given was money, as ever. That now meant that everything had to happen on the Tuesday, leaving only Wednesday to light and stuff. I can do that – all it needs is preparation and a good crew.

As time had always been an issue (and money, of course) I had elected to keep the in-house FOH rig, and work the onstage rig from the generic plan for the show in before us.

God bless repertory training!

The only extras I was bringing in were a fleet of scrollers (as you do), some birdies, my collection of gobos – always useful – and a Strand Classic Light Palette desk. The reason for the desk was that I still couldn't get to grips with the Grand MA at the theatre, and as time was going to be tight,

a Jim-friendly desk would be advantageous. I knew the Palace already had two follow spots and, although I would have preferred three, that had been ruled out very early on thanks to our old friend money.

On the day of the combined fit-up/rig/et al, everything was chugging along nicely; the crew was re-jigging the onstage rig to accommodate my scrollers, and generally making light work of it all. A few interesting words were coming from the production desk – and I was suddenly aware of punch-drunk scrollers, all hell bent on making themselves known. Now, this had happened before with the Palette, but a nifty downloaded 'patch' had sorted that...or not. Paul, my associate, who is more au fait with these things, was already inside the desk,

and his language was NOT pleasant. Undaunted, and sure of Paul's success on the scroller front, I launched into a super fast colour and focus with the crew.

Or not?

The morning had (as usual) been given over the matters of set, props and furniture, and once the excellent theatre crew had rigged, flown and deaded all the bars (with a smattering of hilarity at the vast bulk of my rig – but I'm used to that). Timmy Tallescope was dragged out, and a start was made on the onstage focus. I say 'start' – there was still a huddle of stage crew in the wings, discussing 'things' as they are wont to do; the term Mother's Meeting springs to mind – and Jim is reaching for the valium.

The theatre's resident

SM comes over to ask if I'm alright, and I quickly whisper that I am one of those old fashioned coves who prefers to focus in silence (well, silence apart from my voice); he nods, sagely, and pootles off to the claque in the wings. There is a sudden silence, and as I feel their eyes of rancour on me, I restart my rapido focusing undaunted.

For those who want to know, my rig is a two colour wash of 202 and 204, with all additional colour coming from eight 1K units fitted with the scrollers. There is also my bog-standard medium breakup gobo cover, and two pairs of floor-mounted Birdies lurking at the extreme front corners of the stage. Oh, and a double cyc cover of 132 and 181. On this show I was also introduced to the Junior Source 4 instruments – gosh. Although a fan of the

ordinary Source 4, I hadn't used the Juniors as yet, so I was a tad sceptical. To be more precise, there were Junior Source4's already rigged, and the original idea was to replace them with some 1K lanterns for which I already had my favourite gobos. However, their techies suggested I at least LOOK at the Juniors, as it would save a lot of time. So I did, and it did indeed, and very nice they were too; the only problem may have been the gobos, as mine were B size, and the Juniors take a much smaller one. Thankfully, the theatre had enough of these smaller gobos, in the style I needed.

The director had already confided in me that in Act Two, as long as she could see the faces of the principals who were singing, the less she could see of the chorus, the better. She wanted shadows,





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Sadly there is not too much time now left, and I decide that all the crew can do is a **very quick point** and put my colour in the FOH lanterns (all up in the gallery – last time I was up there, I needed oxygen). That is done in just over 30 minutes, which gives me another hour and a half to block in some very basic cue states for the evening's dress rehearsal – and THAT would also give me a head start for the next day's proper lighting session.

Sometimes, my timing worries me – I finish just as the MD and sundry musicians troupe in to set out the pit, and do what musicians do in the pit! I have to say here that the MD is quite young, and also a woman of the opposite sex. Mind you, she takes no prisoners – hardened male members of the pit often give younger MDs a hard time of

it, and female MDs even more so. Not in this case, as I'd seen in the previous rehearsals.

The Dress starts on time, and the whole thing flows through with but a few, minor, glitches – even my rushed cue states (with a little busking in Act Two) are looking acceptable. I was pleased at that as we had a photographer present, this being the only time he could snap away. Several of these pictures do flag up the focusing errors, but on the whole they are better than I expected. Sadly, I do not take my own pictures – the few times I have, said pictures are neither use nor ornament.

Dress rehearsal over, the director and the MD give the company such notes as are needed/useful – but for me there are none – which is alright, as we have the lighting session booked for

tomorrow afternoon, the morning being given over to my final focus and general tweaking. The director may not have any urgent notes for me, but I have my own few pages!

We decide to leave the Palette in the stalls, at the makeshift production desk – the lighting box at the Palace is small, very small, and it will only take a few moments to reinstall the desk once the lighting session has finished. As to the lighting session proper, the director was very pleased with what I'd busked the night before, except that she wanted the end of Act Two to be even darker and all the Act needed more shadows, so we rattled through the cues.

The company was lucky in that it had an excellent stage manager, who knew both her job, and the operetta

and strong backlighting, and intensely moody! We like shadows... and moody! Mind you, having said that, I have fallen foul of many a director who has asked for this style, and then whinged when given it, that they couldn't see F** all. I must tread carefully here.

Back to the speed focus

As I am working my way along the bars, I can hear snippets of conversation eminating from Paul, in the stalls and INSIDE the Palette; I am unworried. Paul has a knack of getting

straight through to the right person within Strand, and is obviously getting a blow by blow Masterclass in re-routeing things computer related. Confident that all will be resolved, and well, I canter on to a finish of sorts.

With the stage focusing finished as much as one can, without seeing a full run, we break for caffeine. Paul joins us, to say that all now seems sorted with the Palette and the scrollers, OK if he does a quick check?

He does so, and all is quiet, and comfortably still – not a 'jig' to be seen - deep joy.

*"Errr, yes, he IS dressed as a giant parrot.
I warned you it was a modern take!"*

backwards – most of the lighting session was taken up with exactly where cues would go, how long they would be and where the standbys were.

Sometimes, what appears to be an impossibly tight schedule turns out to be quite easy and painless. The **lack** of time can possibly become a boon, with **no** time to prevaricate over things. This was very much the case here, and the show itself was rewarded with packed houses throughout its short run. A full house in a small, but beautiful, theatre always gives one a feeling of joy and the hope that this will continue for a very long time.

Did the modernising work, or did it detract from the original? To my mind, this was a very enjoyable reworking of the show, and I was able to do much more,

creatively, than I had done on past productions. The audiences, too, enjoyed and responded wholeheartedly to the re-vamp; after all, the music hadn't changed (with one addition in Act Two for the dancers) neither had the songs – all the favourites were there.

One little change in Act Three will stick in my mind for a very long time, however, and involves the character of Frosch (the drunken jailer) usually played by a good, comic, actor ...

"Sir, sir, there's a few half-dressed women out there, and they keep askin' for the Chevalier Chagin – well, I told 'em..... there's no shaggin in 'ere!" 🍷

All photos: Andrew Blackholly

April / May 2010



*Simon Slater in 'Bloodshot' at the Nuffield Theatre Southampton.
Lighting by David W Kidd. All production photos: Mike Eddowes.*



There are times when “Break a Leg!” doesn’t mean good luck for a lighting designer

David W Kidd overcomes an awful experience with the help of friends, colleagues, Equity and Light Relief as he lights *Bloodshot* at the Nuffield on crutches....



Accidents at work: awful to witness, let alone to be involved in. We avoid them as much as consciously and physically possible, but they can happen despite our best efforts. In my 35 years in the lighting business I have been indirectly associated with two serious accidents, both falls from a great height. Both victims recovered well in the end, but not without considerable pain, stress and uncertainty over months of recuperation.

I moved into the sphere of freelance design soon after one of those accidents, assuming that the attitude to safety was a reasonably standard one, aware of the guidelines set out by The Health and Safety at Work Act. But working around the country in different venues I began to realise that attitudes

to safety for those working at height varied tremendously from venue to venue. I can't to this day, during a focus session, watch a crew take someone aloft on a 'scope in a manner I feel unsuitable without feeling the need to intervene. Although I'm glad to say this is becoming more infrequent especially with new types of access equipment now available and greater awareness of risk assessment.

It seems that some fringe venues have yet to recognise the importance of new (and safe) access equipment. In most years for me, fringe work accounts for just under one third of my time. I enjoy the fringe; the writing can excel and it can be very satisfying helping to create high production values with low budget constraints.

Above all, it gives me an opportunity to keep in touch – literally – by helping with the rig, patching and most often, focussing myself. You can try out physically the ergonomics of a new lantern (if afforded) or be a little nostalgic by changing a T1 lamp in that Patt.123. And most of us that can work on the fringe (you don't do it for the money!) do roll up the sleeves and get stuck in. Lack of staff often dictates this anyway, but fringe work can be fun and satisfying.

So it was early on a January Monday morning this year, ready to light a small off-Broadway transfer and 'getting my hands dirty' that I was rigging a Starlette from an 11-step platform ladder, with nobody footing it for me. In a split second it seemed the ladder buckled below

me and I became an 'accident at work' victim. I fell about 11ft, hard onto my left leg. All the more bizarre was that the said ladder was a brand new one which I insisted replaced an older one that I had some days previously noticed had broken welds. The investigation into this continues and I have had full support from the staff and the venue itself.

Feeling somewhat stupid more than in pain, my X-ray at the Royal Free Hospital confirmed a bigger injury than expected; fracture to the fibula, multiple fractures to the lower tibia and a fracture to the ankle. It proves that height is no arbiter to one's injury sustained from a fall. And so it was; five and a half hours in surgery to have an Ilizirov wheel and external fixator to pin my lower left leg

together. Ten days in hospital followed.

I'm very pleased to report that Rob Stemson took over my lighting on *Rites Of Privacy* and undertook the design with excellent results, and the American producers paid my fee in full.

Then the real pain started. Not just the physical pain in the leg, but the psychological pain in having to dismiss myself from three jobs already contracted over the next few months. And they were not fringe shows either, so the fees were considerably more. It became clear over the first few days immediately after the surgery that this was going to be no quick recovery. I was not going to work for some time.

And what about the bank balance, the outstanding bills? The awful feeling of



David W Kidd lights *Bloodshot* at the Nuffield on crutches....

day whilst in hospital, and £125 per week while signed off from work on receipt of the relevant paperwork. Whilst this does not cover any loss of earnings, the payout was very swift and, of course, helped enormously in the immediate few weeks. Equity also took over the legal side of things with regard to the accident investigation and this will continue over the coming months and is an ongoing inquiry.

But there was another job six weeks off from the accident that I was particularly reluctant to turn down. Unsure of whether I would be well enough or even mobile enough by the late February production dates remained in doubt until only a few days before the job itself.

The Nuffield Theatre in Southampton is a venue and company I have worked with extensively over the past eleven years. Artistic Director Patrick Sandford phoned my agent to tell him the

theatre and his staff were fully prepared to accommodate me in any way that would make me more comfortable and safe in order to secure me coming on board the creative team. Not only was Patrick directing, but my good friend Robin Don was designing, who, ironically would also be on crutches himself as a result of an operation on his foot. Simon Slater was to be the sole actor, and the play *Bloodshot* is by Chicago born playwright Douglas Post who I got to know when I first worked with Patrick on his thriller *Earth and Sky* which toured successfully in 1999.

Naturally I was dubious and somewhat anxious. Over previous weeks I had already taken a tumble on my crutches a few times and my confidence was fragile. How would I get about a darkened theatre? Focussing? Negotiating the steps in the raked auditorium? What about the daily cleansing of the metalwork that skewered my lower left leg known as

'pinsites'? Whilst I knew I would be surrounded by friends in the theatre, what about the hotel room and showering, for which I now need assistance?

Rick Fisher called, having heard about my accident and I explained my fears over being away from home in production. Again, as with the help from Equity, another source of help would encourage me to change my mind and give me the confidence to undertake the job. Rick explained that *Light Relief* is there for such purposes and if there was anything that the charity could do to help, I was to let him know.

The cost of transport was the first consideration. Wearing a fixator is not the easiest of contraptions to get around in. Public transport is really to be avoided, as is any crowded space, lest I get it knocked or even spike someone. One can only go short distances on crutches. So help with petrol

letting down the people I should have been working with in the immediate weeks?

It was my partner, Barry, who came up with what should have been an

instinctive reaction: phone Equity. I discovered that being a member I was automatically entitled to the Accident Beneficiary Scheme to receive £50 per





David W Kidd lights *Bloodshot* at the Nuffield on crutches....

money that my partner could chauffeur me in the comfort of his car to and from Southampton was a great help.

Secondly, my biggest fear was being stranded in the hotel room shower should I have slipped. Help getting dressed was another issue. So I investigated getting a private carer to visit the hotel each morning to help with getting in and out of the shower, dressing and even helping serve breakfast. Whilst standing on crutches you realise the daily challenges of being an invalid. Slipping over in the shower or bathroom was a huge risk, but reduced with having someone on watch. So it was that I was able to pay for a carer to attend me each morning, helping me with the

very basic of tasks one takes for granted.

Light Relief really clinched it for me. Help with funding petrol money, cab fares and in particular the visiting care assistance at the hotel made the week so much more comfortable and feasible.

Add to this the care given to me – and fellow crutches user, designer Robin – by the Nuffield staff: two rows of seats were removed to place the production desk at the wheelchair level, negating the need to climb any aisle stairs. A wheelchair was supplied from props. Copious coffee rounds, lunch and dinner supplied and served, lifts to and from the theatre etc. It's something one could quite easily get used to...

The focus session, another important element of the week I was anxious about, went surprisingly well. Extra

staff were supplied so I could place people where I would normally stand for a focus, and I either called it from the front (the set being placed on the thrust stage made this easier) or at the side of the raked set. The only delays were the usual running repairs on the theatre's dwindling stock of Sil30s.

The week turned into a great few days of fun, creating a good piece of theatre, a Runyonesque film noir style thriller about the 1950's Soho underworld, all four characters played superbly by Simon, amongst an excellent crew and a director, designer and actor with whom there was the usual common shorthand. Indeed, the theatre capitalised on a little publicity for the show with an article in the *Southern Daily Echo* about 'break a leg

for luck' in the theatre. The play even garnered some favourable reviews and played to a good percentage during its limited run, making it all the more worthwhile.

In all, the whole experience for me clearly illustrates how vulnerable we are as freelancers to our losing our income. Whilst we have our very defined, and often vociferous thoughts about the efficiencies of Equity representing us as a union, the benefits it provides really does make membership worthwhile. But it's important that we maintain a voice through our hardworking Designers' Committee members and increase our numbers within the union. In doing so can only make us stronger and have a greater visibility in the performance industry so these benefits
































can continue and even perhaps be tailored to our needs.

In addition to this, *Light Relief* came to my rescue absolutely fulfilling its remit. The extra expenses funded by this important charity helped my confidence to undertake the job at the Nuffield.

By *Design Day* is April 24th and I for one shall mark the day with great respect – even though I'll still be on crutches!



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Is Technology a Distraction?

Chris Withers discusses the influence lighting technology has in the creation and staging of pieces of spectacular theatre...

Was Shaw right to treat technology as a distraction? Almost contemporary to Shaw in the West End, Ivor Novello's *Glamorous Night*, at the Theatre Royal, Drury Lane, had spectacular sets and extravagant effects, such as a huge shipwreck. In today's technology-enabled world, is the widespread use of techno-spectacle now upstaging performance?

To investigate, I surveyed theatregoers to see what they expected from a large scale West End show. Only two people referred to quality of acting and narrative. The vast majority expected a high standard of performance but also to see design elements forming a larger part of the show than the performers themselves. Is the fashion for spectacular performance design harnessing technology

to realise ever growing creative possibilities or is it *creating* the expectations for spectacle to eclipse narrative?

In 2007 after seeing the epic musical spectacular *The Lord of the Rings* I couldn't help feeling it lacked some of the coherent storyline and emotional involvement you would expect as a basic requirement for a theatrical production. I thought back to another large scale production I had seen earlier that year - *The Phantom of the Opera*. Why did *Phantom* leave me feeling satisfied in a way that *LOTR* did not?

Phantom is still running after 23 years. Despite a relatively simple narrative, the production has many spectacular moments. The greatest spectacle is provided by the set and supported by the lighting. As LD Andrew Bridge said, "The

lighting is not spectacular without the scenery, and the scenery looks awful with the worklights on!" *Phantom* relies on lighting to augment mood and atmosphere. Conjuring up location with light is not important as the huge representational scenery does that. A moody, shadowy atmosphere is achieved through heavy use of sidelight (top left). The lighting in *Phantom* is achieved almost entirely using generic fixtures such as Codas, Preludes, Lekos and Pattern 23s.

In the important scene where we descend to the Phantom's lair, the lighting guides the audience from shadowy corridors into the vast, expanse of the candlelit, underground lake (right). The sequence is a harmonic collaboration between set and lighting. It uses a bridge

When shown a new projection technology, George Bernard Shaw said,

"I'll take care that you don't use these contraptions in my plays! The audience would be so busy staring at the clouds, they wouldn't listen to my words."

that descends to just above stage level. The oppressive atmosphere is created with just a few lanterns. The light then grows, revealing rolling smoke and the Phantom on a boat with Christine. The lair then forms around them as over 200 candles rise through the floor of the stage. The effect of many candles, following deep gloom is both spectacular and a gentle, subtle experience and could not have been achieved without the use of new technology. Andrew Bridge adds; "The most radical thing was the use of radio controlled onboard dimmers - especially with the chandeliers. Without wireless dimmers the chandelier rising in the opening sequence and crashing to the stage at the end of act one would have been much less spectacular and near impossible to control effectively. Towards the end of act 2 the Phantom picks up a candle from his organ before it explodes and extinguishes. This effect lasts a few seconds but is one of the many, technology



driven, details that helps this production to surprise with moments of spectacle throughout".

The more subtle presence of spectacle in *Phantom* contrasts strongly with the

brasher effect of *The Lord of the Rings*, which opened in London 21 years after *Phantom*. *LOTR*, a spectacular adaptation of Tolkien's epic novel, was directed by Matthew Warchus, designed

by Rob Howell with lighting by Paul Pyant. Originally produced in Toronto for \$30m dollars, the transfer to the Theatre Royal, Drury Lane, cost £12m pounds, making it the most expensive West

End musical ever produced (and, incidentally, requiring the removal of the 1930's machinery from *Glamorous Night!*).

This budget allowed the production to impress with

Is Technology a Distraction? Chris Withers



one spectacular sequence after another. The set was a complicated system of revolves and lifts which moved independently to create many different looks, environments and to portray the “travelling” element of the story. This meant that a lot of configurations of the lifts had a similar aesthetic appearance and so, relied

on lighting to create time and changes of location, an immense challenge for LD Paul Pyant.

He responded by specifying a hugely flexible moving light rig. Paul told me; “There wasn’t space for enough generics to cover all the functions the moving lights provided. The revolve was rarely static. This meant

moving lights played a key role in the show. Due to very limited space in the rig, the lighting had to fit round the huge amount of set. As a result, flexibility was essential. So VL3000’s were able to each do the job of 30 generics to create the same possibilities.”

Moving lights also allowed intimate environments, with

lighting tracking in step with the revolve. “Without the moving lights” said Paul, “it would have been difficult to create a closed, intimate atmosphere whilst characters moved.”

The *Helm’s Deep* battle sequence, illustrates the visual spectacle. Large sections of the stage move, whilst performers jump and somersault between them. Complex, moving lighting defines the pictures created by the patterns of the stage sections. As a result this scene has a very cinematic style. The audience’s viewpoint is made to move too, and small, isolated sections of a much larger picture are seen. This contrasts with the traditional theatrical approach of staging the whole scene allowing the audience to choose where to look.

In *Phantom*, the scenery can’t be described as fully naturalistic, but does represent clearly each location for the audience. In *LOTR* the set is rarely a representation. The revolve, side flats and rear video wall

work with the lighting to suggest to the audience that they might be in the small rooms and corridors of a hobbit-hole or in the vastness of Saruman’s Tower. Lighting has a much larger role in *defining* location in *LOTR* than it has in *Phantom* where lighting *adds* mood and ambience to the scenery.

Advances in technology enabled *LOTR* to exist. Without the flexibility provided by the lifts, video wall and moving lights it would have been nearly impossible to stage. *Phantom* has fewer locations making the set simpler to create. “Funnily enough,” said Andrew Bridge “the production uses many pre electricity things - candles, gas lighting, roller cloths, shadows, footlights, arc spots etc., but the smooth and continuous scene changes and illusions would have been impossible without the accuracy and precision timing of the engineering.” I am sure if *Phantom* was staged in the 1930’s there would have been a large number of scenes down at the floats in front



of a painted cloth with loud crashes happening behind!

Although *LOTR* was the most spectacular stage show I had seen, I was struck by the lack of emotion I had felt. I was constantly 'wowed' by the effects and imagination of the creative team but never felt emotionally attached to the characters.

The *Phantom* story allows for many impressive effects to emerge and impress, but they all are subservient to the story and have a somehow *tighter* connection. Therefore they contribute to the emotional impact of the show and are

never distracting. And I think this is the key difference from *LOTR* - although the *LOTR* effects were stunning, they often eclipsed the story on stage.

So, does creating spectacles in theatre draw audiences away from the narrative of a well-told story? Paul Pyant, commented; "Yes, in *The Lord of the Rings* the technical aspects often upstaged the performance. I was much more moved by the workshop performance where cast members were on ladders than I was by the final show."

Andrew Bridge remarked; "I think it is the extraordinary detail that makes *Phantom* a spectacle. Looking at costumes and props backstage, one is still amazed at the complexity in specifying a new production, this attention to detail helps keep the story an intense experience."

I believe this is how spectacular theatre works at its best. When all departments work together by paying minute attention to detail and by striving to be as ambitious as possible they serve the story best.

Yet producers provide increasingly spectacular shows, facilitated by emerging technologies. Are they now pushing intelligent and relevant, but less spectacular, stories out of the West End and Broadway by the very scale of the audience expectations that technology fosters? Nick Hytner understands the issue: "It's not the technology that can get in the way but how you use it." He states. "The real issue is how design fits the piece. If technology is used appropriately, it can really draw out the design and emotional quality of a piece."

So George Bernard Shaw, the wordsmith, was right... in a way. Whilst it is tempting to use new technology, a careful balance has to be struck for it to serve the narrative properly. New technologies have most certainly opened up many opportunities for staging spectacular theatre. However we need to be cautious that everything is brought firmly back to the needs of the story we are trying to tell to our audiences.



Chris Withers

Chris graduated from the BA(Hons) Lighting Design course at Rose Bruford College with first class honours.

He is currently re-lighting the national tour of 'Ernest and the Pale Moon' but also works as a freelance lighting designer and production electrician.

This article is a summarised version of a larger research project conducted in 2009.

For the full version and more information about Chris please visit www.chriswithers.co.uk

Photos of Phantom on pages 28/9 courtesy Andrew Bridge. Photographs of Lord of the Rings London production on pages 30/31 by Nick Moran.

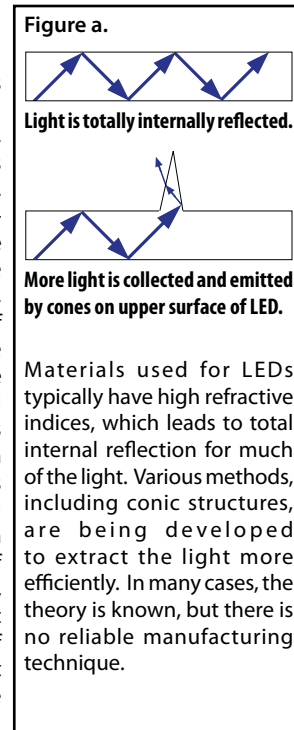
Blue LEDs and White LEDs

Edmund Sutton analyses the 101st Kelvin Lecture by **Shuji Nakamura** at the IET.

There is a plethora of new LED products in theatre and every other field of lighting. We have **Professor Shuji Nakamura of the Solid State Lighting and Energy Center (SSLEC) at the University of California Santa Barbara (UCSB) to thank for his major contributions to the invention of blue and green LEDs using gallium nitride (GaN) as a base material. He gave the 101st Kelvin Lecture at the Institution of Engineering and Technology, London, on 11th March on the state of LED technology and possible future developments. So what is the state of the art, what do we use them for, and what does the future hold?**

Shuji Nakamura and Current Technology

Prof. Nakamura was instrumental in developing the GaN-based blue LED, first made in 1992 to 1993, as used in blu-ray DVD players. GaN allows a wide band-gap energy, and therefore high energy photons. He also built white LEDs in 1996, highly efficient in terms of energy consumption. The commercially available white LEDs have a nominal efficiency of 70 or 80 lumens per watt (lm/W); in research laboratories the efficiencies are twice that, a typical ratio. The SSLEC has been improving the collection of light from within the layers, e.g. by developing conic structures on the surface of the LED which allow light to escape, rather than be reflected (figure a).



The white LED can be made in various ways. A tri-LED chip can be made with three emission wavelengths – red, green, and blue – as used, for example, with four colours in the Vari*Lite VLX. Alternatively, a single blue or UV LED can be used with phosphors that absorb the photons and re-emit them at longer wave-lengths.

A transparent LED is being developed, which might be of benefit in certain special effects.

Current Uses of LEDs

Current uses of white LEDs include solar charged night-lights for use in third-world countries, enabling classes to take place after dark. The *Light up the World Foundation* has been instrumental in providing cheap and safe lighting to many of the world's poor, reducing the

risk of fire from the inefficient (0.03 lm/W) and expensive kerosene lamp.

Readers will be familiar with the uses of RGBAW LEDs for entertainment lighting, decoration of buildings, advertising screens, and so on. Otherwise, they are often used in car brake-lights, lighting aeroplanes, backlighting LCD screens, and intensive plant growing. Ultra-violet LEDs can be used to purify water before drinking.

LED Light-bulb

In October 2009, both Toshiba and Panasonic released LED light-bulbs that will fit a conventional screw or bayonet holder. In response to a question from the floor, Prof. Nakamura said that there were LED lights that would work off mains electricity and were

dimnable via a domestic system. Toshiba claims a CRI of 80 Ra, but it is known that the blue part of the CIE 1960 colour space is incorrect, there having been no requirement to study that part of the spectrum in any great detail as most of the known sources approximated to the black-body curve. There is, of course, the issue of metamerism, which is the phenomenon of two different materials that appear the same under one light source appearing different under another light source with a different spectrum.

Australia has banned the incandescent light-bulb; there is similar legislation in Europe and some American states. The Ban the Bulb campaign and others are vocal in this regard. This is not the place to go into the problems of compact

fluorescent lamps, but LED lamps are even more efficient in terms of energy consumption. Prof. Nakamura claims a potential reduction of 285 million tonnes of CO₂, a reduction of 273 tera watt hours (tera = 10^{12} = 1,000,000,000,000) of energy, a saving of \$115,000,000,000 in 2025, and the removal of the need for 133 new power stations in the USA alone if a 150 lm/W source were developed.

Problems Not Addressed

An incandescent lamp is chemically simple; the various materials are easily recyclable. This is not so for the LED. While it is true that GaN is much better for the environment than the toxic arsenic, antimony, and phosphorus based semiconductors, the chemically bonded complex layers



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He is particularly interested in dance and musical theatre, and credits include The Barber of Seville, Dorian Gray, Jet Set Go!, Au Revoir Les Enfants, George M. Cohan Tonight!, Rapunzel's Last Midnight, The Girl, the Oil Pipe and the Murder in the Forum, Return to the Forbidden Planet. He is also interested in lighting improvised theatre, and credits include Unscripted and he has lit various performances of Showstopper! The Improvised Musical.

He was working for Luxam in the autumn of 2009, lighting exhibits in the Ashmolean Museum, Oxford, during its refurbishment, and in the Museum of London Docklands.

In October 2009, he won the Equity Young Person's Bursary to attend the Broadway Lighting Masterclass in New York in May 2010.

Blue LEDs and White LEDs

of electronic chips are notoriously unrecyclable and still contain these materials as dopants.

The manufacture of LEDs often involves metal organic chemical vapour deposition (MOCVD), which involves highly toxic gases. The ordinary incandescent light-bulb does not suffer from this.

The luminous stability was also not discussed. How long a solar driven LED based lamp lasts depends not only on the life-time of the LED, but on the driving circuitry as well. If the quality is reduced so as to bring the cost of manufacture down, the unit will cease to function long before the LEDs are worn out.

Another question from the floor concerned the colour of these LEDs. By changing the doping of the electrodes, both cool and warm white can be produced. Prof. Nakamura commented that, whereas people in Europe and America were sensitive to the mood of their light and preferred the

warmth of tungsten-based sources, people in East Asia were quite content to have fluorescent or cold lighting in their homes and did not think about the atmosphere created.

It would be interesting to hear any thoughts on the reasons for this insensitivity that any designers who have worked in the Far East might have. Is it that they would prefer to have a warmer source, but are discouraged to question authority and so accept the products offered?

Prof. Nakamura certainly found that in Japan junior researchers are not encouraged to question their superiors; he much prefers working in the USA, where the professor and the student are encouraged to study together collaboratively. Another possibility is that there is simply a different cultural perception of 'white light'; one is reminded of the complaints of the harshness of light when, variously, gas, lime, incandescent,

discharge, and LED sources were introduced.

Nick Moran enquired about the possible uses of LEDs as intense narrow sources, such as might be used for projection. Prof. Nakamura suggested laser diodes as a possibility but cautioned that these were not good for the eyes. Indeed, any laser will burn a hole in the retina if care is not taken. Because the LED emits light over a surface that cannot easily be compressed, as an incandescent filament can, the point source or narrow-angle LED does not exist that will replace the lamp in a profile lantern. It would, however, be unwise to say that it could not.

Future Developments

The non-polar green laser diode has just been developed, joining the red and blue. The light is polarised to a greater or lesser degree dependent on the orientation of the active region in the crystalline

structure of the GaN. The range of colours available in an additive colour mixing system is increased as the laser diode has such a narrow emission spectrum.

One application would be for mini projectors in mobile telephones; sit the telephone on a table and project a small image onto a wall from a distance of a couple of feet.

GaN LEDs are typically built on a sapphire substrate, but new ammonothermal growth techniques are in development to build GaN substrates on an industrial scale.

In Conclusion

While the exciting developments outlined by Prof. Nakamura are taking place at break-neck speed, it is as well to be cautious. LEDs are not the silver bullet that will solve all of the world's lighting or energy problems. As Simon Corder and Rob Halliday pointed out at *Showlight 2009*, if you have a source of clean

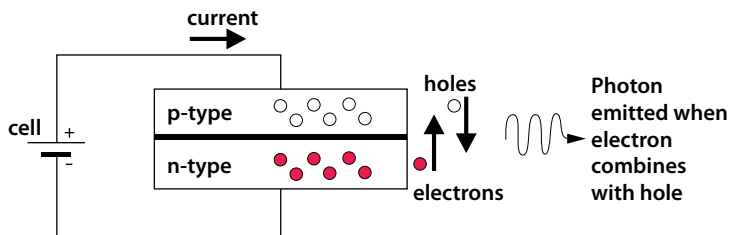
energy, you can run what you like from it. In this case, the incandescent lamp is much more environmentally friendly.

Commercial pressures to reduce costs mean that quality is inevitably reduced and electronics are not easy to repair when they break down, so solar chargeable LED lights are useless once either the LED or the electronics fail, and LEDs are not easily recyclable.

The technology that is being developed will need to be adapted to be useful in the theatre, film, and related industries. We should be careful not to be blinded by the advances to the benefits still afforded by old-fashioned technology (e.g. the pencil and old envelope when drawing initial lighting plans), but should combine the best of the old and the best of the new. Only then can we truly advance. 🌱

How an LED works

The LED is based on a p-n diode. A material such as GaN is doped with impurities (dopants, typically other semi-conducting elements) to introduce more electrons into one part (the cathode, negatively charged, hence n-type) and holes into another (the anode). The hole is an absence of an electron, which behaves electrically like a positively charged particle (hence p-type).



When no voltage is applied, the excess electrons in the n-type region fall into the holes in the p-type region, this being the lowest energy state. When a voltage is applied, extra electrons are electrically pumped into the n-type region and out of the p-type by the cell (or driving circuitry).

These electrons are now at a higher energy than they would be than if they were in the p-type region. The band-gap is the difference in energy between the uncombined electrons and holes and the combination.

As an electron combines with a hole in the active region between the p and n-type regions, it emits a photon with an energy, and hence wave-length, and therefore colour, corresponding to the band-gap. Different combinations of dopants will allow different band-gaps.

Further Reading

<http://tv.theiet.org/technology/electronics/7862.cfm> - a webcast of the lecture itself

www.lutw.org - Light up the World Foundation

www.banthebulb.org - Ban the Bulb campaign

www.toshiba.eu/newlighting/en/ - Toshiba's LED lighting system

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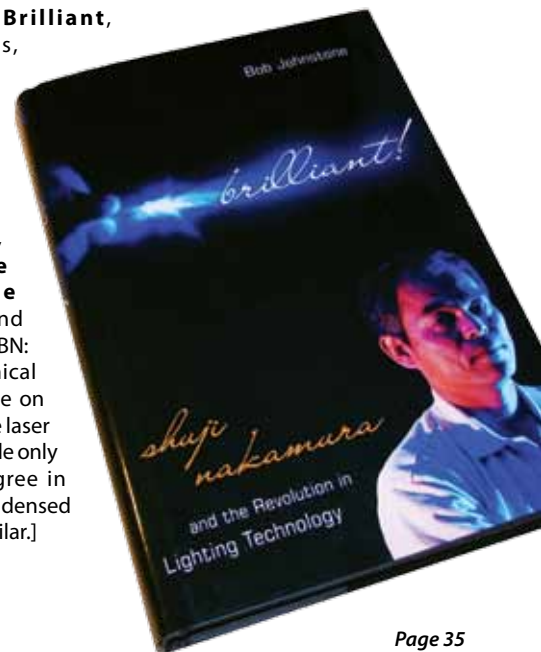
the physics of the blue laser

diode. [Comprehensible only

by those with a degree in

materials science, condensed

matter physics, or similar.]



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