

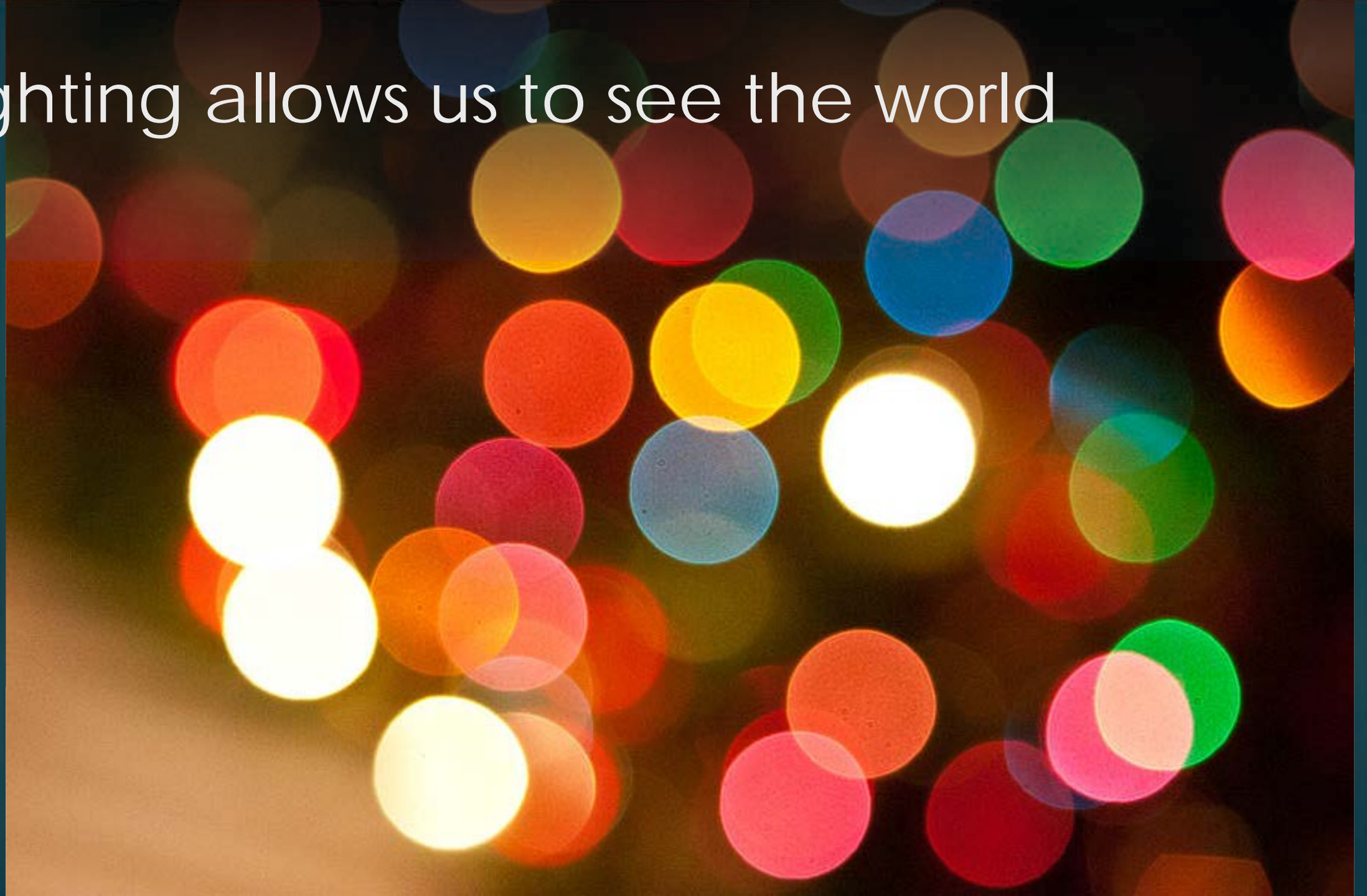
ABRAHAM & PAULIN
PHOTOGRAPHY



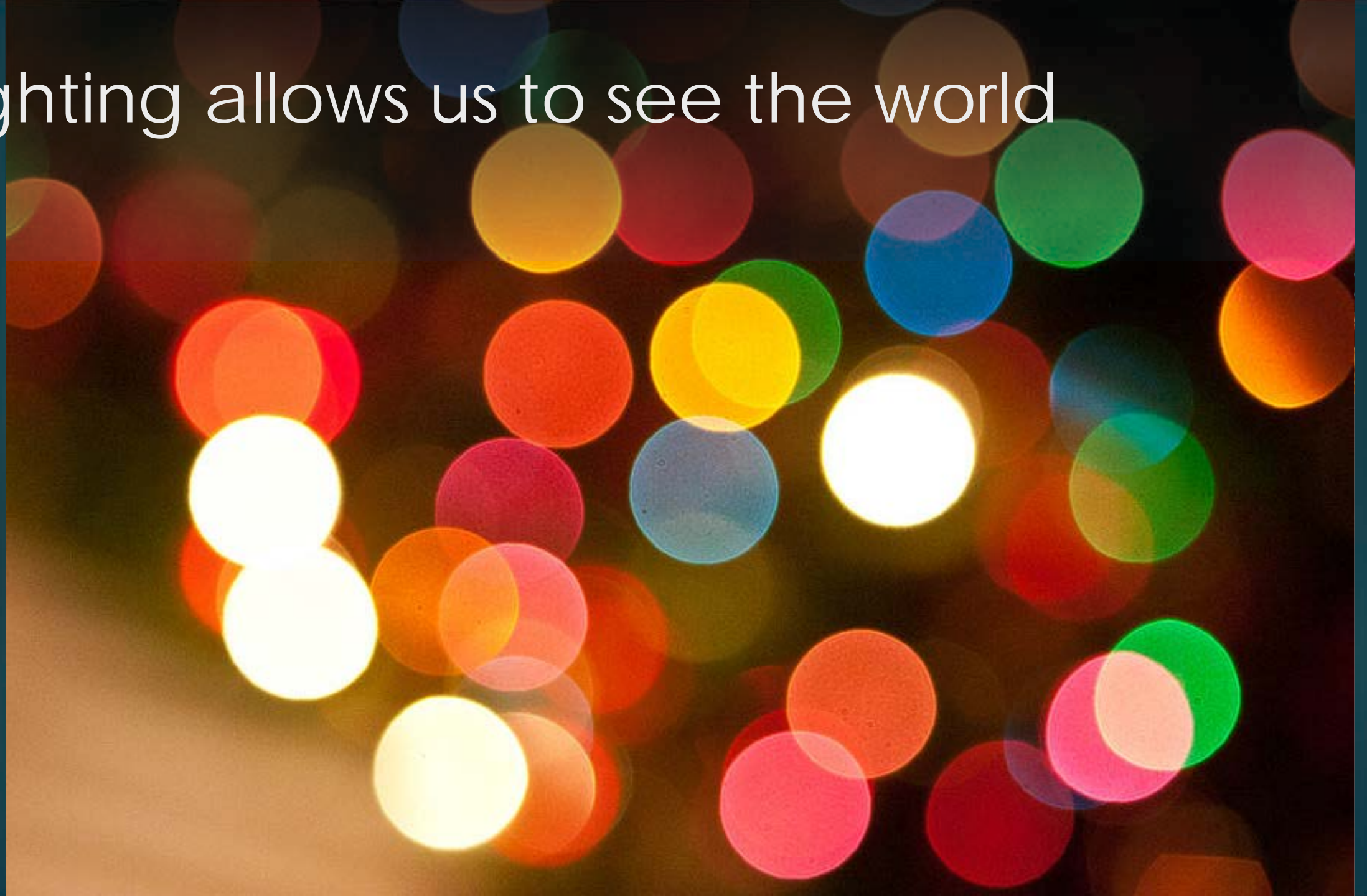
Light / Vision / Space

A TALK ON PHOTOGRAPHY, LIGHTING AND SPACE BY RUSSELL ABRAHAM &
KRISTEN PAULIN

Lighting allows us to see the world



Lighting allows us to see the world



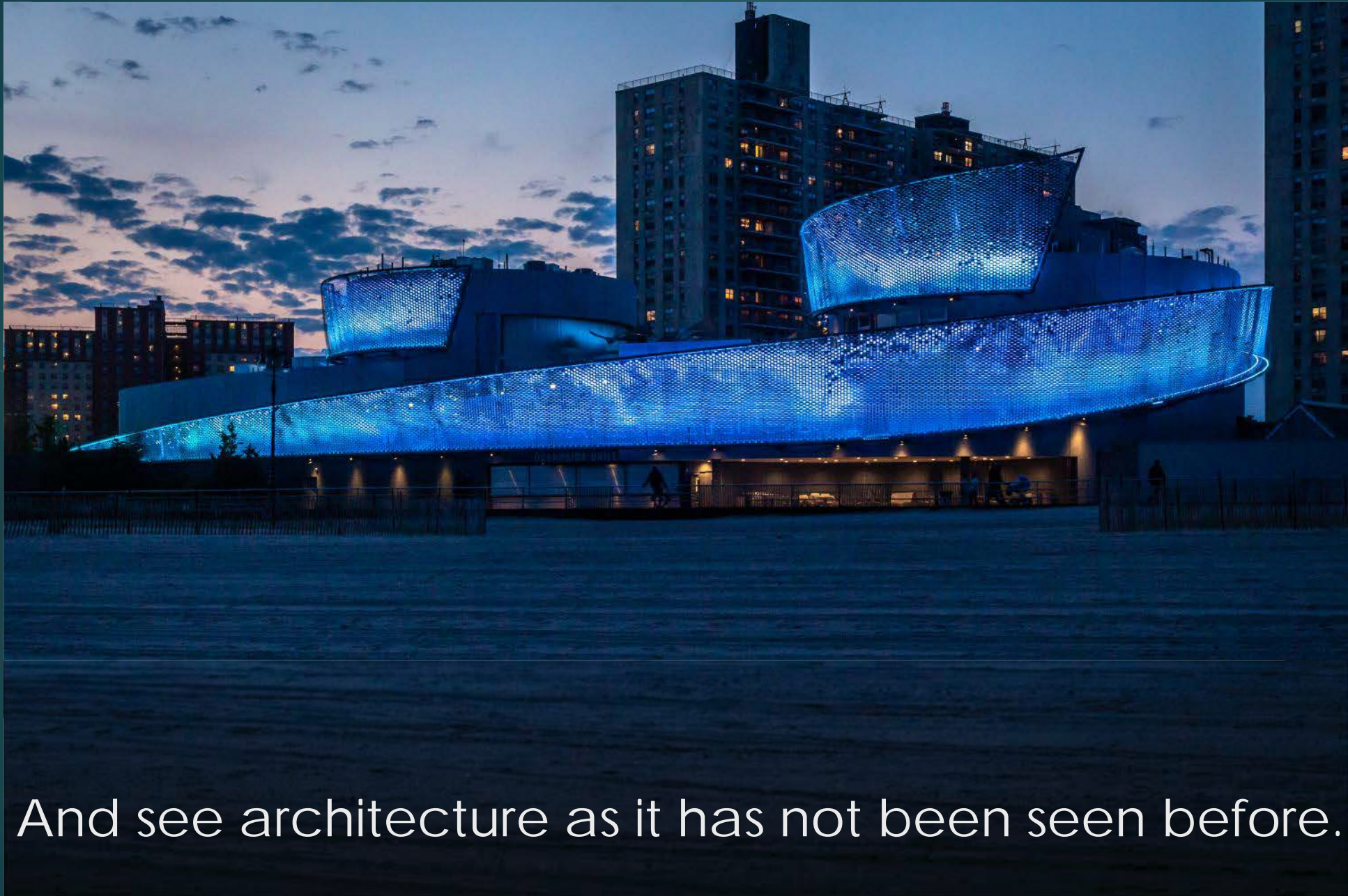


Shows us the way

and brings beauty into our lives.

Lighting allows us to reach for the heavens.





And see architecture as it has not been seen before.

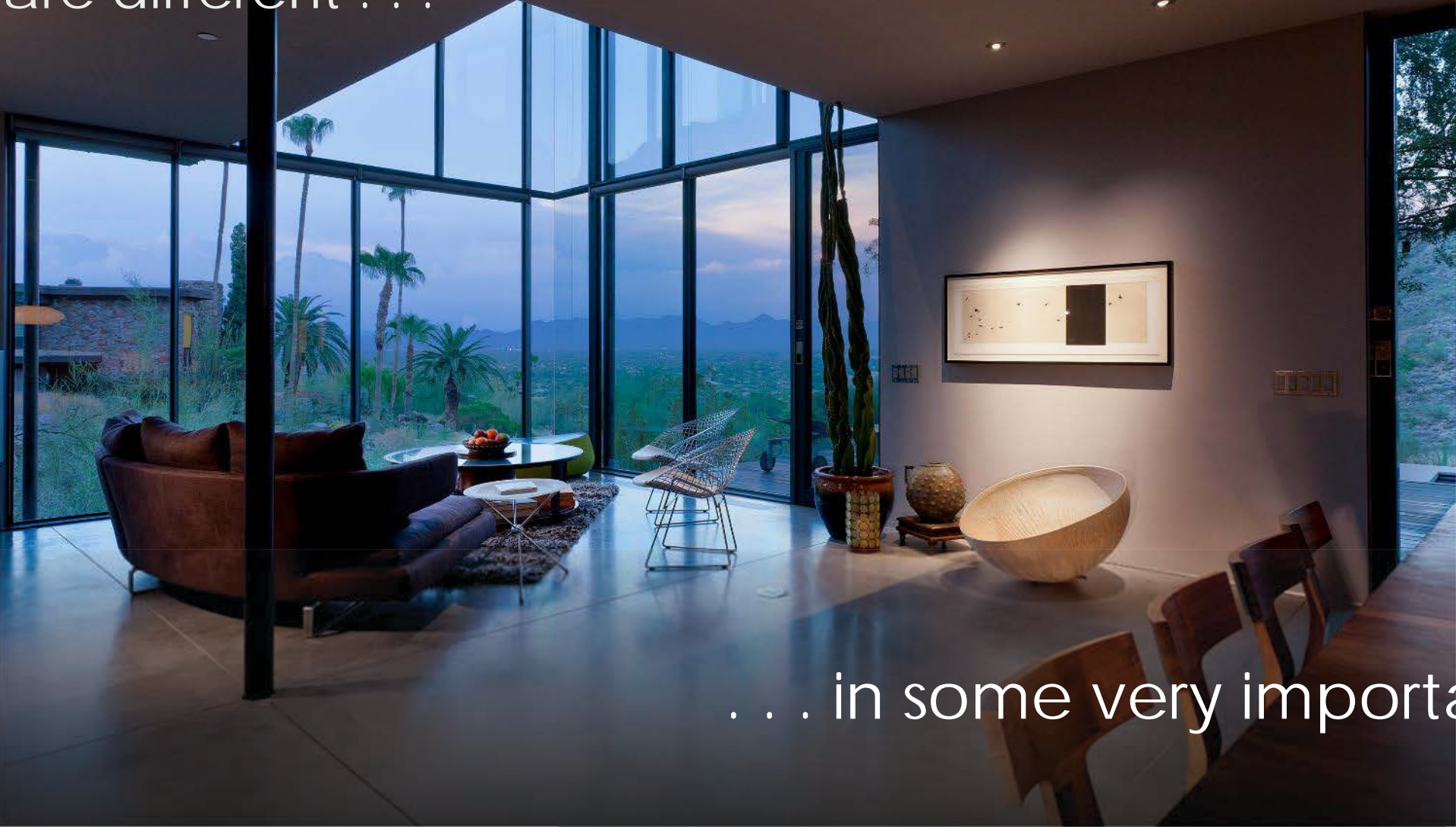
And have some fun!



Oakland Festival of Light, 2018



Seeing a space with your eyes and photographing it are different . . .



. . . in some very important ways.

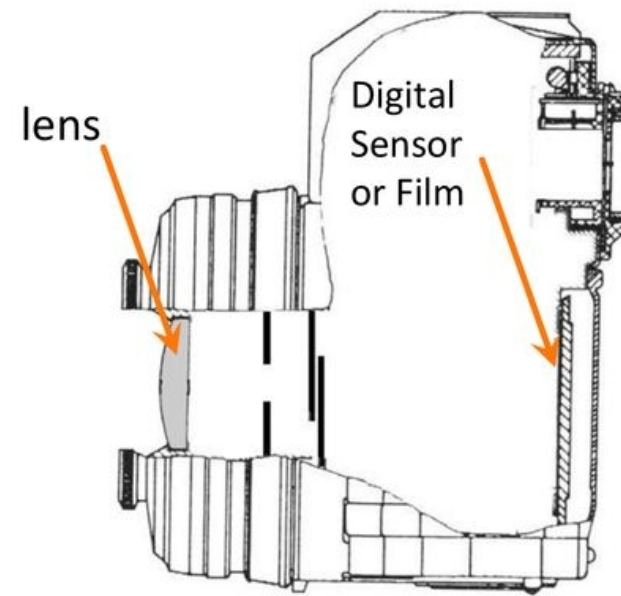
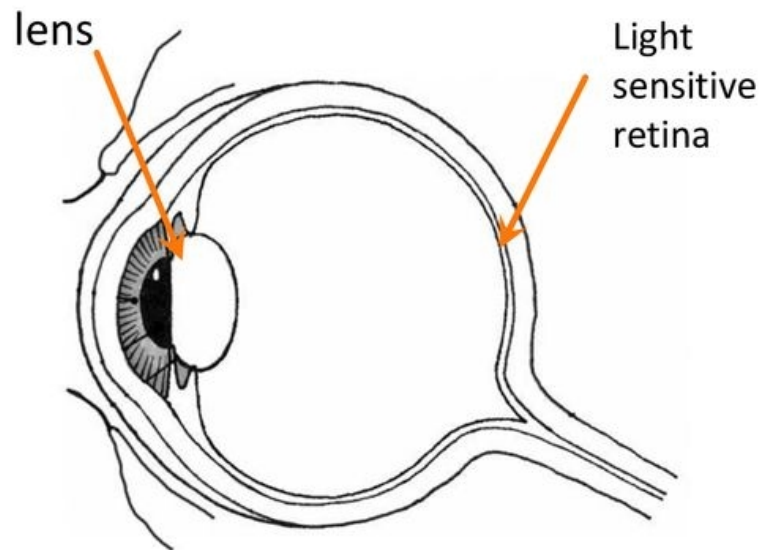
Our eyes are wonderful tools.



The human eye is far superior to any digital or film camera in a number of ways:



The Camera and The Human Eye



So why do photos rarely look as good as how you see the spaces in-person? Because human vision is much more advanced.

As photographers, we're constantly bridging that gap. Our job is to recreate what the eye and brain sees.

Let me dig into the details a little bit:

The human eye is far superior to any digital or film camera in a number of ways:

- We don't have to change lenses
- Our brain automatically adjusts exposure
- Our brain automatically adjusts for color. Photographers need to do that in post production.

The human eye is far superior to any digital or film camera in a number of ways:



$2^{20} = 1,048,578$ shades

$2^{14} = 16,384$ shades

$2^8 = 256$ shades

$2^4 = 32$ shades

Human observation can recognize 16-20 stops of light



Most digital cameras can capture 10-14 stops of light



Monitors can only display 8 stops of light



Printers and inks can only record 4 stops of light



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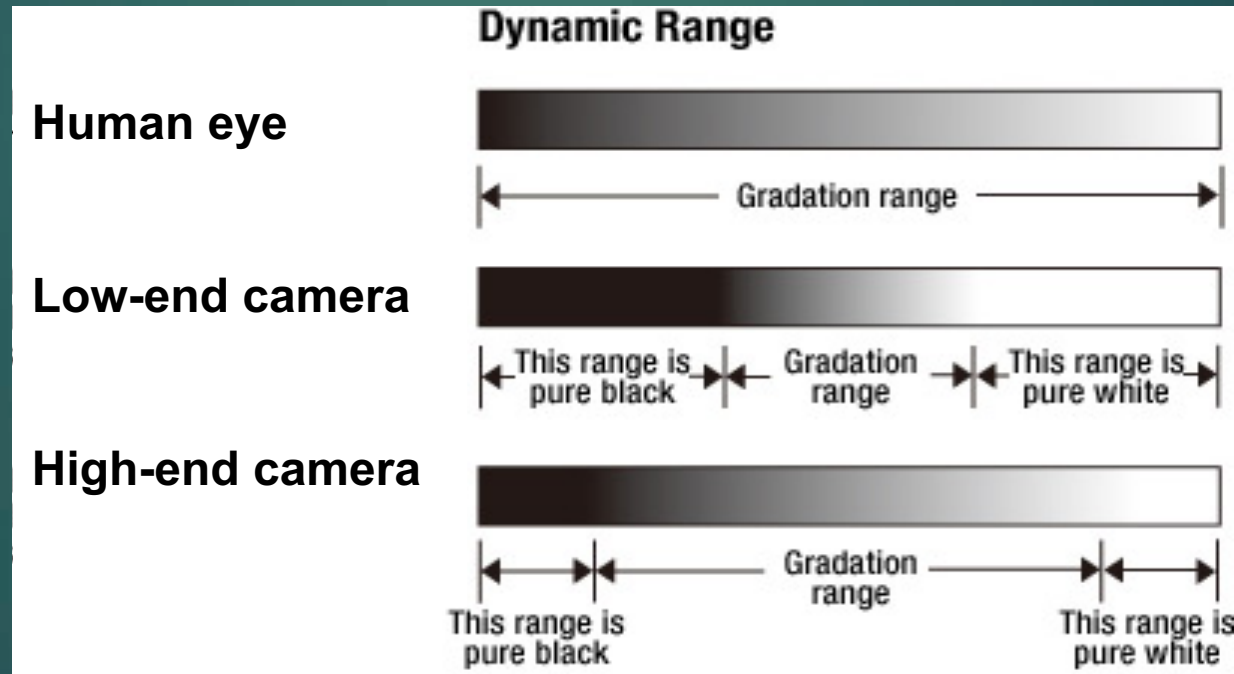
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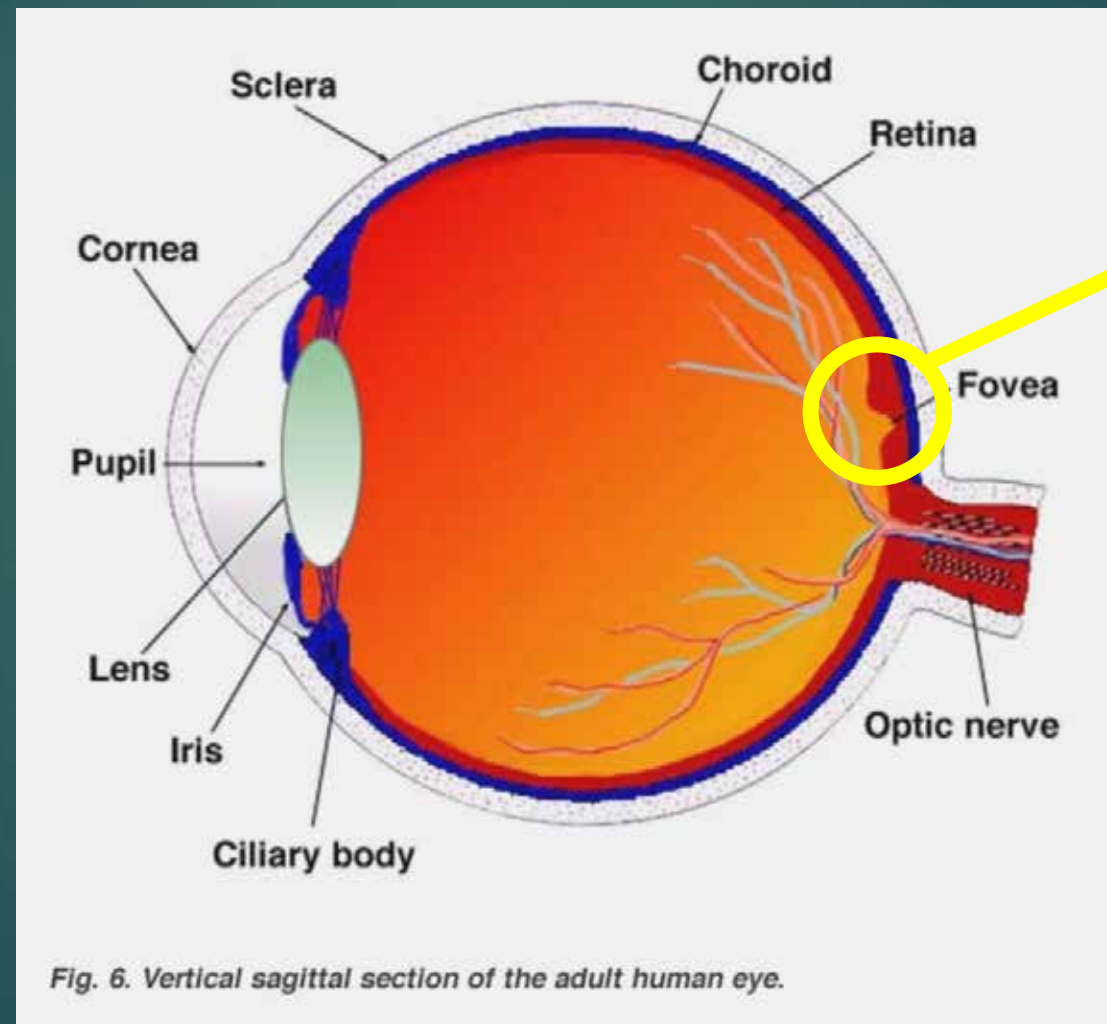
www.despines.com/2016/05/31/too-many-stops

How human vision works...



The human eye has a lot more "pixels" than your camera or your retina-screen-phone or laptop. (about [130 million pixels](#)). We know them as rods and cones. Cones make-up about only 6% of the total, and the rest are all "Rods", which see black and white.

Within the eye is an area called the Macula, which provides our 'central vision', and within the Macula, there's this little dip called the "Fovea". That's where the majority of our color-sensing cones are – All densely packed together. So the central part of our visual field has far more resolving ability than even the best camera.



The part of the retina outside of the Macula has fewer 'pixels':" the black-and-white-sensing "Rods". That's our peripheral vision'.

So how do our eyes and brain deal with these varying photoreceptors??

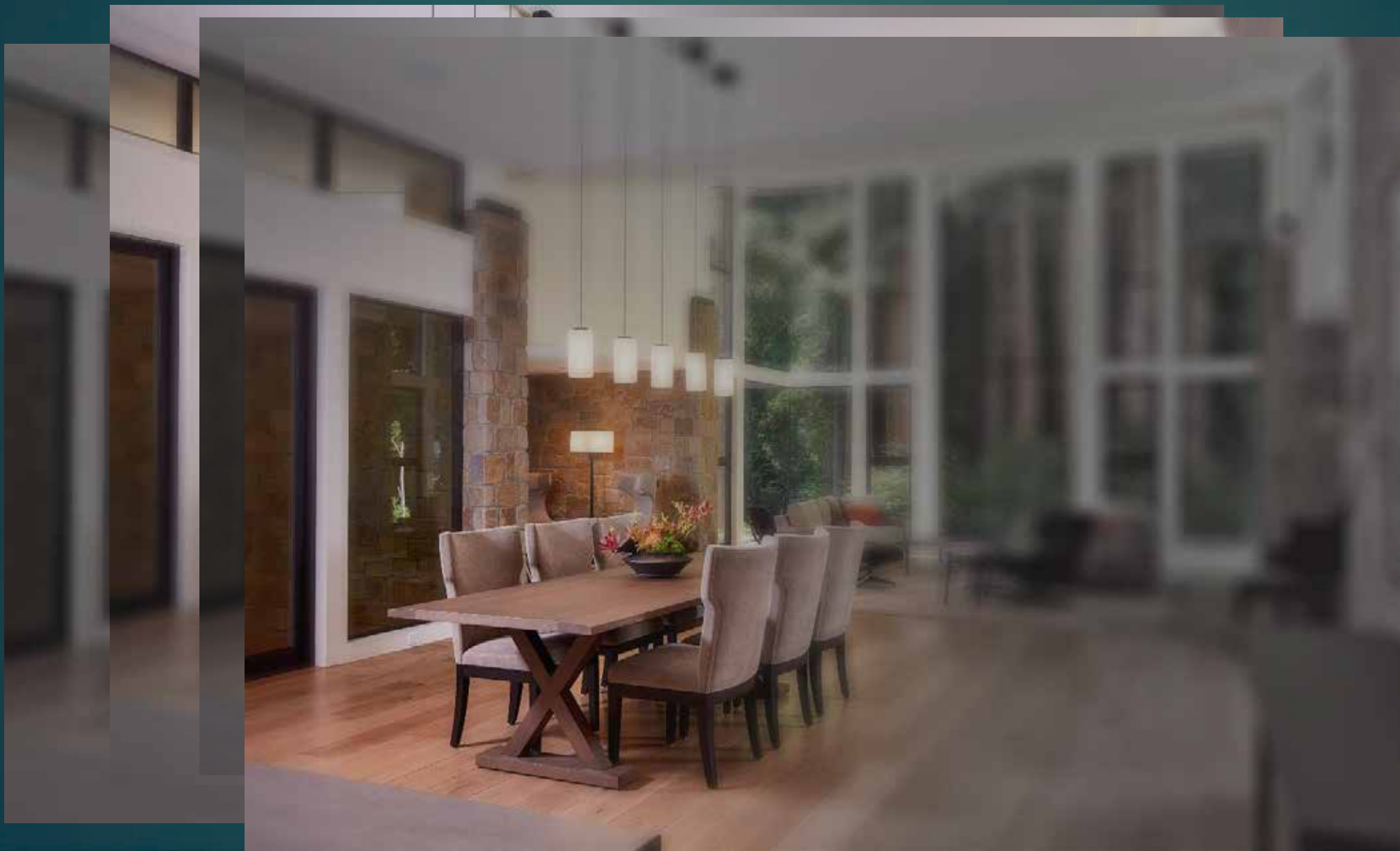
Fig. 6. Vertical sagittal section of the adult human eye.

How human vision works...



Here is a simulation of how the eye and brain create an image. Notice how the edges are soft focus, muted colors, and only the center is sharp. What your eye does is capture a rapid sequence of images, which the brain seamlessly assembles in a fraction of a second.

How human vision works...



Eye + Brain = Foveal Vision



This is what your brain perceives. Its a compilation of the detailed vision within the Fovea, therefore named "Foveal Vision".
What then, does the camera see?



What the camera sees...



Something
like this. . . .
inky shadows.
Muddy
details.



What the camera sees...with fill-lighting.



As photographers, this is our attempt to recreate foveal vision. How do we do it? Well, sometimes we blend exposures, also known as HDR. But Russell and I prefer to use additional fill-lighting as our main technique.

By adding lighting to the space...

- We can fill shadows
- Balance for the light outside
- Render colors accurately
- Better define most of the objects and textures in the room
- Recreate the image that our minds have just stitched together

Color Accuracy



Rendering accurate color is a challenge



80 CRI MR16 LED

95 CRI MR16 LED

Accurate color is a challenge

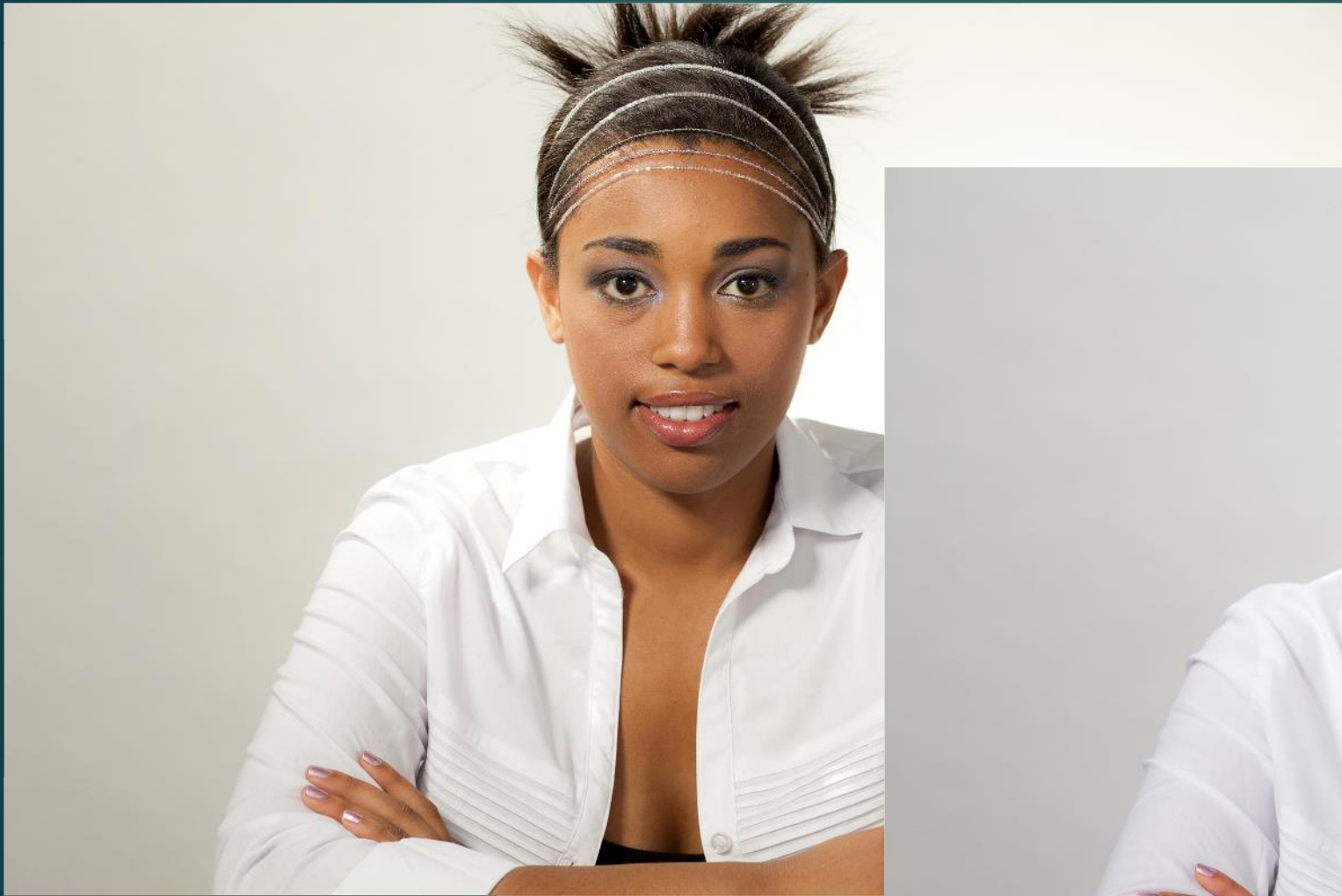


80 CRI MR16 LED



95 CRI MR16 LED

LED Source comparisons: Philips vs. Sora



80 CRI MR16 LED



80 CRI MR16 LED

Comparisons: Philips vs. Sora



LED Source comparisons: 80 vs. 95 CRI



80 CRI

95 CRI

How do we render accurate color in Photography?



- ▶ We work with bench marks, like gray cards and color charts.
- ▶ We use fill lighting that has a known color temperature and match that to the existing ambient lighting.
- ▶ We will shift the color temperature of our lighting when necessary to match the lighting in the space.
- ▶ We have post production tools that can read and adjust image color by matching bench marks.
- ▶ We have special editing tools that can work on specific problem areas in an image.
- ▶ Finally, there is an art to all of this and each photographer has his own style and palette.





LED Retrofit Projects

The Hotel Healdsburg retrofit





Marin County Residence retrofit



Kwan Henmi Architects



Kwan Henmi Architects



BEFORE

Kwan Henmi Architects



AFTER

Commercial Lighting



Lighting Design: Paul Helms Design Consultants

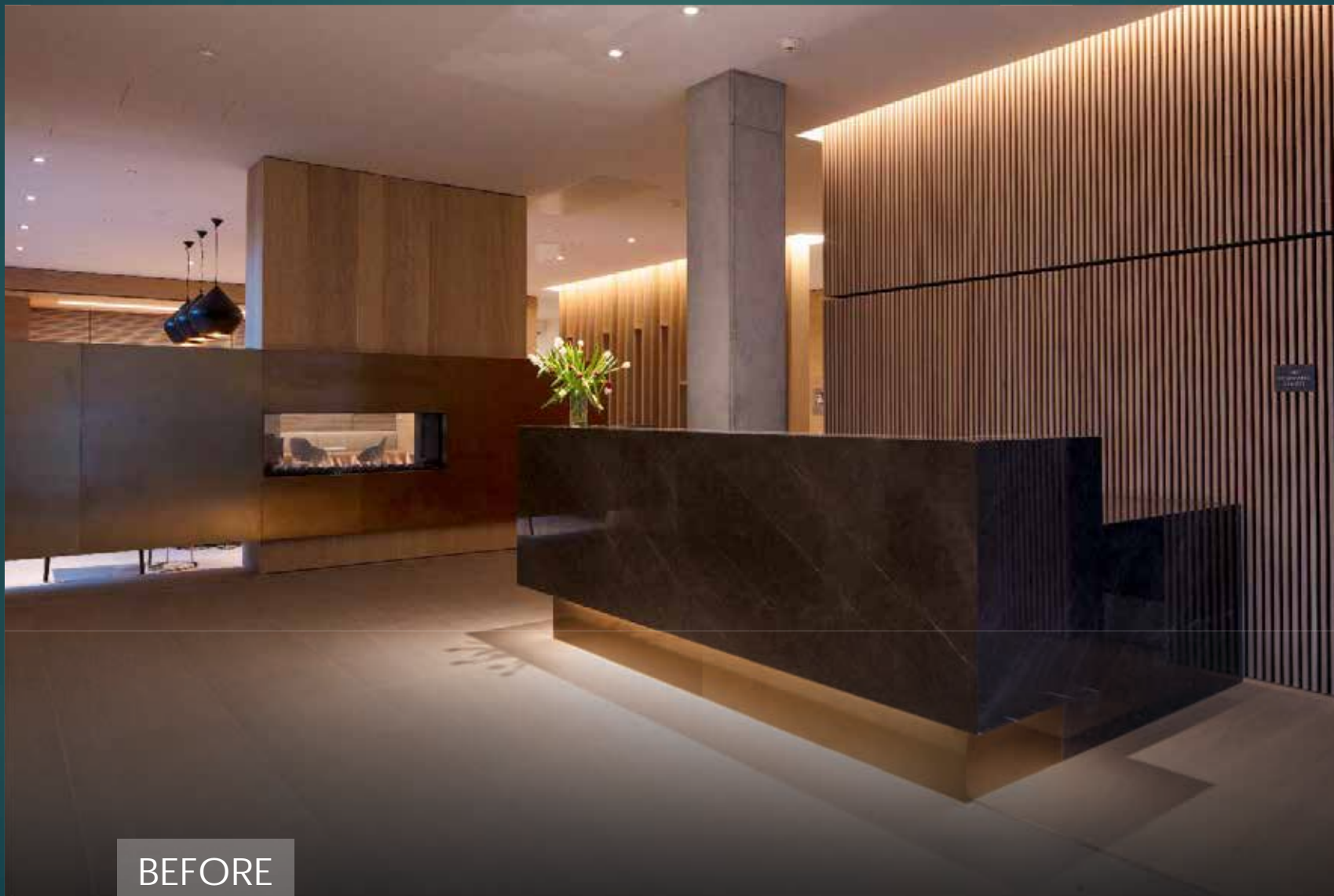


535 Mission St, San Francisco



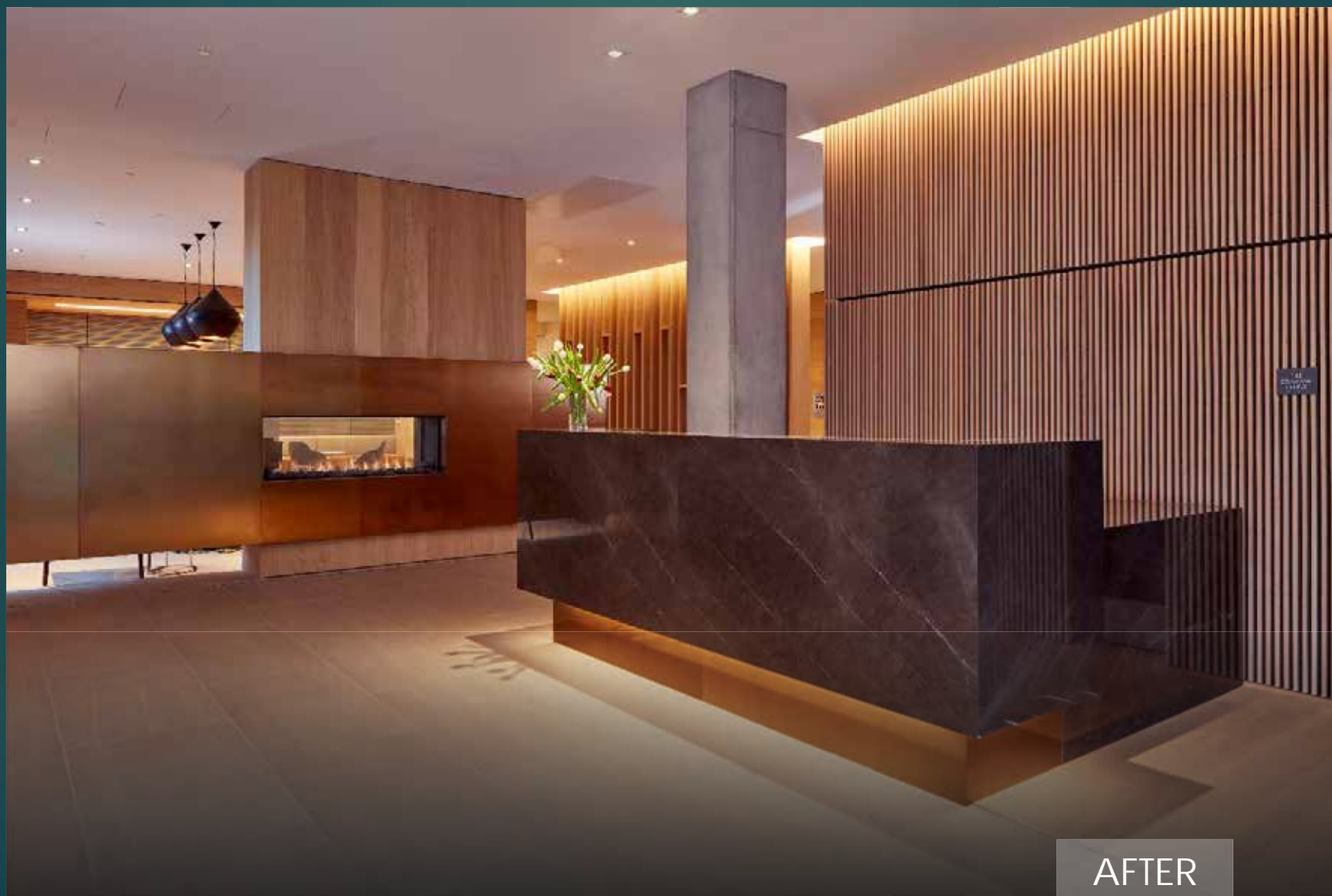


The Austin, San Francisco



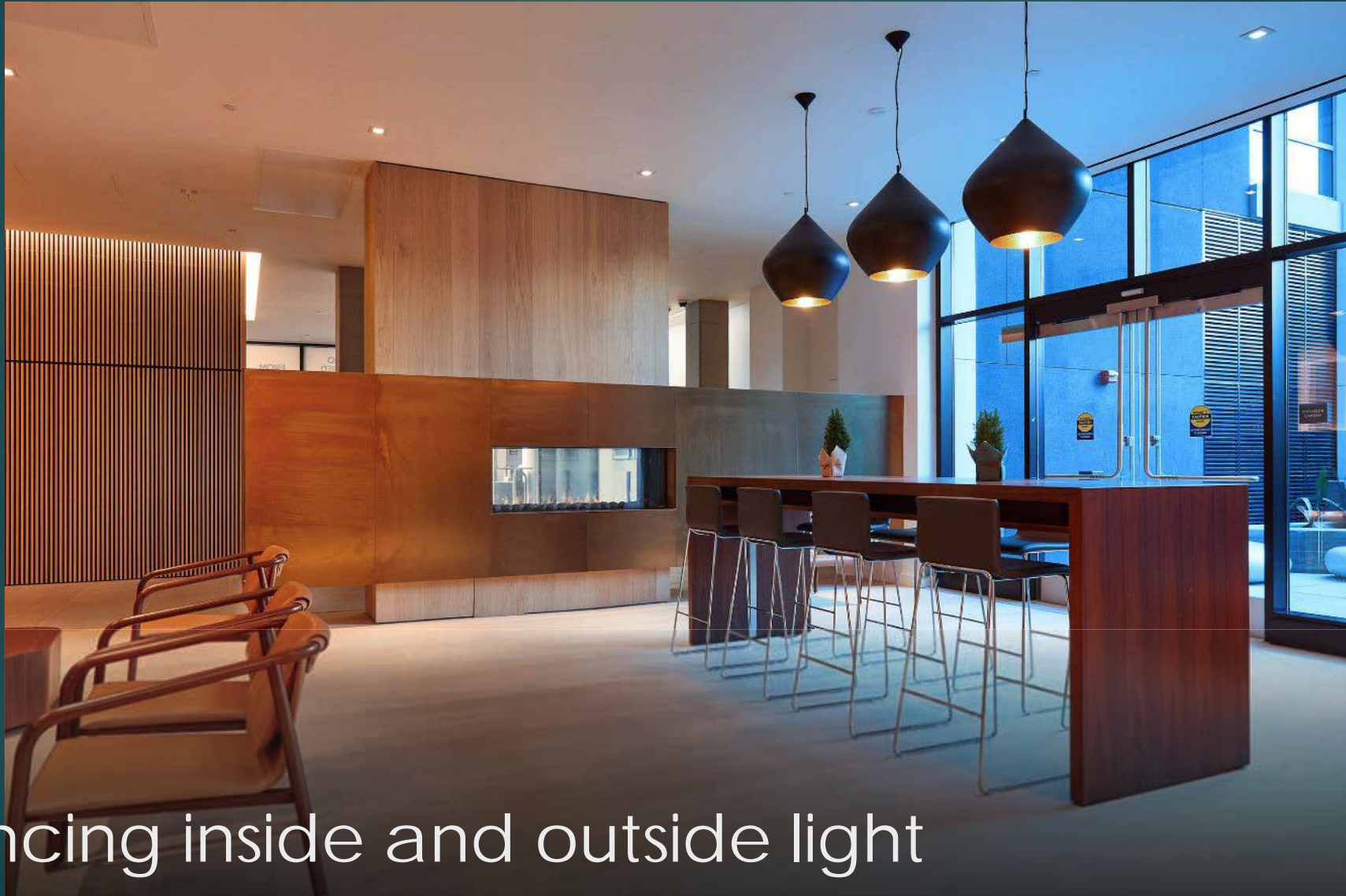
BEFORE

The Austin, San Francisco



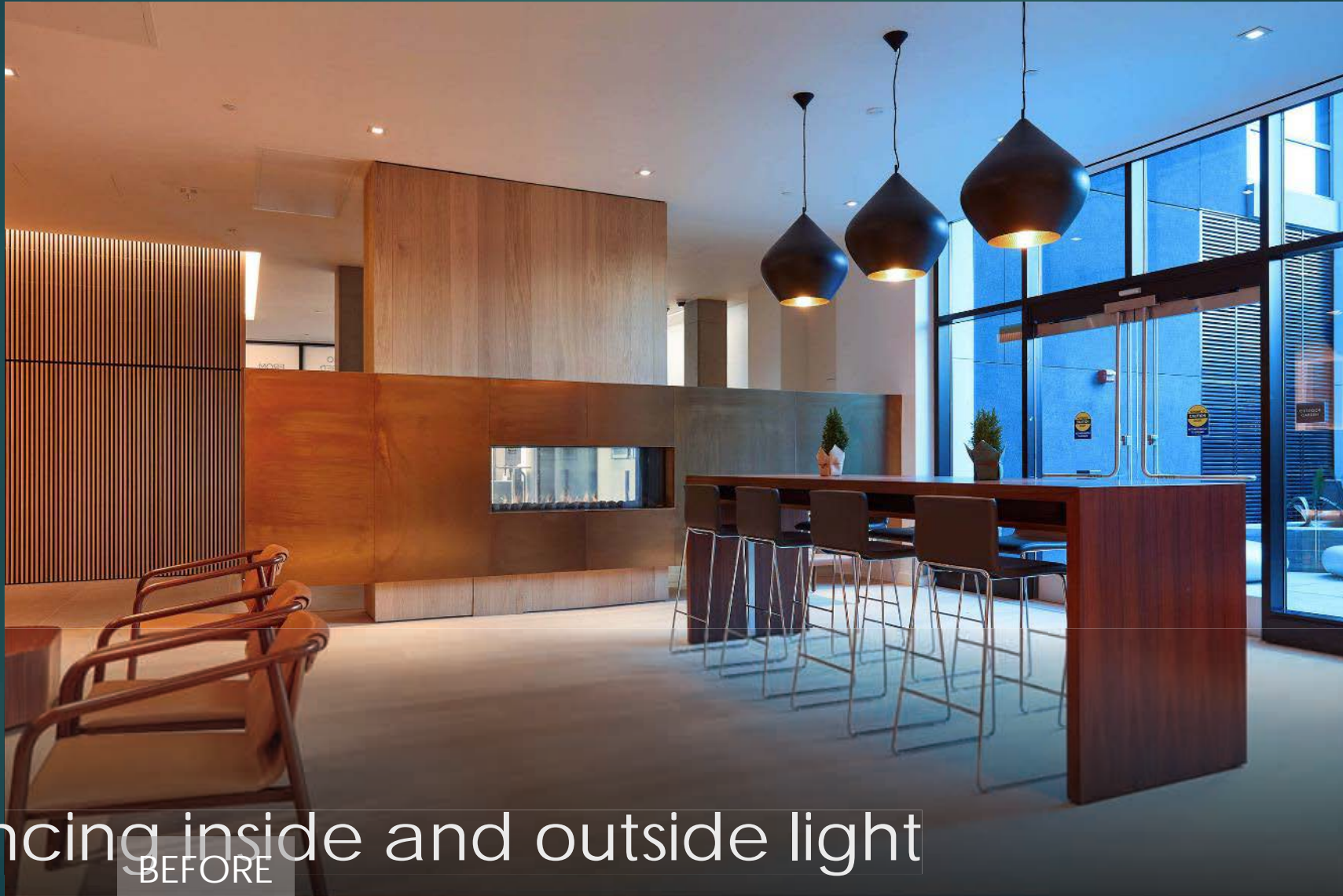
AFTER

Interiors: Edmonds + Lee Architects



Balancing inside and outside light

Interiors: Edmonds + Lee Architects



Balancing inside and outside light

BEFORE

Interiors: Edmonds + Lee Architects

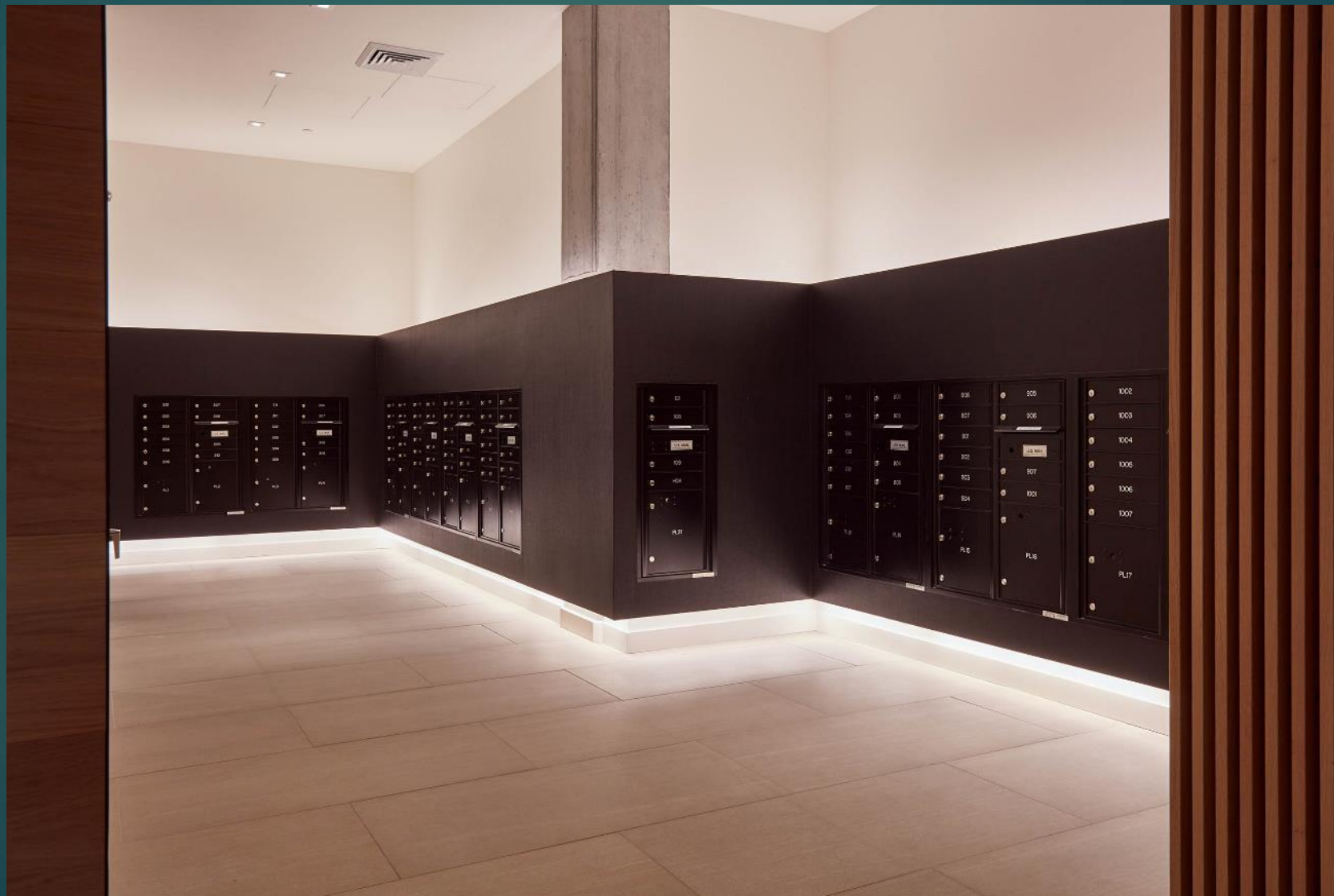


AFTER

Mixing light sources with broad color ranges



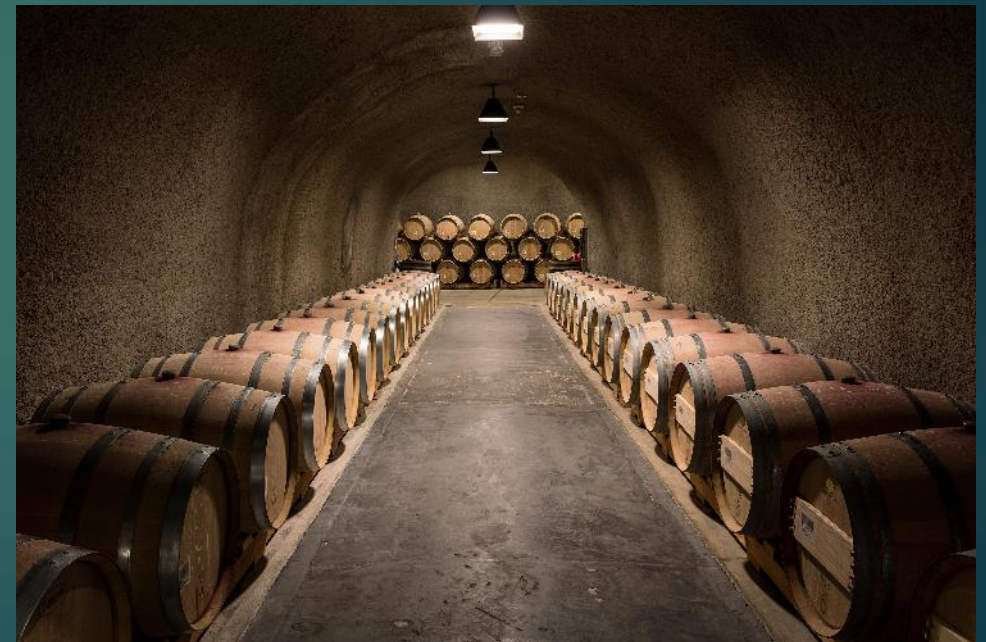
Working with existing lighting

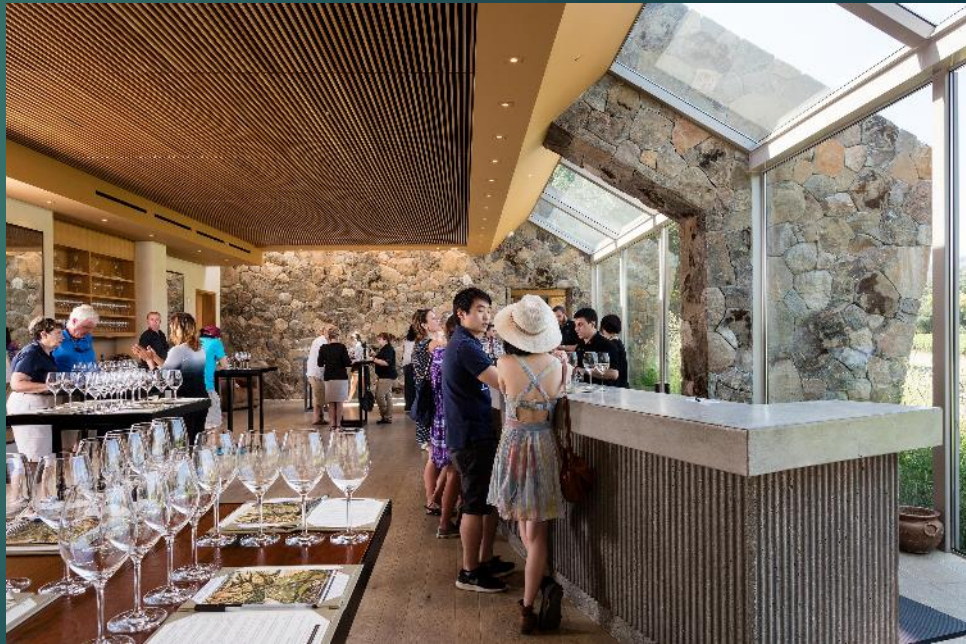


Stag's Leap Wine Cellars, Napa

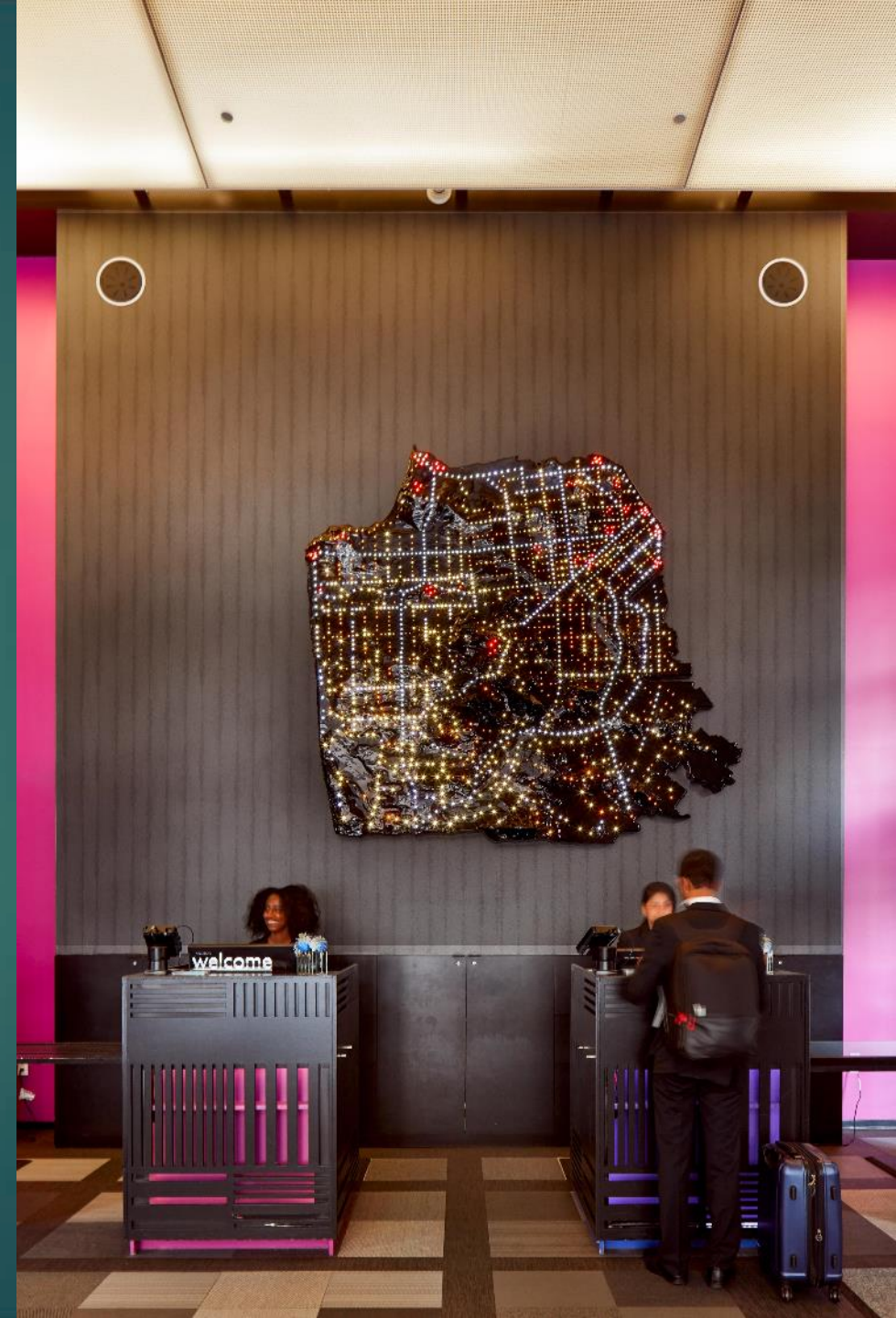
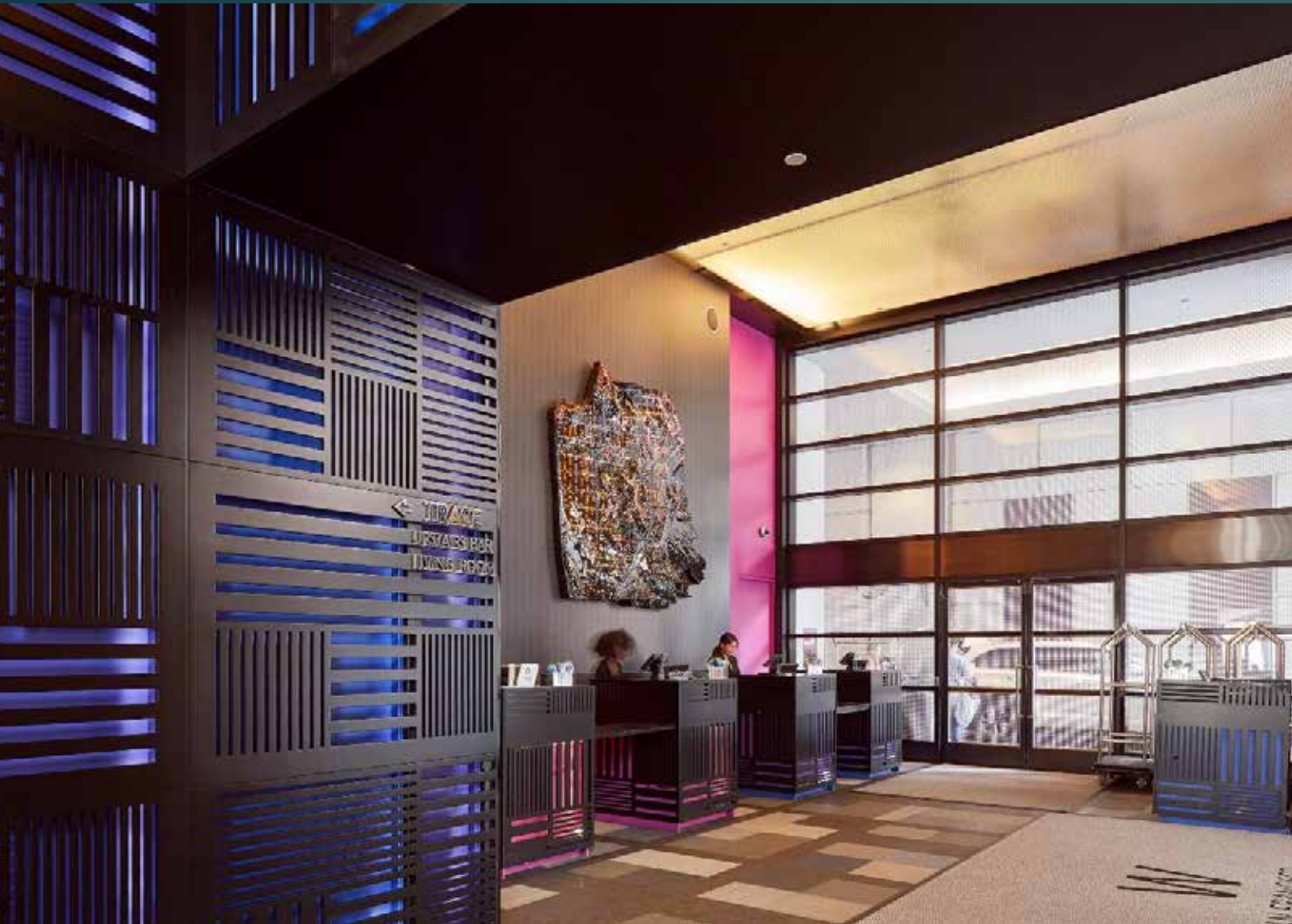


Architecture: Javier Barba





W Hotel, San Francisco



Interior Design: Stanley Saitowitz







Residential Lighting

Residence, Carmel Valley



Architect: Dan Fletcher
Landscape: Arterra



Residence, Los Gatos



Interior Design and Lighting: RKI Interiors



BEFORE

Interior Design: RKI Interiors



AFTER



BEFORE



AFTER

Starchitects



Desert House: Will Bruder, F.A.I.A.



Desert House: Will Bruder, F.A.I.A.



Adding just a drop of fill light





Pelican Point House: Eric Miller, F.A.I.A.

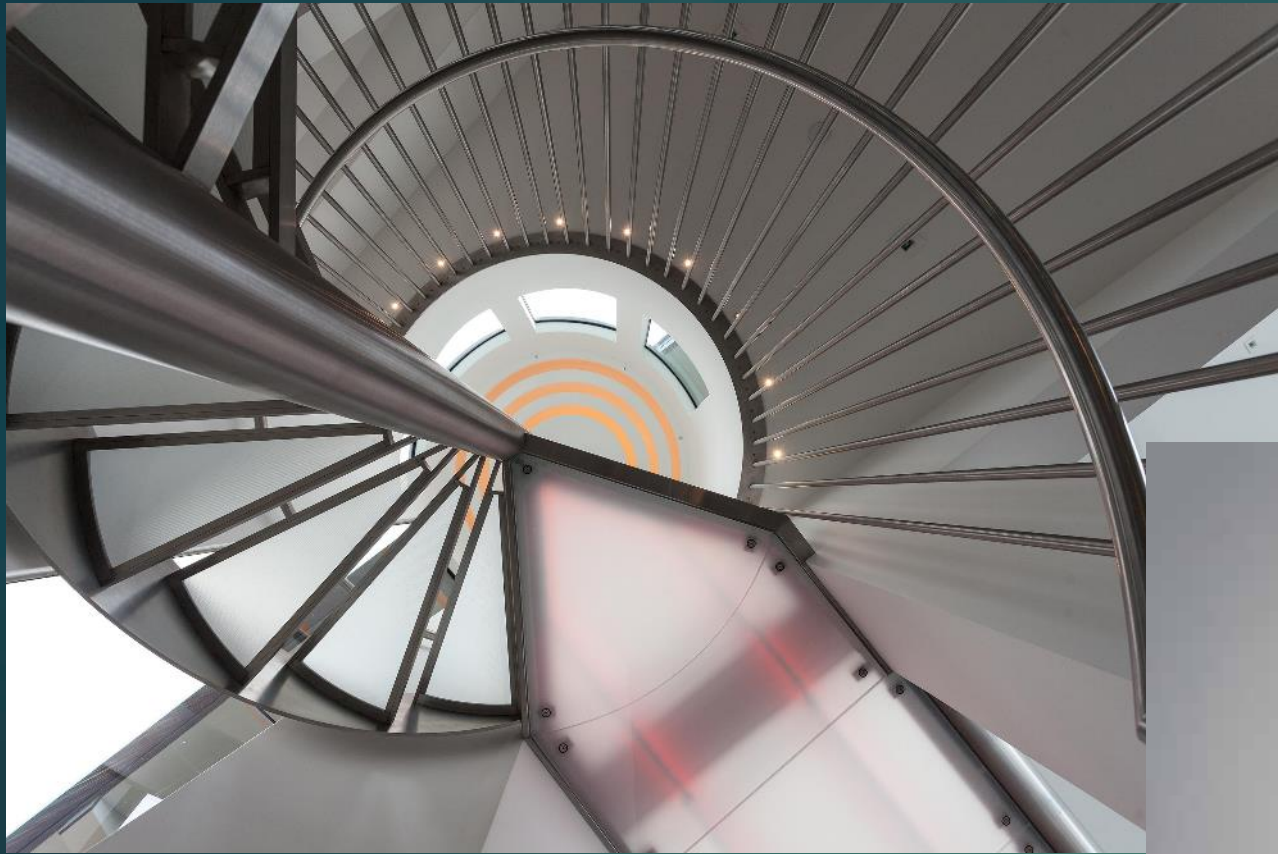


Pelican Point House: Eric Miller, F.A.I.A.











Amara House: Robert Swatt, F.A.I.A.
Lighting Design: Kim Cladas



Amara House: Robert Swatt, F.A.I.A. Lighting Design: Kim Cladas



Amara House: Robert Swatt, F.A.I.A. Lighting Design: Kim Cladas





BEFORE



AFTER



Digital Imaging



100 Congress, Austin, TX

Lighting Scheme: Paul Helms Design Consultants



BEFORE



AFTER



BEFORE



AFTER



Summit Hotel, Cincinnati, OH

Lighting Scheme: Paul Helms Design Consultants









AFTER



Hong Kong Convention and Exhibition Centre

Lighting Scheme: Paul Helms Design Consultants



BEFORE



AFTER



BEFORE



AFTER





ABRAHAM & PAULIN

PHOTOGRAPHY