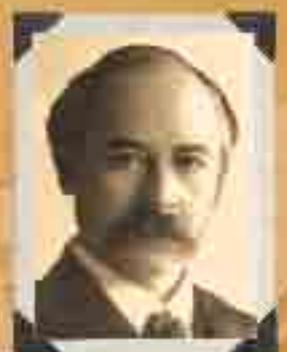


Volume 2, Issue 1, November 2000

Newsletter

The Society of Light and Lighting
Part of the Chartered Institution of Building Services Engineers



- **SLL: 100 years old this month**
- **The third stage of the lighting profession: Cuttle calls for radical rethink**

ILLUMINATING
ENGINEERING
PUBLISHING
&
BUILDINGS
SOCIETY



Secretary

Liz Peck
Tel: 020 8675 5211
Fax: 020 8673 3302
lpeck@cibse.org

Editor

Jill Entwistle
email: jentwistle@cibse.org

**Communications
committee:**

Stephen Lisk (chairman)
Jill Entwistle
Alan Tulla
Iain Carlile
Ruth Kelly
Liz Peck
Richard Forster
Kevin Theobald

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Major lighting events are evidently like red buses. Not a lot happens for ages and then suddenly there are three at once. In this case two organised by the SLL and one by the PLDA. The Centenary Lecture, Kit Cuttle's lecture at the Bartlett and LoveLight were very different occasions but what actually united them was that they all had a strong element of entertainment. Lighting can have its worthy moments and this was a reminder that it can also be fun and inspiring.

There was always a danger that the LoveLight event, organised by the PLDA and Emap, could fall victim to the trendy vicar syndrome: overdoing the youthful appeal and fluffy bits at the expense of seriousness and substance. Not a bit of it. The balance was just right and anyone who attended emerged after an intense 12 hours with a sense that lighting could do with more lateral thinking when it comes to these type of events.

The entertainment value of author and academic Kit Cuttle lay not only in his lucid and lively presentation but also in the stimulating academic discussion that followed it. It seems fitting that in the newsletter which marks the exact month of the SLL's foundation, we should have a new theory of how we should approach lighting (p6). Cuttle's contention that the obsession with measuring light only in relationship to the horizontal plane is outdated and no longer appropriate is radical and refreshing. Whether you agree with it or not, it is worthy of close scrutiny and further discussion. Cuttle is not claiming the theory is cut and dried, and himself advocates further research. But even though there may be quibbles about



his approach, he is substantially right in what he is saying and at the very least his theory should provoke some change of thinking in the way that lighting is measured. It has implications for both the quality of lighting and its current overuse.

The next issue of the newsletter will feature responses from some of those who saw his presentation either at the London event or subsequently at the Professional Lighting Design Conference in Berlin. Unfortunately the publication of his paper has been postponed from the December issue of LR&T to March 2010 (available online for SLL members), but it would also be good to get additional feedback from others who attended the lecture or to the ideas outlined in the feature.

Jill Entwistle
jentwistle@cibse.org

Front cover: The SLL is 100 years old this month. Pictured from the top are the founders of the Illuminating Engineering Society, John Stewart Dow (secretary), Leon Gaster (honorary secretary) and first president Professor Silvanus P Thompson. **Cover design:** Martin Sansom

It's a huge privilege to be writing a column for what is, in effect, the centenary edition of the newsletter. A hundred years ago this month, Professor Silvanus P Thompson chaired the inaugural meeting of the Illuminating Engineering Society with Leon Gaster presiding as honorary secretary.

Much has changed in the intervening period but I believe that many of the values our forefathers held in leading the formation of the IES still hold true today. In fact, at the February 1909 dinner at the Criterion, Gaster said:

'In advocating the formation of such a society, we have no desire to do more than provide a common platform where all those interested in illumination may be able to express their views in a free and informal manner.'

I would like to think that the modern day Society of Light and Lighting still offers this to its members, albeit now in a variety of different ways and through different platforms. For us to be able to commemorate the founding of the society exactly 100 years to the day at the Criterion is truly special.

Those of you who attended the Centenary Lecture will probably agree that it was a spectacular evening. I would like to express my personal gratitude, not just to Bryson Gore, Frank James and Jonathan Speirs for entertaining us so royally, but also to Peter Phillipson who worked tirelessly to coordinate the whole event. For those of you who weren't able to join us, you can view the whole lecture on the internet at www.cibsewebcast.com.

We were also fortunate to be able to host a lecture from the venerable academic and author Kit Cuttle in conjunction with our colleagues at the IALD. He was travelling in Europe for a short time this autumn and provided a very entertaining evening at the Bartlett. Cuttle challenged the way that we provide guidance according to horizontal illuminance, advocating a move towards using mean room surface exitance (MRSE) as a measure in order to satisfy the expectation of an adequately lit space.

Looking forward to next year, plans are underway for the Arc Show 2010 at Earls Court. In addition to holding the prestigious Young Lighter of the Year competition there again, we are also planning to have



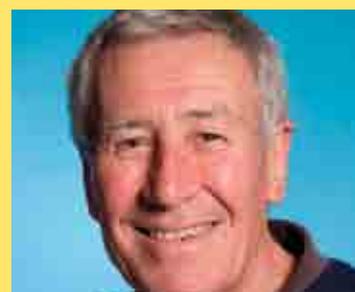
a larger profile exhibition space where visitors will be able to purchase copies of the 2009 Code for Lighting and the SLL Handbook, as well as profiling some of the Young Lighters of the past in a special 'Where are they now?' feature.

Finally, as you know, one of the targets that Stephen Lisk set out in May in his presidential address was for the society to have a net gain of 100 new members in our 100th year. To support this aim, we will be offering free membership briefing sessions in the New Year. This initiative is open to companies of all types whether they be manufacturers, consultancies or lighting design practices. My colleague Bobby Wright and I can share the benefits of membership with your staff, not just from an SLL perspective, but also looking at the opportunity for EC registration and the routes available.

With the downturn of the economy, now more than ever there is a need for a strong, competent and knowledgeable workforce. A progressive organisation is now expected to be trained to a very high standard to gain an edge over its competitors. If you would like us to visit you, please contact me by email and we will fix a date. Our diaries are already very busy for 2010 so please book early to avoid disappointment.

Liz Peck
lpeck@cibse.org

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Be prepared to benefit from the 2011 Carbon Reduction Commitment, argues Andrew Bissell – it will push lighting design right up the agenda

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Government delays carbon scheme

A key part of the government's Carbon Reduction Commitment, now renamed the CRC Energy Efficiency Scheme, has been delayed for a year. Originally all participants (it is mandatory for organisations whose electricity consumption through half-hourly meters is greater than 6000MWh a year, or an annual electricity bill of around £500,000), would have had to buy annual emissions allowances for the first year of the scheme, 2010-11, starting next April. Now they will simply have to report their carbon emissions.

The postponement this month was 'to smooth the introduction of the scheme and to help ease the upfront costs', according to the Department of Energy and Climate Change (DECC).

The CRC is a carrot and stick scheme

designed to drive down energy use in the service and public sectors, and other less energy-intensive industries. It aims to cut carbon emissions in this area by 1.2 million tonnes of carbon a year by 2020. It will affect the UK's biggest users of lighting including supermarket chains, hotel chains, office-based corporations, government departments and large local authorities, around 5000 organisations in all.

These will be obliged to monitor their carbon emissions and buy allowances from the government for each tonne of CO2 they produce. All allowances will be sold at a fixed price (£12 a tonne) during a planned three-year introductory phase. Allowances will then be allocated through auctions with a diminishing number of credits available over time.

One of the crucial parts of the initiative is the name and shame element. At the end of each year a league table will be published summarising the best and worst performers in terms of carbon emissions and reduction. This will be mainly based on absolute carbon reductions since the start of the scheme.

Revenues generated through the initial sale of credits will be recycled back to participants. Companies will receive payments in relation to their first-year emissions, plus or minus a bonus or penalty depending on their position in the league table.

See Leagues Ahead (p10): Andrew Bissell on how the CRC will push lighting design up the agenda.

UK lighting design pioneer is awarded top honour

The International Association of Lighting Designers has given its highest honour to Derek Phillips, honorary fellow of the SLL. The 2009 IALD Lifetime Achievement Award 'recognises the true pioneers and visionaries in the lighting design field'.

Phillips founded the company now known as DPA Lighting Consultants in 1958, the first to practise architectural lighting design in the UK.

After gaining a degree in architecture in Liverpool, Phillips became a post-graduate

in architecture at Massachusetts Institute of Technology (MIT). It was during this time that he met with several architectural luminaries, including Frank Lloyd Wright and Le Corbusier.

The enormous number of projects for which he has been responsible range from the British Foreign Office in Whitehall and the Mandarin Hotel in Hong Kong, to the Dumbulla Cave Monastery in Sri Lanka. Phillips is the author of four publications on lighting design published by the Architectural Press.



LETTERS

It was refreshing to read the opinion article by Martin Lupton, *Natural Progression* (NL5, September/October).

Perhaps it would be fair to assume that as a manufacturer we would see natural light as the enemy. But those of us who are more focused on providing solutions have never really taken this view.

For years we have had most of the tools needed to address the important issue of taking a harmonised approach to lighting a space. However, there are not many good examples of integrated design. Is it just restricted budgets holding us back? Lighting education covers daylight factor calculation, but tends to focus more on the method rather than the reason or purpose.

Harmonising artificial light with natural light creates a

sophisticated dimming and colour-shifting challenge, accommodating changes in quantity and appearance at an unpredictable rate.

We tend to treat daylight as a more static source than it really is, instead of a truly dynamic aspect of the overall lighting result.

It is a challenge for more designers to start using the exciting advances in technology at their disposal, not only to build on Martin's message, but to really demonstrate how we can harmonise natural and artificial light so that they share the same space seamlessly. It will certainly be good for the planet – and would also be good for the people.

David Francis
Director Fagerhult Retail

I cannot let Grant Daniels's remarks about the Lighting Design Awards in your last issue go unchallenged. He says the awards are 'devalued by...unqualified judges'. The last time I looked they included Keith Bradshaw of Speirs and Major Associates, Tim Downey of Pinniger and Partners, Doug James of Mindseye and Jim Morse of Light + Design Associates. All working practitioners at the top of their game.

The list also includes major client Iain Trent of Land Securities, sustainability expert Dave Tilley of DJ Consultancy, PLDA coordinator/lighting designer Sharon Stammers and myself.

Oh, and we actually go out and assess the schemes. Do you know of another such competition that does this?

The innovations judging panel includes Grant's colleague and Thorn's lighting applications director Lou Bedocs, Sally Storey of Lighting Design International, Jake Dyson of Dyson Products and LED expert Gordon Routledge.

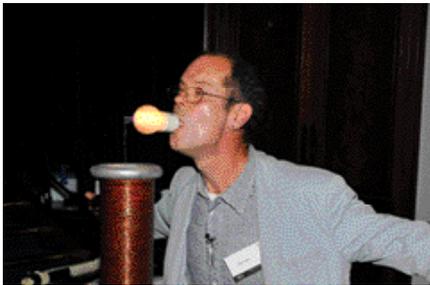
Perhaps he'd like to tell us who of these is 'unqualified'.

He says the awards are also devalued by 'populist hype'. This I throw up my hands to – we need to spread the message about good lighting as wide as possible.

Perhaps Grant would prefer if it was judged by academics, and the presentation held in a secret bunker at Balham?

Ray Molony
Lighting Design Awards

Flash bang wallop



It's not every day you see someone light up a CFL between their teeth using a Tesla coil, but the SLL Centenary and CIBSE Annual Lecture at the Royal Institution was something of a first in more than one respect. In an event organised by Peter Phillipson, the institution's Dr Frank James and Dr Bryson Gore (above) began the evening

with a theoretical and practical lesson in the evolution of electricity and lighting that highly entertained more than 400 people in the venerable organisation's famous Faraday theatre.

Arc lamps and prototype dynamos were among the original and replica paraphernalia that, with gratifying bangs and flashes, demonstrated the inventions of Faraday, Tesla and other scientific luminaries who once stood on the same stage.

The foray into the past was followed by a view of the present and future of lighting design with special speaker Jonathan Speirs of Speirs and Major Associates. Surrounded by three-dimensional projections which subtly suggested the essence of light and

colour, he outlined his philosophy of lighting and his belief that the key to good lighting lay in the creative spark, which could subsequently be supported by the science rather than driven by it (see p5, NL5 September/October).

A webcast of the lecture is available at www.cibsewebcast.com



Light heavyweights create new convention and set precedent

In a highly successful attempt to prise lighting conventions from their conventional mould, LoveLight at the Royal College of Physicians in October was designed particularly to inspire non-lighting professionals about the importance of lighting. Organised by the PLDA in conjunction with Emap, the event attracted around 260 architects and lighting designers throughout the day and evening.

Beginning with a keynote address from Jonathan Speirs, the day moved through both straightforward and off-the-wall presentations from, among others, Rogier van der Heide, global leader Arup Lighting and Tim Downey, director of Pinniger and Partners, as well as architects Eva Jiricna, Laurie Chetwood of Chetwood Architects and Magali Thomson of Marks Barfield.

Presentations were punctuated by short films on lighting, and the pace changed with varying formats including workshops and an in-conversation session featuring president of the Architectural Association Alex Lifschutz of Lifschutz Davidson Sandilands and Cobe chairman Paul Finch.

The evening reception featured an audience-created lighting installation, a pecha kucha session – 15 speakers who used 10 slides, 20 seconds per slide, to explain why they loved light – and the switch-on of a workshop exterior lighting scheme for the RCP's grounds using Philip's LED luminaires, led by Rowena Preiss of Philips and Graham Rollins of Lighting Design International.

'The accolade of being the best ever lighting event in the UK has been uttered by many people and the huge buzz that LoveLight created means we more than achieved our aims,' said Sharon Stammers, who represents the PLDA in the UK and who co-organised the event.

Sponsors included Philips, Concord, Lutron and amBX. More LoveLight events are planned.



Controlling interests

The latest Joined Up Lighting seminar at BDP, jointly backed by the SLL, the ILE, the IALD and the PLDA, focused on lighting controls. Michael Stott, managing director of controls consultant Quo Vadis, outlined the technologies available, and emphasised the important role that Dali has played in simplifying lighting control in both commercial and residential sectors.

Wayne Howell, creative director of Artistic Licence, focused on the convergence of lighting and video, with pixellated lighting used to create video effects and video used for lighting effects. This development has had a profound effect on control technology, he contended, because this type of lighting demanded 'hundreds and thousands of channels to achieve the effects', as well as advanced programming interfaces. This convergence would continue, he predicted, and controls would fall roughly into three groups: Dali for simple room level control, DMX512 (and the newer RDM) and the Ethernet for large-scale, project-wide control.

Paul Nulty, director of Light Bureau, concentrated on the specifier viewpoint. There was a need for simplification, he said, both from the manufacturer (user interface and wiring) and lighting designer (design and specification). He also called for more education of end users and specifiers so that both were less reliant on the word of manufacturers. Also needed, he said, were products from manufacturers that would meet changing requirements.

The seminar was sponsored by Light Projects Group.

In the eye of the

In his recent SLL lecture, Kit Cuttle turned current lighting theories on their head. Jill Entwistle talked to him about seeing space in a whole new light

The way we currently measure lighting, maintains Kit Cuttle, is outdated, inappropriate and quite simply wrong. It is time, he says, that we turn the old thinking on its head and start looking at lighting from a totally different perspective. 'We're measuring in the wrong way, we're calculating in the wrong way and we're specifying in the wrong way,' says Cuttle. 'We have lost touch with the determining factor for the level of light we should be providing for various activities in various locations.'

In an SLL lecture held at the Bartlett in October, Cuttle advocated that the preoccupation with horizontal illuminance should end. Instead we should be concerned with reflected light, the apparent brightness of a space, the light that reaches the eye rather than the horizontal plane. It is what he has termed the third stage of lighting design. However, it is important, he says, to understand what those first

provide additional illuminance in order to compensate for that. But of course that's laughable now, we wouldn't dream of providing 10 lux for any indoor activity. We even light corridors and plant rooms to much higher levels than that.'

Both stages led to a misplaced concern with horizontal illuminance in Cuttle's view. 'The direct component of illuminance has no visual effect. It is not until the light has undergone a reflection that it has a visual effect upon the appearance of the things around us. Therefore, particularly when we have environments where we direct light and control it very intensely to achieve high efficiency on certain planes and surfaces, we get a quite misleading impression of how useful and how effective that light is going to be for vision. We have got to allow the light to undergo at least one reflection before it becomes effective at the eye.'

Among the negative results of the old approach is

'If codes, standards and recommended practice documents specified lighting in terms of how it gives people a sense of brightness in a space this would completely change the way we think about efficient, effective and economical lighting installations. Gone would be the low brightness fully recessed louvre, with mirror optics that direct 95 per cent of the light on to the horizontal work plane. All of that is, I believe, quite misleading.'

two stages are and why in his view they have taken our approach to lighting in the wrong direction.

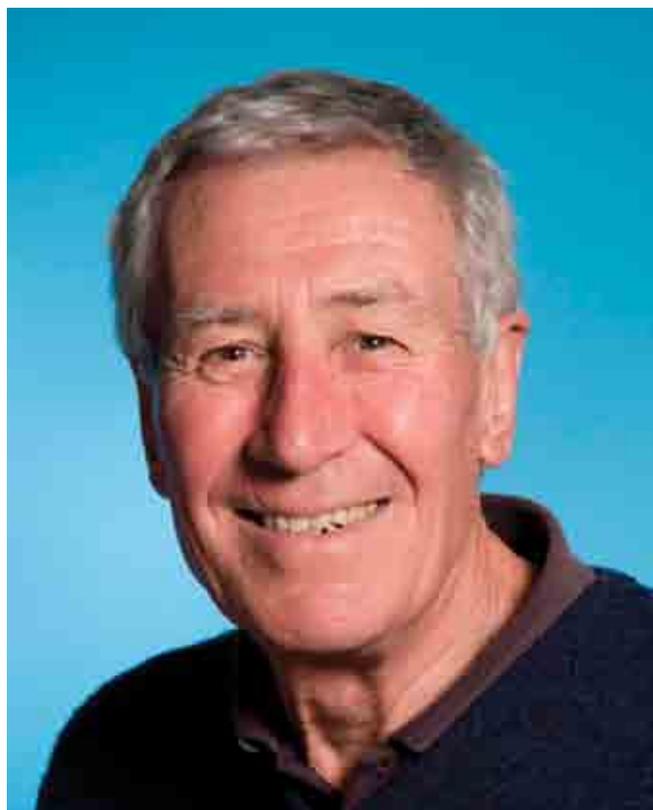
'The first stage is an engineering approach to lighting. The 'first stage' professionals wanted to be able to produce uniform illuminance over large areas. That's a concept that's still very much with us and dominates a lot of our thinking. We have modern light meters which are technically sophisticated instruments, but they still measure exactly the same aspects and quality of lighting that they were trying to measure in the 19th century – Illuminance regardless of the direction of the incidence of light on a horizontal, two-dimensional plane.

'Then they started thinking about how to decide how much light to provide. The whole notion of building this around providing light for human need and the concept of visual performance caught on. I've no doubt that at the time it made a lot of sense. If we go back to the 1920s and 1930s there were eminent people in lighting saying that for a typical reading task we need one foot candle, approximately 10 lux. Therefore when we have difficult visual tasks we should

overlighting, according to Cuttle. General levels of illumination are calculated on the basis of worst possible case which, given that task lighting can supplement light levels for people and tasks that need it, is 'inefficient and unnecessary'. This concern to produce high levels of illumination on the horizontal surface also overlooks the fact that technology has moved on. In the workplace, most people use near-vertical, self-illuminated screens. In the supermarket, the person at the checkout no longer has to read the prices because a bar code scanner does it for them. 'But it doesn't stop them putting strong lighting right over the checkout to give high levels of illuminance on the horizontal work plane because that's what the codes specify.'

The switch of focus to reflected or indirect light turns previous thinking about issues such as efficiency upside down. 'As soon as we start measuring light arriving at the eye, we get a completely different impression of what is effective lighting,' says Cuttle. 'Techniques such as wallwashing or uplighting have always been thought of as inefficient lighting because when we measure illuminance by

beholder



holding out a light meter on the horizontal plane, uplighting and wallwashing make little impact.

'We have to completely rethink the ways in which we distribute light. Washing the walls with light can be an extremely effective way of giving people a sense of a bright, well-lit space and a good sense of the ambient illumination. It becomes efficient and effective to put light on to surfaces that are going to reflect a high proportion back into the space because that is what gives our sense of brightness within the space. It is a complete turnaround, not only for how we measure lighting but how we even think about lighting.'

Crucial to Cuttle's theory, of course, are the nature and colour of the surfaces and objects within a space. Lighting design already accounts for the reflectance and colours of materials within a space, but many a scheme has been compromised because the architect/interior designer subsequently changed their mind after the lighting had been predicated on different surfaces. The closer bonding of the lighting specifier with the overall design process would be essential if indirect lighting was to play the key role. It is here that Cuttle is addressing the lighting engineer in particular, pointing up the gap that still persists between lighting design and lighting engineering.

'I think we're moving into an era where architects find that they're getting on better with people who call themselves

Achieving the third stage:

- Research to establish a simple metric that provides a reliable indicator of perceived adequacy of ambient illumination
- Prescribe minimum values for various activities to preclude the appearance of dull, gloomy, or inadequately lit spaces
- Revise light-level schedules in codes and standards in terms of these values
- Produce revised guidelines for effective and efficient general lighting practice
- Revise lighting education curricula so lighting design becomes an extension of general lighting practice

Dealing with visual tasks

- Lighting for visibility
- The typical reading task is a special case
- Visibility is not determined by illuminance
- The object attributes to be revealed determine the most effective distribution of lighting
- The illuminance levels that we routinely provide cannot be justified on the basis of visual performance
- Light the space: then deal with visibility problems

lighting designers rather than lighting engineers. They like working with them better. I want to see lighting engineers getting involved in this area much more. I don't see that there should be this distinction. Illumination engineering has a lot to offer and a long way to go.

'I would like to see the architects and interior designers talking to lighting engineers because the way they distribute their materials around the space has got a lot to do with how it should be lit and how the distribution of light should work with it. I would like to see lighting engineers becoming much more conscious of that. By and large lighting engineers don't give much attention to reflectances.'

Cuttle still believes in measurement of light, and has developed a process for quantifying reflected light based on Mean Room Surface Exitance (MRSE).

'Illuminance is the density of the lumens arriving at the surface. Exitance is the density of the lumens coming off the surface. The average room surface exitance does not include direct light from the luminaires or from the windows, it's just light from the room surfaces. It doesn't matter if it's uplighting, downlighting, sidelighting, or daylight or electric lighting, MRSE gives a good indication of the overall impression of how brightly lit the space appears to be.'

It's possible to get an approximate measure by taking a conventional light meter, holding it up to the eye, shielding

'You have wall and ceiling illuminance relative to the horizontal plane illuminance. Abandon that. It is not the central issue. The central issue is, as we look around ourselves, how much reflected light is available.'

◀ the light sources and taking a reading, says Cuttle, though he acknowledges that this is obviously an imprecise method. He has also taken it to the next stage of using a web cam, again holding it at eye level. It's a crude instrument and hasn't got a good dynamic range, he says, but it conveys some idea of what's possible. 'You bring up your image on the screen, you click on the light sources to delete those, and you could then develop a programme that would give an average value of the exitance of all the other surfaces. In other words, MRSE is quite capable of being measured. At the same time, of course, you could also get a measure of the UGI (unified glare rating).'

All that is actually needed, says Cuttle, is a photo sensor that could be plugged into the USB port of a laptop and with the appropriate software the rest would be straightforward. 'We could transform the whole thing into a much more simple process. Portable, easily manageable and potentially it's all there. We could bring the process of light measurement right up into the 21st century.'

Cuttle is not contending that direct light should be ignored altogether. 'We need to give thought to how we take control of the amount of direct light relative to the indirect light because if we only have reflected light, and every light source is completely concealed, it becomes a rather dull world. We need a bit of brightness, a bit of liveliness, a bit of sparkle here and there, but it's important to get that balance right. I think this would be a lovely avenue for people to explore a good deal more thoroughly, that direct light from a luminaire is glare.'

Neither is Cuttle suggesting any precipitate changes without careful thought and further exploration of the theory. 'To really move in this direction we do need some good research,' he says. 'I don't want to see people rushing into print with completely revised codes and standards until we have actually got some good research and can show that this whole approach is valid and has been investigated.'

'We need to have sound values by which we can specify what is perceived adequacy of ambient illumination. Then we can revise our documents and teaching. Lighting manufacturers, I trust, would be pretty quick to get on board and realise the market is shifting and they have to adapt to it.'

Responses to Kit Cuttle's lecture will be published in the next issue of the newsletter (Jan/Feb). If you would like to contribute, please email the editor at: jentwistle@cibse.org

Kit Cuttle's paper, Third Stage of the Lighting Profession, is published in the March 2010 issue of LR&T, also available online to members at www.sll.org.uk

The second edition of Cuttle's book, Lighting by Design, has just been published in the UK by Architectural Press, and is available through Amazon and specialist outlets, price £34.99 ■

Dynamic

Could digital cameras transform luminance measurement?

Liz Peck reports

Luminance, as we all know, is traditionally measured using a luminance meter which gives a single spot reading. A high resolution image from a digital camera contains around 10 million pixels, effectively 10 million spot readings. So does this mean that digital cameras could be the answer to a more effective measure of luminance? It was this question that was addressed by Axel Jacobs, John Mardaljevic and Birgit Painter at a recent London SLL meeting.

The human eye is capable of adapting to luminances as high as 1,000,000 cd/sq m and as low as 0.000,000,1 cd/sq m. Once adapted, the eye can cope with a luminance range of 1:1000, but for a part of the scene, this can be as high as 1:10,000. However, most digital image formats have been designed with the capabilities of computer graphics displays in mind and therefore the typical contrast for a TFT screen is currently about 300:1.

This means that computer display technology is a long way from being able to display images that have a luminous range even close to what the human eye can process. On top of that, the information stored in the image files is not expressed in photometric terms. Instead of describing the luminance of a pixel in cd/sq m, pixels can only be expressed as a brightness comparison to another pixel.

How is it possible, then, for a digital image to give a measure of luminance? The answer, it seems, could lie in High Dynamic Range Imaging (HDR).

HDR images are created from a set of photographs taken at differing exposure levels. A minimum of three images is required: under-exposed, normal and over-exposed. The more exposure settings that can be added in between, the better the HDR image. The HDR computing software uses

Further information and reading:

London Metropolitan University WebHDR site: <http://luminance.londonmet.ac.uk/webhdr>

Transmission Illuminance Proxy HDR imaging: a new technique to quantify luminous flux

J Mardaljevic PhD, B Painter PhD and M Andersen PhD
Lighting Research and Technology, 41:1, 2009

High Dynamic Range Imaging and its Application in Building Research

A Jacobs

Advances in Building Energy Research, Vol 1, No 1, 2007

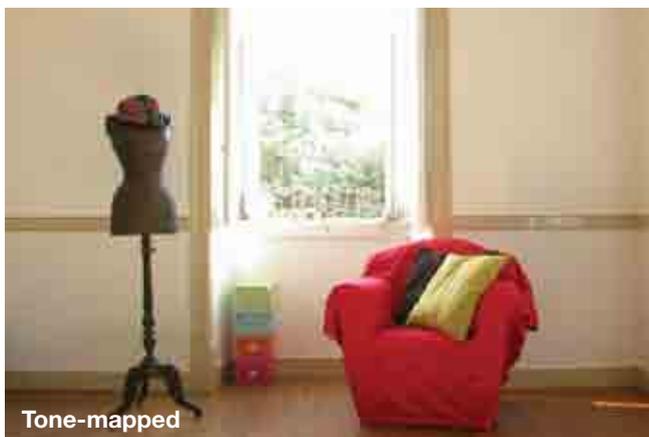
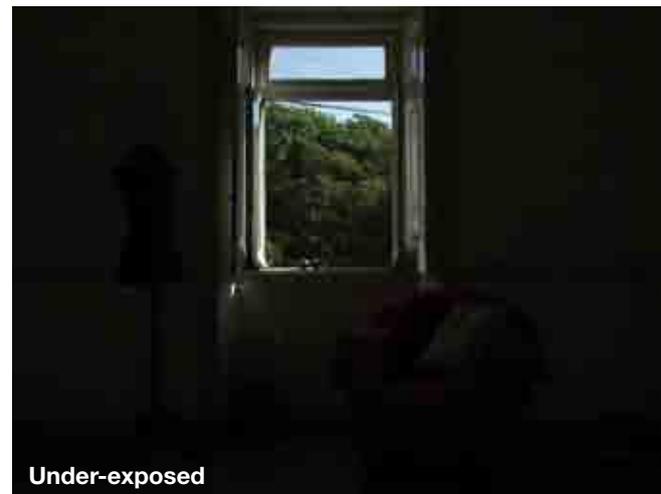
development



the embedded EXIF data (exchangeable image file format – ISO, exposure and aperture settings) to adjust the images to determine the actual luminance distribution within the photographed scene, and produces an HDR image. In order to display or print an HDR image, the dynamic range needs to be reduced again to fit that of the output device. This is known as 'tone-mapping'. Tone-mapping operators may also be used for manipulating digital images and for creating interesting artistic effects.

From this image, and using the embedded information, pseudo-colour images can be created that map the luminance of a pixel to an arbitrarily chosen colour. While it is recognised that this may not be as accurate as spot measurements from a quality luminance meter, cameras can be calibrated against a meter to give very accurate readings.

In addition, the same approach can also be used to determine the direct and diffuse components of illuminance. This brings into play the possibilities of completing glare surveys and the monitoring of both natural and artificial lighting. This technique has been named Transmission Illuminance Proxy – High Dynamic Range Imaging (TIP-HDRI). An interesting prospect in the light of Kit Cuttle's new theory... ■



Leagues ahead

The introduction of the CRC scheme in 2011 is an ideal opportunity to push lighting design up the agenda, argues Andrew Bissell



The introduction of the CRC Energy Efficiency Scheme, albeit slightly delayed (see p4), means that our clients now have another reason to employ a lighting designer and that can only move lighting further up the design agenda.

As you delve into the principle of buying credits and understand the costs, what becomes evident is that the real saving comes from reducing energy bills and not the money a company will receive back from the carbon trading scheme. It is perhaps obvious, but easily overlooked when the focus of the CRC scheme is on the cost of the credits and the associated penalty or bonus.

In essence, the scheme is a wake-up call to large companies that they need to measure their energy use, record it, understand where it is being used and then do something about it. The fact that their performance in energy terms will appear as a league table will give some companies real kudos and others an embarrassing PR problem.

The clear message is that good quality lighting design, which includes the fusion of sunlight, daylight, electric light and controls into the architecture and building systems design, will substantially reduce the overall energy consumption for our clients. To successfully achieve those energy and cost savings, however, there are certain key areas that need to be tackled.

For one thing, we need to contribute to the design process at the earliest stage, ensuring access to sunlight and daylight, while working with the architect and our mechanical colleagues to satisfy the form and thermal strategy. Delivering buildings where the natural light is the predominant light source is essential. It is no longer acceptable to allow this element to take a back seat.

Our clients only receive back their carbon credit cash and any bonus against the energy they actually save – not against

a simple prediction of any energy they may save – so the use of daylight factor modelling as a measure for potential to save energy is no longer useful. Therefore techniques such as climate-based modelling, as advocated by John Mardaljevic, where both the useful sunlight and daylight are measured and identified, allows the lighting designer to contribute to facade design. This will deliver a high-quality lit environment and sufficient natural light to allow the electric lighting to be isolated or significantly dimmed for the majority of the day.

Another important area concerns lighting controls. The EPC certificates offer substantial benefits when you tick the box to say that automatic daylight-linking and PIR detectors will be provided in the building design. If, in reality, the natural lighting is insufficient in quality and quantity, then you are actually wasting both money and materials by providing those lighting control items throughout the building. Again, using climate-based modelling and truly understanding how a client plans to use the building and expand in the future will ensure maximum energy savings and no unnecessary lighting control.

A third issue involves designing spaces based on how end users will actually live and work in the buildings they own and occupy. We need to move away from this strategy of flooding a building with an emotionless lattice of recessed luminaires on day one. Even for spec offices we need to end this ritual of wasting raw materials and creating tasteless hollowness supported by a frail numerical defence. The reality is we can deliver authentic branded design through working closely with the interior architects and save around 30 per cent of the energy of the lattice solution.

'The scheme is a wake-up call. The fact that their performance in energy terms will appear as a league table will give some companies kudos and others an embarrassing PR problem.'

We should also undertake more detailed checks on equal and approved alternative products to ensure that the total energy consumption of the alternative design is equal or less than the original design. It is still common to have contractors put forward products and systems which, when scrutinised, have hidden energy costs, or the quantity of units increases even if the lamp output is the same as the original.

We know lighting design can make a positive impact on people and spaces. With the CRC Energy Efficiency Scheme we have the opportunity to approach our clients to demonstrate that we can both save them money and energy, and deliver high-quality lighting designs – but we need to be speaking to them earlier in the design process.

Andrew Bissell is associate lighting designer with Cundall Light4 ■

City lights

Finns finish first in the latest urban lighting awards

Jyväskylä in Finland (right) has won first prize in the 2009 city.people.light awards, the annual competition organised by Philips Lighting and the Lighting Urban Community International Association (LUCI). The award, which recognises projects that use lighting to contribute to the wellbeing of those who live, work or visit a city or town, was for the Finnish centre's City of Light initiative.

The winning project, which so far has involved 50 installations, was designed to position the city as a forerunner in outdoor lighting using the latest technology, and is a collaboration between local businesses, building owners and the city. The wider aim, according to the city, is to develop the outdoor lighting culture in Finland.

Located in the central part of the country and spending the majority of the winter in darkness, Jyväskylä wanted to use lighting to provide a strong sense of security for its fast-growing population, while ensuring that it was energy efficient and environmentally sustainable. The jury particularly remarked on the subtle use of lighting not only for major urban projects, but also for smaller public spaces and parks where light is in direct touch with the people.

'We appreciated that the city used all the potential lighting can offer to stimulate sustainable urban development,' commented Iris Dijkstra, an independent lighting designer and president of the multinational jury. 'At the same time Jyväskylä will also reduce the energy consumption of its public lighting.'

There were four other awards. The joint second prize went to projects in Hangzhou, China, and Lachen in Switzerland, while projects in Copenhagen, and Moers in Germany got a Special Mention.

The jury was impressed with how strongly the Hangzhou project (centre right) created a landmark for the city, reinforcing its natural link with water. 'A delicate and yet powerful project which gives a new dimension to the grand canal and reinforces the city's identity as a whole, in its most romantic and natural aspects,' said the judges.

The port of Lachen project (bottom right) was commended for its harmony with both urban and natural environments. 'The designers have used light in a sensible and moderate way, creating a gentle landmark and reinforcing the charm and identity of this tourist destination.'

Twenty cities entered this year's competition, which was judged by a six-person jury comprising lighting architects, lighting designers and municipal lighting managers. Judging criteria included how lighting projects added to the cultural and architectural heritage of a city, its night-time identity and the environmental contribution.

Now in its seventh year, the awards has involved more than 141 cities since its inception.

More details at www.luciassociation.org/awards.php. ■



Photo credit, Luttako Park: Mauri Mahlamäki

'A delicate and yet powerful project which gives a new dimension to the grand canal and reinforces the city's identity as a whole, in its most romantic and natural aspects'



24 November

CIBSE Presidential Address – the director’s cut
 Speaker: Mike Simpson
 Venue: The Grosvenor Thistle Hotel, Victoria, London SW1
 Time: 5.30pm for 6pm

26 November

Lighting Masterclass
 Location: Newcastle
 Time: 10am-4pm

15 December

Festive lighting: friend or foe?
 Joint meeting with the Institution of Lighting Engineers. Followed by a Christmas drinks reception
 Speakers: Nick McLaren and Peter Harrison
 Venue: iGuzzini showroom, Business Design Centre, Islington, London N1
 Time: 5.30pm for 6pm

2010

19 January

LG5: Lighting in education
 Speaker: Iain Macrae
 Venue: to be advised
 Time: 1.30pm for 2pm

21 January

Using the Society of Light and Lighting Code
 Trainer: Peter Raynham
 Location: CIBSE, London SW12
 (see Mid Career College)

28 January

Lighting Masterclass
 Location: Leicester
 Time: 10am-4pm

3 February

Young Lighter of the Year final
 Venue: The ARC Show 2010, Earls Court 2
 Time: 4.30pm-6.30pm

3-4 February

The Arc Show and IALD Enlighten Europe Conference
 Earls Court 2
www.thearcshow.com



24 November: CIBSE Presidential Address – the director’s cut

16 February

Residential lighting
 Speakers: Benedict Cadbury and Rebecca Weir
 Venue: to be advised
 Time: 5.30pm for 6pm

17 February

Joined Up Lighting
 Topic: The New Part L – will it really reduce carbon emissions?
 Venue: BDP, Brewhouse Yard, London EC1

25 February

Lighting Masterclass
 Location: Portsmouth
 Time: 10am-4pm

11 March

Lighting Design Awards
 Venue: London Hilton, Park Lane, London W1
www.lightingawards.com

16 March

Trotter Paterson Lecture: Mesopic Vision
 Speaker: John Barbur
 Venue: to be advised
 Time: 5.30pm for 6pm

25 March

Lighting Masterclass
 Location: Oxford
 Time: 10am-4pm

11-16 April

Light+Building
 Venue: Frankfurt
www.light-building.messefrankfurt.com

20 April

Optical materials
 Speaker: Peter Thorns
 Venue: to be advised
 Time: 1.30pm for 2pm

29 April

Lighting Masterclass
 Location: Telford
 Time: 10am-4pm

12-14 May

Lightfair Trade show and conference
 Venue: Las Vegas Convention Center, Las Vegas
www.lightfair.com

18 May

AGM, presidential address and awards reception
 Venue: to be advised
 Time: 6pm-9pm

27 May

Lighting Masterclass
 Location: London
 Time: 10am-4pm

9-10 June

Guangzhou International Lighting Exhibition
 Venue: Pazhou Complex, Guangzhou
www.light-building.messefrankfurt.com

Lighting Masterclasses:

Masterclasses are kindly sponsored by Holophane, Philips and Thorn. For venues and booking details, see www.sll.org.uk

Mid Career College: the college runs various courses across the whole spectrum of lighting and at sites across the UK. Full details at:

www.cibsetraining.co.uk/mcc

LIF courses: details from John Hugill, 0208 529 6909, or email training@lif.co.uk