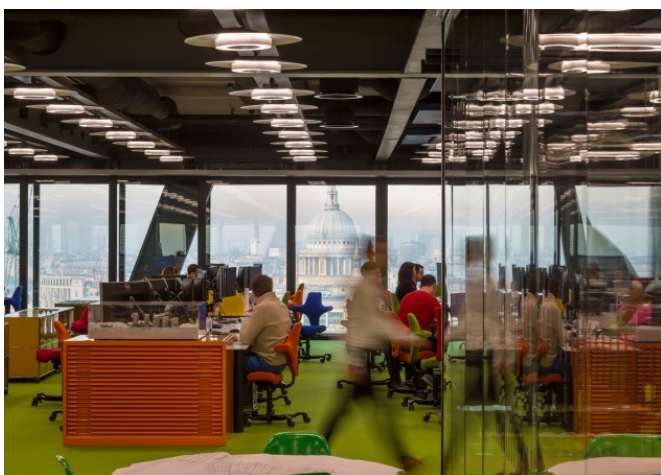


How to design human centric lighting – by scientist who discovered it



(/article/2017/01/how-to-design-human-centric-lighting-by-scientist-who-discovered-it-)

More dynamism and research is instead required when it comes to lighting workplaces and hospital wards Professor Russell Foster told Lux



The Rogers Stirk Harbour + Partners offices in the Leadenhall Building in Central London features a human centric lighting system. Photograph by Paul Raftery.

The lighting industry needs to take a much more ‘dynamic’ approach to lighting workplaces, Professor Russell Foster has said in an interview with Lux.

Foster is credited with discovering light sensitive ganglion cells in the retina of the eye, which influence the body’s internal clock.

‘We started working on mice with inherited retinal problems that had lost a lot of their vision. Although the mice were visually blind, they could regulate their internal clocks perfectly normally,’ Professor Foster told *Lux*, in an interview that you can view below.

The discovery that a mouse could be visually blind and not clock blind led to the belief that there was another kind of light sensor in the eye.

‘The eye is the organ of space and image, but it also plays a critical role as an organ of time. Without the eye and that synchronising signal to the body’s internal clock, then we will start to get up later and later,’ Professor Foster continued.

In response to the discovery Foster believes that the lighting industry now has to work more clearly to define what a space is being used for and then light it accordingly.

‘Most of us live in homes that are not well lit, we are commuting to work on say, the Tube, which is poorly lit and then we get to work and that is usually a poorly lit environment as well.

‘What is needed is dynamic lighting, where by first thing in the morning you have bright blue enriched light which would intersect and stimulate photoreceptors. Then perhaps later in the day this can be wound down.’

The receptors are not only clock receptors, they also have an effect on alertness. So as light levels increase so do levels of concentration.

‘If you a designing spaces where people need to be particularly alert, you could install blue-enriched light for that purpose.’

The research is not only pertinent to the morning, but can also be used to improve rest at night. This is certainly the case on hospital wards, which are often lit throughout the night.

‘If you go into an intensive care unit it is kept constantly lit. This means your internal clock cannot lock onto a signal meaning it will start to drift and physiology will start to fall apart. All in people that already vulnerable.’

Foster went on to advise the industry to adopt a much more nuanced attitude towards the research.

'We do now know that the rods and cones in the eye can modulate the light sensitive ganglion cells. So we need to see some more research and I don't think we should just run in and put blue lights all over the place.'

Rather than simply sticking to a *blue light good, red light bad* maxim Professor Foster, suggested that more dynamism and research is instead required.



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Professor Russell Foster

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- **Hear more about human centric lighting advancements from Dr. Shadab Rahman, Instructor, Harvard Medical School and Associate Neuroscientist, Brigham and Women's Hospital**

(<http://lightingforhealthandwellbeing.com/usa/>)

Dr. Shadab will be discussing dynamic lighting schedules, which can greatly impact shift work by improving cognitive performance during nighttime hours and enhance sleep and mood in settings where individuals spend most of their days, e.g., care-homes, hospitals, homes, etc. Dr. Shadab will further discuss how lighting schedules, intensity and spectral characteristics need to be carefully considered along with the cost savings and visual-performance considerations when upgrading or designing new lighting environments.

You can find out more about the event here and you can register to attend by clicking here. (<http://lightingforhealthandwellbeing.com/usa/>)



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