Designing Collaborative Spaces Using Neuroscience

Neuroscience and Design

Neuro-Design as a way to connect neuroscience and the study of behavioral responses to the built environment and how they are designed. A good design is more than pleasing to the eye, it is also pleasing to the brain and we feel it as a human emotion.

We naturally want to be in tune with place and space. We have all had the experience of a place “just not feeling right,” and also ones that felt “just right.” When people and place are attuned they seem beautiful, uplifting, and peaceful.

_The person enters the room_
_It is complete, open, pleasant, calling him_
_He now is at peace_

**Neuroscience tells us:**
Humans have an evolutionary need for private spaces that offer a sense of safety, but we also crave vistas for inspiration—a condition known as prospect refuge. Open spaces foster creative thinking, while close confines increase focus. Specific colors have been shown to enhance or hinder these abilities.

Let’s start with a simple timeline of the neurological evolution of the human brain and our related cognitive comfort with certain arrangements.

We spent a great deal of time on the plains, seeking rocky areas and clumps of trees for shelter and sustenance. As early humans we lived with prospect and refuge. You pick a spot were you can see what’s out there and you can see what’s coming. We prefer our vistas with clear sight lines. Neuro-research shows that just looking at landscaping has been shown to lower blood pressure. These are the reasons we are drawn to landscape paintings and window framed vistas.

**ART**

The right nature-based artwork can give clients a way to muse on life situations. Images of a pathway through a serene landscape or a bench in the middle of a pleasingly landscaped garden can foster relaxation or allow clients to make mental associations with the imagery. — Avoid nature imagery that's confusing, chaotic or complex. Whether looking through a window or at a a piece of art, you want a scene that invites you — one that makes you comfortable to enter.
A survey of art preferences in many different nations found that realistic painting was preferred. In addition to landscapes, favorite features include water, trees and other plants. Works with animals, both wild and domestic large animals, and humans, particularly beautiful women, children, and well-known historical figures, were favored. One note, in divorce cases, be sensitive to art with single people and families.

The research showed that blue, followed by green, was the favorite color in art.

**Ethnicity in Art**

Including art that demonstrates your openness to different cultures can also be a plus, particularly if you serve multicultural clients. When a research team compared reactions of white college students and mainly ethnic minority adult community members to photos of a therapist's office, the community group rated the professional more favorably when the art was more ethnic in flavor than Western. However, if all of the artwork clients see represents a tradition different than their own, it is possible for them to feel unwelcome.

**Applying Neuroscience to Design**

**GO GREEN**

Modernly we spend about 90 percent of our days indoors with artificial light and filtered air. Historically we spent over 99 percent of our time outside. When we’re in nature, we’re at home. While we are no longer cave dwellers, we do still crave sunlight, greenery and fresh air.

More than just a backdrop, the office setting and its environmental conditions are deeply connected with human health, and, in turn, our ability and desire to do great work. Cognitive function has been shown to improve by as much as 60 percent in green buildings with clean indoor air.

Known as biophilic design, incorporating natural elements such as sunlight and greenery into offices promote mental and physical well-being. Where you can, mimic the outdoor environment, with open space, access to natural light, greenery and fresh air.

Seeing the outdoors through window vistas such as the surrounding hillsides calms and centers. Seeing a tree within a hundred feet helps cognitive abilities go up and stress go down. Outdoor views aid in brainstorming and creative ideation. They also shown to be generative building, helping foster new relationships. More than 50 percent of our brains are visual — what we see matters.
Indoor plant walls and other indoor plants can clean the air, and circadian-based lighting systems can mimic natural light. Neuroscience tells us exposure to plants makes us less emotionally volatile and error prone; even pictures of plants have a calming effect. As a bonus, certain plants give off antiviral, immune-boosting chemicals called phytoncides that promote office health.

**Natural Materials**

Using natural materials makes most people feel more comfortable and thus more productive.

That’s one reason we are seeing so much recycled lumber and other wood in new office designs. Wood satisfies several aspects of the multi-sensory experience that please occupants.

However, there’s a limit to how much wood you should use. Research shows that when natural wood surfaces like floors and walls exceed 45 percent of a room's surface, they start losing their stress-busting effects.

**CEILING HEIGHT**

Neuroscience has shown that ceiling height makes a difference.

**High ceilings** activate concepts related to freedom. Like outdoor views, high ceilings aid in brainstorming and creative ideation.

In office spaces with high ceilings we can solve problems faster and easier, and are better at analyzing information and getting the basic concepts. High ceilings encourage you to think more freely and abstractly.

**Low ceilings** promote focus. If you want clients to look at the details or do detail-oriented work, lower the ceiling. It’s the best environment for accomplishing those tasks.

Height of the ceiling is one thing to think about when choosing an office space for collaborative work, or for determining where you work within the office space.

Are you a financial specialist and do a lot of detailed work? You and your clients will likely be happier and more productive in a space with a lower ceiling.
Are you a collaborative professional that needs to balance detail with creativity? Perhaps you’d like the ceiling over your desk to be lower, and the space that you work with clients to be higher to encourage creativity.

Although we often have no choice about ceiling height, there are design installations that can be used (think drop wooden panels, clever use of tarps). Even the color of the ceiling can have an impact on how high the ceiling feels. Darker ceilings (in contrast to the walls) feel lower, lighter, higher. This can be tricky to accomplish well and is one place you may want to consult with a designer.

COLOR

Workplace psychoanalysts have asked subjects what concepts were most important in describing their environment, and three of the top answers were hue, brightness, and saturation of colors.

Color can indeed influence a person — however, it is important to remember that these effects differ between people. Factors such as gender, age, and culture can influence how an individual perceives color.

Even temperature can matter. There is evidence that color preference may depend on ambient temperature. People who are cold prefer warm colors like red and yellow while people who are hot prefer cool colors like blue and green.

Color variety matters. When every hallway and office has the same carpet, the same wall coverings, and the same furniture, creativity suffers. Designing office spaces with colors that differ is a way to boost the brain into better performance.

If you are designing your own office (and aren’t hiring a designer), keep it light. Consider keeping the dominant color neutral or in the light range, then add a secondary color for interest, and an accent color to brighten the space, boost stimulation and create further interest. A simple accent design tip is to place the accent color in three different areas of the room and at three different heights.

Colors affect your mood and should be deployed wisely. The color of the office walls sets a tone.

Researchers have discovered that wall colors in light, soothing colors like sage green or dusty blue promote a sense of calm and relaxation, environmental designers say.

Pastel colors such as light green, lilac and blue, researchers found, were likely to make the participants feel calm, while brighter colors such as yellow, orange and pink made them feel more upbeat and excitable.
Gray, beige and white offices have been found to induce feelings of sadness and depression, especially in women. Men, on the other hand, experienced similarly gloomy feelings in purple and orange workspaces.

While it may seem like a trendy choice to paint the walls a dark color, studies have concluded that doing so may make you feel sad. However, if done right, painting a specific wall or area of your home a dark color doesn’t have to have a negative impact on your mood.

Low-wavelength colors, like restful green and calming blue -- two of the most common colors in nature -- improve efficiency and focus. They also lend an overall sense of well-being. Bottom line: If you want happier, more effective clients and workers, green and blue are wise choices.

**Blue:** The color blue is known to send the message to parts of the brain to be alert. In evolutionary history, the only time we ever saw blue was when we saw the sky, and the only time we can see sky is in the daytime. Perhaps this is why blue suppresses melatonin, the chemical that helps us fall asleep.

Use blue for stimulation and productivity. We’re more creative and imaginative in the presence of blue (think brainstorming). It also makes us feel strong and bold.

**Deep Ocean Blue** rooms, studies have shown, are immediately calming.

**Green:** The color green correlates to plants. We are attracted to plants, and therefore to green, because we are nourished by them. When we see green, we are more focused and at ease. Use greens for reducing stress and energy levels, and increasing focus.

**Yellow:** Bright yellows make us happy. The color is believed to trigger innovation and is best used in creative work environments. Mellow yellow is viewed by color psychologists as the shade of optimism. It’s energetic and fresh.
Red: Red, a high-wavelength color, is active, intense and alarming at times. It increases the heart rate and blood flow upon sight. That said, if there’s something in the office you want to urgently someone’s eyes to, it’s best to paint it red.

Red rooms are stimulating. Red can encourage conversation, but too much can cause anger and arguments. Red also stimulates appetite.

One Dutch research team used an MRI scanner to determine people's preferences when it comes to shape, color, and building materials. The results found that our brains respond most positively to objects that are red, plastic, and formed in closed organic shapes.

Another study published in Science found that we remember words and other details better when surrounded by red (think proofreading and debriefing).

Pink: The right color pink can be calming, but too much pink can be physically exhausting. Some recommend the color pink for conference room walls, but beware — Prison’s use pink rooms to calm agitated people, but based on research, only for 17 minutes.

White: White is considered the color of purity and simplicity. It is a highly reflective color. Use white to create the illusion of space. White is suitable in work environments requiring precision and accuracy. Too much white in a room can be cold, sterile and unfriendly. Used as a background, white sets off other colors well — making them look fresh and clean. Pure white is a difficult color in interior design to use practically — off whites and creams are far more useable.

Brown: Brown is a warm color - the color of earth and nature. It suggests solidity and security. It looks good against all other colors. Brown makes a very good, sophisticated and warm, neutral basis for any interior design scheme.

Gray: Gray is seen as a sophisticated choice for contemporary interior design schemes. It is associated with productivity. But beware - gray can be seen as dull, lifeless and quite depressive. So, take care if you want to use gray in your rooms as gray can lead to a drop in energy, and a depressive feeling. Use grays with plenty of texture and pattern to add interest and life to the color. It can be warmed by wood furnishings or wood walls, or by tan, brown and cream colors.
**Colors Change:** Remember when choosing colors that a color looks different depending on the colors that surround it. Take a look at the visual image (attributed to the artist Josef Albers). In the top pair of rectangles, the embedded X’s appear to be different colors. Now look at the bottom pair. When the X’s are separated from the colors surrounding them by white space, they’re revealed to be the same.

**Time of day or our natural light** shining on one wall and not on another can make the color of walls look like totally different. One wall might look blue, the other green, and a third gray — and be out of the same paint can.

Remember too, artificial lighting comes in different colors and can change the color of the room. Try turning off the overhead fluorescent lights and see the colors change.

Before painting a whole room, paint test swatches on different walls and look at them at different times of day.

**FEELING SAFE**

From a neuro-design point of view safety is important. Do anything you can to make the brain feel safe: Green plants. Good Signage. Brighten up the workplace. Create places of refuge.

**Glass fronts** are recommended for safety in offices, conference spaces and huddle rooms because you can be seen and can see out. For collaborative cases, you’ll need to weigh this plus against privacy for your collaborative clients. Client may prefer to be in more of a cave like room where they feel safe and secure with trusted professionals. Glass doors into your building and reception area will make your clients feel more at ease.

**Have your client's back.** An evolutionary perspective can help you make intelligent decisions on what is arguably the most important element in your office — the client chair.

Where clients sit in a room can make them feel more at ease and in control. In most rooms the safest feeling place is having your back to the wall in a location that you can see the door. Place your clients in those seats if you can. Feeling they have a clear way to the exit will also make them feel safer. Consider what may appear to be obstructing the path.

Chairs with backs at shoulder height can facilitate a feeling of protection, environmental design researchers say. Another way to promote a sense of personal safety include placing a plant behind the chair.

To support clients' need for control, consider having chairs that can be moved or are large enough to let people shift to one side or the other. Being able to adjust the distance between themselves
and others can also be helpful. However, if any of your clients have histories of being physically violent, you’ll want chairs that are heavy enough that they can’t be easily picked up and thrown.

When shopping for chairs, you’ll want to test them for people of all sizes, particularly the large and tall. Consider testing them with such a person. Pillows can be used for smaller people.

Placing small tables next to client chairs, which can enhance clients' sense of "territory" by giving them a place to put personal items.

If you are using a conference table, round is considered to be best as it stimulates conversation. If using a rectangular table, try to make it a narrow one so there isn’t too much distance between individuals.

Sit clients next to each other. This arrangement gives clients the option of not looking at each other if they don’t want to, but they are also in a perfect place for an intimate conversation when that feels right.

Collaborative attorneys should sit next to their client if they can; if not, across works well too. Clients should not sit directly across from each other as this is the most adversarial seating, and if possible, not across from the other attorney (particularly if there isn’t significant distance between them).

Neutral collaborative professionals will have the best command of the group by sitting at the ‘head’ of the group. It’s also best to give this position of power to a neutral. If there are two neutrals, place one at each “end,” if your seating area permits.

If you have a particularly “weak” client, the head of the room may give them more “power” and make them more of an equal in the room. Sitting them on a sofa by themselves may accomplish the same thing since that is generally the most commanding location.

Having all the chairs be the same in the room will provide a sense of equality in the collaborative team.

**NATURAL LIGHT**

While maintaining a healthy circadian rhythm is not the only goal of healthy architectural design, it is certainly an important component. Good lighting, especially natural light, allows your body to perceive that it is day and respond by releasing chemicals that keep your alert and functioning at a high level.

Let the sun shine in. Lots of windows and the use of glass in interior walls and doors means more natural light filtering through to the rest
of the office. This increases overall light levels and improves wellbeing for all occupants.

Natural light is a big mood booster, so when possible, incorporate windows or skylights. If windows are at eye level, the best views look out on calming, natural scenery, not onto bustling sidewalks or roads with distracting sights and sounds.

If your office lacks windows, use floor and table lamps with soft lighting rather than overhead fluorescent lighting to promote a feeling of comfort and coziness. Some lightbulbs even simulate natural light, which can boost the positive ambience of windowless offices.

**SIMPPLICITY OR VISUAL COMPLEXITY?**

Humans have a finite capacity of attention, and during experiments when these attentional resources are depleted, people struggle to perform tasks and experience negative emotions in complex visual environments.

So, simple is better?

Not so fast.

Research has also shown that environments with low visual complexity can be “boring” for users, even causing a stress response. Ultimately, there is no right answer for visual complexity, it depends on the space and the behavior or emotional response that the designer is striving for.

For example, as conflict professionals, we want to be thinking about our clients finite capacity for attention. We wouldn’t want to create a space that is so complex that it makes it difficult for clients to pay attention.

Workplaces designed with simplicity as a guiding principle are easy to understand. Once inside the space you do not experience a sense of confusion. You walk into them and they convey a felt sense of purpose, if you will, and they are easy to navigate or find your way around. As designer John Meada says: “Simplicity is about subtracting the obvious and adding the meaningful.”

On the flip side, research suggests that clutter increases the “memorability” of a room and establishes a reassuring sense of place. In other words, a generous scattering of objects generates a fondness for the place.
MESSY OR NEAT?

Are you the type who keeps your desk clean and tidy, or are you among the crowd that has a desk that appears disorganized? A new psychological study suggests that both styles have strengths and benefits.

Working at a clean and prim desk may promote healthy eating, generosity, and conventionality, according to new research.

Then again, research also shows that a messy desk may confer its own benefits, promoting creative thinking and stimulating new ideas.

Regardless of your work preference, research shows that clients prefer their meeting space to be orderly and neat.

NOT TOO FANCY — NOT TOO SHABBY

When selecting furniture and finishes for your office, keep client demographics in mind. In general, people feel most comfortable with a middle range of furnishings—those that aren't overly fancy or expensive, but not cheap or shabby, either.

If you're putting in very expensive materials, but your clientele is not at the upper end of the socioeconomic spectrum, you can alienate people. Conversely, old or poorly made furnishings can make it look like you're not doing well—the wrong message to send clients.

FURNISHING SHAPES

A study by neuroscientists found that faced with photographs of everyday objects—sofas, watches, etc.—subjects instinctively preferred items with rounded edges over those with sharp angles. The neuroscientists speculate that our brains are hard-wired to avoid sharp angles because we read them as dangerous.
A Final Note on Collaborative Offices:

One of the most important steps in designing a collaborative professional office is making sure that it accurately reflects the intention of the practitioner. Ask yourself, “Will this space make my clients feel welcome, at ease, comfortable, and most importantly, safe?”

When your office is not in alignment with the goal of collaboration, then it will be more challenging for your clients to feel at ease and ultimately do the important work necessary for decision-making, and if possible, for healing and change to take place. Ideally your office will have a clean, living, generative sense—one that fosters a renewed sense of physical vitality, alertness and creativity for your clients, your collaborative professional team and yourself.

Research has shown that clients prefer offices that feel comfortable, nice, clean, warm and inviting. They equate orderly, personalized and softer offices with the professional being more bold and more qualified. Offices that were considered to have a “softer” feel where ones with cushioned chairs, carpeting, table lamps, plants and throw rugs.

At any moment you can begin the process of enhancing your office by mindfully introducing elements, symbols, color, plants, images and materials that have meaning for you and that could support your client in receiving the deepest level of collaboration possible.

Remember that beliefs and intuition, as well as science, all count in creating your collaborative workspace.

Enjoy designing your office!