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Biophilic Design

Biophilia

Reconnecting with Nature

Ever since Man first settled in a mud hut in a small clearing, built a village, a town and finally cities and urban sprawl, he has moved steadily away from nature.

But innately, people are still wired to respond to the natural world. Evolution is slow and the human brain's structure effectively stopped developing between 100,000 and 200,000 years ago. Even though we think of ourselves as 'modern man', as far as our brains are concerned, we're still ancient, designed to live in a very different environment. We are still wary of heights and shadows and can derive inspiration from a green space. We find running water relaxing and a windswept beach exhilarating.

This principle is the basis of biophilia and biophilic design: the weaving of nature into our daily lives through design, architecture, products and the things and spaces around us.

What is Biophilic Design

According to Terrapin Bright Green, an environmental and sustainability B-Corp consulting firm, there are 14 patterns of biophilic design.

But these can probably be distilled down to just a few key characteristics:

Primary elements of nature. Plants, water, stone and wood for example. Or a visual link to nature - views of greenery, trees or water etc.

Analogue or representative elements of nature. Curves rather than straight lines, natural colour palettes, textures, graphics and fractal patterns – repeating and regressing forms found across the natural world. Light and airflow could also fall into this category.

A sub-cognitive connection with nature. Characteristics of the natural world that are more instinctive to humans, such as refuge or mystery, prospect or risk.

So, biophilic design is the bringing into our lives of any or all of these aspects. Using natural materials rather than man-made.

Ensuring at the very least we have views of trees or sky during work hours.

Designing furniture using curves rather than ruler-straight lines, natural colours like yellows, blues and greens rather than fifty shades of grey and introducing texture where we can.

Bringing plants into our spaces, hanging pictures of nature on the walls, using water where appropriate and ensuring light and airflow is natural.

Lastly ridding ourselves of the Victorian-straight lines of desks or pods on our office floorplans.

Origins of Biophilia

The concept of biophilia is not a 21st century invention. Social psychologist Eric Fromm first coined the term in 1964 and biologist Edward Wilson popularised it in 1984 with his publication 'Biophilia'.

Since those days though, every use of the term has referred to a desire to reconnect with the natural world in some form or other. Since the turn of the century a lot of study has gone into biophilic design and its benefits. These include increased productivity, resilience against stress, patient recovery in hospitals and overall benefits for mental health and wellbeing.

Since the pandemic many businesses have been considering how they can remodel their workspaces to both entice workers back to the office, but also encourage wellbeing and productivity gains while they are there.

The growing movement to shorter working weeks and hybrid working has also spawned a renewed interest in making the most of office time, including through biophilic strategies.

The use of biophilic design principles in furniture for work, home, health, education, and public spaces is not entirely new either. However, bringing biophilia together with other principles such as acoustics, utilisation measurement technology and psychology presents a much more holistic and considered approach to design.

Applications of Biophilic Design

Through understanding biophilia and the natural world, we can apply specific aspects to design of objects and spaces. Knowledge of the human desire to retreat or to gain refuge for example leads to the design and production of office pods where workers can focus on tasks, make phone calls in peace, or even collaborate with a small number of colleagues in relative seclusion. Using materials that reduce the acoustic load, creating shapes and naturalistic forms that provide the right amount of separation from the rest of the space without being isolated from colleagues, it is possible to produce the ideal solution for very specific or generalist tasks as are required.

It would be wrong to assume that a single biophilic pod will increase productivity and reduce stress in an otherwise bland and linear workplace though. It must be thought of as a holistic solution to a workspace. Acoustic lighting, soft break-out areas, space-breakers such as dividers or backdrops, airflow, colours, views or office planting will all contribute to a whole greater than the sum of their parts.

Fractals Reducing Stress

Blair McKolskey of PLN Group is particularly interested in fractals. It's an area his team is looking at in more detail to see how natural patterns can be incorporated into future projects. As mentioned above fractals are regularly occurring, repeating yet regressing patterns seen throughout the natural world. The simplest example of these can be seen in a tree whose trunk splits to branches, which split to thinner branches, which split to twigs, which split to leaves which themselves contain the same patterns in the form of their veins. But fractals can be seen too in clouds, waves, coastlines, forests and galaxies - even vegetables such as this broccoli - (see next page).

Research carried out by professor of physics, psychology and art, Richard Taylor has demonstrated not only a strong affinity to fractals by humans, but also by measuring nervous system activity showed a reduction of stress of up to 60% when people are exposed to fractal forms. The possible applications are obvious, from keeping patients calm in hospitals or dentist waiting rooms, to reducing stress in the workplace and thus improving productivity and inducing a calmer, happier working environment.

Several PLN Group products incorporate fractal patterns in their design - such as the Hush light, the padded backs of the Keystone range and the Nautilus Light for example.

Less is Not More

Although there is evidence that simply adding a few plants to a space can help us in reconnection with nature, doing so in and of itself should not be considered 'biophilic'. It's even been said that just adding one or two natural elements into an otherwise unappealing or bland space simply highlights the blandness to its occupants, conceivably making the situation worse.

As with any design, a biophilic design strategy is needed to create a whole environment that is as cohesive as a natural environment is, where elemental co-reliance provides total ecosystems. Architects, interior designers, employers, planners and the designers of the furniture and other moveable elements in a space, need to come together to plan a space in concert, which then systematically connects itself and importantly its users to nature.

Moreover, employers, planners and building owners need to stop seeing comfort, wellbeing and good design as a luxury item and start to see the economic benefits of these design aspects.

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Economics of Biophilic Design

Research shows biophilic design works on all levels. Terrapin Bright Green have produced a report called "The Economics of Biophilia" which shows it's not just health and wellbeing that employers, building owners and planners can deliver by following biophilic principles.

Make people happy and the returns are all positive. The report shows absenteeism is likely to fall where biophilic aspects are present, by around 10% where workers have views of trees and natural landscapes for example.

A US call centre saw calls answered up to 7% faster by employees with views of the outdoors versus those with no external views. The return in productivity over the initial building cost was in the region of 300% per annum according to the Terrapin report whilst another study in 2015 called "The Global Impact of Biophilic Design in the Workplace" showed a 15% uptick in productivity and nine out of ten workers reporting improved wellbeing in a more natural work environment.

Other studies show similar results. The "Human Spaces Report", which surveyed 7600 office employees in sixteen countries stated 6% productivity increases, 15% creativity improvement and a 15% hike in wellbeing. "The Impact of Biophilic Design on Workers Efficiency" report from Turkey's Akdeniz University shows an 8% productivity boost. It also reports Amsterdam's ING Bank building reduced workday loss by 15% by introducing basic biophilic principles and Perakende, a retail news site, increased its profits by around 40% by taking similar steps.

Biophilic ROI

The upshot of all of this is that biophilia can provide a positive financial ROI as well as happier employees and better retention rates which save even more time and money.

Of course, biophilic design is not limited to workplaces, but can be implemented in educational environments, health facilities, public spaces and homes. If hospitality businesses such as hotels and restaurants really flexed their biophilic muscles, imagine the customer return rates they could enjoy.

Real Life Research

PLN Group recently ran an experiment in conjunction with a local primary school, where one classroom was designed with biophilia in mind including plants, forest wall graphics and biophilic design furniture, whilst another similar space was left as originally designed – relatively bland. The results, whilst possibly not scientifically rigorous, showed a marked improvement in pupil engagement right through the week where nature was present versus those learning in the control space whose concentration waned as the days rolled on.

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Biophilia and its design principles are here to stay and for good reason.
As the modern world becomes more challenging, faster and more complex, the greater the need will become for humans to re-adapt to their brain's desire to keep it natural.

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Thank you