

Influences of Color in Healthcare: Nature, Technology, and Culture

By Deanne Beckwith

The convergence of three influences, **Nature, Technology and Culture**, is generating major trends concurrently, across all industries and global markets. Information technology affects all areas, unifying the world in its concerns, industries in their responses, and individual cultures in the homogenizing global marketplace. More closely aligned than ever before, the diverse industry sectors and markets are in a wave of new information flow and communications, they share more similarities than differences, and are mirroring the androgynous path of fashion with blurring boundaries.

A second major trend is the emergence of new **Mind/Body/Health Connections**. Listed by futurists as among the most significant trends of the new millennium, it is strongly validated in lifestyle marketing and consumer industries. These focus areas are lending even more credibility to methods for creating healthy environments, which has always been seen as important in healthcare solutions.

Designers seek to create products and spaces that are more inviting, have uplifting and energetic atmospheres, more universal appeal, versatility, and longevity. Their search to provide a spatial balance to the chaos and stress of everyday life helps to closely align color palettes from home, office, healthcare, and hospitality alike, with “calm and comforting” as its universal appeal.

An emerging field of study, psycho-neuro-immunology (PNI), is both an art and science being embraced by pioneering interior designers to enhance well-being, creativity, and performance. Strongly supported by notable advocates such as Millicent Gappell, FIFDA, the PNI approach combines color, art, interior design, music, and science to produce wellness-enhancing environments. This new scientific method brings more attention to creating wholesome and healthy

environments and the holistic approach of healing through appropriate balance of light, color, and space.

The basic principles of **harmony, balance, and the spirit of nature** are becoming widely accepted and sought after in experimental spaces to create atmospheres that are more lively and life-giving. The color palettes can work on many different levels to meet the needs of a wide range of settings.

Experiential Living is among key trends forecast by The Futurist in business and the economy sectors. The creation of company towns, with lifestyle and services for workers, is extending to subsidized apartments, home, and condos that are wired to the workplace. Large corporations may begin building large campus-like settings that include healthcare facilities. Ostensibly intended to enhance well-being, it also is intended to help improve their workforce’s productivity. In addition, support for elderly parents in eldercare settings may be included in the campuses.

Just as Americans seem discouraged by organized medicine and HMO programs, and are ready to break away from traditional models, their expectations of the healing effects of their healthcare environments, coincidentally, are being heightened.

The emergence of new **miniaturized technologies and integration** into personal space and activity is rapidly approaching. Beneficial in many ways, it also implies that more humane environments and healthcare settings may become more important than ever before. Senior citizens could be equipped with electronic memory devices as wearable computers with video sensors in eyeglasses that record everything you see. A face-recognition system can identify any acquaintance you encounter, a computer to retrieve notes on the individual, and a wristwatch to provide

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crib notes on your friend, including your last conversation, helps to navigate socially.

Experimental architecture includes **ecosystems** growing on indoor walls – and may be an answer for “sick building” syndrome. These experimental structures are composed of rocks, plants, fish, and microorganisms that inhale dirty air and exhale clean air.

Experimentation for health benefits is gaining acceptance and advocacy in other areas, including traditional prescription-paid medical models. People are beginning to explore self-treatment and cures. “Nutraceutical” has been coined by Stephen DeFelice, Founder and Chairman of Innovative Medicine, as redefining and **blurring the boundaries** between food and pharmaceuticals, a wave of the future.

There is also more awareness of harmful effects in the atmosphere. The heavy use of electrical equipment tends to dry the air and create dehydration. Adding elements of water can create better **harmony between machines and nature** and provide calming sounds as well.

A room filled with electrical powered machines such as TV's, monitors, computer equipment, etc., create electrical fields that can be positively and negatively charged and ionized to static electricity, especially when doors are closed. Even their resulting clutter is a stagnating feature, in a space that should have free air flow to **refresh and renew energy**.

Higher levels of stress in everyday life with continuous bombardment of information and increasing speed of everyday life require a balance. **Spirituality now blending with religion** begins to blur faith as individuals increasingly combine beliefs and practices of many different religions, seeking that respite in various forms of stress relief and personal introspection.

Color — the Common Thread

Recognizing that technology is essential in healthcare settings, we still long for the balance of human values. Color may be one of the most important common threads that allow us to bridge both worlds. Our natural environment provides color that is **honest, pure, spiritual, healing and calm**, like a tonic. Color can help to refresh the space.

The elements of a space together can be colored to create the same enriching/luminous atmosphere that is provided by the experience of nature. Careful control of all surfaces and

objects – texture, scale, and shape help to create a balance between the necessary technology surrounding patients and space and air that is beneficial for well-being, mental and physical, and the energies of life that can keep people invigorated and alert.

More tranquil spaces for healing are about freeing up the mind and spirit **by making the surroundings seem less complex and demanding**. The clutter and the associated chaos can be controlled to create a feeling of light, space, and free flow of energy, cleanliness, and being refreshed. **Purity of forms, function, and shape** can lend simplicity, order, and calming. Serenity does not necessarily mean hard, cold minimal, but balanced and simple.

Including closed doors on cabinets for storage to hide the multitude of paraphernalia can do wonders for calming and creating order in a space, just as an orderly display of objects can create serenity. The new pared down styling is simple, but not cold, tends to be light and airy, and presents a strong sense of order in calming atmospheres.

In many schools of thought, cleanliness and serenity are closely linked. Cleanliness is associated with neat, ordered, and methodical activity, giving patients a higher level of confidence in the healthcare providers.

The illusion of space and flow of air within it are of vital importance in the popular practice of Zen. **Colors of natural materials** and the materials themselves help to create the feeling of spaciousness. Wood colors ranging from the paleness of **scrubbed birch** to the darkness of **dark walnut** can be the perfect foil for all sorts of additional complementary colors from nature.

The basic tenets of Zen are **simplicity, balance, and harmony** – in **light, texture, color, and form**. Purity of form, function, and shape are minimalist in character. But soul and spirited influences help to create the character. Deliberate points of interest are created, whether through placement of objects or colored walls, or soothing sounds of waterfalls.

Placement of cabinets and screens can improve the balance of a space by complementing a lone element that cannot be moved or hidden, for example. Screens should be unobtrusive and not a decorative feature in their own right, but support the overall space with balance while providing privacy as needed.

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A high level of sensitivity to atmosphere, surroundings, quality of light, mood, and ambiance combine to create an inviting space. Lines are more important to restful conditions than are curves. But there is no perfect symmetry – nothing exact and too harsh. Straight lines can be more restful than curves because they suggest calmness, but not in a rigid and exacting way.

To achieve balance, representations of **Earth and Water, Fire, and Forest** should be present in equal proportions in a space. Color is often used to create this balance especially when some of the elements are necessarily missing in highly functional spaces. Fire can be represented by the simple luminosity of a small polished portion of brass or copper or similar hues in paint. Earth is colors of stone or sand, or wood accents or terra cotta tiles, etc. Illusion of certain atmospheres is created through color. Clay and taupe, pale brown, or soft pale aqua and lavender create a feeling of being in serene settings.

Balance Light and Shade

A room needs a balanced aspect of both light and shade. Light is needed to invigorate and brighten the space, and shade is needed to create restful balance, relaxation, and contemplation. Placement of furniture should be considered with the movement of natural light throughout the day to take advantage of the changing areas of brightness and shadow. Seasonal changes can also affect the overall color and lightness of a space and the objects within it.

Light is essential to health and vitality, digestion, and hormonal effects. When light hits surfaces and is either reflected or absorbed (light colors are reflected and darker colors absorbed), it is altered by surfaces which are smooth or textured. Natural light can dramatically alter these effects as it is constantly changing throughout the day and can be used effectively to create a calming, orderly space or can contribute to confusion and clutter, making a space even more stressful.

Appropriate use of artificial lighting to complement its effects can balance the setting in patient rooms and other contact points within healthcare environments. Havens of calm can be created with lighting to offer a respite from the high activity areas. For natural harmony, it is therapeutic to create small cameos on which to focus – a point of interest, a highlight.

There is a growing trend toward the use of **eugenics**, the translucency of colors (not transparent) plus light to shape spaces. If this technique is not possible in a setting, establish a palette that is muted and soft, in practical new materials to give surfaces a metallic, reflective appearance. These slightly “disturb the surfaces” without actually having texture for added interest and give life to the space.

Color and Moods

Just as a room can be made to appear to have different proportions from what it actually has, colors too can give off different feelings or atmosphere. Blue is associated with cleansing, washing, and tranquility. But, particular shades of blue can feel cold to some people and restful to others. Orange makes people generally feel hot and agitated, over-stimulated; yet others feel it emits a cozy and comforting aura. Dark red often seems enveloping, contemplative, and reassuring, or at the other extreme, claustrophobic.

Colors can be used to create areas with different moods in the same space, using extremes of dark and light, i.e., powder blue with midnight accents, or tints of pink with small accents of vermillion. It is important for the color and objects to work together in different scales, to create a balance of the elements, and affect the total atmosphere.

Achieve harmony in colors by using tones from the same family to avoid discord. The most harmonious is to use shades of a single color in different intensities. Or, within families of different strengths: red and blue with something from purple; yellow and red with something from orange; or blue and yellow with green.

In trying to simplify space, a plain wall in a shell of a room is not always possible. There may be all sorts of equipment and life support elements essential to the function of the space, but blending them within the overall color and finish of the space can help make them seem less intrusive. Keeping the wall colors pale to reflect natural light does not necessarily mean white walls. In cooler northern climates, warmer tones of cream can give the impression of sun and comfort and are relaxing and calming. Tints of natural shades such as oatmeal browns, muted greens, and grays are also calming. In warmer climates, purer white with soft hues of pale sky blue, almond green, or lemon are refreshing and cooling. A pale wash of terra cotta or plush pink or lavender is also calming and restful.

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Dr. Nancy Kwalleck, the University of Texas at Austin, has presented some interesting research findings related to the effect of interior colors on mood, performance, and productivity. While painting everything white is generally accepted as the simplest solution, beneficial, and easiest for the facilities manager to coordinate, it does not necessarily make all people feel better. Her argument is that “One’s cultural background, gender, and ability to screen out extraneous stimuli are all factors that might lead to selecting a color that makes an individual feel better.” This tends to make one question whether in today’s heterogeneous cultural mix if it is possible to determine what colors will provide the best environment for making people feel better.

Color Preferences of Color Professionals

Experts such as color consultant Donald Kaufman, however, find that mixing complementary hues, rather than using a single coat of paint, brings a full spectrum of color to the surface, giving any selected color a richness and depth that is livelier and more natural in feeling.

In a survey conducted by Color Marketing Group, the highest peak in overall color preference on the chart is blue for both males and females. Blue is used most often for emotional appeal. To achieve a sense of authenticity, use blue plus neutrals in cool and warm gray. Blue plus energy colors in orange, red, or golden browns create a different atmosphere.

Red was the next highest preference noted in the survey. All long or short wave length colors are preferred while the color professionals tend not to favor mid-range colors such as yellow and green.

Magenta and yellow are colors professionals tend to ignore according to the survey, and yellow green and orange were consistently least favorites.

Achieving Surface Appeal

Innovative treatments of surfaces and innovation in products indicate that many technological advances need little functional improvement. However, blending their presence into new spaces invites new surface treatments. Technological breakthroughs are reflected in fabrics, effects, and colors. Iridescence, reflexivity, shimmer, texture, layering, sheers, and metallics play a central role with new technical challenges to bring these qualities to upholstery. Current trends indicate the use of reflexivity and luminosity, iridescence, textured effects, layering, and “light-filled” colors. These are enhanced by use of metallics and interjection of higher gloss

surfaces in contrast to matte surfaces in a space. Photo transfer imaging is becoming more important as a part of a craft-development that lends a new character to surfaces.

Themes and Influences

Currently, all the trends for color applications in various industries and applications lend themselves well to health-care venues. Nature-technology-culture – key words used to define themes begin with nature and protective softness and continue with connection, symbiosis, alliance, transversality, unexpected, mixing, passage, message, and instinct. Colors exhibit **refinement and lightness** along with **durability**, lasting qualities that are easy to live with and maintain.

Seeking “authenticity between technology and humanity,” they fall into 4 distinct clusters: Techno, Chromatic, Serenity, and Meditative.

Technology has opened up the ability to simulate multi-dimensional effects and more complex textural aesthetics to give the illusion of tactile surfaces, more granular colors, and chameleon effects that shift with the movement of light. Unusual materials are combined for a natural “techno” look. There is constant movement between modern and retro, nostalgia, cultural origins and sensory play, illusions, and reality.

The rapid growth of technology has made the world a smaller place, communicating ideas more openly and freely between climates and cultural settings. It also allows us to more easily identify palettes by demographics where light, climate, and cultural differences reflect true palette differentiation.

Recognizing that technology is essential, we still long for the balance of human values. Color may be one of the most important common threads that allows us to bridge both worlds. Our natural environment provides color that is honest, pure, spiritual, healing, and calm, like a tonic.

There is a strong use of **Utility Neutrals** (serious world) juxtaposed against bright colors (optimism) – as **strong and graphic**. It is a palette saturated with extreme contradictions. Neutrals support the invisible functional performance elements, while the plant-like greens come forward as performance colors – Teflon gray with marigold – cold to warm contrasts. Gray from organic and mineral elements, new greens from nature’s chaos, and faded fiery reds bring warmth, along with frosty starlight illuminated colors.

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Techno color schemes are gray, taupe, black, and white. New uses of gray as a basic are combining it with warmer brown tones in a classic sense, with white for contemporary serenity and with lilac for lively energy. Neutrals, the strongest category, particularly favor grays and silvers as a high-tech androgynous color, compatible with the brushed chrome effects being used in the high-tech side. They are saturated, have complexity, and are more assertive. Techno colors that remain strong are purples and plums.

Chromatics create adrenaline in energetic hues. Combinations of opposites of the spectrum such as blue and yellow can help to shatter light and texture to create the impression of depth and texture in settings where smooth surfaces are a must.

Richness of **tropical** places – blues and greens of the seas and the sky, the warmth of sunsets, tropical flowers – creates a richness, is more intensified, and can overwhelm senses, some think, making one more relaxed, as if on a vacation to an exotic place.

Serenity colors create a sense of harmony and balance. Influences of Miro, Picasso, Klee, and Modrian balanced with **Impressionism** are still important.

Color does not depend only on its inherent qualities but the circumstances in which it is used. There is a sensitivity to color differences within each and every person. Natural colors are complex, made up of many hues. To re-create that full spectrum of light, newer techniques include gradations of colors, transparency, and subtlety in shapes and textures. The importance of water and sunlight reflect the warming and brightening, comfort and clarity, an emotional appeal.

New colorways – bleached brights or citrus tones are softened. There is an overall feeling of lightness, softness, and clarity with flattering, sparkle, and reflection that shows optimism and confidence in the future. A light citrus trend, in a clean and usable accent of light orange, earth inspired, yet techno-connected is being found usable in pediatric healthcare.

Meditative colors in rich, earthy spice tones warm the spirit. While reds are not often associated with healthcare, in their softened and pastel forms, reds add energy to healthcare settings and balance to the palette, especially with brown undertones, reflecting the multi-ethnicity, alongside the sueded browns that offer comfort and harmony, personal warmth.

Motifs are primarily **blurry and informal, floral and vegetation, oriental and textural** – weaves and knits, layers of textures, blurred tone on tone colors, zones are layered one on the other. Powdery, grazed watery florals on blurred grounds with precision drawn flowers or leaves on top, diffused trees of foliage, like shadows two-toned, create illusions of ethnic Indian paisleys and SouthSeas ikats. Culture refers to the swing of the fabrics and their expression of their cultural roots plus the sensory responses to the illusions of alchemy provided by today's technology.

Color and Architecture

Tropism—the theme refers to a universal mode of attraction. In a biological sense, it designates motion, either forward or backward, of an organism responding to an external stimulus such as light, heat, or instinct. It is the meeting point of unexpected marriages, of functional connections, and of discrete sophistication. In this direction, **Natural joins forces with Techno**. And a new generation of fabrics is born with a Natural look with discreet sophistication and better performance than ever. “Life” is given to color through the fibers and/or finishes, multi-layered surfaces, semi-transparent sculptural, and architectural light effects.

Color can create an architecture all its own. Placement of color serves the form, to enhance or disguise shape and texture. But in pragmatic terms, it is often impossible to apply complex interpretations to large scale projects. Lightly reflective surfaces, therefore, help to create these richer atmospheres. The space has shapes that define its scale and energy. Even neutrals can interact to create appearance of movement. A new geometry of a space is created with different patterns and layers.

Emerging color themes which address this **new geometry** include the total universe as it moves from **Earth to Horizon to the Sky**. We are seeking a connection between earth, water, and sky. The importance of water and sunlight reflect the warming and brightening, comfort and clarity, and emotional appeal.

Earth speaks to roots and forests and can be seen in **mosaics and patchwork** effects. Sky represents the spirit of the galaxy in **neutrals, black, white, soft dove grays, soft taupe, and bronze** colors. Horizon represents the passage of mankind between earth and sky and is the inspiration of iridescence, **transparency**, and even stripes of pale colors with whites.

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While green, especially dark hunter green, is elegant, flexible, and usable, is still a staple, and is still an important influence, greens are evolving more toward the blues in **ecological overtones**, where the two will be used together more. Blues are optimistic, tranquil, compatible with warm tones, add vibrancy and clarity, non-offensive, calming, and a great companion to greens.

Extremes within the same color – dark and light blue – varying shards of purples from lavender to deep midnight can achieve the same effect.

Deep purples add a sense of **confidence in the future**, are invigorating, and express the complexity of complement wood tones nicely. Purples remain the spiritual bridge, provide an architectural aspect and relationship to important graphic elements and can act as neutrals.

Since blue is becoming the strongest color direction, there is a need to balance the palette with both warm and cool colors. Shifting and flipping from the cool to the warm allows us to suit all sorts of needs. Strong **mineral colors** in neutral grays mixed with the blues are the strongest statement, backed with light cream, oatmeal, pale green misty colors, and suede beige.

Soft hues of sky blue and almond green are refreshing and cooling in warmer climates. Blue is associated with washing and bathing spaces, while a pale wash of terra cotta or blush or lightest pink lavender can be calming in sleeping rooms. Keeping the tints absolutely light gives the feeling of airiness without imposing on other issues of conditions of the various conditions of health that may be affected by colors.

Important pastels include midtone – wedgewood blue, lavender, coral, and orchid. Chalky pales in icy blue, and silver sage. Brights in mallard green, clear red, and ultramarine blue. Cold colors – french blue, grape, violet, and khaki. Hot colors – clay and cranberry. Darks include dark green, plum, and navy.

Conclusion

There is a growing need to balance the cold and impersonal feel of high technology that propels into the future with colors that are flexible, synergistic, blended, stable, and convergent, not so much with the hard edge. We want to choose colors that reflect our emotions and our need to express our individuality. In this, a strong appeal is for neutral colors with less visual noise and more staying power.