

# CONCEPT CONVERSATIONS: ARTIFICIAL LIGHTING AND ITS EFFECT ON CREATIVITY

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# LIGHT HAS IMPACT

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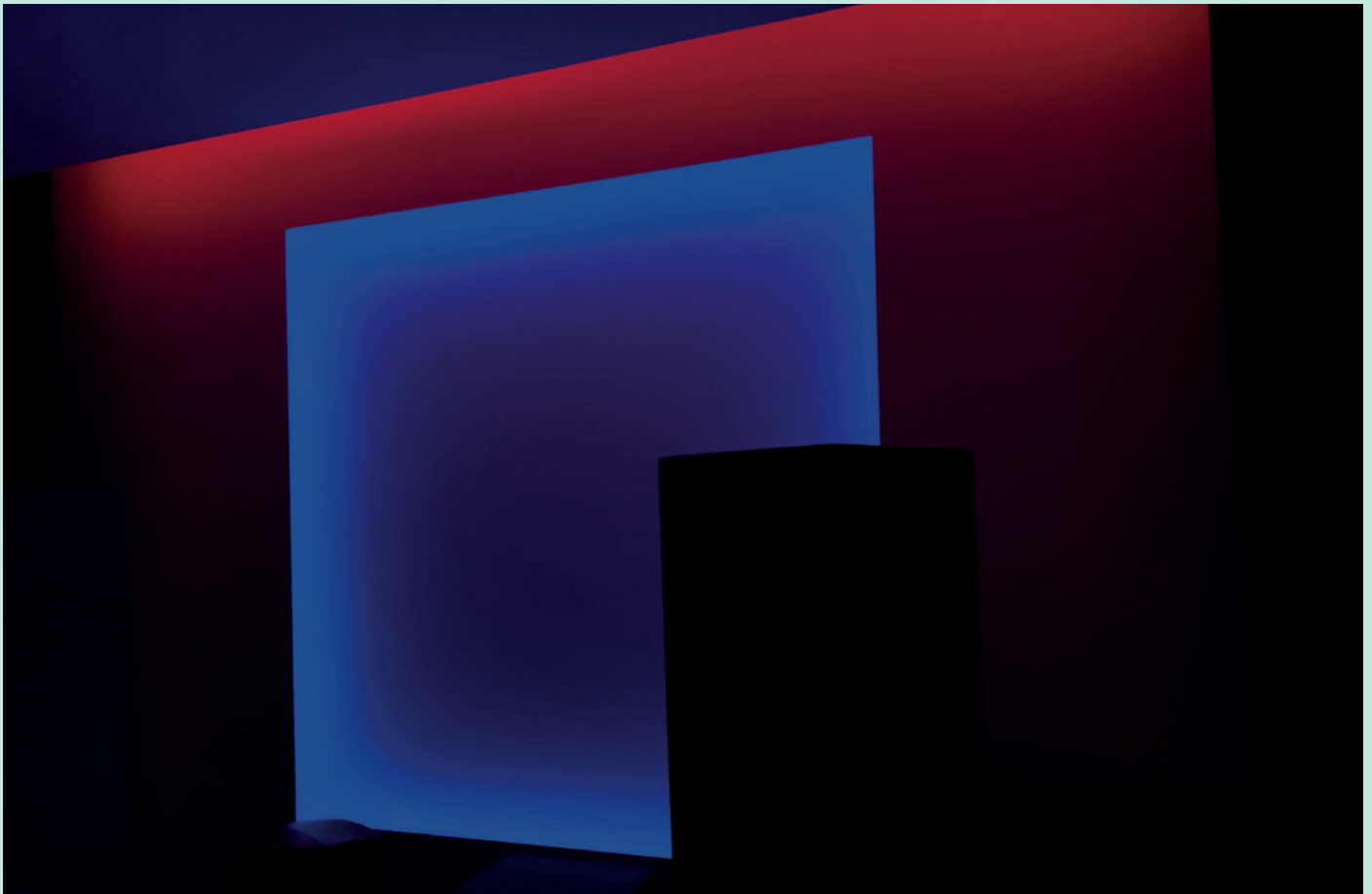
Lighting has a profound effect on how we live, on our overall health, and also our sense of well-being. An array of terms have been used to define the modern use of lighting in residential and commercial spaces, including smart, integrated, wellness, holistic, and biophilic to describe the ability to help repair broken circadian rhythms, improve production and create more peaceful environments through the use of light.

**R**egardless of what you call it, people are understanding, and more actively utilizing and demanding, modern lighting solutions to reap the benefits that come from a well-executed lighting plan.

In the language of light, it is said that productivity thrives when it is most bright, using lighting temperatures between 3500 Kelvin and 5500 Kelvin (neutral white light to daylight). You will find most modern offices implementing lighting in this temperature range. For meditation, relaxing, or winding down from the day, lighting temperatures shift to the sunset range of 2700K to 3000k. But what lighting temperatures are best for creativity? Where rest prefers warmth and productivity brightness, creativity it seems, thrives in the dark. Or at least, the properly lit dark.

The Journal of Environmental Psychology published a paper in September of 2013 by psychologists Anna Steidel and Lioba Werth who conducted a series of experiments designed to measure how various lighting schemes affected creativity response. "Apparently, darkness triggers a chain of interrelated processes, including a cognitive processing style, which is beneficial to creativity" the researchers concluded. They also suggest that dim lighting creates a 'visual message' that opens our minds to a more exploratory mode, or in other terms, the near darkness creates a more uninhibited mental space.

Various artists throughout time have expressed light's ability to open up their creative flow. American artist, James Turrell, has been creating installations that play with light's ability to manipulate space and color since the 1960's.



Trent Reznor's Home Studio

His Skyspaces are observatory style structures that have an aperture in the ceiling, exposing the viewer to the skies above and nature's natural light show. His creativity is both inspired by and fueled by light itself. In Colomé, Argentina atop the world's highest vineyard sits Unseen Blue, Turrell's largest Skyspace to date, where viewers are encouraged to arrive at dawn or dusk (the dimmest times of day) to experience the indelible impact of his engineered artificial light show that coincides with nature's own.

Another great American artist and musician, Trent Reznor, similarly uses light as a muse, implementing it specifically to design a space conducive to his creative process. We sat down with Reznor to discuss the integrated lighting system configured in his home studio, and the impact it has had on him and his environment.

For Reznor, the first real lighting revelation came by the dawning of a lamp shade on what was previously a naked floor lamp, in a poorly furnished apartment in Cleveland during his twenties. He was just starting industrial rock band Nine Inch Nails while living as meagerly as possible, working unwanted jobs at a local recording studio, and putting all of his available energy into creating music. But the simple addition of the lamp shade made a real impact on Reznor, taking note of how the warmer lighting helped unlock his creativity by making the environment around him more pleasing and less austere. "I was stunned at how it affected my mood and creativity, as stupid and obvious as that lesson was, it stuck with me, particularly in areas where I need to be creative or feel creative."

As NIN made their way out of Cleveland, continuing to tour across

the country and world, they began working in countless studios and a variety of home studio set ups along the way. In each environment they found themselves in, right up next to the importance of sound, was light. "Often when it's being adapted for a room to work, you're trapped with certain logistics and perimeters and budgets," Reznor explains, "... the use of lighting is of paramount importance to us, me particularly, I'm super sensitive to how things feel lighting wise." Making the most of what was available, he goes on to describe, "We've experimented in the past with home remedies, using Hue lights set up just to experiment... a room that's lit in a beautiful deep blue light evokes a certain degree of feelings that's different than white light, or red light, things like that."

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Outside the confines of creative and recording spaces, light also played a defining role in setting the tone for NIN's stage performances, specifically in the aesthetic and feeling the band was trying to convey. This ultimately led Reznor to another lighting revelation, and to the negative effect poorly executed lighting can have. "At one point, after having the luxury of working with some top-notch lighting designers on stage, we tried someone else who had an incredible resume, and we showed up to production rehearsals, and from the first song it felt completely wrong. It was bright colors and just a sense of aesthetic that wasn't in tune with what felt right to me, and it made

it hard to play the music." While they tried to remedy the situation for a few days, before returning to a previous designer they knew could deliver, Reznor felt "It really impressed upon me how integral lighting is to the performance aspect



of music, not just the creating. It felt like those dreams, where you have no pants on, that kind of feel, when the lighting worked against what we feel should work."

Taking the knowledge that comes with years of experience, both the bad and good, Reznor knew that when it came to designing his own home studio, he wanted to assemble a team that could understand what the intent was for the space and translate that into the best solution. "The mission is to create a recording studio environment where it's not just execution, it's not just work, it's also the creative element taking place in that main room. That's where we



compose, where we record most of the stuff. It's where I typically sit 10hrs a day, 5 days a week, at least, and so care of lighting design, as I've mentioned, is right up there of paramount importance with what we need to accomplish."

To give the space the functional, pragmatic lighting Reznor desired, he turned to lighting designer Sean O'Connor and integration specialists, Global Wave Integration, to bring the vision to fruition. There needed to be warm, general, non-directional lighting, as well as functional task lighting to highlight certain pieces of equipment, like detailed modular synths, as well as lighting that inspired creativity. As Reznor put it, "We never want to feel like 'deer-in-the-headlights', with lights shining in our eyes, ever, from any angle." And, where a muse may serve two masters, Reznor was inspired by Turrell's works and their

ability to bleed light and color. He desired the space to have a like-minded installation, "...that could achieve different gradations of light and be able to muster up a rainbow of colors if necessary... that light, ideally, can mutate from one scene to another, over time, where you're not noticing it changing but you're aware that, over time, things have changed. That was something we were hoping to achieve."

As important as knowing what he wanted, was also knowing what he didn't. Namely, anything LED. "The only thing that I was pretty adamant about was I am a much bigger fan of incandescent lighting than any kind of LED, for general purpose lighting. I seem to get obsessed... I can sense the flickering-ness of it and I hate the coldness of it when it dims... so in general it's something I have to avoid, and it works against creativity in my mind."



To achieve the desired minimal, yet impactful, as well as flexible lighting goal, a combination of Ketra perimeter and cove lighting, a large Aion ceiling square, as well as track lighting was used. A symphony of systems was brought it for control, including Savant, DMX controllers, Lutron HomeWorks controls, and Aion's circadian rhythm abilities. The integration of each of these into each other was a key point in addressing the various wants and concerns of both the project and of Reznor.

One of the challenges these combined systems met, was providing two different color values between the cove and exterior perimeter lighting that allows the colors to gradiate over time, whether that time be an hour or an entire day, without any visible stepping. "I've truly been

blown away by the quality of light and the flexibility of light... it felt very organic, it felt very rich." But choosing which lighting colors to have is more a part of the

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exploratory creative process. As Reznor puts it, "There are lots of missteps on our end, in terms of what color choices, as they go from one to the next. You know, you can wind up with a weird salmon color that isn't exactly fantastic, but that's just trial and error and the science of picking what colors to fade into what colors. And that's kind of a fun challenge to partake in."

After having a few months to work in the space, Reznor appreciates that the light feels variable and compatible to their changing days and workloads. “We can go from a very clinical kind of sit-up-in-your-seat, we’ve-got-a-lot-of-work-to-do, lets-get-this-done vibe, to very relaxed, and anything in between. From moody and cold, to very warm and engaging, to uncomfortable... we haven’t even begun to tap what the lighting we have in the room right now is capable of.”

Without needing to add other elements to the existing capabilities of the Ketra and Lutron systems, it has allowed the room to remain minimal and uncluttered, the light taking center stage. “There’s empty space, there’s negative space, there’s a canvas where the light can be the thing you’re looking at. And what we find pretty inspiring is to be able to sit and listen to music and stare at a wall that’s basically just a flat color, and be able to let your mind look at a square as it gradiates into the shadows and the corners, and not really see any lines, and it feels cool... it’s something that feels inspiring. And I’m kind of amazed that the idea has actually been executed and that the equipment, and that the lighting instruments themselves, have been able to outperform the expectation.”

Where the pursuit for perfection is never over, and the communication between systems will continue to

improve and become more elegant with updates and continued fine tuning, Reznor already feels the benefit of his meticulous interest in light and the system it has produced. “At the time we’re doing this, I’ve been working on a Pixar movie for the last year almost, as the main thing. It’s been a difficult project to work on, and often we’re watching a 20 second clip for 3 days in a row, and it can start to make you insane. So what we’ll do, is dial up the lighting to be in a more soothing palate, nothing that’s too intense, something that can make the room feel a little softer to combat a moment of a chase scene or a chaotic thing, that by itself is one thing, but looped into infinity can become a recipe for madness. So the room is flexible enough that we can dial that in.” Alternatively, “If we’re working on a NIN piece and we’re going for something that’s super aggressive and dark and sleazy, we can go with some intense reds and purples and dark blues. That really makes the room feel kind of sexy and feel dangerous in a way. And that’s something that’s worked out really great for us, to be able to have that flexibility, and to have that richness of color in there.”

If the goal is to make a room seem like a place you want to be, and you want to return to, lighting is an obvious instrument to use. From bright to dark, done right, perhaps it may even open your creative genius.



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