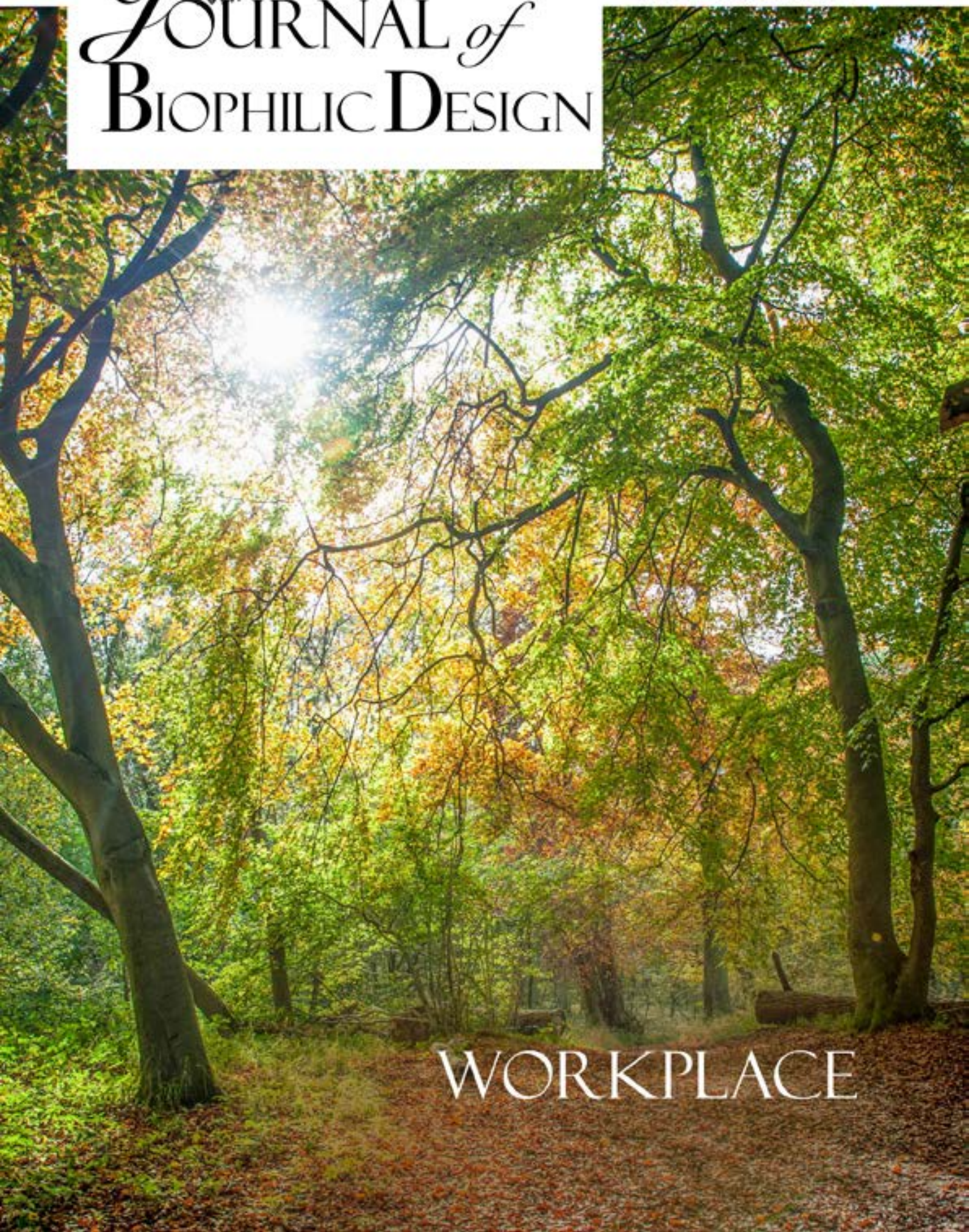
ISSN 2754-2815
ISSUE 1 / OCTOBER 2022

JOURNAL of BIOPHILIC DESIGN



WORKPLACE

This issue is dedicated to the memory of Criswell Davis, a lover of trees, nature and a worldwide advocate of the gifts that wood gives us, from sequestering carbon, inspiring focus to sparking joy within. Thank you for sharing your knowledge and passion with us in this Journal, we valued your time and positivity you gave in your podcast with us too. May your onward journey be leafy and green, and the sun shine on you wherever you are. Sending strength to your family.

To subscribe to the free newsletter that accompanies this journal please visit www.journalofbiophilicdesign.com. To purchase this magazine on Kindle please visit Amazon and search for "Journal of Biophilic Design" or visit the page dedicated to the journal on our website for other epub and hardcopy options, or to request a branded wrapped version for your business.

Coming up...

ISSUE 2, Dec 2022/Jan 2023 - HOME
ISSU 3, Feb/March 2023 - HEALTHCARE
ISSUE 4, April/May 2023 - CITIES
ISSUE 5, June/July 2023 - CREATIVITY
ISSUE 6, Aug/Sept 2023 - BLUE MIND
ISSUE 7, Oct/Nov 2023 - EDUCATION
ISSUE 8, Dec 2023/Jan 2024 - WELLBEING
ISSUE 9, Feb/March 2024 - SEN/DIFFERENCES
ISSUE 10, April/May 2024 - ENVIRONMENT
ISSUE 11, June/July 2024 - LEISURE/HOSPITALITY
ISSUE 12, Aug/Sept 2023 - RETAIL

Suggestions for contributions welcome, please contact editor@journalofbiophilicdesign.com for submission guidelines.
For advertising and sponsorship opportunities please contact promotions@journalofbiophilicdesign.com
To support the Journal we would love to see you over on our Patreon page, Journal of Biophilic Design.

Final word
If you are designing with biophilia at the heart of what you do, thank you for making the environments you create, the lives you improve and the planet happier and healthier. If you have just started on your Biophilic Design journey, then welcome to the movement, together we can make the world a better place to live, work and flourish in.

WELCOME

Welcome to the first edition of The Journal of Biophilic Design.

Biophilic Design, I believe, is a key pivot in helping unlock sustainable building practices as well as providing mental and physical wellbeing in public spaces (from healthcare through to education, the workplace and our homes).

Wouldn't it be amazing if everyone was flourishing in their lives, whether at home or at work, anywhere in the world? Wouldn't it be fantastic if everytime we built or designed something it didn't destroy our planet but actually had a positive impact? Wouldn't it be wonderful if our children could learn more easily, our families heal quicker in hospital and we also enjoy our worklife? Biophilic Design isn't a magic bullet, but it is definitely a magic brush. A brush with which everyone has the ability to transform our environments so we can live our best life.

The purpose of our magazine is to inspire this change. We want to support this exciting and growing movement of Biophilic Design, to show how everyone can bring design elements inspired by nature into our built environment to help countries, cities, families and you flourish.

Never before has there been such an interest in wellbeing, our climate, mindfulness, the workplace, physical and mental health as well as how we live our best lives. Our magazine builds on and supports this global interest. If you search online for "Biophilic Design" you will see hundreds or articles not just academic but also mainstream media. The world has caught on to this vital design trend.

Our podcast series with researchers, thought-leaders, architects, environmentalists, psychologists, acousticians and interior designers now reaches 30,000 monthly listeners.

The time is now to celebrate a better way of building, designing, living and flourishing

If Biophilic Design had been implemented in our built environment 20-years ago, our cities and towns would look so different, and we would not be in a back-footed position trying to heal the environment. It's not too late, and I'm hopeful that Biophilic Design will be one of the major keys in unlocking sustainable practices in the Built Environment all over the world.

Vanessa Champion PhD, AMRSPH,
Editor and Founder

editor@journalofbiophilicdesign.com
www.journalofbiophilicdesign.com
Free Newsletter
Buy a copy of the Journal

HIGHLIGHTS

Each edition of The Journal of Biophilic Design has regular sections.
We highlight them here so you can navigate your way around the Journal.
If you would like to contribute to a future edition, please do contact our editor we would love to feature your research and case studies.

Details of our contributors can be found on our website.
Each edition of The Journal of Biophilic Design is published every other month.
Next issue's focus is **The Home.**
Sign up for our newsletter on our website to be reminded when the edition is out.
Don't forget you can read this on your Kindle as well as buy a beautiful full colour printed edition to keep and refer back to, contact us for direct links.

If you would like to sponsor the Journal please contact us.
Future editions will focus on Healthcare, Cities, Creativity, Blue Mind, Education, Welbeing, SEN, Environment, Leisure, Retail.

THE WORKPLACE

In each edition of The Journal of Biophilic Design we focus on one theme. This issue is focused on the Workplace (the next is Home).

With so many of us now either working from home, working from a remote office or a shared space, it has made it challenging for some businesses to entice their staff back to the office.

On the other hand, there are offices where staff have had to come back in, but promptly want to leave because the working environment is in such stark and brutal contrast to the comfort of where they have been working during Lockdown, and also where they had more freedom to move around, change location for different work tasks or go for a walk with the dog or sit in the garden for a brain break.

Employers of all shapes and sizes are realising that the design of the workspace needs to be fit for today's workforce. It needs to be functional yes, but also there is an increasing realisation that the environment can really make a positive (or negative) impact on their workforce.

This impact, they are realising also has an impact on the business's bottom line. If staff are stressed or in a noisy environment, or the VOCs are making them sick, or the lighting is too bad, then they just won't produce the quality work at the rate they need it. Nor will the staff be creative, focused, inspired or engaged.

Then if you combine that with the global need to reduce carbon emissions, reach net zero in the workplace and the general push for more sustainable materials then Biophilic Design is really coming into its own.

Biophilic Design in the workplace, ticks all those boxes and more. There are many designers, businesses and individuals working with and implementing Biophilic Design all over the world, and the number is growing.

The ambition of this specialist section each edition is to share knowledge, opinion and inspire anyone interested in Biophilic Design. There are case studies, research, ideas and examples. Every writer is happy to be contacted, as is our editor, so just reach out.

In the meantime, have a read, be inspired, and let us know what you think.

The world needs thinkers, but even more than that, the world needs thinkers who do. Never a truer word spoken.

Welcome to the movement.

Working with Nature

"Where do people in your workplace go when they need time alone?" This was the question that kickstarted our recent research into how Biophilic Design could support wellbeing in the workplace as, sadly, the answer is all too often "...the bathroom".

Oliver Heath

Even before the events of 2020, corporate buzzwords such as 'burnout' had become commonplace within our vocabulary – reflecting the already increasing stress felt by the workforce.

But it was impossible for any of us to predict the ways Covid-19 changed the landscape of where and how we work.

From office desks swapped for family dining tables and many of us working from home (WFH), a term which has now become synonymous with the pandemic, to hybrid working models which see us inhabiting the shared workspace on a part-time basis. Within the comfort of our own homes, we have been able to control many aspects of our workplace environment that were previously dictated by the space and culture of shared offices. From when and where to rest, to emotionally decompressing in private without the worry of colleagues overhearing or passing judgement.

This curation of the physical workspace has led many to realise what they individually need to take care of themselves both physically and mentally. A realisation that has been felt globally during 'The Great Resignation', which saw workers quitting their jobs en masse in 2021 – sending shockwaves through businesses and organisations in the process.

As employees return to the office it has become evident that these spaces are no-longer, and perhaps many never were, equipped to fully support a pivoting workforce who actively put their wellbeing first. Indeed, research indicates 53% of workers around the world are now more likely to prioritise their health and wellbeing over their job. This has resulted in many of our clients coming to us with a new set of concerns: how to retain and attract talent, create a physical workspace that employees want to return to, and how to support both the physical and mental wellbeing of their workforce.

From our existing research and expertise in Biophilic Design, we know that supporting wellbeing is more than just a token gesture. As a designer I've seen many spaces within offices proclaiming to be yoga studios/meditative rooms/restorative spaces when, in reality, they are just glorified broom cupboards (often with a dusty pot plant thrown in for good measure). Businesses are missing a trick. Restorative spaces have the potential to not only create areas in the office for wellness caretaking, but also to act as a beacon to potential talent that the organisation is aligned with their changing values.

So, what is the formula to designing a top-notch restorative space? At my own practice we take a nature-based Biophilic Design approach, which we recently explored in our guide co-authored with Interface Inc. – 'Designing Restorative Spaces'. This approach is significant when you consider the role nature has played in our lives over the last few years, with many of us frequenting beaches, forests, and green spaces – sometimes more often than our own offices!

One of the most common misconceptions that I hear about Biophilic Design, is that it is solely reliant on the presence of plants and greenery. It is so much more than this, also considering indirect experiences of nature, such as natural materials and soundscapes, and how linking back to local ecology and culture can help foster a sense of community.

Biophilic Design is additionally built on a foundation of evidence, which is particularly important when you consider the results-driven and finance focused nature of investing into the physical workspace. Research has found that when there were visible natural features in the office, such as wood cladding or organic patterns, absenteeism was reduced by 15% and there was also a 15% higher level of wellbeing . Whilst a study by the CBRE found that the addition of plants in view of each workspace led to a 76% improvement in energy levels, with a 10% improvement in task performance.

Essential to reaping these benefits in the design of restorative spaces is to understand the needs and wants of your employees. In 2019 we undertook a study of an aging office environment at the BRE, entitled the 'Biophilic Office Project pre-occupancy studies' the study revealed fascinating results. Quantitative studies measuring light, air quality, temperature, and acoustics of the existing space revealed that the building was in a usable if not excellent condition.

Workers with the best possible views out of the office have a 10 to 25 percent improvement on mental function and memory recall

15 percent higher level of wellbeing when natural elements are present in the workspace

However, qualitative questionnaires revealed that occupants felt this dreary and unloved space was having a negative impact on their wellbeing. Illustrating that people felt it was uncomfortable, unsupportive, didn't represent the values of the organisation, and was not a space where they wanted to welcome clients. These in-situ studies revealed the drive for change, to better respond to the needs of the occupants and their experience of thespace – something that would have been missed had we only focused on the quantitative studies.

By engaging directly with the workforce, you are not only getting to the root cause of problems faster, but also ensuring they feel involved in any changes. For this reason, I recommend pre and post occupancy studies to all my clients looking to better their workplace environment and consider it an important step in our Biophilic Design process.

Alongside understanding your employees concerns and needs, scale is also an important factor when looking to implement a restorative space. For instance, we recommend for those eyeing up the windowless broom cupboard to instead consider designing in partitioned furniture with views out of the workplace. This is because studies have uncovered that workers with the best possible views out of the office have a 10-25% improvement on mental function and memory recall.

Increasingly we are receiving briefs from workplace clients that include nature-inspired restorative spaces, but we are also seeing demand in other sectors such as hospitality and retail. This is a signal of change, the people who departed the workplace in early 2020, have a greatly changed mindset as they return to it now. Whether we are going into the office full-time, practicing a hybrid model or joining our colleagues remotely, our wellbeing is and will continue to be, a top priority.

www.oliverheathdesign.com

The Business case for a biophilic Office

Have you ever wanted to have some notes in your pocket to persuade your client or boss to incorporate Biophilic Design into the building? Well here is a ticklist.

Maggie Procopi

If you're reading this article, chances are you're already a devotee of biophilic design. But I'm disheartened how relatively few of us there still are. Even quite recently I was chatting to an established architect and mentioned biophilia - his response was "What's that?". I am soft spoken and perhaps he didn't hear me properly, but either way it was disappointing.

I decided to take a positive view on this experience and now make an effort to speak a little louder ;) but I also see from just looking around at the number of existing office spaces that are bereft of any nod to nature, that there is still ignorance of biophilia, and therefore a massive opportunity, and multiple financial and altruistic rewards, to be had from bringing biophilic design into mainstream office design. This is a unique time in the history of the workplace. As we emerge from the pandemic and at the same time tackle the climate crisis there has never been a better time to build the biophilic business case, for both new build and existing spaces.

One of the consequences of the Covid-induced work from home is that many employees and organisations now realise they have little need to inhabit an office five days a week. Most companies are attempting to entice employees back for at least some of the working week, typically a Tuesday, Wednesday and Thursday (not necessarily recommended by workplace consultants, but still largely favoured by HR and managers). However employees are reticent to return and corporations are having to work hard to tempt them back, even for this reduced period.

Add to this the requirement to achieve zero carbon emissions by 2050, and a significant reduction before that in 2030, and you have a fertile basis on which to nurture a biophilic business.

Here are five points you may like to include in a business case for a biophilic office in 2022 and beyond.

Providing Flexible Space

Office space needs to be even more flexible than previously. Many offices are mostly occupied just three days a week – Tuesday to Thursday - so what do we do with the space outside of this time? Do we make it available and/or share it with others? Or perhaps we adopt the practice of cafes and restaurants, where areas that are not in use are closed off.

Alternatively, offices may soon follow the lead of the higher education sector, and we may see a drive towards welcoming others into office space, making it available outside the company, possibly like HE, to the local community.

We are increasingly seeing a blurring of the edges where office design is concerned, and a space that doesn't immediately look like an office and that has flexibility in layout is easier to fill. So office space needs to look less like a traditional office and appeal to a wider audience. Indeed many office designers are looking to the hospitality industry for interior design inspiration.

Providing a choice of work settings and styles is also important. Features like moveable living walls, plant clusters, biophilic inspired booths and pods are also useful in creating adaptable spaces.

Compensating Space Reduction

As a consequence of reduced use, there is understandably a call from real estate managers to reduce costs and decrease office space. Financial pressures are very real right now, but we can take comfort from these words from Bill Browning (Terrapin Bright Green) speaking at Workplace Trends way back in 2015: "Biodiversity is more important than size of space". So if needs be, we can get away with reducing office space if we can compensate it with good biophilic design as the benefits outweigh the downsides of poorly designed spaces.

Natural Noise Reduction

Noise, or specifically unwanted sound, in an office is one of the most common reasons employees work elsewhere, or disengage from the office space (think of all those staff wearing "do not disturb" headphones).

Biophilic design on its own won't necessarily reduce noise, but with careful planning and design it can do so. Using green, modular walls that have been tried and tested for their acoustic properties will make a difference. Groupings of large plants help too.

A biophilic-influenced acoustician will advise also that it's not just about planting: other natural materials, for example wood, particularly cork, is a very effective at sound absorption.

Add into this mix acoustic panels like the nature-inspired printed panels produced by the Journal of Biophilic Design and you can create a calm and soothing workspace.

Many workers enjoy the privacy and quiet they have become accustomed to at home. To temp them back to the office, quiet and secluded areas can be more widely incorporated into office spaces, created with biophilic design elements, thoughtful layout and/or moveable pods.

Productivity, Health, Wellbeing and Absenteeism

We already know that biophilic elements in office design improve health and wellbeing. Employees feel better and can be 20% more productive as a result of biophilic surroundings. Plus sick days are significantly reduced.

On the wider scope of absenteeism, in their "Economics of Biophilia" paper, Terrapin Bright Green state that "10% of employee absences can be attributed to architecture with no connection to nature". With staff costs amounting to 70% of a company's business costs it makes sound business sense to invest in biophilic design with a view to a high return on this investment.

Carbon and Energy Saving

Sustainably sourced natural materials offer low or zero carbon options. Moreover, green walls and roofs can help save energy costs and reduce the carbon footprint of existing buildings.

A quick Google search reveals many research studies on this, but typical is one from the University of Plymouth's Sustainable Earth Institute. They installed a living wall on the outside of an uninsulated cavity walled building from the 1970s. After just 5 weeks of measurements, the amount of heat lost through the living wall section was 31% lower than the original structure. That will equate to a sizeable energy and carbon saving figure.

The same study also found that daytime temperatures within the section covered by a living wall remained more stable than the section behind the bare wall; meaning less energy was required to heat it.

So these are just a few ways biophilic design can help the workplace, or more specifically the office space, move forward. I am sure you can add to the list yourself. The average office as we knew it pre-Covid has been quickly outdated, but there is a huge amount of opportunity to cost-effectively and sustainably apply biophilic design to new projects.

Please drop me a line at Workplace Trends with news of any workplace design projects you are working on or have completed recently. I'd be very interested to hear about them!

www.workplacetrends.co

Facilitating Biophilic Design

WHY SHOULD FACILITIES MANAGERS CARE ABOUT BIOPHILIC DESIGN?

Ian Baker

A few weeks ago I escaped my home office and travelled several hours from where I live on the South coast, to another county, another city and what seemed to me, another time!

It wasn't the geographical location that produced a feeling of going back in time; I wasn't working in a 'hip' refurbished old mill, I had not perched my laptop on an old-fashioned wooden desk with a patina to make an antiques dealer swoon, nor was I surrounded by beige 'L' shaped desks from the late 1990's. No, it was none of the above. I was on holiday and surrounded by plants, very big plants! I was in the Eden Project in St Austell, Cornwall.

I'm not only interested in how workplaces affect our wellbeing and our ability to deliver our best work, but it's also **my job** to help organisations obtain this goal for themselves. **When people ask me to describe my 'perfect workplace' I say, "imagine the Eden Project, then add desks!".**

I was unable to stop thinking how great it would be to work in here! A meeting table here, a desk over there – obviously great wi-fi and of course amazing coffee!

I'm not sure what it is about the Eden Project that makes me feel I've gone back in time, something about being around massive plants feels prehistoric? Perhaps it's the fact **any living plant, running water or natural material connects us with something from the past**, a time when wi-fi and coffee were just not important.

I think it's odd that we needed to learn how important biophilic design is for us. **In the years before we spent our days staring at tiny, illuminated screens, we'd bring nature into our homes and workplaces just because we liked it, not necessarily to save us from our screen loving selves!**

So, why should facilities managers care about Biophilic Design?

In recent years the traditional role of facilities management has shifted towards workplace management and workplace experience. There is a greater understanding of how our workplaces affect our minds, our bodies, our wellbeing and the ability to deliver our best work. The FM's role as custodians and managers of space, places us at the heart of the workplace, where people come first and where decisions can either have a positive or negative influence on the users.

In times of financial stress, cost saving exercises resulted in plants and trees being removed from a workplace where people worked in long shifts. The result? Sterile, bland, uninspiring workplaces, that did nothing to dampen the stress of working there. This financial decision was about reducing a visible cost on a spreadsheet, and yet the invisible cost to the people using the space was ignored or misunderstood.

How can FMs bring Biophilic Design into their stable?

We're now operating in the wake of the biggest change to how we work since the invention of the lightbulb! There is a greater focus on improving productivity, reducing mental health issues, providing safe environments, and supporting peoples work life balance. Being at the heart of the workplace, FMs are well placed to bring biophilia into our buildings, or to start discussions with their customers on the many benefits of Biophilia. A great place to start discussing biophilic design would be your nearest workplace consultant, or someone involved in the organisation's workplace strategy and able to bring a wider view on the cost versus the reward.

Why is it important in the bigger sustainability picture?

There is a danger that if we isolate ourselves from the living natural world, we lose sight of what's really important. Sustainability and the care of our planet should be top of everyone's agenda, being around nature connects us with a sense of ownership and increased responsibility.

And what about my trip to Eden? Well, it has reaffirmed bringing the benefits of biophilic design to as many people as possible. I may not be able to work inside the Rainforest Biome (to be honest the humidity was stifling!) but the idea that being around natural and living things helps human beings, especially in our places of work, needs to be raised and discussed more often. And I shall be making sure I take every available opportunity to do so, hope you do too!

www.emcoruk.com

why Biophilia and business go hand in hand

CASE STUDY

Rap Interiors

Why has biophilia become such an essential part of a design scheme?

As an experienced office refurbishment company, Rap Interiors has been “bringing the outside in” for a number of years, and clients present different reasons for the inclusion of greenery.

Biophilia has become a staple of modern office design. From multinational tech companies like Google to ambitious companies with small teams, it is likely you will find greenery in most offices across the world.

For one of Rap's clients, Kent-based housing developer Chartway, the inclusion of green elements was crucial in projecting the right company image. As one of the leading residential construction companies in the county, the developer wanted to show that it takes corporate social responsibility seriously - with particular focus on sustainability.

With this in mind, Rap Interiors' team developed a new design concept with sustainability at its core. This included numerous changes to the reception area, which, as a focal point for the business, would serve as the perfect place to illustrate Chartway's green company ethos.

As Chartway uses natural resources to reduce its environmental footprint, it was important to do the same with the reception interior design scheme. Therefore, Rap's designers introduced a branded feature wall made up of sustainably harvested moss and timber planks (the latter being made using and anwcient Japanese technique called Yakisugi). Further to the feature wall, Rap installed a wooden-slat reception desk and sourced carpet made from recycled materials, making for a stunning space that immediately establishes an eco-friendly theme.

Another of Rap Interiors' clients, travel firm Classic Collection from Worthing, wanted to embrace natural elements to create a sense of calm in its new breakout area. To do so, the design team cleverly combined biophilia with furniture, with one highlight being the Frovi Relic table draped in foliage. The designers also integrated planters between the bleacher and banquette seating and placed potted plants around the space for additional greenery.

Journal of Biophilic Design

WORKPLACE

For Classic Collection, the creation of a serene, inviting environment has helped its employees to be more productive during working hours – an idea that Rap covered in a recent blog on Deep Work and the "attention restoration theory". **According to the theory, walking through nature allows your brain to recharge the energy it needs to focus on cognitively challenging tasks.**

In addition to the productivity benefits, the green elements offer health benefits too. According to Office Landscapes, research by NASA found that indoor plants are able to remove up to 87% of toxins in 24 hours, making the air employees breathe fresher and healthier. This, of course, is a big plus for Classic Collection's employees in terms of wellbeing.

Based on the two project examples here, it's easy to see why biophilia has become an office design staple. For companies like Chartway and Classic Collection, the inclusion of biophilia is about more than decoration: it's about how it positively impacts the wider business. Whether that be projecting an eco-friendly image to clients and associates or creating a space where employees can recharge their batteries, biophilia can be very valuable for businesses. Indeed, with benefits like these, it looks like biophilia's popularity will continue to grow.

With over 30 years' experience, Rap Interiors, one of the leading workplace design and build companies in the UK, has a team of sustainability champions, and prides itself on creating eco-friendly spaces that benefit both businesses and the environment.

www.rapinteriors.com

Reviving and Revising the Landscaped Office

"The Landscaped Office concept is derived from research into basic human needs, particularly environmental and evolutionary psychology."

Dr Nigel Oseland

In the first half of my book, Beyond the Workplace Zoo: Humanising the Office, I highlight the design issues with modern offices and how, due to a focus on cost-cutting and over- densification, the office is more akin to a workplace zoo. In the second half I propose a human-centric and evidence-based solution which I termed the Landscaped Office. I called it so for three core reasons:

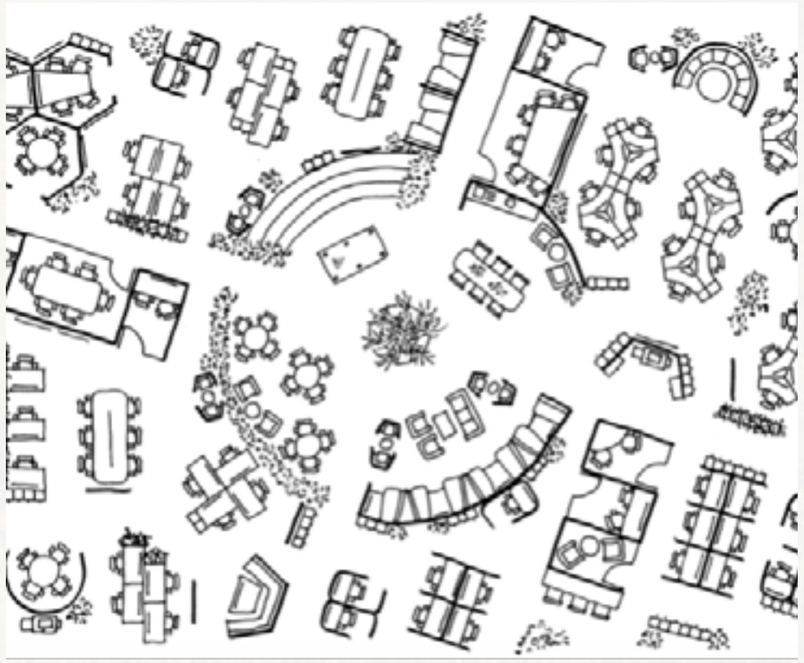
1. Bürolandschaft, the 1950s open plan workspace concept, literally translates to office landscape. Bürolandschaft included laudable space planning principles including small clusters of desks, organic layout, low density, variety of work-settings, some screening and plants. The Landscaped Office is a modern interpretation of Bürolandschaft.

2. The Landscaped Office offers different desk layouts more organically arranged (rather than serried rows) and interspaced with a mix of work-settings including open, semi-enclosed and fully enclosed spaces. The work-settings facilitate social interaction, collaboration and virtual meetings along with focussed work and confidential activities. Such design features create both a horizontal and vertical landscape.

3. The term is also a nod to adding planting and greenery in the office along with other biophilic design elements.

Environmental psychology is the study of how people respond to the surrounding (built) environment. Environmental psychologists recognise that the perception and behaviour of different people in the same environment will vary, due to personal factors and individual requirements. Such factors include physiology, personality, gender, age, culture and neurodiversity. Accommodating a range of individual needs requires choice of a variety of work-settings and environmental conditions rather than a homogenous workspace designed for the "average" person.

Biophilic design principles, which go way beyond plants, and the positive effects of biophilia are fully documented by Bill Browning, Ryan & Clancy (2014) and Kellert & Calabrese (2015). However, biophilic design mostly relates to evolutionary psychology concepts. Human physiology evolved over millennia to survive on the African Savannah and Evolutionary psychologists believe that also applies to the functioning of our brains.



However, biophilic design mostly relates to evolutionary psychology concepts. Human physiology evolved over millennia to survive on the African Savannah and Evolutionary psychologists believe that also applies to the functioning of our brains. However, evolution is a slow process such that, despite the habitation of cities and migration to modern offices, we still have an innate preference for more natural environments. Regarding successful office design, the following environmental conditions should be catered for.

• **Daylight** – Daylight regulates sleep patterns and also allows us to tell the passing of time during the day and the year. Working in buildings with heavily tinted windows or deep plan buildings where desks are positioned away from the windows can be discombobulating.

• **Views** – Humans favour views out, preferably of nature, and primitive humans would sit with their back to a tree/rock for protection. Consequently, we like views to the outside and prefer not to be overlooked from behind or sit with our backs to a busy walkway or corridor.

• **Temperature** – We all have personal preferences for temperature depending on our activity and personal factors. We also prefer slight fluctuations in temperature rather than the steady state ones found in air-conditioned boxes. In nature, if the temperature does not suit us then we would move to a different space, in the sunshine or in the shade – such adaptations are not usually possible in the office.

• **Air movement** – In general, we prefer natural to mechanical ventilation. On a warm day, a gentle breeze on bare arms is quite appealing, rather than a down-draught on the neck. Gentle air movement provides a direct feedback loop and informs us that a space is being cooled – part of the reason why windows, and fans, are preferred to mechanical ventilation.

• **Sound** – A slight breeze will cause leaves to rustle or water to lap on the shore – both familiar and natural sounds. These and other natural sounds, such as birdsong and running water, are more pleasing and relaxing than mechanical sounds. Such sounds can reenergise workers and improve their performance, so are particularly useful in breakout areas and chillout zones.

Journal of Biophilic Design

WORKPLACE

Evolutionary psychology provides a better understanding of our preferred environmental conditions. In addition, our preference for different types of office spaces can also be inferred from our innate human behaviours.

• **Inquisitive** – Desmond Morris (1967) notes that "All animals have a strong exploratory urge, but for some it is more crucial than others" partly driven by the need for food and resulting in a "constantly high level of curiosity". As we are naturally inquisitive animals, we like to move around exploring, rather than be inactive and sitting for too long. So, offices should provide opportunity for moving around with alternative routes, unusual shapes and layouts, nooks and crannies, plus arts and points of interest etc.

• **Movement** – As our musculoskeletal system evolved to support hunting and living of the African Savannah it can be argued that continuous sedentary activity takes its toll. So incorporate "active design" and encourage staff to stand up by providing sit-stand desks and stand-up meeting tables, and encourage movement around the office by creating intriguing spaces for exploration and providing easily accessible stairwells between floors.

• **Socialising** – Humans are social animals and social interaction builds trust and is a precursor for true collaboration, it also enhances connectedness to colleagues and the organisation. We particularly like to share stories with our colleagues over food and drink – harking back to the hearth mentality. Recreate the hearth with a gas fireplace (inside or outside), inglenook and surrounding seating. An under-utilised breakout space can be boosted by providing good coffee and biscuits!

• **Contemplative** – Although we are social animals, we are also contemplative and require spaces for occasional solitude, solace and privacy. Providing more natural spaces will facilitate restoration and help reenergise the weary worker. Some organisations have included art, soundscapes and even an aquarium in their chillout zones.

• **Greenery** – Plants have psychological benefits (tendering to our innate needs) and research shows they can help improve creativity and problem solving. Plants are part of our natural environment, so, where practical, introduce plants into the office. Plants also have some acoustic properties and can mitigate noise issues. For example, moss walls provide some sound absorption and most larger plants, including broad leaf ones, bamboo and grasses, can create sound diffusion breaking up the sound waves, as well as providing some visual privacy.

A low-density organic desk layout with multiple work-settings is core to the Landscaped Office. However, the environmental conditions must also meet our human needs by adopting evolutionary psychology and biophilic principles.

www.workplaceunlimited.com

WOOD - Carbon Storage and Beauty

Wood is so beautiful but is also so amazing and useful,
not only by storing carbon but also helps us flourish in our workplace too

Criswell Davis

I have been involved with the hardwood wood business in the US for more than 34 years. For 12 years I worked out of a windowless office. There was a time zone change between my home and the office, resulting in traveling to work in the dark and traveling home after work in the dark during the winter months.

I had no connection with daylight or nature during a typical workweek. Not surprisingly, I found that my focus and mood were challenged every day during those winter months. I struggled with depression and slept poorly. I would often struggle to stay awake at the wheel during my 1 hour 15-minute drive home. I loved my job but driving to the windowless office every day was wearing on me.

After those 12 years I was asked to travel around the US talking to the design community about using American hardwoods for interiors. I discovered that simply being out in natural sunlight and fresh air improved my sense of well-being dramatically. I slept better, and I felt more relaxed and happier.

After two years of travel limited to the US, I was asked to travel internationally on behalf of the American Hardwood Export Council, giving similar presentations to the international design community. My presentations were mostly centred on carbon sequestration and sustainable forest management followed by the aesthetic beauty and durability of hardwoods in application.

My expertise was in domestic and tropical hardwoods and their use in cabinetry, flooring, millwork, and furniture. I began to challenge my audiences to mount a cogent argument against the notion that a wood-clad built environment is simply a better space. I have now talked to over 15,000 architects and designers around the world, and no one has mounted such an argument.

I then had to figure out for myself why it is that we feel better in a wood-clad space. I concluded that humans and trees live in symbiosis with each other because trees absorb carbon and give us oxygen in return. Then I figured out that we resonate with trees because we are alike in four distinct ways: First, we are both about 60% water. Second, we are both about 18% carbon. Third, we share about 50% of a tree's DNA. Fourth, we both have a peak life span of about 80 years.

Yes, humans can live longer than 80 years and trees can stand in a forest for more than 80 years. However, after our peak life, trees and humans are more susceptible to injury and disease and are less productive. Trees have one job in the biosphere and that is to absorb carbon, and when a tree reaches its peak life, it starts to release that stored carbon back into the atmosphere. In sustainable forest management, the mature trees are harvested, opening the canopy, and allowing rain, sunlight, and the seeds dropped by the trees to reach the forest floor. These seedlings will begin to absorb carbon aggressively while the harvested trees will bring beauty to the world, storing the absorbed carbon forever in flooring, furniture, millwork, and cabinetry. In a kiln-dried hardwood board, more than 50% of the board is stored carbon.

It was at this point in my career that I started to understand that as we resonate with wood-clad indoor spaces, where we spend about 90% of our time, we are benefiting from that resonance in empirically verifiable ways. The wood in our built environments is improving our sense of well-being and reducing our stress levels. I came to understand this phenomenon as "biophilic design."

In my travels, I met a designer who would become a friend and mentor to me in the use of natural materials in interior design. His name is Tony Chi, https://www.tonychi.com/ and his work is all about helping people to feel more alive in his interiors. He is a champion of the use of wood in his environment. He likes wood because it is beautiful, sustainable, biodegradable, helps people to feel better, and improves indoor air quality.

Since COVID made its appearance in 2020, I had to stop travelling and now work in a room addition to our house that has large windows facing our garden and mature trees. I am far more productive and relaxed in this room. Working in this open space helps me to remember how difficult it was to be productive in a windowless office for so many years.

I am fortunate enough to be friends with Naomi and Boris Tosic in Sydney, Australia, owners of Elan Construct. They converted the old Paramount Studios building into a set of office suites called "Paramount by The Office Space" in collaboration with Woods Bagot. It is a gorgeous space and was awarded the distinction of "best office in the world" in 2016 WAF INSIDE. This was a well-earned accolade, owing to its use of natural materials and biophilic design elements in real wood cabinetry and furniture along with plants and windows to the outside.

Bloomberg HQ Red Oak Ceilings

Numerous studies have been shown that biophilic design in the workplace increases productivity, fosters a sense of wellbeing, improves air quality, and reduces absenteeism.

Aside from the carbon sequestration properties of wood along with its sustainability, beauty, and durability, it helps everyone in that built environment feel better, healthier, and more productive. Biophilic design is fast becoming the design trend of the COVID era, especially when employers are eager to entice employees into returning to the office.

"Wood is the most humanly intimate of all materials" Frank Lloyd Wright

Criswell Davis, President, Mighty Oaks Consulting www.mightyoaksconsulting.com
Founding Director, The Timber & Forestry Foundation timberandforestry.org

Journal of Biophilic Design

WORKPLACE

“The Shoffice”

Platform 5, based in London, are the designers who created this wonderful project called “The Shoffice”, highlighting the benefits of biophilic design for a home office in a backyard.

Let's talk about flourishing in work

David O'Coimin

The dichotomy of Work From Office (WFO) versus Work From Home (WFH) is false. It hinders human nature and prevents us from flourishing. We are not dealing with a case of Home versus Office. It is much bigger and more exciting than that.

Firstly, the proven direction of travel for long-term human betterment is an increase in work flexibility - Home, Office, Coworking, Café, Train, Event, and flexible hours. It depends on the role and the resources, but all things being equal, many of the results are in and we are happier and more productive when we can synchronise our paid work with our unpaid everything else.

In my own opinion Work From Anywhere also helps us to cast off the shackles of a traditionalist mindset which continues to hold us back. One of my favourite expressions is 'what got us here, wont get us there'. And we need to move forward from 'here'. Pronto. So bring on the changes toward a more human-centric world of work.

We have a long way to go in that transition: to accommodate for onboarding new employees with more experienced mentoring ecosystems; to overcome the distrust that sees organisations putting cameras in people's homes, to understand how to measure in the short-term for long term success, as a few examples.

Aiding the transition is the rapid and widespread growth of Corporate Social Responsibility, the explosion of Social Enterprises, B Corporations and Supply Chain requirements based on the UN Sustainable Development Goals for example. All make it essential that our organisations take greater responsibility for their behaviours towards People and Planet.

In a recent onboarding process we were asked to supply our Environmental Policy, Modern Slavery Policy, Standards Of Business Conduct, Anti-Bribery Corruption Policy, Workplace Safety Statement and satisfy a raft of requirements around equal opportunities and inclusivity. We have them all, and more, because these things form part of our purpose and our modus operandi.

My point is more that it is UNAVOIDABLE that your business takes steps in this direction, or it will be left behind. Perhaps not today, but in the battle for talent and with squeezes coming from all directions on your bottom line, you cant afford not to.

And to me, that is a good thing.

These changes toward a more People/Planet focused ecosystem will take time and trial and error to evolve.

Nevertheless, the road from an industrial era mindset of presenteeism and the office as a white-collar factory, with rows of workers and a foreperson counting heads, to the COVID accelerated revolution of flexible, remote-working, based on output and outcomes as opposed to clock-cards, the direction of travel is clear.

And in to this melange of human-centric change we see a glorious focus on wellbeing like never before. Wellbeing projects and Hybrid-working are the tag-team of all activity passing through designers hands at this moment in time, with Sustainability acting as a glue between them.

Here's the question which is fundamental to these efforts: How can I make my office more appealing in order to attract people back/new talent. I would argue its worth taking a step back from that question to a bigger one of why, but lets assume we have this real estate and we wont be getting out of the lease any time soon.

Here's where Biophilia and related approaches are key to success. These are the things I hope to spend my precious column inches talking about over the coming months with you.

In the past, the workplace office had become a One Size Fits All: an extroverts haven, designed by a process of squeekiest wheel getting the oil, ignoring human needs and paying little to no attention to the type of brains or tasks taking place in the space. A 'One Size Misfits All' if you will. Efficient in the short term but ineffective in the long. Pouring investment in to salaries with just a fraction going toward the space.

The future of workplace is an ecosystem, just like a forest. The most productive, engaging, successful built environments will understand and accommodate different types of brains, working on different types of tasks, in different ways. Offering a variety of types of locations, zone and facilities, imbued with personalisation and local controllability on things like light and temperature and noise levels.

The design team expertise will include air, scent and nutrition experts, psychologists, healthcare professionals. The HR team will become versed in neuroinclusivity and how to use principles of Inclusive Design. Collaboration and self-determination will become part of the process of workplace evolution.

The proof will be in the pudding. Greater inclusivity and inspiration from nature lead to increased engagement, creativity, invention and happiness, which in hand increase IP generation, performance and profits while reducing sickness and staff-turnover.

Some workplaces will succeed more as general gathering places and others will work best when tailored to particular activities – an office or zone for scientists, computer programmers, financial analysts should be arranged and appointed differently to ones for sales, marketing, creative brainstorming or collaborative style activities.

Coworking will become one of the places where people go to imbibe themselves in events, training and new experiences, bringing back best practices to their work communities.

Home will evolve greater multifunctionality and nuance between its various roles, with not merely a dedicated work spot, but also the dexterity to flex between modes or to provide several modes at once.

These things will eventually make their way in to the fabric of how we build homes, offices, hospitality, even education and healthcare.

I am excited for the changes ahead, for this change-moment and to play a part in taking advantage of it so that we can lock-in the benefits and iterate quickly towards a world which empowers all of us to contribute and to be our best selves.

All we leave behind is the way we made others feel, so lets build a world which makes people feel great. Let's plant trees in the shade of which we ourselves will never sit.

www.nookpod.com

THE SCIENCE BEHIND BIOPHILIC DESIGN

Scientists and psychologists have, since the 1960s, identified the enormous benefits that living with nature confers on us, but it is only now that interior and exterior design is really starting to celebrate this progressive trend not only to reduce stress, improve our health and wellbeing, increase happiness, productivity and creativity, but also to lessen our environmental impact.

In this regular section, "The Science behind Biophilic Design" experts explore the trends, research, academic evidence and more to show just how Biophilic Design has a positive impact on all apects of our health, happiness and our planet.

You will learn about environmental psychology, acoustics, circadian rhythms, lighting, air quality, the patterns of Biophilic Design, ergonomics, designing for SEN and more.

Setting the Right Scene

"Biophilic Design is profoundly empathetic design.
It asks modern humans, designing buildings that reach ever closer to the sky,
to remember their forebearers who lived in the branches of trees
barely rising above the surface of the Earth.

Dr Sally Augustin, Environmental Psychologist

Biophilic Design has been around for a while now, but some people still aren't familiar with what it is and why it matters.

The sorts of spaces where we lived our best lives many generations ago are the ones that need to be replicated, at least conceptually, today, so that modern humans can live the lives they value.

All this remembering our past is the core driver of Biophilic Design. We need to empathize with the needs of our earliest selves because in the ways that matter for design, we are still them—we still process information coming into our brains from our environments the same ways, for instance.

This talk about conceptually replicating the past and spaces from our early days as a species may make Biophilic Design seem like a lot of fluffy woo-woo, dreamt up on a rainy afternoon and then exhaustively marketed by an enterprising self-promoter.

It is not.

Biophilic Design pulls its principles from science and much research has shown that it positively affects human lives. Its value has been confirmed in multiple studies, in labs around the planet and in field studies out in the real world, where people work, day after day. Biophilic Design principles are, and their implementation should be, as fundamental to workplace design as gravity.

We'll set the record straight about what Biophilic Design is and share some of the science-derived information that supports it.

Kellert (2012) reported that biophilically designed structures "'contain the essence of natural objects without being exact copies. They draw on design principles of natural forms'" (Kellert quoting Judith Heerwagen). Kellert details how comfortable people feel in biophilically designed spaces and the positive emotional, cognitive, and physical consequences of spending time in them.

THE SCIENCE

Biophilic Designers are known for adding potted plants to interior environments and putting photos/paintings of meadows and woodlands on conference room walls—and those plants and images are vital components of Biophilic Design—but Biophilic Design is more than plants and photos.

Places that are biophilically designed are a lot like meadows in temperate zones on lovely Spring days, so, for example:

· There are a rich variety of deliberately selected sensory experiences, sights, sounds, feels, and scents, in biophilic spaces. Regularly, modern designers develop options based on information that will flow to our brains via just one of our sensory channels (usually what will be seen), forgetting that what we see has implications for what we hear, etc. Hearing nature soundscapes at barely perceptible volumes, ones featuring burbling brooks, gently rustling leaves and grasses, and peacefully singing birds, for example, is not only relaxing but also mentally refreshing.

· Biophilic Design is very bullish on natural materials. Multiple studies with visible wood grain, for example, have shown that seeing it has a tremendously positive effect on helping us feel more relaxed and able to take on the day. Woods with warm finishes is particularly good for us psychologically. Research has shown that wood has its most positive effects when just less than half of visible surfaces (walls, floors, furniture, etc.) feature visible wood; this is a case when more than half is not better than less.

· In biophilically designed spaces, people feel confident because they feel safe and can see out over the world around them. For most of us, being eaten by a tiger is no longer the sort of concern that keeps us up at night and makes us late for our morning Cheerios—but our brains have really not accepted this new safer reality, at least not yet. That means we like to be able to spend time in places where we have a good view out over the world around us and we feel safe, for example, like nothing could sneak up on us. This sort of safe view is known in the psych biz as having prospect and refuge and it's why we so often choose to sit in high-backed booths with a view of a restaurant's door, on balconies, in alcoves/inglenooks tucked into the edges of expansive areas, and in that chair with the large plant behind it from which we can see through the door of the room we're in and to the outdoors in the room across the hall. Any place where humans are truly comfortable has at least a few seats with prospect and refuge; when a couple are present, even if we're not actually in them at the moment, we're hopeful that we can slip into one of these havens in the future—and that sort of optimism keeps us moving forward with our lives.

· Biophilic spaces aren't visually cluttered, which helps keep us calm, cool, collected, happy, and our brains firing effortlessly on all cylinders. We are stressed in cluttered spaces today because there's too much competing for "eye time." The number of colours and patterns present all contribute to visual complexity (more colours, patterns, more complexity) as do the shapes (2- and 3-D) we find in upholstery and other fabrics, for example, and the volumes formed by the backs of our chairs and our desktops. Of course, how much order there is in the arrangement of all of these colours, etc., also contributes to visual complexity; less order, more complexity. Research has shown that we're best off when we're in a space with moderate visual complexity, the sort found in a savannah view or a residential environment designed by Frank Lloyd Wright.

THE SCIENCE

· There is gentle movement, like grasses fluttering in a slight breeze in biophilically designed spaces. Modern environments are often completely static, at least when things go according to plan. Biophilic Design, however, plans for curtains fluttering in the merest HVAC current and that light reflecting off a watery surface throwing undulating shadows up onto a nearby wall.

· Curving shapes and lines abound in biophilically designed spaces; there's little in nature that's rectilinear and few lines there that meet at 90-degree angles. What is pointy in nature (like the teeth of that hunting tiger mentioned earlier), makes us tense. No space or thing can ever be entirely curvilinear (just like none can be purely rectilinear, without really freaking us out), so we're talking about biophilic areas having relatively more curving lines in 2-dimensions (say, upholstery fabrics) or 3-dimensions (for example, the rolled arms of a sofa). Curving lines make it more likely we'll be in a mood that sends our well-being and cognitive performance higher and better.

· In our primordial homes light was golden as the sun rose and set and nighttime fires burned and bluer and brighter at midday when even our primitive selves had work to do. As a result, dimmer warmer light still helps us relax and cooler brighter light can help us concentrate and feel energetic. Needless to say, biophilically designed spaces are also awash in (glare-free) natural light.

· And biophilically designed spaces are high on green leafy plants (particularly those with curving branches like FICUS) and images, painted or photographed, still or moving/video of welcoming meadows and woodlands. Seeing these plants and scenes helps us achieve life objectives and mentally refresh after we've been focusing on something for a while, whether that something is trying to resolve a difficult problem or trying to explain how we've done so to someone else or something else entirely.

THE SCIENCE

So, what other research backs up Biophilic Design?

· Way back in 2007 Joye was able to report that "nature-based forms and organizations in architecture are valuable for human emotional and cognitive functioning. . . **by architecturally mimicking natural forms and structural organizations of natural settings, these beneficial effects can be tapped in a built contex**t." Our brains work better in biophilically designed spaces, according to Joye, because **our brains can so efficiently and effectively process the information that flows from them into our heads through our multiple sensory channels.**

· Burnard and Kutnar (2020) report that during their research "human stress responses were compared in experimental office settings with and without wood. . . . as indicated by salivary cortisol concentration. . . . overall **stress levels were lower in the office-like environment with oak wood** than the control room [white furniture]. . . . it is possible to use wood furniture as a passive environmental intervention to help office workers cope with stress" --particularly when the colour of the wood is warmer and the finish light enough so the grain is visible.

· Renner (2020) quotes Kastner, who is a professor at Princeton, and reports on her work: "'Many of us aren't good at processing clutter,' says Kastner. 'It can become overwhelming and make our brains do more work to complete simple tasks.' The more conflicting stimuli we're dealing with, the more our brain has to work to filter out what we need. When you take away this strain on our brains from competing objects, focusing becomes much easier. In 2011, Kastner found that people who cleaned up their homes or workspaces were able to focus better, and their productivity increased. Other research teams have confirmed that **decreasing visual distractions can reduce cognitive load and free up working memory**."

THE SCIENCE

· Wu, Lu, Yan, Chu, Wu, and Yang (2021) found that "The results of a survey with makers in 15 makerspaces and two experiments indicated that a **rounded physical work environment (Rounded-PWE) was more likely to enhance divergent creativity** than an angular physical work environment (Angular-PWE), while an Angular-PWE was more likely to enhance convergent creativity than a Rounded-PWE." Some important definitions: "A rounded physical work environment (Rounded-PWE) indicates that the corners of objects, including shapes, abstract objects, furniture, and design elements, in the environment have been blunted and are not sharp, but curved. Conversely, an angular physical work environment (Angular-PWE) indicates that all objects have angles or sharp corners." For instance, in the curved test condition a round white table was present and in the more angular one that round white table was replaced with a square white table. Also, "Divergent creativity can be defined as the ability to generate as many ideas and responses to a problem as possible. . . . convergent creativity can be defined as the ability to integrate and synthesize various concepts. . . . it plays an important role in idea implementation."

· A space that's **naturally lit enhances both our mood and our cognitive performance** (Edwards and Torcellini. 2002). More positive moods are important, for beyond the obvious reasons. When we're in a good mood, we're better at problem solving, creative thinking, and getting along with others, for example.

· Nieuwenhuis and team (2014) found in a series of experiments, most conducted in real life workplaces over extended periods of time that "**enriching a previously lean office with plants served to significantly increase workplace satisfaction, self-reported levels of concentration, and perceived air quality**. . . . enriching space also improved perceived productivity. . . and actual productivity. . . . simply enriching a previously spartan space with plants served to increase productivity by 15%. . . . **a green office leads to more work engagement among employees**. . . . the results unambiguously indicated that **participants who worked in green office space were more productive than their counterparts who worked in a lean office space**.

Tasks were completed faster and— importantly—without any accompanying rise in errors."

These results were found when people could see **1 to 3 plants as they worked, with test plants just less than a yard tall.** Lots of plants signal "jungle" and life was tough for us in ancient jungles; conditions reminiscent of them today (for example spaces with too much visual complexity), are not places where we have many positive experiences. Studente, Seppala and Sadowska (2016) **link seeing plants and also, and separately, looking at the colour green with enhanced creative performance.**

A Biophilic Environment is proven to:

Reduce Blood pressure

Improve Short term memory by 14 percent

Make us more Productive,

Give us better Concentration

Help us be more Creative

Enhance mood and cognitive performance

· Aristizabal and colleagues (2021) found that **when we have multiple biophilic experiences simultaneously (visual and auditory, for example) the beneficial effects on our at-work wellbeing are amplified**. Additional research by an Aristizabal-lead team also ties several same-time biophilic experiences to self-rated boosts in work performance.

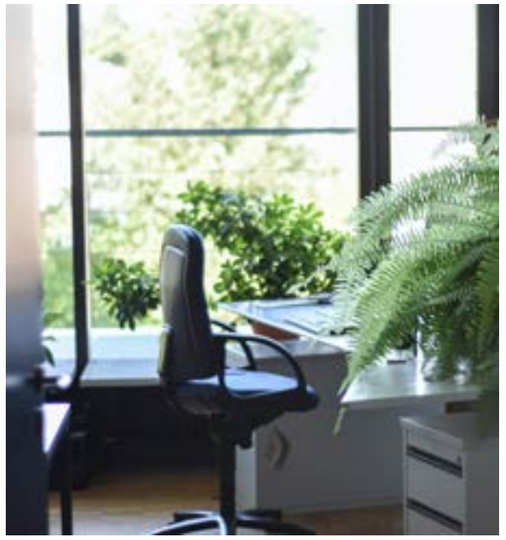
· Finally, in 2018, Yin lead a team that had people experience biophilic office designs via virtual reality and "The indoor **biophilic environment was associated with a decrease in participants' blood pressure. . . . Short-term memory improved by 14%** [in the biophilic space compared to the non-biophilic one]."

A team at Terrapin Bright Green, reviewing published literature related to Biophilic Design (Browning, Garvin, Fox, Cook, Labruto, Kallianpurker, Ryan, Watson, and Knop, 2012), found that **"Biophilic changes made to a workplace can reduce absenteeism over a long period of time, reduce complaints that drain human resource productivity, and help retain employees over many years** . . . we calculated that the lost productivity value of absent employees who work in office buildings in New York City is about $4.7 billion. Studies have shown that biophilic work environments can reduce about 10% of workers' absenteeism (Elzeyadi, 2011). Therefore, **biophilic work environments could help New York City recoup $470 million in reduced absenteeism."**

In 2014, the Terrapin Bright Green team (Browning, Ryan, and Clancy, 2014) went on to say "Biophilic Design can reduce stress, enhance creativity and clarity of thought, improve our well-being and expedite healing; as the world population continues to urbanize, these qualities are ever more important."

Brains are brains and people are people wherever they are, so if you're wondering how all the research that's been done with Biophilic Design should inform what you do in your home office, ponder no longer. The same conditions that boost our well-being and performance when we're working at our employer's offices have the same effect when we're toiling away in our own office at home.

Biophilic Design is a lot more than adding a few plants and pictures of nature to a space; and **Biophilic Design done right is the most powerful way two develop work environments that boost wellbeing and performance**.



For more information, take a look at:

Sara Aristizabal, Kunjoon Byun, Paige Porter, Nicholas Clements, Carolina Campanella, Linhao Li, Aidan Mullan, Shaun Ly, Araliya Senerat, Ivan Nenadic, William Browning, Vivian Loftness, and Brent Bauer. 2021. "Biophilic Office Design: Exploring the Impact of a Multisensory Approach on Human Well-Being." Journal of Environmental Psychology, vol. 77, 101682.

Jacob Benfield, B. Taff, Peter Newman, and Joshua Smyth. 2014. "Natural Sound Facilitates Mood Recovery." Ecopsychology, vol. 6, no. 3, pp. 183-188.

Bill Browning, Chris Garvin, Bob Fox, Rick Cook, Leslie Labruto, Namita Kallianpurker, Catie Ryan, Siobhan Watson, and Travis Knop. 2012. "The Economics of Biophilia: Why Designing with Nature in Mind Makes Good Sense." Terrapin Bright Green, LLC: New York, https://www.terrapinbrightgreen.com/report/economics-of-biophilia/

William Browning, Catherine Ryan, and Joseph Clancy. 2014. "14 Patterns of Biophilic Design: Improving Health and Well-Being in the Built Environment." Terrapin Bright Green, LLC: New York, http://www.terrapinbrightgreen.com/report/14-patterns/

Michael Burnard and Andreja Kutnar. 2020. "Human Stress Responses in Office-Like Environments with Wood Furniture." Building Research and Information, vol. 48, no. 3, pp. 316-330.

Sibel Dazkir and Marilyn Read. 2012. "Furniture Forms and Their Influence on Our Emotional Responses Toward Interior Environments." Environment and Behavior, vol. 44, no. 5, pp. 722-732.

L. Edwards and P. Torcellini. 2002. "A Literature Review of the Effects of Natural Light on Building Occupants." National Renewable Energy Laboratory; Golden, Colorado, NREL/TP-550-30756

David Fell. 2010. "Wood in the Human Environment: Restorative Properties of Wood in the Built Indoor Environment." Dissertation, The University of British Columbia.v

Yannick Joye. 2007. "Architectural Lessons From Environmental Psychology: The Case of Biophilic Architecture." Review of General Psychology, vol. 11, no. 4, pp. 305-328.

Stephen Kellert. 2012. Birthright: People and Nature in the Modern World. Yale University Press: New Haven, CT.

Stephen Kellert, Judith Heerwagen, and Martin Mador (eds.) 2008. Biophilic Design, John Wiley and Sons: Hoboken, NJ, pp. 227-241.

Marlon Nieuwenhuis, Craig Knight, Tom Postmes, and S. Haslam. 2014. "The Relative Benefits of Green Versus Lean Office Space: Three Field Experiments." Journal of Experimental Psychology: Applied, vol. 20, no. 3, pp. 199-214.

Genevieve Poirier and Claude Demers. 2019. "Wood Perception in Daylit Interior Spaces: An Experimental Study Using Scale Models and Questionnaires." Bioresources, vol. 14, no. 1, pp. 1941-1968, DOI: 10.15376/biores.14.1.1941-1968.

Rebecca Renner. 2020. "Why Pandemic Stress Breeds Clutter—And How to Break the Cycle." National Geographic, https://www.nationalgeographic.com/science/2020/08/why-coronavirus-stres...

Syvie Studente, Nina Seppala and Noemi Sadowska. 2016. "Facilitating Creative Thinking in the Classroom: Investigating the Effects of Plants and the Colour Green on Visual and Verbal Creativity." Thinking Skills and Creativity, vol. 19, pp. 1-8.

Jennifer Veitch. 2012. "Work Environments." In Susan Clayton (ed.), The Oxford Handbook of Environmental and Conservation Psychology. Oxford University Press: New York, pp. 248-275.

Yueyan Wu, Chingyu Lu, Jianhui Yan, Xiao Chu, Meijiao Wu, and Zhi Yang. 2021. "Rounded or Angular? How the Physical Work Environment in Makerspaces Influences Makers' Creativity." Journal of Environmental Psychology, vol. 73, 101546.

Jie Yin, Shihao Zhu, Piers MacNaughton, Joseph Allen, and John Spengler. 2018. "Physiological and Cognitive Performance of Exposure to Biophilic Indoor Environment." Building and Environment, vol. 132, pp. 255-262, doi: 10.1016/j.buildenv.2018.01.006.

www.designwithscience.com
www.thespacedoctors.com

ERGONOMICS AND BIOPHILIA

"Guy Osmond, MD of Osmond Ergonomics calls for a holistic approach to designing workplaces with wellbeing in mind and discusses how ergonomics relates to biophilic design in the workplace."

Guy Osmond

When thinking about workplace ergonomics, most people might conjure up a mental image of a fancy chair with lots of levers – usually a giant black plastic thing which is in no way related to the natural world or the principles of biophilia.

In fact, Ergonomics – from the Greek 'Ergos' for work or labour and 'Nomos', meaning natural law – encompasses much more than desks and chairs and, like biophilia, has human nature and human needs at its core.
Ergonomics is the discipline of designing and arranging the working environment to optimise the comfort and performance of the individual. It incorporates everything which contributes to the facility of an individual to be at their most attentive, most productive, and most comfortable at work. In a nutshell it's about optimising wellbeing, both physical and mental – and, when seen in those terms, the relationship with biophilic design is much more obvious.

Ergonomics and wellbeing

When I started out in the ergonomics business 30 years ago, by accident rather than by design having suffered with back issues myself, the focus was entirely on physical health – predominantly helping people avoid and ameliorate the back, neck and shoulder issues created by poor posture and inappropriate work setups, especially among those using screens for prolonged periods.

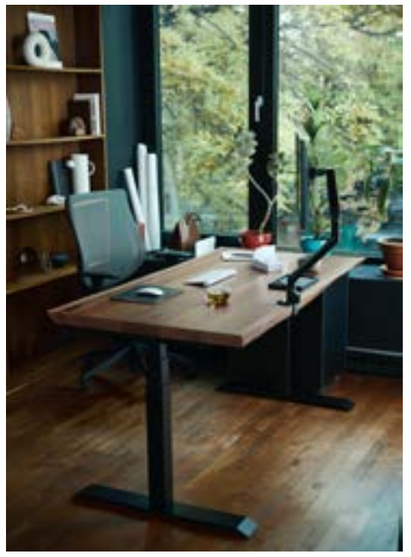
However, over the years it has become more and more obvious to me, and better understood generally, that physical and mental health are completely intertwined. When you go to assess someone suffering with back pain, and nine times out of ten they tell you about their financial worries and relationship problems too, the need for a holistic approach becomes pretty clear.

Both physical and mental health come under the umbrella of wellbeing, and ergonomics is a core part of that conversation just as biophilia is. Both disciplines are concerned with creating an environment and a way of living or working which enables people to be at their best.
Biophilic products

Osmond Ergonomics has been discussing biophilia for many years already – with good reason. The body of evidence to support incorporating plants and natural elements in workplaces is ever expanding; a study published just this summer in the Iranian Journal of Ergonomics found biophilic design is associated with improved human wellbeing, performance, concentration and stress reduction. So, it follows that employers will want to invest in products that will deliver those benefits to their teams.
As nice as it would be, installing a jungle of real plants or having an office window looking out onto a glorious green vista is simply not possible in most working environments. Fortunately, all the research shows that plants do not even have to be alive to be effective, as long as they are realistic. Good artificial products – or even photographs – will also contribute to the wellbeing of officer occupiers.

Our own experience includes working with life-size wall graphics, green walls made from mummified plants and moss, office furniture incorporating inbuilt planting spaces, and live plant walls. We have many such products installed in our own offices here in Dorset.

Our 1m square green pictures can even come with inbuilt Bluetooth loudspeakers. When we play birdsong through them at exhibitions, we find people will stop dead and look around, trying to locate the origin of that sound. Again, it goes to show that we're all hardwired to connect with the natural world.



THE SCIENCE

Shaping an environment

Having good natural light flowing into the workspace helps to keep us grounded in nature. Large windows are ideal, but not always practical or possible, so good task lighting can help, especially if it offers a 'daylight' effect.

We are also working with a crowd-funded project developing circadian lights which mimic how natural light changes though the course of the day, and according to time of year and geographical location. This product will effectively allow an individual to keep in rhythm with the natural world and their own body clock, even in a space without access to natural light.

It's too easy to forget that we as human beings have only been office-bound urban workers for a little over a century, after millennia of living and working in constant connection with the land and the natural rhythm of the days and seasons. By respecting and understanding that, we can seek to lessen the impact of essentially unnatural office settings.

That same approach can be applied to other environmental elements – using air filters to improve air quality, sound insulation and quiet pods to cut down noise, and even playing natural sounds and introducing natural smells such as lavender or citrus to make an environment feel more comfortable, less stress-inducing, or more energising.

Biophilic design also makes use of wood, stone and other natural materials. Designs, colours and textures inspired by nature are all part of this – so we see patterns depicting webs, leaf structures, or forest floors incorporated into office design and office furniture, the use of natural colours such as greens, blues, browns, yellows, and the introduction of textures to help create a 'natural' feel.

I think we can look to the hospitality industry for a cue as to the direction office design is moving in; pubs and restaurants increasingly make use of natural materials - wood, recycled materials, exposed brick, plants and greenery - to build the kind of rich, inviting atmosphere that smooth painted walls never could.

As human beings we now understand to what extent we are recharged by nature. Strip lit, sterile, neutral, ugly office spaces surrounded by concrete are never to bring out our best, and at worst can impact negatively on our wellbeing – it is high time they were confined to the past.

The future of the workplace, especially as we find ourselves in a new age of hybrid working, will look very different.

www.ergonomics.co.uk

Exploring Fear

'Nothing in life is to be feared. It is only to be understood.'
--Marie Curie (1867-1934)

Paige Hodsman

There is more to Marie Curie's quote, though often omitted, which continues, 'Now is the time to understand more, so that we may fear less' (Bernarde, 2007). **One view of fear is that it is an emotional reaction elicited by the presence or expectation of a threat (Barnes & Pinel, 2018, p. 535).**

It is often studied due to its ease of detection across different species, e.g., via facial expressions, its functioning as a biological survival mechanism (to avoid harm), and its role in the emergence of stress (Godoy et al., 2018).

Some research suggests that threats have evolutionary reoccurrences that result in innate fears. These innate fears include the fear of heights, other people, open spaces in nature, snakes, and spiders (Adolphs, 2013).

The natural environment is a vital component of healthy development in humans. In a study of children's emotional responses to nature, happiness (biophilic) was the predominant emotion, yet fear (biophobic) was the second most common response.

The **experience of happiness in relation to nature is suggested to represent a feeling of security and familiarity based on positive nature experiences,** whilst fear is postulated to show a response to the fear of wild nature, and primarily based on negative experiences.

The study concludes the relevance of acknowledging fear responses associated with nature in order to prioritise the importance of instilling pro-environmental attitudes and behaviours during child development (Olivos-Jara et al., 2020).

To think about fear, what it is and where it comes from is pertinent in the quest to improve health and well-being in the context of modern 'safe' places like hospitals, schools, and offices.

So, here we look at some of the basics of fear and open the door for more discussion and exploration of this fascinating subject.

Emotional expression is controlled by the structures within the limbic system (amygdala, hippocampus, cingulate cortex, fornix, septum, and mammillary body).

The limbic system regulates motivational behaviours such as fleeing, feeding, fighting, and sexual behaviour and is in the temporal lobes, on either side of the head, behind the ears (Barnes & Pinel, 2018, p. 477). Of these structures, it is the amygdala that is believed to be a receiver and assessor of all sensory systems information, especially fear (Adolphs et. al., 1995).

Whether or not the brain will consider the fear significant is based on learned and stored information.

When fear is experienced, the defence response is either the sympathetic nervous system reaction to fight or flee or the parasympathetic reaction, which includes the freeze response, increased heart and blood pressure rates (Barnes & Pinel, 2018, p. 207).

Experiencing fear releases the stress hormones adrenaline and cortisol.

We process fear in several different ways. Fear conditioning creates a fear response through a harmless trigger (Wilensky et. al., 2006). In the controversial study of 'Little Albert' (Watson & Rayner, 1920), a nine-month-old baby learned to associate a white rat with a loud sound, producing a fear of the rat even without the sound.

We recognise facial expressions of fear and are particularly adept at seeing fear on the faces of others.

By exploring the emotional connectedness to nature, we can use the natural environment more effectively to promote positive psychological and emotional development

We can transfer fear from one person to another through facial expressions and verbally. Fear is contagious (Demos, 2008; Knapska et al., 2006; LoBue & Rakison, 2013).

As one of our most basic emotions, fear aids survival by triggering the release of stress hormones preparing us to fight, flee or freeze. It can be innate, such as fear of heights or snakes, and it can be learned, as demonstrated in the study with Little Albert. We can even spread fear to others through the expressions on our faces and in our verbal communication.

Finally, by exploring the emotional connectedness to nature, including biophobic responses, the natural environment can be more effectively used in promoting positive psychological and emotional development.

In these contexts, towards the pursuit of better human health and wellbeing, we will look at fear in future articles and explore how it may manifest in hospitals, schools, and offices.

www.ecophon.com

Further Reading

Adolphs, R., Tranel, D., Damasio, H., & Damasio, A. R. (1995). Fear and the human amygdala. Journal of neuroscience, 15(9), 5879-5891.

Adolphs, R. (2013). The biology of fear. Current biology, 23(2), R79-R93.

Barnes, S. J., & Pinel, J. P. (2018). Biopsychology. Pearson.

Benarde, M. A. (2007). Our Precarious Habitat... It's In Your Hands. John Wiley & Sons.

Demos, K. E., Kelley, W. M., Ryan, S. L., Davis, F. C., & Whalen, P. J. (2008). Human amygdala sensitivity to the pupil size of others. Cerebral cortex, 18(12), 2729-2734.

Godoy, L. D., Rossignoli, M. T., Delfino-Pereira, P., Garcia-Cairasco, N., & de Lima Umeoka, E. H. (2018). A comprehensive overview on stress neurobiology: basic concepts and clinical implications. Frontiers in behavioral neuroscience, 12, 127.

Knapska, E., Nikolaev, E., Boguszewski, P., Walasek, G., Blaszczyk, J., Kaczmarek, L., & Werka, T. (2006). Between-subject transfer of emotional information evokes specific pattern of amygdala activation. Proceedings of the National Academy of Sciences, 103(10), 3858-3862.

LoBue, V., & Rakison, D. H. (2013). What we fear most: A developmental advantage for threat-relevant stimuli. Developmental Review, 33(4), 285-303.

Olivos-Jara P, Segura Fernández R, Rubio-Pérez C and Felipe-García B (2020) Biophilia and Biophobia as Emotional Attribution to Nature in Children of 5 Years Old. Front. Psychol. 11:511. doi: 10.3389/fpsyg.2020.00511

Watson, J. B., & Rayner, R. (1920). Conditioned emotional reactions. Journal of Experimental Psychology, 3(1), 1–14. https://doi.org/10.1037/h0069608

Wilensky, A. E., Schafe, G. E., Kristensen, M. P., & LeDoux, J. E. (2006). Rethinking the fear circuit: the central nucleus of the amygdala is required for the acquisition, consolidation, and expression of Pavlovian fear conditioning. Journal of Neuroscience, 26(48), 12387-12396.

New Open Plan Office Acoustic Standard Released

Resolving noise distraction in the office is a longstanding pursuit and requires exploring the psychological, physiological and physical factors. For the first time, a new standard has been released which considers both the physical acoustic conditions of open-plan offices and sound processing within the human body and mind.

Previous standards addressed the physical aspects of room acoustics, such as reverberation times (or echoes) and the ability of various materials to absorb or reflect sound waves.

These physical aspects have been measured and adapted based on empty rooms without considering the presence of people. Although this type of information is a vital component for solving acoustical problems, focusing on an empty room's performance is not enough to create comfortable and supportive spaces for the people who occupy them.

The new ISO Standard 22955 – Acoustic Quality of Open Office Spaces concerns both the space and the cognitive effects of noise, such as comfort and reducing disturbances.

The standard is also different in that it is intended to be used by those working, planning, designing and building open-plan offices, not just for specialist acousticians. It is intended as a basis of communication between the various stakeholders, particularly project owners, to make more precise decisions when drafting acoustic specifications.

According to the standard drafters, the aim is 'to offer principles, descriptors and measurement methods to characterise acoustics which are easy to use and correspond to the perceptions of the acoustical environment by the occupants of the spaces'.

Link to the standard: https://www.iso.org/standard/74237.html

The Science of Biophilic Sound

Creating multisensory workplace experiences

Evan Benway and Fran Board,
Moodsonic

Imagine you're walking through a beautiful forest. The trees are lush and green, the birds are singing, insects are chirping. Then, suddenly, there's silence. Everything goes eerily quiet. How would that make you feel? How might your body react, physically?

This scenario highlights two important things to consider in the context of workplace experience. Firstly, sound plays a huge part in the way we experience the world. And second, we should characterise this sound beyond just its noise level. Quiet isn't always good and conversely loud isn't always bad.

Designing for the ears

Our ears evolved for us to make sense of physical spaces. They give us 360 degrees of information about an environment. The sound we encounter on a day-to-day basis affects our brains and bodies enormously, whether we're indoors or outdoors. Just as we experienced in the silent forest, sometimes no matter how beautiful a space looks, the way it sounds can override our response to it.

Despite the fact that we evolved for survival in nature, we now spend most of our time indoors. Sonically, these environments are so far removed from our natural habitats that our brains struggle to cope.

Our primordial sense of hearing is very well-adapted to survival outdoors, but ill-adapted to the acoustics of the modern office. Bleeping phones, other people's conversations… **These spaces are typically distracting and lacking the richness and therapeutic value of the natural world. And this has a knock-on effect for the way we think and behave in offices.**

On the flip side, simply **listening to the sounds of nature can bring significant benefits to our physical and mental health. Natural sounds can relax us, energise us, or help us focus.**

Research has found that the sound of a babbling brook promotes optimal cognitive functioning.[1] Birdsong can help us feel safe and secure.[2] Listening to the sounds of nature can reduce our muscle tension and heart rate.[3] The list goes on and on![4] These benefits can be brought indoors too. Our own research found that introducing biophilic soundscapes into the workplace improved focus, creative thinking, and relaxation compared to typical office sound.

Listening beyond the noise

Despite knowing about these biophilic benefits for years, most of the historical talk about office sound comes back to loudness and how to reduce noise. It can lead people to assume that quiet equals good and loud equals bad. Sometimes that's true, but not always. Just think back to that eerily quiet forest.

Loudness **is** an important consideration. We've all experienced that feeling of "not being able to hear ourselves think", and continued exposure to loud noise like traffic or construction can cause serious health problems. But loudness isn't the only factor that determines how healthy or productive a soundscape is.

Workplaces can also be too quiet as well as too loud. It's become a particular problem post-Covid lockdowns, with lower office occupancy levels. Humans are particularly sensitive to speech and in a quiet office other people's conversations are frustratingly intelligible and distracting.

Even without distractions, silence isn't the gold standard for wellbeing or productivity. When researchers compared task performance in different soundscape conditions, **natural soundscapes outperformed silence and pink noise for restoration, focus, creative thinking, and subjective preference**.[1, 5]

Creating multi-sensory workplace experiences

Consider the diversity of sound you encounter walking through a natural habitat.

Even in a relatively small area, you might encounter open meadows, forests, streams, or any number of other environments or creatures.

Imagine too how that sound changes throughout the day, year or in different weather conditions.

Outdoors, we're connected to our surroundings and its daily or seasonal rhythms. Compare that diversity with the sound you'd encounter in a typical workspace and the differences will be obvious.

This is important because **responses to sound is personal.** There's no one size fits all. Individual reactions might depend on a person's sensory processing capabilities, or on what type of activity they're engaged in. It also matters because by being connected to nature, we maintain functional circadian rhythms, promoting healthier sleep schedules at night and greater alertness in the daytime.

THE SCIENCE

But recent developments in soundscaping technology mean that it is possible to create more organic sound indoors.

With algorithmically programmed soundscapes, content can vary from zone to zone, hour to hour, or even deliver soundscapes that are "alive" and respond in real-time to changing environmental conditions. Just as with circadian lighting, research shows that natural sounds too can be used to trigger our bodies' circadian rhythms[5]

Beyond sound, biophilic design should recognise the workplace as a multi-sensory experience. Aligning sight and sound, for example, enhances the therapeutic benefits of biophilic design.[7, 8]

In this way sound becomes part of a holistic and human-centric design language. With nature as our blueprint, we are unlimited in the types of beneficial spaces and experiences we can design for people.

Using nature's blueprint to improve the sound indoors | Moodsonic biophilic soundscapes - https://www.youtube.com/watch?v=8xUfr6zzDVE

www.moodsonic.com

References

1. DeLoach, A.G., Carter, J.P., & Braash, J. (2015). Tuning the cognitive environment: Sound masking with "natural" sounds in open-plan offices. Journal of the Acoustic Society of American, 137, 2291.
2. Sayin, et al. (2015) "Sound and safe": The effect of ambient sound on the perceived safety of public spaces. International Journal of Research and Marketing, 32, 4, 343-353
3. Largo-Wight, E., et al. (2016) The Efficacy of a Brief Nature Sound Intervention on Muscle Tension, Pulse Rate, and Self-Reported Stress: Nature Contact Micro-Break in an Office or Waiting Room. Health Environments Research and Design Journal, 10, 1.
4. Ratcliffe, E. (2021) Sound and Soundscape in Restorative Natural Environments: A Narrative Literature Review. Front. Psychol., 26 April 2021, Sec. Environmental Psychology
5. Haapakangas, A., Kankkunen, E., Hongisto, V., Virjonen, P., & Keskinen, E. (2011). Effects of Five Speech Masking Sounds on Performance and Acoustic Satisfaction. Implications for Open-Plan Offices. ACTA Acustica United with Acustica, 97, 641–655.
6. Goel, N. (2005) Late-night presentation of an auditory stimulus phase delays human circadian rhythms. American Journal of Physiology: Regulatory, Integrative and Comparative Physiology. 289, 1, R209-R216
7. Pheasant, R.J., Fisher, M.N., Watts, G.R., Whitaker, D.J., & Horoshenkov, K.V. (2010). The importance of auditory-visual interaction in the construction of 'tranquil space.' Journal of Environmental Psychology, 30, 501–509.
8. Jahncke, H., Hygge, S., Lahin, N., Green, A.M., & Dimberg, K. (2011). Open-plan office noise: Cognitive performance and restoration. Journal of Environmental Psychology, 31, 501–509.

BIOPHILIC DESIGN

LET THERE BE LIGHT

"Biophilic Design is a philosophy that encompasses so much more than green walls and a discipline that goes beyond any one single thing."

Gary Thornton

Like the natural world where organisms coexist in an interacting ecosystem, biophilic design is the sum of many interconnected parts. It's a design philosophy that encompasses so much more than green walls and a discipline that goes beyond any one single thing. Textures, shapes and materials all contribute to the experience. Lighting, acoustics and scents all work together to support the overriding vision. This need for a full multisensory mix, means that the lighting designer can't exist in isolation: a cohesive and holistic approach across multiple disciplines is the only way to breed a successful biophilic scheme.

Defining the role that biophilic lighting can play in the workplace is best understood when we take a step back and appreciate how things have shifted in this sector. Post-pandemic, we're increasingly seeing people choose where and how they want to work. Workplace design is evolving as a result, borrowing principles from the world of hospitality in the process. Here, wellbeing is everything, emotion sets the tone and wow moments are a tried and tested formula. It's all about offering a holistic experience that prioritises people over place and recognises the need for a more emotional design approach. As we've moved towards a fluid amplification in the workplace sector, it stands to reason that biophilic design principles have come to the foreground. It creates an opportunity to tap into our innate connection with nature and evoke a sense of wellbeing, and the scope to think beyond what's customary to design more nuanced environments.

Lighting for people

Workplace lighting has historically been flat and one-dimensional. Think offices with a standardised grid of 600mm ceiling panels, chosen to achieve a specific Lux level on a desk. What you're left with is a flat and over-illuminated environment that offers nothing in the way of comfort and wellbeing for the occupants of the space. What's missing from these schemes are the gradations of tone that we experience as light changes throughout the course of a day. Biophilic lighting attempts to replicate these subtle shifts, by using layers of light to create something much more dynamic. Whilst we can never replicate the full range of daylight in all its glory, we can attempt to mirror the interplay of light and shadow or emulate the shifts in colour and intensity that make the experience so rich. Natural light, along with access to fresh air, water and plants, is one of the most important tenets of a biophilic design philosophy. It offers a tangible link to the outside, connecting the building's occupants to the natural world to support wellbeing, helping to reduce stress and increase productivity. In the absence of frequent exposure to natural light, artificial light can be considered in a number of ways. It can be used to achieve layers of illumination, where different types of light - direct and indirect, diffuse and dynamic light - mimic daylight patterns and the body's natural circadian rhythms. This can also go some way to replicating the way that light changes its position throughout the day, as we can build in datums of light so that a scheme works at the ceiling plane, eye level and working plane.

Journal of Biophilic Design

THE SCIENCE

Lighting for plants

Biophilic lighting principles should take into account the needs of all occupants of a space, including the plant life within a building. It's well-documented that clusters of greenery can have a positive effect on the workplace, helping to clean the air and offering a direct link to nature, but there's no point in adding hundreds of plants if no one has considered how they will be illuminated. While pot plants and succulents on desks and furniture are fairly easy to introduce, green walls require a high level of exposure to natural daylight to thrive. It often requires you to provide a specific spectrum of light across the span of the wall for around eight to ten hours a day and results in artificial light being used to supplement daylight exposure levels. In reality, it takes a considerable number of Watts to light a vertical surface, so the implementation of a green wall can end up being counterintuitive to the sustainability credits a building is looking to achieve.

Lighting for freedom of choice

Flexibility is the new benchmark in the biophilic office space. There are no straight lines in nature, so it's illogical to think that a living and breathing workplace should follow a conventional path. The open plan format doesn't suit everyone in the era of personal choice, so flexibility needs to be built into workplace lighting design to cater for a mix of cellular and communal working spaces. Lighting can help to facilitate a change of tone as employees move from place to place, switching the pace and mood in dwell points to create a sense of refuge and calm, or offering localised control for greater flexibility in focused working areas.

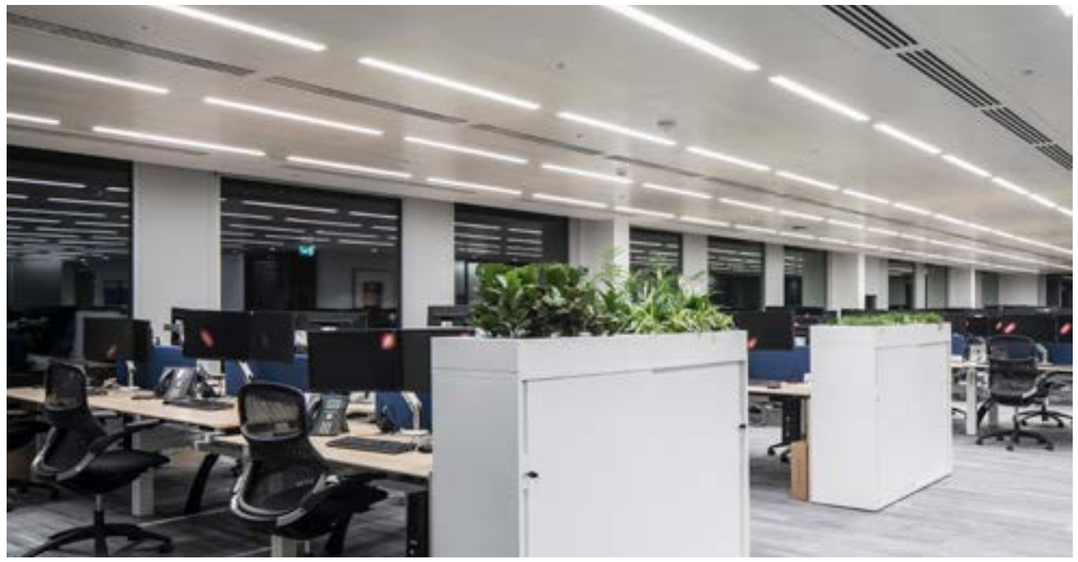


Photo James French

Journal of Biophilic Design

THE SCIENCE

A biophilic approach to the lighting can come into play in the workplace by creating the sense of an aesthetic that is seemingly fluid, where things feel visually and emotionally changeable. Light is the one element that has the power to change the mood around the static objects that it comes into contact with. There's arguably no other discipline that can influence behaviour in this way, which is why lighting design is having its moment in the workplace.

www.nultylighting.co.uk

Third Age Design

Acoustics

When we enter a room we perceive the space with all our senses, yet design is often focussed on the visual elements; here we look in more detail at the impact of the sound environment on our perception, comfort and use of spaces within a care home setting.

Andrea Harman

THE SCIENCE

Achieving the correct acoustic environment is important to everyone. We all have a physiological, psychological and emotional response to sound.

How we design and furnish spaces can have a large impact on the internal sound environment, which affects what we hear and so our response. This is of particular importance in care home design where people are more likely to be vulnerable to noise.

Hearing loss is common as we age, in fact ageing is the most common cause of hearing loss. In the UK by the age of 50 about 40% of us have hearing loss and by the age of 70 this increases to over 70%. Affected hearing reduces our comprehension of speech and interaction at social events especially when in busy spaces.

We have to concentrate more to hear over background noise, use non-verbal clues to work out what has been said and ensure that we sit somewhere where we can see the people speaking clearly.

In addition, we may contribute less because of the worry of not having heard the discussion correctly and not wanting to give an out of context response. This is often tiring, leads to social isolation and loneliness and can affect our mental health.

Many studies also show a link between long term untreated hearing loss and an increased risk of cognitive decline. Untreated severe hearing loss in midlife makes a person's dementia risk 5 times higher and people living with dementia who previously did not have hearing loss are more likely to develop it, unless it is treated. This means care home residents may have both conditions.

Dementia often affects our perception of and reaction to sound. People often become very sensitive to things they can hear. As a result, **noise can be alarming, frustrating, and emotional, causing stress and contributing to social isolation, anxiety, fear and aggression. A noisy environment also inhibits people living with dementia when processing information with tasks requiring concentration are reported as easier in a quiet space and noise has been linked to people's restlessness, falls and their desire to walk around.**

Some people become care home residents following an illness or as part of their pathway to recovery. Hospital research has shown that when we are ill we do not respond well to noisy environments. Noise often prevents us resting and sleeping and leaves us feeling tired and stressed. A noisy environment for people who are patients has been linked to an increase in pain perception, cardiac stress, miscomprehension and time taken to heal.

THE SCIENCE

A care home is a living space and we would like to think of it as being safe, inclusive, comfortable and enabling. The sound environment can affect this both positively and negatively. **A poor acoustic environment leads to a reactive response whilst a good acoustic environment will enable and support people.**

For example, a noisy dining room (a space where our senses are often overloaded) can lead to disorientation, restlessness, frustration and aggression, whilst a calmer acoustic feel in a dining space with a less background noise and clamour encourages people to eat and enables social interaction

The MonIA project investigated age friendly and memory friendly acoustic environments and found sounds that supported people and were viewed positively could be split into the following groups

Individuality– sounds that the indiv idual likes with importance placed on the resident having control over what they are hearing

Communality– sounds that support meaningful social interaction, community and promote liked activities that create interest and reduce isolation.
Recovery and support – sounds, spaces and environments that support relaxation and recovery

Orientation – sounds that help people recognise a space, activities and time and are easy to comprehend.

Safety – sounds that help people feel safe, these are often familiar, contextual and expected sounds linked to everyday activity

Cosiness – these sounds help individuals feel at home and enhance mood such as the sound of music and social interaction

When looking at how to achieve this supportive room acoustic environment we should consider how sound moves in a room. Our hearing and sensory response to sound has evolved so that it works best outdoors in the natural world.

Indoors sound moves and builds in a way that is very different to outside. Walls, floors and ceilings give us shelter, safety and visual and sound privacy, but the acoustically hard materials often used are sound reflective.

These reflections allow sound levels to build up inside a space and to propagate over a distance. They increase reverberation and echo which interferes with communication and concentration.

Good room acoustic design will meet the needs of sound privacy but also use a balance of sound absorption and sound diffusion to imitate the acoustic environment of the natural world inside buildings.

www.ecophon.com

A few links to further reading - not research papers:

https://www.ecophon.com/globalassets/media/pdf-and-documents/knowledge/healthcare/research-studies/age-and-memory-friendly-acoustic-environments-guide.pdf/

https://rnid.org.uk/hearing-research/hearing-loss-and-dementia-how-are-they-linked/

https://cks.nice.org.uk/topics/hearing-loss-in-adults/background-information/prevalence/#:~:text=Prevalence%20increases%20with%20age%3A&text=In%20the%20UK%2C%20around%2040,and%20older%20have%20hearing%20loss.

Plants

For me one of the main delights of Biophilic Design is plants. Plants, green leaves, trees, flowers, fruit, herbs, you name it. Whether they are in mega pots on the floor, dangling from the ceiling or cascading down the bookcase, they bring me such joy, and I know they are doing me good, not just by cleaning the air and getting rid of VOCs but also they are making my brain happy and reducing my blood pressure.

In this regular section we have articles by plant experts, landscape gardeners, living and vertical wall specialists, research and case studies on how plants bring positivity into our built environment.

For those who know of me, they also know I'm passionate about having more trees, plants and green spaces in cities, but more of that in the Cities section. There is also a special edition of the Journal of Biophilic coming out which will be looking at cities and Biophilic Design, that one is the fourth issue. So do sign up for updates if you would like to be informed when it's out.

But right now, it's time for Plants.

PLANTS AND HUMANS

Kenneth Freeman
Chair of Plants at Work and an interior landscaping and biophilic design consultant

As little as ten years ago, the very word biophilia was barely understood. Designers were shy of using a phrase that sounded as if it may be a disease or some sort of perversion. But now biophilic design is a buzzword, especially in the world of workplace design - and especially as workplaces are being re-imagined for the post-pandemic world.

The evolution of the workplace

A generation's worth of workplace evolution is happening in the space of a few years. Just as the extinction of the dinosaurs kick started a massive evolutionary diversification in a relatively short period, so the pandemic has unleashed huge diversity in workplace organization. Some of these new ways of working will flourish, others will fizzle out, and the workplace dinosaurs will die out.

Many offices are barely 25% occupied for most of the time. Office workers now used to (and, if surveys are to be believed, enjoy) home working. As a result, organizations are trying to find ways of making their expensive space work effectively and give people a good reason to be there.

Strategies range from leaving passive-aggressive notes on civil servants' desks to creating spaces that have the feel of a home from home. Many strategies include redesigning workplaces with wellbeing in mind and this has led to major changes in the look and feel of those spaces. Biophilic design is frequently invoked as the inspiration.

Biophilic design is associated with greater wellbeing, and the body of evidence supporting it is growing by the day, but what do we mean by the term?

Many proponents think mainly, or only, in terms of the emotional, almost spiritual, need to connect with nature. This can be an effective approach, is easily understood and has a lot of merit. However, that isn't the whole story.

Research has consistently shown, for almost 50 years (maybe longer), that when we put plants and other biophilic features in buildings, things get better. People feel happier, symptoms associated with sick building syndrome disappear, stress can be reduced, people feel more comfortable and become more productive.

Various mechanisms for the benefits have been suggested - physical and psychological - but for years, all we had was a catalogue of discrete research projects without a compelling narrative to tie them all together.

The evolution of the human

Biophilia theory is rooted in evolutionary biology and genetics. It contends that we, as a species, have an inherent need to be in an environment that relates to our basic needs as a species.

Anatomically modern humans first appeared about 300,000 years ago having evolved from previous species of hominids that may have been around for a million years before then.

Humanity evolved on the plains of Africa, with wide open spaces with undulating landscapes. The vegetation grew in scattered clusters; water was plentiful and skies were bright. Our senses are highly adapted to that environment. Those senses evolved to enable our species to survive.

Humans use their eyes to look for food and threats - sight is our most developed sense. Colour perception for us - the part of the spectrum that we can see - enables us to spot shapes (food or danger) against the background of vegetation, and recognise when fruits are ripe. Our hearing is fine tuned to the noises of prey animals and the sound of running water. Our sense of touch helps us to determine the quality of materials that we can use for shelter, and our senses of smell and taste tell us what is safe to eat.

The stimuli from all of our senses act in concert to give us a coherent message about our surroundings, and when our senses all tell us the same story, we know instinctively how to deal with things. If we stress our senses, we react as if there is a threat to our survival.

Our senses evolved to work at their best in such an environment, but when we create environments for humans - offices, for example - we tend to make them very space efficient, very energy efficient and completely unlike the environment where our species has spent over 99% of its evolutionary history. In many buildings, our senses become overwhelmed, under used or out of balance.

When our senses are stimulated discordantly, when we can't make sense of what we are seeing, feeling, hearing and smelling, then we become stressed. If we hear a threat, but can't see it, or if we smell the ocean (emitted from a scenting machine) but see only the grey walls of an office, it takes mental effort to come to terms with those stimuli and to try and understand such contradictions. This results in stress and discomfort.

Stress hormones prepare us to fight or flee, so it makes sense to create our artificial environments to stimulate our senses in much the same way as in our wild setting. This is where biophilic design differs from conventional interior design. By combining multiple design elements, including natural elements and natural analogues we can create environments that are stimulating, engaging and which provide sensory stimuli that work together to minimize stress and discomfort.
Biophilic design is much more than an emotional need to connect with nature. It's a survival mechanism.

The difference between a space full of pretty plants and biophilic design

Many of my colleagues in the interior landscaping industry use the term biophilic design as a synonym for interior planting. Whilst indoor greenery can certainly be a critical component of biophilic design, it isn't the whole, and in many cases might not be biophilic at all.

There is a huge benefit to putting plants into buildings - the very act of enriching a space can have some profound effects in terms of wellbeing and productivity. The difference, however, between doing interior landscaping and biophilic design isn't what you put in a building, but how what you put in a building speaks to the people that use the building. In other words, it isn't just about the products, it is how they are used. It is also about why. Why are you putting plants in buildings? What is the intent?

The principle of intent

The more you enrich a space, and make it interesting and biophilic, the better.

However, Craig Knight's research, and that of others, has shown that the biggest impact on wellbeing and performance isn't plants, art, smells, and everything else biophilic designers and landscapers do, but it is organizational culture. The more people are empowered to manage their work and their work space, the better things are.

It seems that it is likely that there is quite a strong interaction between design and organizational culture (although more evidence is needed to determine the strength of the effect), and that there are some synergies to be exploited. For designers, the more the end user is considered, the better. Successful biophilic design, design that really improves wellbeing, means moving from design being done to the user, through being done for them, ultimately to being done with them.

For me, the ultimate expression of biophilic design combines the best in the design of the physical environment - all the plants and other elements - with the intent to make the mental environment better as well. If the intent for creating wellbeing isn't there, then all you are doing is making spaces pretty.

www.plantsatwork.org.uk

Pioneering Research

Can Biophilic Design add Value to the Workplace?

Biophilic Design - the use of plants in providing cleaner air and connecting us with nature, coupled with other patterns from nature, such as natural light, specific colours, acoustics, and fragrances - has long been proven to have a positive effect on both mental and physical well-being.

For over 25 years, expert horticulturalists Benholm Group have pioneered the use of plants for interiors, not only as an eye-catching focal point, but also to promote the natural health benefits that being surrounded by plants can bring.

The exploration of the benefits of Biophilic Design is at the forefront of a new research study led by Sustainability Lead at House of Commons + PhD Researcher, Joyce Chan-Schoof to question if we can apply a social and economic value to biophilic design:

Can biophilic design add value to the workplace - not only through improving air quality and aesthetics, but can it have a tangible impact on employee productivity, retention, absenteeism, satisfaction, engagements and up-skilling?

During an in-house pilot study, 6 participants will carry out their daily work at a designated workstation in a 30m2 office space at London based PLP Architecture.

Over the course of 8-weeks the environment inside the office will be changed from an average office space into a multi-sensory experience by providing rich, natural stimuli to the participants such as lush, green, living planting all provided and maintained by Benholm Group, as well as access to natural light and outside views, new natural décor, patterns and colours, plus sounds from nature – a scenario that will be an immersive, biophilic 'wow' space.

Benholm Group's experienced design consultants will bring the office space to life with lush greenery, ensure that all plant species thrive in the climactic conditions of the room, and contribute to creating a healthy and relaxing environment for the participants. They have carefully selected a variety of living plants for the study including trailing plants, floor standing and desk-top planters and a living wall. Plus, specialist maintenance technicians will be maintaining all greenery throughout the study to ensure the plants remain vibrant and healthy.

Collaborators in the study are: Sustainability Lead at House of Commons and PhD Researcher, Joyce Chan-Schoof, PLP Architecture and their in-house research and development team PLP Labs, Biophilic Design Consultant Alexander Bond, and lecturer, author and expert in multisensory design, Professor Derek Clements-Croome.

Together they will measure indoor environmental quality objective data throughout the testing period, and participants will complete questionnaires after each scenario change.

Adrian Byne, Managing Partner of Benholm Group, worked closely on the study, says:

"At Benholm Group we have long understood the value that plants can bring to every space. To have the opportunity to collaborate on a research study which will prove the social, economic and environmental benefits of biophilia for the built environment is a fantastic opportunity, and we look forward to seeing the results in a few weeks' time".

The research study begun in May and concluded in July 2022. Sign up to be notified when the study is complete, as we will report on the results in a future edition of The Journal of Biophilic Design.

www.benholm.com

PLANT FOCUS

SANSEVIERIA

As we've read in Kenneth Freeman's piece about biophilic design - Is workplace biophilic design more than just pot plants? – we know that biophilic design is a combination of conditions working together to improve our wellbeing and isn't just about adding plants. However plants of course play a role in creating biophilic spaces, so we will be introducing you in each issue to some of these plants which are often used in workspaces to achieve an important part of biophilic design.

Our first plant to feature is the Sansevieria, a sturdy plant which is perfect for the confines of the workspace. It comes in several shapes and sizes all of which hold water and need the minimum of care which gives it another point in its suitability for workspaces.

A native of Africa and southern Asia, this beauty has become a favourite for planting up long troughs, almost barriers in offices. It withstands a minimum of care and survives both sunny aspects and shaded spaces.

One of the common species has flat leaves usually with yellow edges which have earned it the name of Mother-in-Law's tongue as its sharp-edged leaves were likened to the sharp tongue of some Mother in laws! It is also known as the snake plant which is obvious to see in the cylindrical varieties and the beautiful snake-skin like patterns on their leaves.

\Not only do the 70 species of Sansevieria offer a range of looks but they are also easy to care for making it popular for use in workplaces in particular. It needs a minimum of water and can withstand both bright spaces and darker areas.

Did you know?

Plants can cool the air in our homes and workplaces generally. In the heat they let excess water evaporate through their leaves. This process known as transpiration helps them to cool down and also takes the heat out of the surrounding air. Sansevieria is particularly good at this as it stores a lot of water in its leaves and when temperatures rise rapidly, it lets this water evaporate to avoid over-heating creating fresh cool air which we can enjoy as well.

Did you know that Sansevieria has flowers? This something I've seen evidence of this summer when my Sansevieria Cylindrica bore the most delicate of flowers which closed at night and reopened the following morning.

The Sansevieria is a great all round plant.

www.plantsatwork.com

VERTICAL GARDENS

Daniel Bell is an award winning landscape garden design guru, he is also a pioneer of successful eco sustainable vertical gardens. He was inspired by French botanist, Patrick Blanc, and has gone on to champion this incredibly low-tech vertical garden solution.

This vertical garden system uses recycled clothes as a two-layered felt carpet, into which you cut little pockets for the plants to sit in. There is an irrigation pipe at the top, and they don't need compost, in fact they are better without. We did a videocast on the Journal of Biophilic Design (also viewable on YouTube) with Daniel a while back so do watch the demonstration.

The point of difference, and what makes his vertical walls unique are the designs. And oh.. my...word... they are awesome! The textures, shapes, colours, heights of the plants within the installations are simply a jaw-dropping flamboyance of life.

And they are not your expected living wall plants. You will find in his vertical gardens dwarf birches, juniper, fuchsia, mind your own business, lavender, solanum, fatsia, hebe...

The fact that these vertical gardens can go anywhere, means that for urban planners looking for a solution, as in Piccadilly central London where he did an installation, this system is sustainable, lightweight (it is only 25kg/sqm), they don't damage a building, they can be used to cover an ugly facade of ductwork, or tired concrete.

Rather than pull down old buildings which may have had their day visually, Daniel suggests, why not add nw life and add a garden to it. How amazing would that be, to literally breathe life onto old buildings. And just think of how it will help reduce pollution as well?

What I also think is interesting in this installation featured here, is that hoardings on building sites don't have to be boring. In fact they can be an asset to the brand, help improve the air quality, and also reduce noise pollution.

So next time you or your clients are building something, why not look at a beautiful vertical wall to uplift and inspire the neighbourhod and everyone working on the project too.

daniel-bell-vertical-garden.format.com

2022 Biophilic Design Awards

The annual awards program recognizes the best from the interior landscaping industry. Judged from a biophilic design point of view, the focus is to award those that show exemplary incorporation of biophilic design in their projects. The contest provides a platform for interior landscaping professionals to share their work on a global stage.

2022 Biophilic Design Awards was honoured this year to present their most prestigious and vied exclusive award level, the judges Diamond Award, which went to Outside In and Jasmax for their joint outstanding work labelled 'MC Project'.

Entries were judged by a panel of four experts— Dr. Vanessa Champion, Editorial Director of the Journal of Biophilic Design from London, England, Sean Campbell, owner of Grundy's Plantscaping and is an award-winning company, Mike Senneff, Past president of Green Plants for Green Buildings and Founder of Natura, and Josh Senneff, President of Natura. Entries were judged on the uniqueness and innovation of their design; innovative use of materials; appropriateness for the space; and satisfaction of the client. To view entries see iPlants Magazine

"These projects are unique for their design and use of materials. This team really thought outside the box to bring their clients and their visitors something truly special," said Elliott Bennett, CLT-I, publisher of I-Plants Magazine and director of the awards. "These innovative projects are an inspiration to others in the design industry and really showcase what can be done with live plants, green walls and moss wall art. We are very proud to recognize their talents and to celebrate the fresh and innovative biophilic design work that they are bringing to their clients and their community."

Outsidein Platinum Winners Case Study

Biophilic design was the key design principle for this project for New Zealand's largest litigation firm, MC, for their 230-person premises to deliver a premium, one-of-a-kind workspace that appeals to the best up-and-coming legal talent. The aims were to reduce stress, enhance wellbeing, and increase motivation and creativity through a strong connection to the natural environment.

The resulting space lent heavily on Biophilic Design principles and uniquely includes a living terrarium, providing employees with a sensory experience akin to walking through the Waitakere Ranges, a New Zealand native forest.

The project showcases the beauty of biophilia, specifically demonstrating nature in and of the space. The brief was to replicate the full , lush experience of the New Zealand forest. Nature is experienced "directly" by filling the terrarium with living plants and natural moss. Both the plants and moss can be touched and smelt. The terrarium is also surrounded by full height windows allowing natural light to flood into the space.

Nature is experienced "indirectly" by, using natural tactile materials and colours throughout the terrarium space such as solid timber battens, Resene Turtle Green for the exposed services and Dulux colour rangoon green powder coated frames and structures. Textures and patterning are woven throughout that respond to the natural world for example, graphics on walls, wallpapers, and material selection.

As guests walk through the welcome lobby, they are greeted by recordings of native bird life. The ambient temperature and light mimic nature and the lighting is set to replicate circadian rhythms to meet WELL certification. Prospect and refuge have been designed intentionally into this space. With many small seating arrangements nestled amongst greenery where people can seek solace and solitude. As well, there are large views from the full height windows out over the harbour and the city.

From the moment you walk into the space, you feel at ease and at one with nature. Floor to ceiling planting combined with various natural materials produce an intriguing and engaging space, inviting you to want to explore further. **Respite nooks** are found by following the meandering walkways through the terrarium, just as you would find a spot to sit and relax when out in a forest. The specially designed Forest Floor™ product provides the **walkways with an asymmetrical finish, mimicking the natural environment.** A variety of NZ-designed furniture was chosen specifically to reflect the multitude of natural shapes and structures found in nature.

The terrarium space is a full multi-sensory experience. **Visually, you are drawn to the scale and depth of the layered forest experience.** The space is acoustically enhanced with a soundtrack that includes bird song. The smoothness of the natural timber used combined with the textural layers of planting invite you to touch. Pops of colour introduced via the carefully chosen furniture imitate the glimpses of colour you see when a bird swoops low, or the summer flowers are in bloom. **Oxygen levels within the terrarium are elevated, the air is cooler, and the lighting is subdued to support indoor planting and rejuvenate people.**

All these elements perfectly work together to emulate the feeling of walking into the cool New Zealand forest.

Not only has this project broken design standards, it is the first law firm in the Asia-Pacific region to achieve WELL Pre-Certification and is aiming to be the first professional services firm to secure WELL v2 Certification. The workspace has been designed to foster a culture of collaboration, health and wellness. Together, these reinforce the firm's industry leading commitment to sustainability and wellbeing.

Journal of Biophilic Design
PLANTS

A rigorous material selection process was undertaken to ensure products met the WELL targets. This included using New Zealand-made products wherever possible, resulting in more than two thirds of the furniture provided by local suppliers. The materiality and finishes were chosen to reinforce humankind's fundamental connection to the natural world. **A selection of warm, natural and textural materials gives the space a tactile feel, contrasting with the vibrant colour palette selected for furnishings.** Whilst much of the colour palette throughout is neutral and subdued, pops of colour are injected via furniture and artwork. Each of these colours has been purposefully selected to work with the environment and enrich it.

RESPITE

The intense nature of prosecution legal work is taxing and stressful and the terrarium forest offers an onsite respite. This allows employees to be rejuvenated and reduce stress without the need to leave the building.

High quality acoustic design was key to ensuring the office ecosystem worked well; as much as the space needed to be unique, creative and fun, it also needed to allow staff to carry out their daily work tasks with ease and discretion.

An array of formal and informal work settings accommodates varying working styles, including silent concentration spaces, collaborative meeting rooms, a café and breakout areas. Planting is used to seclude and add privacy without feeling enclosed. All areas of the office space have views in and across the atriums so that all spaces benefit from the extensive interior planting.

The Forest FloorTM contours are covered in preserved moss, mixed with natural tree mulch. These two products together perfectly mimic the NZ forest environment with decomposing tree matter and patches of moss under the trees. We used a variety of moss types which are true to life of the New Zealand forest. Plant species were chosen to represent those that you would see in the native forest such as the NZ Ponga and a plethora of native New Zealand ferns. The plants were also chosen so that there was no colour variation in the leaves, just various degrees of greens to imitate the richness of the NZ forest.

The entire project is in scale with the sizes/proportions of the building space. The terrarium has a ceiling height of 3.6m high and the larger trees in the space are almost 3 metres tall. Above the canopy of trees, hanging integrated plants trail down from overhead. As one walks through the building there is an even balance of greenery throughout all the office spaces at varying heights so that greenery can be seen in proportion to the spaces it occupies. The Forest FloorTM is planted out in layers of planting including canopy, sub-canopy and ground covers to accurately replicate the New Zealand forest.

Journal of Biophilic Design

PLANTS

The space has been designed to create an experience akin to walking through the New Zealand native forest. Polished concrete flooring and raw concrete columns, create an unrefined feel to the space, unlike a normal office environment. Natural timber batten cladding to the meeting rooms, mimic the repetition of tree trunks. Exposed services painted deep green complement and add to the tree canopy created.

The workspace has been designed specifically to foster a culture of collaboration, health and wellness as well as meeting the varied career needs of the employees. An array of formal and informal work settings accommodates varying working styles, including silent concentration spaces, collaborative meeting rooms, a café and breakout areas.

Overall, this is an inspirational, and outstanding example of how all the elements of biophilic design can come together to create an authentic space that resonates harmony, helping everyone who uses the workspace to flourish.

www.outsidein.net.nz

ENVIRONMENT
PEOPLE
PLANET

Each edition of The Journal of Biophilic Design, we will be discussing and sharing opinion pieces about the impact our behaviours are having on our natural world. Every decision we make, whether that's choosing to drive to the local shop or turn up the thermostat has an impact. If we are designing buildings, interiors, homes, hospitals, schools and cities, every choice we make WILL have an impact on our planet, the planet that sustains us.

Biophilic Design, by its very nature is sustainable, and furthermore, the presence of plants, natural textures, view and images of nature, soundscapes, fresh air, gentle movement, prospect and refuge, zoning and more, all act as triggers to our subconscious to consider our behaviour and make more sustainable choices.

So for me, I feel Biophilic Design is a key pivot in helping unlock sustainable building practices as well as providing mental and physical wellbeing in public spaces (from healthcare through to education, the workplace and our homes).

If Biophilic Design had been implemented in our built environment 20- years ago, our cities and towns would look so different, and we would not be in a back-footed position trying to heal the environment. It's not too late, and I'm hopeful that Biophilic Design will be one of the major keys in unlocking sustainable practices in the Built Environment all over the world.

NEW LIFE AFTER THE RAINS

Alexander Verbeek, Dutch environmentalist and former diplomat, walked the Camino to Santiago over the summer. He witnessed the forest fires in Spain and documented his experience in the extreme heat. Now back home, Alexander reflects on the state of climate change, tells us about Eunice Foote and gives us cause to remind ourselves why we should always celebrate the beauty of the natural world around us.

Alexander Verbeek

Until quite recently, the impact of climate change was so hard to see that it was easy to deny that it was taking place. But in just a few years, our climate has been changing so fast that even climate change deniers had to change their message. Now they say that it is either so insignificant that it is harmless, or they go to the other extreme and say that it is so bad that we can't do anything about it anymore.

Whatever they said before, and whatever they say now, their message remains the same: don't reduce the burning of fossil fuels, and thus the income of those who pay for this created confusion.

Our hot summer

Look around you. How hot was your summer? If practically all of us experienced more heatwaves, forest fires, droughts, or floods in the past years, then it looks like the scientists were right, and the climate change deniers were wrong.

Having been right (in believing climate scientists) doesn't make me happy.

Deep in my heart, I had a tiny bit of hope that the sad message the scientists shared was perhaps a bit exaggerated.

But, unfortunately, they were spot-on in predicting atmospheric warming at higher levels of greenhouse gasses, and they even somewhat underestimated how dynamic the Earth's systems reacted to the human-made changes to the atmosphere.

Eunice Foote

Surprisingly often, the most vocal climate change deniers are men. I guess many of them are the types that won't like it that it was a woman who was the first to acknowledge that carbon dioxide had the power to change the temperature of the Earth. Eunice Foote wrote in 1856 a scientific paper about an experiment she had conducted with two glass cylinders that she placed in the sun. One was filled with carbon dioxide and the other with air. Foote noted that the cylinder filled with carbon dioxide was warmer and must have trapped more heat. She concluded: "An atmosphere of that gas would give to our earth a high temperature."

A few years later, a male scientist, John Tyndall, published his research on heat-trapping gasses. It is unclear if he knew Foote's work. He didn't refer to her study but did have a paper on colour blindness published in the same 1856 journal as Foote, so I would say it is pretty likely that he must have read her article. Until several years ago, Tyndall's more detailed work was typically credited as the foundation of climate science. I can only imagine the frustration Foote must have felt.

On the other hand, she was not the last climate scientist or activist whose voice was ignored. Nor will she be the last. The list is endless, and the frustration of not being listened to only increased when alarming messages from scientists got more frightening every year.

Take, for instance, Guy Callendar, who decided in 1938 to take a break from his day job as a steam engineer to collect records from weather stations worldwide. He found that global temperatures had risen 0.3°C over 50 years and argued that the warming was caused by carbon dioxide emissions from industry. We now know that his estimates were highly accurate, but other scientists largely ignored his study.

The IPCC on unprecedented climate events

Fast forward to just ten years ago. Then, the 2012 UN IPCC report on extreme events, disasters, and climate change warned that there would be more heat waves, worsening droughts, increasing downpours causing floods, and more robust and wetter tropical cyclones. In short, it warned of "unprecedented extreme weather and climate events."
Since the report's publication, the world has not taken sufficient climate action, and greenhouse gas emissions have gone up instead of down. What also does go up is the number of unprecedented weather and climate events.

I increasingly need to take temporary breaks from the alarming reality, and nature is where I usually escape. Last week, I walked in the beautiful east of the Netherlands. But my escape from reality was unsuccessful because I was shocked to see how dry this delta of northwestern Europe had become. Never before did I see so many ditches and fosses without any water. For months we had hardly any rain. And the rain that finally had fallen in the previous days seemed to have disappeared entirely in the dry ground.

Hope

But there is some good news too. Since I returned a few days ago, we have had every day some more rain. This afternoon I was in the dunes close to my village on the Dutch island. I could see everywhere what a week of rain means for the record-dry dunes. The colour green is coming back. Everywhere I saw small green shots popping up. I went down on my knees to enjoy in detail the sight of new life sprouting out of the sand, especially of the smaller patches with darker, more humid, fertile, and warmer soil. Today, some of the dried-up ponds had a little bit of water.

I try to find some time, preferably in the morning before messages pop up on my calendar or email that all seem to have a higher urgency than the walk I had planned. So today, I walked through my village, the nearby dunes, and the forest a bit further from home. It was a walk of about nine kilometers; the long stretches in soft sand and photography slowed me down, so it took me nearly two hours.

Everyone will have their own reasons, but for me, it is that sense of tranquil awareness once I leave the village and society behind me. I focus on my body, my mind, and the beauty of nature around me.

This summer, I walked some 700 kilometers (435 miles) in Spain, improving my health. Although I often walked and talked with others, I most vividly remember the long daily stretches that I walked utterly alone for 25, 30, or even more than 40 kilometers. There was just the sound of my breathing, footsteps, and my trekking poles. City life was far away, including sitting too many hours behind my screen. I can see why people who appreciate nature and spend time in it have less stress and are happier, healthier, and more creative.

Journal of Biophilic Design

THE ENVIRONMENT

Vincent's love for nature

Earlier today, I saw Vincent van Gogh's well-known quote: "If one truly loves nature, one finds beauty everywhere." So many nature lovers I have met have a remarkable eye for detail, connections between their observations, and the beauty of nature.

Vincent wrote it in Dutch in a letter to his brother Theo from London on 30 April 1874.

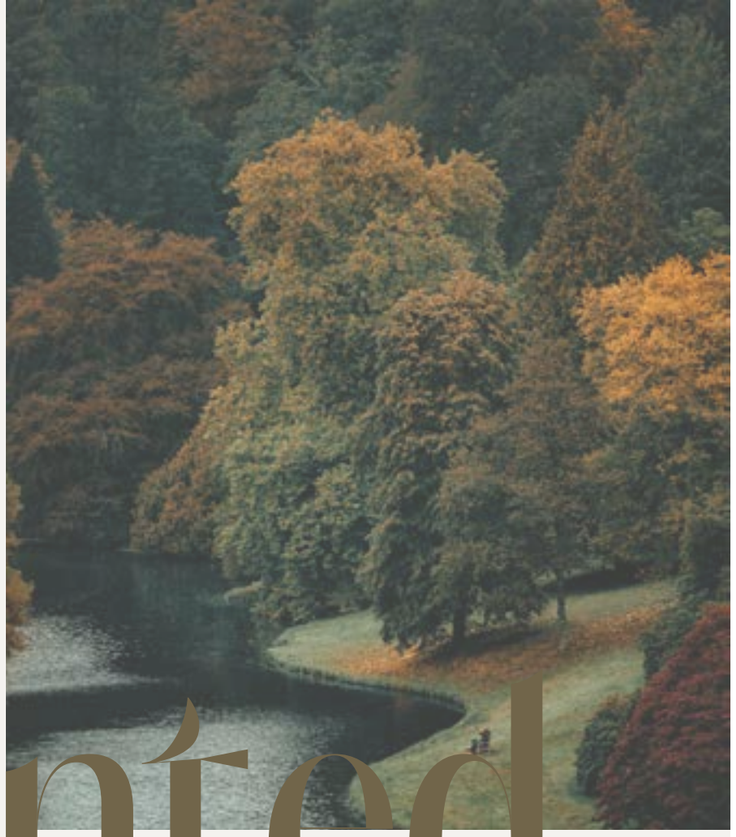
"Als men waarachtig van de natuur houdt dan vindt men 't overal mooi."

To give a bit of context, these are some of the lines he wrote in the letter, including the often quoted phrase:

"I walk here as much as I can, but I'm very busy. It's absolutely beautiful here (even though it's in the city). There are lilacs and hawthorns and laburnums &c. blossoming in all the gardens, and the chestnut trees are magnificent.

If one truly loves nature, one finds beauty everywhere."

https://theplanet.substack.com



THE ENVIRONMENT

PLANTED COMMUNITY

The Journal of Biophilic Design is proud to partner with Planted; the only events and media company promoting exclusively nature-based businesses and organisations. Through the lens of biophilic design, Planted works only with partners who place the environment at the heart of their business model and we're delighted that in each edition of the Journal of Biophilic Design, we'll be running regular news and features about their partner brands,
written by Planted's co-founder and former Sunday Times journalist, ***Sam Peters***

We've all been there haven't we? Sitting in the drab and dreary grey office space staring mindlessly out of the window at another barren, concrete rooftop which dominate our cities.

The view drains energy, saps passion, disconnects us from nature. Grey is drab. Barren is sad. We suffer as nature suffers. Now where is the good in that?

But, it doesn't have to be this way. They say where the biggest problems exist, so do the biggest opportunities. And our rooftops are a problem.

A huge opportunity is currently being missed to green the tops of our buildings on an epic scale to create new habitats, mitigate against floods, insulate buildings while reconnecting our people and workforce with nature.

I'm talking of course about green roofs. Sedum ones to be precise.

At the start of this year, as we were planning our first ever Planted Country event at Stourhead, which we ran in partnership with the National Trust, the Planted team approached a company local to where we now live near Salibsury in Wiltshire, called Sedum Green Roofs.

By happy coincidence, one the business's senior management team, Olivia Eyers, or "Liv" for short, had a son who attended the primary school as our daughter, and after an initial conversation established that Liv saw huge value in showcasing her stunning green product at the newly launched event, we were able to learn more about the environmental benefits of greening up our roof tops.

Being surrounded by nature and rolling pastures, the founders of Sedum Green Roof, a family-run business situated in an area of outstanding natural beauty called the Cranbourne Chase, saw at first-hand the profound risks posed by climate change to our environment

"At Sedum Green Roofs we ensure investing in a green roof will maximise the benefits for our customers," said Eyers. "By installing one of our roofs, our customers save on energy costs, mitigate flood risk, enabling biodiversity by providing habitat, tackling air pollution and mitigating against the effects of urban heat islands."

They wanted to be part of the solution, and created an aesthetically pleasing natural product which not only reuses and repurposes some of vast amounts of waste generated by the construction industry, but also provides a beautifully simple antidote to the featureless and lifeless rooftops which blight our urban spaces, depress workers and deprive wildlife of desperately needed habitats.

We know, because there is an abundance of scientific evidence to prove it, feeling connected to nature makes people more productive, they concentrate better and are also more creative. People recover faster from illness and are generally more energetic when connected to green spaces (ever wondered why we all gravitate to parks, rivers of woodlands to exercise?) so why wouldn't all employers want their employees to have a beautiful green roof to look out at, while at the same time lowering their carbon footprint and encouraging the regeneration of our desperately depleted natural world?

From first hand experience, having recently had a sedum green roof installed on top of the kitchen at our family home, I can testify to the enormous difference it makes each morning to open the bedroom window and see the insects buzzing and greenery growing on what was once effectively a desert, purporting to be a roof.

Journal of Biophilic Design
THE ENVIRONMENT

And happily for Planted, the feeling is mutual as Sedum Green Roofs agreed to join us once more for our Planted Cities event at King's Cross, held on Granary Square in September during London Design Week, where their installation caught the eye on the canal steps and challenged architects and designers to change the way they think of roofs.

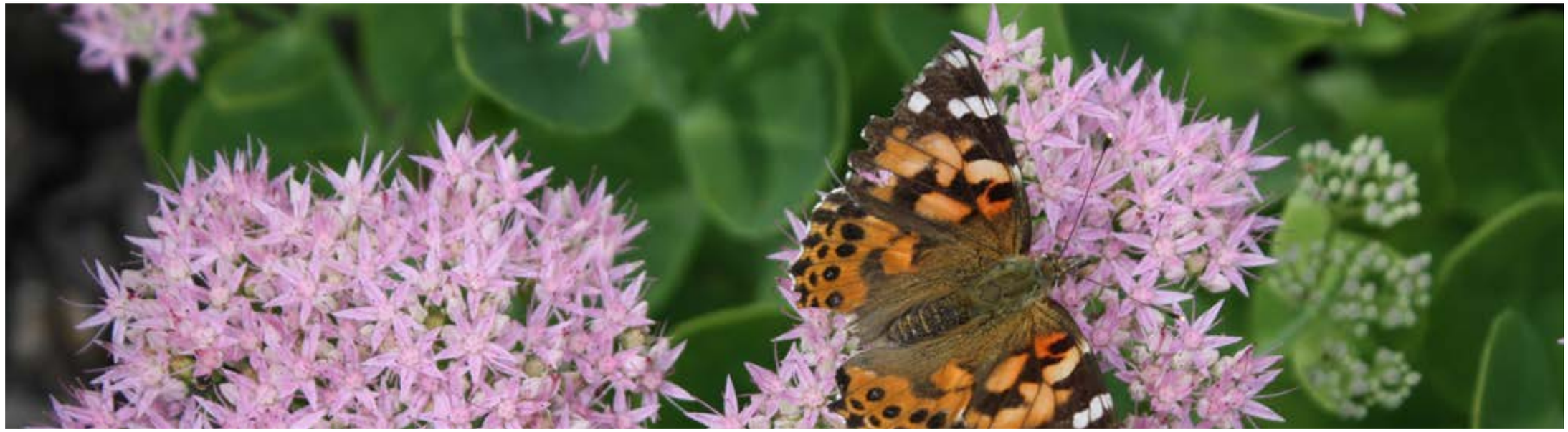
"I was already a big fan of Planted and when I heard they were coming to Stourhead, which is local to where we are based, we jumped at the opportunity to take part," said Sedum Green Roof director Toby Rasch.

"It was a really cool event and we didn't hesitate to get on board for London again in 2022."

And I dearly hope they'll be with us again in the future, because Sedum Green Roofs are definitely Planted's type of product.

Habitat creation? Tick. Flood mitigation? Tick. Better insulation? Tick, tick and tick. Sedum Green Roofs. What's not to like?

www.planted-community.co.uk



ACKROYD AND HARVEY AND BEN OKRI ON THE SHORE

In the photography of Ackroyd & Harvey, notions of passage of time and transience are evoked through the use of a living plant material – seedling grass.

The artists use grass grown from seed on vertical surfaces as a living photographic medium, which they term 'photographic photosynthesis'.

In a darkroom setting using projected light through a negative image, the emergent blade of grass has an extraordinary capacity to record complex photographic images through the production of chlorophyll.

In a sense, Ackroyd & Harvey have adapted the photographic art of producing pictures on a sensitive film to the light sensitivity of young grass and the equivalent tonal range developed in black and white photographic paper is created within the grass in shades of yellow and green.

Each germinating blade of grass produces a concentration of chlorophyll pigment that relates to the amount of projected light available to it and the strength of green produced is according to the intensity of light received; the grass still grows without light, the bright yellow colour being conferred by light-independent pigments. To ensure the stability and visibility of the image during exhibi6on, the grass is dried. There may occur some gradual fading of the image over 6me due to natural UV bleaching by light.

Responding to 'place' is integral to how Ackroyd & Harvey develop ideas and their work is often created for the venue, considered within the context of the curatorial vision, the architecture of the space and the influence of the environment, both in terms of the immediacy of locale and the complexity of earth ecosystems.

ackroydandharvey.com

Journal of Biophilic Design
THE ENVIRONMENT

On The Shore
Tate to Thames 17 - 25 June 2021

In the summer of 2021, Ackroyd & Harvey collaborated with the poet, novelist and activist Ben Okri to address the climate and ecological emergency in a large-scale performative work in two acts.

On The Shore Act 1 Tate Modern, London – link to film
Over nine days, a 16 x 4m banner grew in the Turbine Hall with a text written by Okri stencilled into the seedling grass. Equivalent to a photogram, his words were revealed in bright yellow as the letters were removed.

On Friday June 25, a cellist played and eighteen performers congregated to roll and remove the grass banner from the Tate to the Thames.

The installation follows Tate's declaration of a climate emergency in 2019.

On The Shore Act 2 Bankside Beach, London Link to the film featuring Ben Okri
To the call of the trumpet, and led by a dancer, the performers processed to the embankment. Lowering the banner over the railings, a crew awaited to secure the grass to a cork floatation raft.

At 11am, to the sound of St Paul's bells, the banner was lifted by the waves and floated on the river. Speeches and music followed.

Wellbeing

Every issue, we take a look at how our immediate environment, our lifestyle, our mindset, our individual choices, every action has an impact on us. In this section we look at how biophilic choices in all aspects of our lives has positive and profound impacts on our health and wellbeing.

How connecting with life and the natural world around us uplifts, nurtures, inspires and heals us. Some ideas will surprise you, some you may already be doing and some you might want to share with your friends and colleagues.

If we all make one change, one better choice every day, together we will make a positive and beautifully significant sea-change on our homes, workplaces, schools, healthcare, towns, cities, countries and ultimately our planet.

Health and Home

"Health and Wellness is improved by environment, biophilic designs and interventions really do have an impact."

Dr Charlie Easmon

Why should doctors be interested in houses or the built environment? What possible impact could they have on health? Interestingly they have a vast impact on health.

A respiratory disease that was known as 'the white plague' (to differentiate it from 'the black plague') many years before COVID-19 was Tuberculosis (TB). This caused lung lesions, generalised wasting away and had a high mortality. In the UK statistics clearly show that the reduction in TB transmission was linked to improvements in housing with less crowding.

Ever wonder why so many hospitals have long corridors and have significant gaps between beds? This was also a product of the knowledge in how to reduce TB transmission.

Since Victorian times we have learned a lot about healthy environments and we know the beneficial effects of appropriate and adequate lighting as well as **living with nature inside the home in the form of plants or even images of plants**.

A group of people develop a depressive illness at certain times of year when there is less natural sunlight and this condition is known as Seasonal Affective Disorder (SAD). We know that putting appropriate artificial lighting in their homes lifts their mood. **We know that hospital patients who have a view of nature, as opposed to those surrounded by white walls, heal faster.**

Our connection to plants can range from allotments to window boxes in urban settings. Tending to something is good for our mental, physical and spiritual health. Obviously, our nutritional health is improved by eating less processed foods so if you can grow something you can eat even better.

William Morris is quoted as saying "Have nothing in your house that you do not know to be useful, or believe to be beautiful." Art, plants, flowers and well-made furniture can be your items of beauty. The useful stuff is everything from your sleeping arrangements to your stereo system and the hopefully nutritious food that you chose to eat.

If as the saying goes an "Englishman's home is his castle' it does not have to be a fortress against all invaders but it **should be a sanctuary of peace, reflection and health. Biophilic design is leading the way.**

www.yourexcellenthealth.org

Naturopathy

Dr Owen Wiseman

The term ‘vis medicatrix naturae’ is Latin for the healing power of nature. This phrase is used to describe how nature has a self-healing ability and how it can be used to restore health. Naturopathic medicine is based on this principle, and it focuses on using natural methods such as diet, exercise, and lifestyle changes to help restore health.

For decades, humans seemed intent on disconnecting from nature as much as possible. In lieu of meadows and forests, industrialists saw grounds for human expansion. This could have been accomplished in a way that collaborated with nature, minimizing the consequences of our burgeoning population. Instead, we saw decades of mankind subjugating and dominating the lands that had nurtured our ancestors.

The ensuing detachment from the environment is at the heart of countless chronic health concerns including cardiovascular disease and depression. But as we are now coming to understand, there is a remedy for this malady, and it lies in reconnecting with the natural world.

This is where nature-based medicine comes in. In some countries like Germany, naturopathic doctors (ND) have been regulated since 1939 as ‘Heilpraktiker’. Licensed NDs are regulated in jurisdictions across Europe, India, Latin America and North America and act as primary care providers in various clinics and hospitals. In Canada for instance, NDs found in Ontario are regulated under the Registered Health Professions Act that oversees 26 types of practitioners including psychologists, pharmacists, nurses, and dentists.

The role of a ND is to focus on treating the whole person, to see them as more than their symptoms. We help you create a plan that complements the work done by the rest of the care team.

This might mean a series of blood tests to assess various biomarkers, a diet review to appraise the nutrient density of your meals, and strategic supplementation to meet any gaps.

For example, you consume 200% of your daily vitamin ‘X’, but your bloodwork shows that you are deficient. This might mean a few things:

- You are not properly digesting the food to release the vitamin (low stomach acid?)
- You are digesting the food, but failing to absorb the nutrient (gut inflammation?)
- Your body is using a large amount of that vitamin and depleting its stores (infection?)

With initial appointments ranging from an hour to 90 minutes, your ND has the time to evaluate each of these scenarios to determine the best course of action. This might mean a referral to your family doctor or nurse practitioner for imaging, while your ND recommends a 3-month course of specific supplements to support you while tissues heal and the illness is resolved.

With knowledge of both pharmaceuticals and supplements, we are also able to determine whether an interaction is safe. This might mean waiting to finish your course of antibiotics before starting that recovery course of personalized supplements because of a risk of interaction.

Beyond supplements, your ND looks to mother nature and the herbs and plants it provides. ‘Vis medicatrix naturae’ is one of the six core principles of the naturopathic oath that each of us adhere to. Species like ‘Echinacea purpurea’, the common purple coneflower seen in pollinator gardens across the country, have been studied for their anti-microbial and anti-inflammatory properties. The roots of ‘Curcuma longa’, studied for its anti-inflammatory properties have been compared to many common medications and shown to be just as effective, minus the side effects. A quick search on one of the largest medical databases produces close to 5,000 research articles assessing its clinical value. Botanical tinctures and extracts can be mixed to target a specific need based on the patient’s presentation.

Nature-based medicine has been around since the dawn of humankind, and in certain situations, we need only look to our gardens and forests for support.

Dr. O Wiseman, ND is the founder of HealthWISE Consulting, a multi-interest organization focused on supporting the health of Canadians through direct patient care and helping business clients invest in the wellness of employees with programs that work.

www.owenwiseman.com

Botanic Shed School of Nature

"We are on a mission to make biophilia, or 'love of nature', the leading language of the world."

Lara Cowan

An affinity for the natural world is fundamental to our health, outdoors is where we want and need to be (for a good amount of time each day). We love nature because we learned to love the things that helped us to survive. We are hard wired to respond positively to fractyls clouds, leaves, trees, bird aviation formations.

Here are 5 ways to access the healing powers of nature:

1. Look at patterns
Looking closely at the geometric motifs on leaves trigger the same areas of your brain to light up as when you relax listening to music. Observing these leaf patterns releases happy hormones into your brain.

2. Watch wildlife
Watching wildlife at play and in flight creates feelings of awe, which in turn stimulate the production of the hormone dopamine which lifts our mood, speeds up healing and supports self-regulated behaviour (more peace at home!) Dopamine plays an important role in anxiety management and can reduce time spent in recovery, care or hospital.

3. Listen to water
Being near water takes us back to nature. It gives our bodies a sense of being holiday... at last...if even for a five-minute break. The sound of water decreases our cortisol production so listening to water is like giving a break to the mind. It gives us a true sense of our inner harmony and calms the nerves.

4. Play with flowers
Arranging cut flowers is creative and meditative task that will foster calm and balance in your mind and body. While focusing the mind and body on arranging the placement of flowers to positions that please you eye, you are engaging in an act of self-compassion and care, creating something that looks good for you, but you are also looking at colours in nature, predominantly, green that calm the mind.

5. Get close to trees
Immerse yourself among trees for better health. Being around trees reduces anxiety which is going to be very useful for people concerned about coming out of lockdown and going back to work. Trees communicate with one another through network of chemicals called phytoncides which, when inhaled, manages our stress hormones and calm us down. Trees also increase the amount of Natural Killer cells produced in our bodies which fight diseases and reduce blood glucose levels which supports people with diabetes.

www.botanicshed.com

WELLBEING

Mindfulness at Play

"Building True Connection with Your Pet."

Vicki Draper

Sharing your home with a pet can be among the most joyful parts of life. It can also be one of the best things that you do for your health. **Studies have shown that connecting with your pet can lower blood pressure, reduce stress, improve mood, ward off loneliness, and help you stay physically active**. In my work, I focus on helping clients form strong bonds with their animals, improving the physical, emotional, and mental health of both person and pet. The foundation of this work is mindfulness and connection.

As essential as mindfulness is, it is a challenge for most of us. According to a study referenced in Psychology Today humans are only truly "present" about half the time. That means the other half of the time we are distracted; worrying about the past, wondering about the future, or "checked out" scrolling through our cell phones.

Unlike humans, animals are fully present and ready to connect with us 100% of the time. Behaviour issues often stem from your pet simply wanting to connect with you. Think about a dog that barks incessantly or a cat that keeps jumping up on your desk when you are busy working. Their behaviour is telling you that they need and want your attention and are frustrated that you are not available to them.

Building a mindful bond with your pet does not need to be heavy and serious with deep breathing in a dark room. In fact, one of the best and easiest ways to connect with your pet is to have fun playing with them!

Make a play date with your pet and show up for playtime focused. Put your phone aside. Let any distractions or negative thoughts flow out of your body through your feet.

Choose something that both you and your pet like to do. Play fetch or frisbee with your dog, or go for a walk. Get out your cat's favourite toy. Remember that playing with your pet is only fun and beneficial if both you and your pet are enjoying it.

It doesn't "count" if you are talking on your cell phone while tossing the frisbee. Talk to your pet while you are playing, and praise them. Laugh and smile, and let them know that you are having fun. Animals like to see us being happy!

Chances are you will feel happier, calmer, and more productive after your play date. You will probably notice that your pet is more relaxed and well-behaved too. Like you, they have had a chance to get some exercise, release stress and build a connection with someone they love.

www.healingyouranimal.com

THE SPIRITUALITY OF BIOPHILIC DESIGN

"What is a column on spirituality doing in a journal on biophilic design? Pull up a chair."

Maureen K. Calamia

Most of what we hear on this topic of biophilic design is about the measurable impacts on physical and mental wellbeing. We learn about how nature improves productivity, recovery from surgery, and decreases absenteeism and turnover. We hear mostly about high-end, highly visible corporate and public projects creating biophilic spaces. The emphasis is on how biophilic design can improve the bottom line.

But is that what biophilic design is all about?

Not so, when I discovered it back in 2008 while searching the internet. I saw that biophilic design was a modern counterpart to the ancient practice of feng shui. Even Stephen Kellert said as much when I met with him a few years later at his office at Yale.

"The idea of biophilic design arises from the increasing recognition that the human mind and body evolved in a sensorially-rich world, one that continues to be critical to people's health, productivity, emotional, intellectual, and even spiritual wellbeing." Stephen Kellert, Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life, p. vii.

Since then, proponents recognized that in order for the practice to become adopted in building, renovation, and re-design projects, the message had to appeal to a corporate, profit-focused audience.

Has the message been watered-down? Have the attributes of biophilic design been sanitized and stripped of their full meaning and potential to make it more palatable for business? More focused on stats, technology, and products, has it lost part of its humanity, something that biophilic design was supposed to help cure?

Scientist and social critic, C.P. Snow, is quoted in the 2002 book, The Good in Nature & Humanity: Connecting Science, Religion, and Spirituality, edited by Stephen R. Kellert and Timothy J. Farnham (p.3)

Science reduces and oversimplifies
Condenses and abstracts, drives toward generality
Presumes to break insoluble
Forgets the spirit
Imprisons the spark of artistic genius.

What was acknowledged in this book, at the early stages of biophilic design's development, has been forgotten. Science reduces and oversimplifies and loses its heart.

Several sets of biophilic attributes have been created over the years, published first by Kellert and then by others, but there are some elements that seem to have been dropped from the early days.

In his 2008 book, Biophilic Design (p. 15) Kellert's list includes two attributes that are given little coverage in later guidelines: Placed-Based Relationships and Evolved Human-Nature Relationships. Some of the elements missing are:

- Geographic, historical, ecological, and cultural connections to the land
- Spirit of place
- Curiosity and enticement
- Affection and attachment
- Attraction and beauty
- Exploration and discovery
- Fear and awe
- Reverence and spirituality

Why were they removed from future renditions?

Essentially, I believe it is because these elements were deemed too subjective and not easily measurable, which can make its application a challenge, putting a burden on project teams. And unfortunately, putting a spotlight on spiritual wellbeing is not a goal in most, if any, build projects.

But I do think this is changing.

My work in feng shui has given me a different perspective than most. I discuss spirituality with my clients and see more people than ever talking about their spirituality.

Feng Shui's goal is to create spaces for the whole individual. It acknowledges that our environments impact our thoughts, actions, and behaviour. And I am grateful for the environmental research that has been done for the benefit of biophilic design. It also benefits the adoption of feng shui.

In this column, I will share ideas related to these topics. Biophilic design, feng shui, and the pursuit of spiritual wellbeing. How the adoption of biophilic design helps us restore a connection to the natural world. And how this is just the start of recognizing the truth, that we are not separate. We never were. And how our deep relationship to trees, wildlife, weather patterns, and the great landscapes of the earth are a necessary part of our survival.

www.luminous-spaces.com

Humans in Trees

1. Things we have in common with trees

Anicee Bauer

Hello, my name is Anicee Bauer. I'm an environmental psychologist, who likes to plant seeds. Literally and figuratively. I want to plant seeds of transformation because our world urgently needs change. But in my view the problems we face today reach further down the rabbit hole than we expect or are able to see. Yes, we are dealing with heart-breaking environmental drama, but I regard them as a consequence of our current societal systems, that no longer serve mankind or the planet, but still determine how we see the world.

And that is a problem. **Because how we see the world determines how we do things.** And as Einstein pointed out: "We cannot solve our problems with the same thinking we used, when we created them". So, to change things in the long run and build new systems, we first need to change our thinking. And that means we have to look inward. In nature everything grows from the inside out, and being part of nature, the same applies to us humans. Only if we first re-shape our inner landscapes will we be able to also create outer landscapes, that reflect a healthy, sustainable and biophilic eco-system! What we think and believe, we become and create!

Since long the core of our thinking has revolved around our human existence on Earth. But somehow along the way we have forgotten that everything is connected and that we are (part of) nature. We cannot recognize ourselves in nature anymore. Have you ever seen a human in a tree? Literally, I'm sure you have. And you probably also made your own experiences of tree climbing as a kid. But have you ever figuratively seen a human in a tree? That's when the magic happens! And that is what this column is about.

I want to take you on a journey into the world of trees, that many of us don't even know exists. There is so much to know about trees, so many ways we are connected to them and so much we can learn from them… It's absolutely amazing! And by slowly exploring this world piece by piece, I believe we can broaden our view on life and all living things and develop a new sense of belonging that will lead us to a more spiritual understanding of ourselves as being part of a greater whole. And in the aftermath, we naturally will design our physical surroundings accordingly: more like an organism, a support system, a companion … more like home.

So, let's dive into the wonders of the woods, shall we?

To start off, I want to lay the groundwork and make a simple case for the things we have in common with trees. Because recognizing similarities, where we initially thought there were none, can be a powerful and unifying thing!

The most obvious communality is of course our physical appearance. Trees and humans both stand upright, have a stem or a body, a crown or a head and branches or limbs, that can move, grab things, grow into odd shapes, bend at different angles – and break! We both have an outer layer of protection, the bark and the skin, that has an amazing potential to heal itself but is also likely to leave a scar – sometimes for life. We both come in all kinds of sizes, shapes and colours and every single one of us is unique. There are no two humans exactly alike on this Earth – but also no two trees! Ever thought about that?

Moreover, the fractal design of the human lung looks suspiciously similar to the anatomy of a tree, a phenomenon called "structure-function relationship", meaning that structures with the same function (breathing in this case) simply look alike. But what is even more interesting: humans and trees are symbiotic counterparts of each other. We provide the necessary conditions for one another to (continue to) exist! Trees take in carbon dioxide and release oxygen – humans do the opposite. We each complete only half of a full respiratory cycle! ... And I'm sure you've heard this somehow sometimes. But do you really feel it? Do you really deep down grasp the meaning of it?

Lastly, I want to point out a commonality, I find especially fascinating from a psychological point of view. Humans and trees both live in communities. A forest is not just a bunch of trees. It's a like a "colony" with interdepend and cooperative relationships. Just like humans, trees know the family dynamics of grandparents, parents and children. They greatly respect the wisdom of their elderly, especially their strong Mother Trees (although I'm not sure that this is actually something we have in common...). Mother Trees hold important centre positions within the "wood-wide web", the gigantic underground network of fungi, that extends, protects and connects the roots of trees so that they can absorb and share nutrients and water.

But this network is about more than survival. It enables trees to communicate, express their emotions, send extra nutrients to young, sick or damaged trees and warn each other when there is danger. Trees live as one big entity because they know that they are only as strong as the support that surrounds them... like the Ents in "Lord of the Rings"! And I have to admit: the more I learn about trees, the less this movie appears fictional to me. Because there clearly is more to a tree than meets the eye. And a whole lot of it is going on under the surface, without us having the slightest idea!

Sounds familiar, fellow human?

So, the lesson I hope we can learn from this is to become more open-minded, considerate and yes: adventurous! Let's not longer fool ourselves by assuming that (only) what we can see, perceive, understand, imagine or measure is the truth.

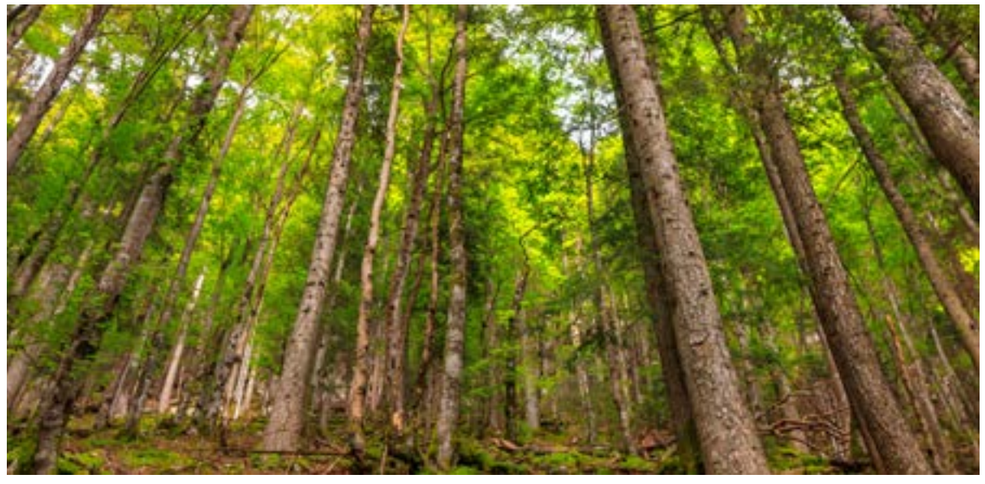
Let's liberate ourselves. Let's first believe for a change. And then see.

www.humansintrees.com

Further reading:

Beiler K.J., Durall D.M., Simard S.W., Maxwell S.A. & Kretzer AM (2010). Architecture of the wood-wide web: Rhizopogon spp. genets link multiple Douglas-fir cohorts. New Phytologist, 185: 543-553.
Simard, S.W. (2021). Finding the Mother Tree. Penguin Random House.
Wohlleben, P. (2017). The Hidden Life Of Trees. William Collins.

"Between every two pines is a doorway to a new world." Jon Muir



BIOPHILIC CITIES

Each edition of The Journal of Biophilic Design will be exploring the very exciting developments taking place around the world where more and more cities are becoming Biophilic. Some of our urban environments are becoming greener, more sustainable and incredibly beautiful. We share news, updates, research and opinion pieces by those working and researching on the frontline of Biophilic City developments.

Why we Need Biophilic Cities

Naturae enim non imperatur, nisi parendo
We cannot command nature except by obeying her
Francis Bacon (1561-1626) [1]

Dr Joanne M Leach

It has been hot in the UK this summer. The Met Office reports that this summer has been the joint hottest on record (tying with 2018).[2] With little air conditioning available in the workplace and cities becoming super-heated, employers worried about their employees working from the office and offered them home working. The thinking being that employees may not have air conditioning at home, but they probably live in less built-up areas that don't suffer from the increased temperatures found in cities, and that they have access to a garden or nearby park that offers natural cooling.

When temperatures are high cities become hot. It is called the 'urban heat island' and it is caused by the reflection of heat off surfaces such as glass, and the absorption and radiation of heat from surfaces such as concrete and asphalt. If you've ever walked barefoot on the pavement in the hot sun you will have felt its heat, and probably moved quickly to walk on the cooler grass. Grass and other greenery don't reflect or radiate the sun's heat, they absorb it and turn it into energy for growth.

When plants grow they absorb carbon dioxide and emit oxygen. Through this process humans are locked into a symbiotic relationship with them: what we breathe in, they breathe out, and vice versa. Plants are locked into the same symbiotic relationship with other things too, like cars, vans, trucks, trains, and airplanes, although this relationship is more complicated. Plants absorb the carbon dioxide emitted from tailpipes as well as that emitted in the production of the vehicles themselves (including electric vehicles). They also absorb the emitted particulate matter. These are the minute particles released into the environment every time the brakes are applied, engine lubricants are heated, and wheels turn against roads or rails.

Plants literally 'clean' the air, but in order to do so effectively the right plants have to be planted in the right places.[3]

Biophilia is about the human need to be in or near nature.[4] Although this includes blue spaces (such as rivers, lakes, and the sea) and fauna (birds, insects, fish, and mammals) it is most often interpreted to mean flora (plants). Biophilia is about more than the cooling and air cleaning benefits we get from greenery; it is about an inherent need for humans to be in or near nature in order to be healthy and happy. For decades we have known that hospital patients that have a view of nature get better faster;[5] that workers in offices with lots of indoor plants are more productive, less stressed, and take fewer days off sick;[6] and that people who convene with nature on a regular basis, for example by taking walks, are happier,[7] the more so if they take their walks with a group.[8]

Cities offer a unique opportunity for biophilia, although perhaps it is more accurate to say that cities have exposed biophilia. The world is urbanising. More people are living and working in cities, existing cities are growing, and new cities are being created.[9] With people spending so much of their lives in cities, it is important that cities provide more than basic services such as jobs, houses, security and commerce. If cities are where we are living our lives, they need to keep us healthy and happy too.

The Biophilic Cities Network brings together cities, organisations and individuals "committed to planning and designing cities with abundant nature".[10] Cities that join must demonstrate their current biophilic credentials and their future plans, and agree to monitor and measure progress against agreed indicators. Through the network's 'pattern library' members have access to examples of biophilic design in practice, and can submit their own.

Biophilia in cities isn't limited to large scale designs, such as creating parks and daylighting rivers (uncovering the culverted rivers that flow through many cities). Buildings are a rich biophilic resource that can be greened inside and out, often with added benefits. Green roofs, for example, keep buildings cool in the summer and warm in the winter. They absorb rainfall, reducing run-off and the pressure on oversubscribed drainage systems, thus preventing flooding. Greening balconies on tall buildings provides shade and fresh air to those in the building. Both of these designs provide horizontal and vertical 'green corridors' for insects, birds, bats, and other animals to move around the city. Some creatures move easily through a city, but others (such as small birds) struggle to traverse environments without stopping-off points like the branch of a tree or bush. Bees need destinations such as flowers and other food sources and will fly high to reach them. At night, bats won't fly through a beam of strong light (such as a security light) and insects uselessly exhaust themselves flying around electric lights. This has led some cities to create 'dark corridors' where streetlights are turned off or turned down during the early morning hours when few people are about, and residents and businesses are encouraged to turn off unnecessary outside lights.

The Cheonggyecheon river project, Seoul

The Cheonggyecheon river runs through centre of Seoul. Its name means 'clear stream creek' and it is a tributary of the Han river. It was culverted in the 1960's and a raised motorway was eventually built over it. The resultant surrounding environment was as you might expect, dominated by concrete and cars.

Between 2002 and 2005 a 6 kilometre, city-centre section of the river was daylighted: the raised motorway was removed, the river exposed, and the banks of the river and surrounds were redeveloped with people in mind. Visitors are now greeted with a vibrant environment, beautifully designed pedestrian bridges that invite them to cross, and sculptures and other public artworks.

The impact of daylighting the river has exceeded expectations. The river is an exciting and desirable place to live, work and visit. But it isn't just people who have returned (displacing the cars that previously dominated), there are fish, birds and insects that now call this river home.*[11]*

Singapore, a city in nature

Creating a 'city in nature' is the first of five sustainable development pillars found in Singapore's ambitious Green Plan 2030.*[12]*

This ambitious city-nation intends to set aside 50% more land (200 hectares) for parks. This includes developing new parks and enhancing existing parks.

It will ensure all households are within a 10-minute walk of a park.

By 2030, Singapore will have planted one million new trees (doubling its current annual tree-planting rate). These new trees will absorb 78,000 tonnes of CO2, and with existing vegetation, will clean the air and moderate temperatures.

By 2035, Singapore plans to have established 1000 hectares of additional green space that will, inevitably, encourage wildlife. Recognising that wildlife can come into conflict with people, the city-nation is working with communities and organisations to ensure people and wildlife are able to live harmoniously.

It is at this point that biophilia – the human need for nature – comes together with ecosystem services – "the benefits provided by natural ecosystems that contribute to making human life both possible and worth living".*[13]* Ecosystems provision services (such as water to drink), they regulate services (such as temperature), they provide cultural services (such as recreation), and they support other services (such as nutrient recycling). Although couched in the language of what ecosystem services can do for humans, these benefits extend beyond this to what they do for the good of the entire planet.

In this way, biophilia is a central component of our effort to reduce and reverse human-induced climate change. Our exposure to nature directly impacts our behaviour: the more we are exposed to nature, the more environmentally responsible our behaviour becomes.*[14]* If designed well, a single city can offer millions of people the opportunity to connect with nature and provide them with the motivation to protect our most valuable resource: the planet.

Remember this as you water the potted plant on your desk, as you put up a hanging basket, and as you replace that decking with lush garden plants. Think about it as you admire a green wall, and are amazed by trees growing on balconies and rooftops many stories in the air. Feel inspired as you walk through cities that feel more like parks and sit on the bank of that daylighted river you had forgotten was even there.

To connect with Dr Leach
https://www.birmingham.ac.uk/staff/profiles/civil/leach-joanne.aspx

Footnotes

1 Novum Organon, Aphorism cxxix, Spedding translation
2 https://www.bbc.co.uk/news/uk-62758367. Heat records in the UK go back to 1884
3 https://www.sciencedirect.com/science/article/pii/S0048969721036779
4 https://www.merriam-webster.com/dictionary/biophilia
5 https://pubmed.ncbi.nlm.nih.gov/6143402/. It is worth noting that evidence conclusiveness remains elusive, not least because of the number of different ailments with which people suffer. However, that there is general consensus about the health benefits a view of nature provides.
6 https://www.actahort.org/books/775/775_13.htm
7 https://journals.sagepub.com/doi/abs/10.1177/0956797611418527
8 https://www.mdpi.com/1660-4601/10/11/5603
9 https://www.oecd-ilibrary.org/urban-rural-and-regional-development/cities-in-the-world_05384b8c-en. Noting that what, exactly, constitutes a 'city' isn't universally agreed
10 https://www.biophiliccities.org/
11 The daylighting of the Cheonggyecheon river does invite some criticism. For example, the water is pumped from the Han, and the project's success has led to gentrification (the displacing of communities that can no longer afford to live and work there). Nevertheless, it is a reminder that much can be achieved even if perfection proves elusive.
12 https://www.greenplan.gov.sg/
13 http://blog.soton.ac.uk/serg/files/2017/12/The-little-book-of-ecosystem-services-in-the-city.pdf
14 https://journals.sagepub.com/doi/abs/10.1177/0956797611418527

WELCOME MILANO BIOPHILIC OFFICE DISTRICT NORTH OF MILAN

Odile Smith in conversation with Yuki Ikeguchi from Kengo Kuma Associates

New architecture and the design of office buildings are important in our cityscapes, and Biophilic Design can and should be playing a major part in how we look at planning the city landscape. The beauty, public interest, and awe-inspiring potential that is latent in a biophilically designed building really helps a community flourish when it is realised. It also supports net zero ambitions, nurtures local wildlife and gives joy to all who use the space. It also creates healthier spaces inside and out for the users of the building and can act as an anchor, a driver for tourism and a pull for lifting a community's sense of pride. Odile Smith, who works in the home industry, and is a sustainable procurement expert, lives in Milan near one of the most beautifully conceived Biophilic office buildings designed by Kengo Kuma associates. Here she interviews **Yuki Ikeguchi,** one of the architect partners for us to find out more.

Odile
Tell us about this fabulous project.

Yuki
Our approach to architecture is to engage with the environment, the biophilic elements, the natural elements, to build with and be surrounded by them. When you think about it,

we all spend a large amount of time in everyday life in an office space so it's even more significant to be surrounded by these natural elements even in a work environment as if you were in the middle of the cabin, in the middle of the nature or the woods.

Odile
Well, of course, it's an office building, so naturally, the expectation is repetitiously modularized, very flexible, very uniform space and planning. That is the usual typology by developers or office users.

Yuki
It's different in this case, we apply a rather dynamic typology. In fact, it's not a typical office typology at all. There are no repetitions on each floor. Everything is shifted and the space in between is quite dynamic. It's more playful. Also, if you are approaching the building, it doesn't call out 'office', it doesn't have a typical appearance of an office. It's built with Timber, it has rotation, it has space in between, making the courtyard and the light filled base possible.

Odile
Did the client understand the benefits of biophilia before they came across your project? Or was it that when they saw it they realized, this is really new and understood the wellness aspect that it was going to bring or were they already aware of biophilia?

Yuki
Well, I can only speak from my own interpretation, but of course, we had a walkthrough before we actually started coming up with the scheme with the client and developer. They did express a clear vision of connecting to the park, Parco Lambro and to make the public areas like the piazza open for the community, open for people and even to draw visitors from the centre area of Milan because it's quite on the outskirts of the city. But it's an architect's job, I believe, to make it far more visualised and formalised so that the developer can actually see their vision, through our architecture. So, I think there was a very good synergy with our proposal.

Odile
I wanted to ask you a couple more things because some things are quite stunning. The use of lights, which is obviously a very important biophilic element, and the use of plants for the regeneration of the air. Can you explain the strategy behind the design in the various areas, for instance, there's a lot of timber and I know that it's not always easy to find these big pieces of timber to sustain this kind of project.

Yuki
Yes, there was a lot of thought put into it. First of all, the building is not a simple expression of multiple levels but it's like fingers that are spread out. The higher portion of the building is close to the tower, then as it cascades down it gets slowly lower towards the Parco Lambro. As the roof cascades and comes closer to your eye level, its intention is to merge the roof surface, the green surface, and into the horizontal plane of the trees in the park. Also, this configuration is like a finger that lets the light in, because these fingers contain the office building while the space in between, you can imagine that it's a courtyard or interior atrium that lets the light in. The volume and planning have a lot to do with contributing and defining what makes our building biophilic. Because you need light, you need air. So every space in the interior is either to oversee or have a view to this garden interior or exterior and the roof garden. So that's what's special about it, everyone gets to have this view and access to the green area. And timber is of course one of the most important things to make the building possible to the biophilic environment, but it's also acting as a structure and not just to make the interior feel very warm and woody, but the timber contributes to reduce the common footprint in view of the concrete. So all the structure that are composed with the engineered timber beams in combination with the CLT (cross laminated timber). So it's functional, structural, sustainable and contributes to the biophilia as well as to keep warm and comfortable feelings inside.

Odile
I also wanted to ask about the use of the plants for the regeneration of the air. I saw you had some kind of collaboration with Stephanie Mancuso.

Yuki
Yes, Professor Mancuso came in after our concept design and the client had a great idea to implement his "Fabrica dell'aria" (the air factory) into the interior environment which works hand in hand and in synergy with our design. So he did come in and we worked together to have glass-encased vegetation that produces the air and helps distribute the fresh air inside. So it's both creating a green setting as well as air purification. It's a beautiful idea, I think.

The air factory is, imagine something like a glass box that is placed inside the entire space and on the top of the glass box, there's an air outlet. So, it gives the inner interior environment fresh air, but that doesn't mean that you've been constrained from the outside.

Odile
One last thing. Was there anything in particular in this project that struck you which you found particularly challenging or gratifying?

Yuki
Well, it's complex. It's not easy to do timber buildings in such complex configurations, especially if of course the developer does not take it for granted that it's a unique building, but we must make a huge effort to make it rational. We cannot just suggest the solution solely because it's beautiful and for the environment, there's the business side of the project as well. I think it's an architect's mission to balance the two. But I'm just happy that time will be sympathetic to our design. So, they won't just focus on it purely as an office building that seeks only the rational and the most economical way of designing architecture. But they understand that they have made a lot of effort implementing what we suggest and envision. So that's the great thing about the project.

thehappyhealthyhomeshow.com

For more information on the architects
Kengo Kuma Associates
https://kkaa.co.jp/en/

Are We Ready to Come Down to Earth?

A thought-provoking opinion piece by author, coach and Nautilus Prizewinner. Should we be rethinking WHERE we make our decisions?

Mary Reynolds Thompson

I emigrated from London to New York in January 1981 at the age of 24. I recall my first day exploring. It was one of those cold, crystal-clear days, the sky a fierce blue, and the towering skyscrapers liquid silver in the sunlight. My neck hurt from all the straining upward, the dizzying sense of verticality. It was exhilarating to think of all those people working hundreds of feet above the ground, more divine than human. How wonderful to rise above it all.

Years later, I recognized how these buildings cast long shadows. The financiers, the wheeler dealers, worked in their lofty perches, heads in the clouds—the mythic gods of capitalism. And to this there was a cost. Freed from the dirt and detritus of earthly life, they became dangerously ungrounded, absent of humility, a word that comes from the Latin humus, for earth.

The eco-feminist Starhawk writes that it is time "to speak of deepening, of getting down as well as getting high." Her message is that we need to root ourselves in the darkness of earth and the loamy intelligence of our own bodies. And living and working miles about the ground, doesn't easily allow for that.

Skyscrapers are magnificent, perhaps even necessary given population density. But they are also the architecture of disconnection, perfect for cultivating grandiose ideas unrelated to natural laws or the challenges of people's everyday experiences. When CEOs make decisions from a Zeus-like height, should we be surprised if free-market economics takes precedence over the environment, or soaring profits over dwindling resources?

How would the world change if business leaders were required to make their decisions rooted in an entirely different environment? Say, in a forest, or a meadow, or by a creek. If they were made to walk barefoot, on soft ground, before deciding their priorities.

Of course, many would call this the rambling of a romantic. But then again, where has hyper-rationality gotten us? Isn't it time to ensure that our leaders—be they business, political, or educational, spend time in nature, before they wield their power? Perhaps they would discover that nature, unlike the marketplace, values diversity, reciprocity, collaboration. And that these qualities are at the very heart of sustainability.

My 24-year-old self was in awe of those towering New York edifices. Now I live in Marin County, California, my tallest companions the redwood trees, who are trying to survive in an increasingly hot, dry, world. And this, while business leaders like Branson, Bezos, and Musk build rockets to see who can go the highest.

But this, too: The founder of the outdoor gear and clothing company Patagonia, Yvon Chouinard, just announced that 100% of the company's voting stock is being transferred to a trust that will be dedicated to defending nature. "**Earth is now our only shareholder,"** he said. Started by a band of nature buffs--climbers and surfers--Patagonia's headquarters still hugs the coast of Ventura, California, where employees regularly ride the waves during their breaks.

www.maryreynoldsthompson.com

Further reading

Starhawk, Dreaming the Dark. Boston: Beacon Press, 1982, pp 26.
Allyson Chiu, "Patagonia founder gives away company: Earth is now our only shareholder." Washington Post, September 14, 2022

Union Corner Plymouth, Devon

Case Study

A community centre with a reverence for life

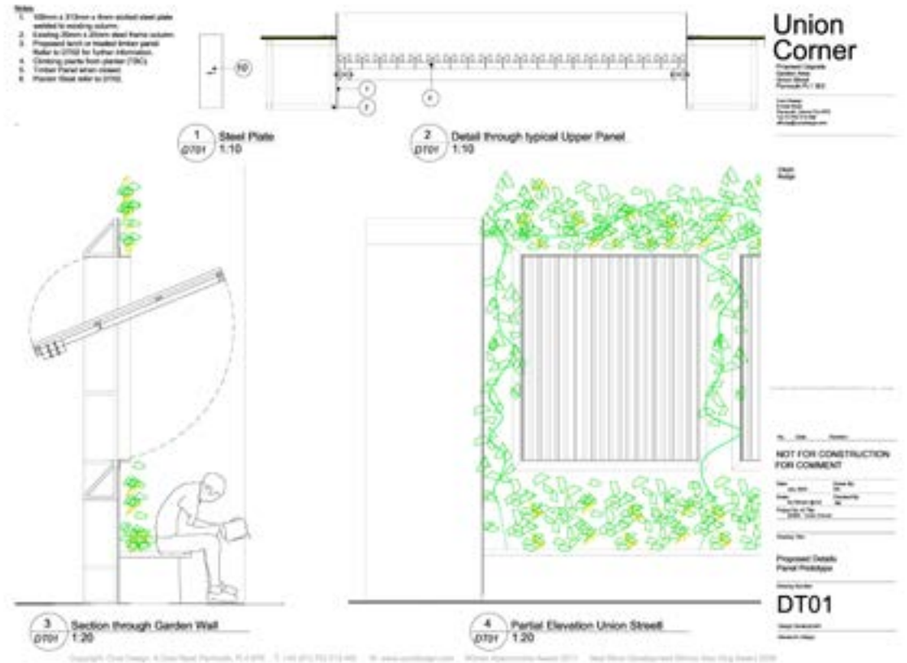
Robert Bedner,
Architectural Technologist

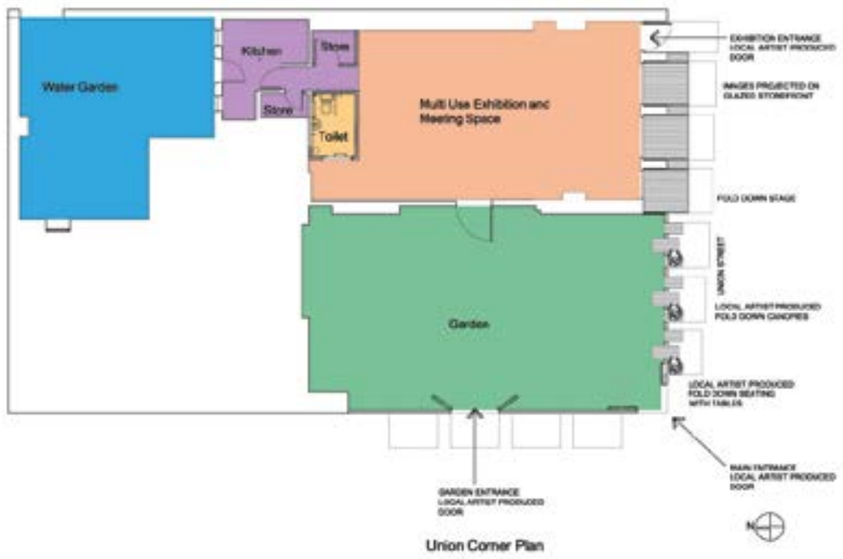
The Union Corner Community project was the founding project of the local community group Nudge Builders with the dream of transforming and bringing life and community spaces to a neglected and virtually abandoned city centre area in Plymouth. Billboards were erected in the area with the message “love Union Corner”! Grass roots and crowd funded with support from the local council,the project is currently in its final stage of development which includes a low cost living wall surrounding both the building and the enclosed garden utilizing a wire trellis system. The community centre spaces are now fully booked throughout the year and Nudge has used this model to secure three further adjacent properties down the street.

This type of development model has been recognized and copied by other cities throughout the UK.

The brief for the project included a ground floor multi use space and two urban gardens. The gardens were to be open and welcoming while at the same time providing privacy and security.

The emphasis on the design was from a biophilic perspective. In this context, biophilic design can be described as a type of design that has “a reverence for life”. The building construction focuses on connecting people to nature through its use of materials and its design. The building construction focuses on connecting people to nature through its use of materials and its design. In addition, the green wall increases biodiversity and the green plot ratio by benefiting the local bees, butterflies and insects while also cleaning the air pollution from passing trucks and cars and helping to regulate the internal temperature (on the shop front) and protect the facade.





Union Corner Plan

The biodiversity benefits might at first appear minimal. Why biodiversity?

What's being lost with the extinction crisis, or the biodiversity crisis, is not just species but their interactions.

So what's the big deal if we have less insects or or plants?
When you lose a particular insect or butterfly or plant-
you lose more than something beautiful in the natural world
you lose more than "a resource"
you lose an interaction.
you lose a critical link in a system of life
you lose an understanding and possible future knowledge
of what the earth is and our place in it.

The benefits to visitors include handcrafted timber elements (including tactile handles produced by local artists and craftspeople) are fixed into a low cost backdrop of prefabricated industrial cladding that wraps around the garden and becomes part of the main facade.

These elements make up new openings in the construction that admit light, air and people into the centre. Every time a visitor walks through a door or opens a window they come in direct contact and touch these handcrafted elements and become more aware of these natural materials. They sense the care, thought, and craft of the local people that made them. Small peep holes are located around the garden facade for for children to look through. Sometimes they can look through and other times a mirror is placed inside and they see themselves.

Journal of Biophilic Design

BIOPHILIC CITIES

The front garden facade has canopy panels. Originally inspired by the boarded up shopfronts in the area, these panels are different. The timber panels open during the day and like a flower, close in the evening. The canopies create protection from sun and rain and as well in some places areas to sit and talk with views into the garden and across the street to Place Theatre.

The rear garden will be decked with a focus on water and light. Existing rainwater downpipes are replaced with hand made water chains that provide a waterfall sound when in use and recycle the water for the plants.

Buildings - (especially buildings incorporating biophilic design) can take steps to support and even increase the natural world both for the benefit of nature and for the benefit of our own health and well being.

The project won "Best Community Project 2017" in the local Abercrombie Awards which awards the best architecture in the city every four years.

www.curadesign.com

National Park Cities

Biophilia at the City Scale

Ross O'Ceallaigh

'Is that a lemon tree? In London?'. I'm on a guided tour of community orchards and fruit trees in south London. Something about this lemon tree, growing casually in a city garden 3,000 kilometers from its homeland, captures the group's imagination. Our guide, Divya, is a London National Park City Ranger and she explains that the owners brought the tree back from Cyprus 40 years ago so they could have a piece of home in their front garden. And it has been bearing citrusy sweet fruit ever since.

Divya explains that once you start looking for them, fruit trees are practically everywhere in London and they often have fascinating and personal stories behind them. Growing alongside popular fruits like apples and pears are more exotic varieties like avocado, pomegranate and banana trees. Against all odds, they thrive in the city's balmy microclimate. She's been chronicling their locations and stories on her Instagram page, 'Fruity Walks'.

She muses, 'There is just something unexplainable of being able to see a piece of fruit grow, and you realise how long it takes for that piece to grow from seed to mouth'.

Deer in Richmond Park photo Luke Massey

Clissold Park in London, photo Ross O'Ceallaigh

The magic of urban fruit trees inspired Rangers Divya and Lesley to work with their local community and Borough council to transform two forgotten spaces in their neighbourhood into community orchards. Once fully established, the orchards will be a place for the community to meet and connect with nature, and for school children to learn about food growing. The organisers are also keen to establish an annual harvest party, revitalising a rural tradition in the middle of the city.

As the Covid-19 pandemic forced many of us to work from home, local parks and walking routes became lifelines. Suddenly living near a good quality green or blue space felt not only like a perk, but a basic requirement for our physical and mental health. This rediscovery of the nature around our homes has also highlighted how our city centres and places of employment can often be barren and grey. But what if you lived and worked in a National Park City like London?

We all know about the great National Parks of the world; Yellowstone, Victoria Falls, the Peak District. Notice that none of these are in cities? So, why not? Mapping of London reveals that 49.5% of its surface area is green and blue, including forests, back gardens, swimming ponds and urban farms. The city is home to 15,000 species (alongside Homo Sapiens) and the density of trees means that London could technically be considered a forest.

Recognising this diversity of life in the city, a group of Londoners came together in 2014 to ask a simple question: what if we treated London as if it was a national park? After years of tireless campaigning by this grassroots movement, London was designated the world's first National Park City in 2019 by the Mayor.

London National Park City - as a place, a vision and a movement - exists to connect people to the nature around them and make the city greener, healthier and wilder. This is biophilia at the city scale.

That's where the Rangers come in. I know what you're thinking, and no, they don't ride around on horseback or wear a special hat. In fact, it's very hard to describe what a typical Ranger looks like or does. Among the cohort of 150 volunteers are artists, teachers, engineers, ecologists, musicians and green-fingered community organisers.

Rangers work in their local communities and across the city on projects to tackle the climate and ecological crises, scale greening initiatives and conservation activities, run education and youth programmes, improve access to green and blue space and inspire Londoners to connect with nature.

Ranger Alisa creates nature-inspired artwork from upcycled materials, to encourage people to engage with non-human life. Ranger Allan in west London teaches orienteering skills to young people in city parks, showing you don't need untouched wilderness to get lost in nature (and presumably find your way again). Rangers Paula and Katie run forest school programmes across London to ensure city kids get the chance to explore and learn from nature. Ranger Mike founded the London Fungus Network, which connects Londoners with the urban Fungal Kingdom (or Queendom) through mushroom forays, workshops and art that inspire people to look at nature in a different way.

Although London boasts an enviable network of natural spaces, access to them is often uneven, with deprived and marginalised communities living in the greyest neighbourhoods. Like Divya and Lesley, many Rangers are actively creating new green spaces and biodiversity in the city. For instance, Rangers Luke and Charles are greening leftover urban spaces in north London with a range of community projects, including establishing a local nature reserve. They tell me that the land had to be cleared of decades of illegal dumping, which uncovered amongst other things, a still intact crisp packet from the 1980s and the chassis of a car. The nature reserve is now home to a huge variety of birds and insects that otherwise would struggle to thrive in the concrete jungle.

These are just a few examples of the vast array of initiatives and activities created by ordinary Londoners. And you don't need to be a Ranger to get involved. Anyone can be a part of London National Park City - in fact, that's the point.

Journal of Biophilic Design

BIOPHILIC CITIES

St James Park, photo Sapan Patel

The success of London National Park City has inspired others around the world. In 2021 Adelaide became the second city to be formally designated as a National Park City, and the ambition is to realise 25 National Park Cities around the world by 2025. Other cities with active campaigns include Galway, Newcastle and Christchurch. What about your city? What would change if you considered it a national park?

You can start by simply slowing down and exploring the urban nature around you. You may even get some lemons out of it.

https://greenurbanistpod.com/

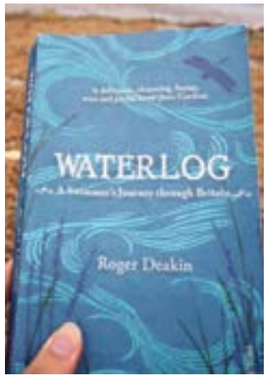
Further reading

https://designsoutheast.org/
https://www.nationalparkcity.london/
https://www.londonfungusnetwork.org/
https://www.instagram.com/fruitywalks/?hl=en

BOOK REVIEWS

Each issue you will find some excellent book recommendations, suggested by the dazzling book and gift shop Folde in Dorset

Folde Dorset



Waterlog: A Swimmer's Journey through Britain by Roger Deakin

When the late Roger Deakin decided to swim through the British Isles at the end of the 1990s, there was no inkling of the resurgence in interest in wild swimming that would follow a decade or two later. He may have been ahead of his time but he shared the same conviction about the therapeutic benefits of being "in nature", as he put it, as many of today's burgeoning number of outdoor swimmers. Deakin's account of his adventures, Waterlog, has become a bible to many and has inspired some to seek out the locations he describes in the book. Our home county of Dorset features as the place where Deakin first tried out his idea of "an amphibious ramble" in "some of the best sea-bathing in the whole of England". We're not going to argue with that.

As enthusiastic, if not accomplished, swimmers, we can't pretend that we share anything of Deakin's gung-ho fearlessness – some of his swims require more bravery than we will ever be able to muster – but we can testify to his conviction that wild swimming can have a significant impact on a person's mental health.

"Natural water has always held the magical power to cure. Somehow or other, it transmits its own self-regenerating powers to the swimmer. I can dive in with a long face and what feels like a terminal case of depression, and come out a whistling idiot."

Waterlog is considered by some to be one of the most influential pieces of nature writing since it was published in 1999; even if you count yourself as no more than an occasional seaside paddler, it's hard not to be inspired by Deakin's joie de vivre and his unfailing conviction of the swimmer's right to roam.

Waterlog is published by Vintage (£9.99)
https://uk.bookshop.org/a/8995/9781784700065

Braiding Sweetgrass by Robin Wall Kimmerer

Described on the cover as "indigenous wisdom, scientific knowledge and the teachings of plants", Robin Wall Kimmerer's book draws these themes together effortlessly throughout. From early days wanting to understand why asters and goldenrod look beautiful together, to enlisting on a general botany course, Robin describes the importance of plants in her upbringing. As a child, she recited the Thanksgiving Address, known in her native language as the Words That Come Before All Else – words that show gratitude to the ones who share their gifts with the world.

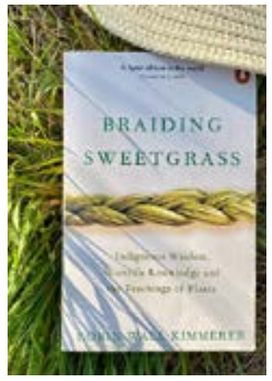
The theme of reciprocity runs throughout the book, linking what we take from the land with what we must give back. Whether it's giving thanks for crops, or asking the ground permission to take resources (and making an offering of tobacco in return), it's clear that the need to co-exist in a delicately balanced ecosystem is prevalent. This comes through in the tale of the three sisters, corn, beans and pumpkins, and how they grow together to benefit each other.

In later years, Robin takes her botany students out into the field, asking them to create a sustainable camp and food from what they can find. Patiently, and with a great deal of humour, she explains how, from trees to rushes, nature can provide to create a self-sustaining environment.

The book touches on the wider issues too – from the treatment of first nations people to the environmental damage caused by heavy industry. In doing so, she sets out the way that reconciliation and remediation can put the balance back, and indeed the importance of doing so for ongoing survival.

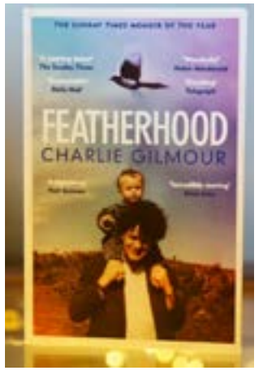
"The land knows you, even when you are lost."

Braiding Sweetgrass is a love letter to the author's children as well as the planet. Motherhood extends not only to those born of you, but also to the land you tend. Passing on the values, care and love for the lands and waters you tend are met with equal measure to caring for family, as well her students. With a firm belief that with knowledge there exists the opportunity for change, she leads the next generation to a deeper understanding of our environment, and the care needed for a sustainable future.



Braiding Sweetgrass is published by Penguin (£9.99)
https://uk.bookshop.org/a/8995/9780141991955

Featherhood by Charlie Gilmour



This book intrigued me from the moment we unpacked it from the delivery box. I've long been fascinated by magpies, in part, I think, from a hard-wired family superstition, but also from watching the antics of a loose flock that roosted opposite the house I once lived in in France. Part story of a young man who hand rears an abandoned magpie chick, Featherhood is also the story of an estranged father-son relationship and the author's attempts to understand why his father, the poet, playwright and activist Heathcote Williams, abruptly left him and his mother when he was just six months old.

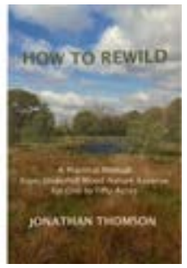
Nature versus nurture is a central theme as the newly married Charlie contemplates whether he will ever be capable of becoming a father himself. His young adulthood was a troubled one, and there was a penny-drop moment for me when I realised that I'd seen him before, on the newspaper front pages back in 2010, when he had been photographed climbing the Cenotaph during a student protest. It's hard to equate his actions then, for which he served a prison sentence, with the articulate, gifted writer whose intelligence and sensitivity are present in spades in this touching memoir. But they are indeed one and the same person and, as the book unpacks Charlie's relationship with his barely-there father, and the impact his absence has had on his life, it isn't difficult to join the dots. One of the most heartbreaking aspects of the book is Charlie's belief that he, somehow, even as a baby, must have been to blame for his father's departure. "There is no more sombre enemy of good art than the pram in the hall," Heathcote had ranted to Charlie's mother, quoting Cyril Connolly's Enemies of Promise.

As he pieces together a picture of Heathcote's life, Charlie is astonished to discover the unlikely coincidence that his father too had once hand-reared an abandoned corvid, a jackdaw in this case, doting on it with an affection he never managed to afford his own son. That parallel experience, however, does not connect the two men in the way that Charlie hopes.

His descriptions of magpie-raising are both entertaining and endearing, leaving me more enchanted than ever by the species' intelligence and playfulness but never more certain that good pets they do not make. They are messy, noisy and demanding, much like human babies, you might say. And it is through his close bond with Benzene, named after the petrochemical sheen of her plumage, that Charlie begins to trust that history doesn't always have to repeat itself.
I loved this book. It is a multi-faceted, honest and touching page-turner, told in a gentle voice despite the difficult truths that Charlie faces, as well as the none-too-charming reality of sharing one's home with a magpie. She may not be the tidiest house guest but Benzene's constant presence throughout the book, so beautifully described, is both comfort and joy. Highly recommended.

Featherhood is published by Weidenfeld & Nicolson (£8.99)
https://uk.bookshop.org/a/8995/9781474609487

BEST SELLERS



How to Rewild: A Practical Manual

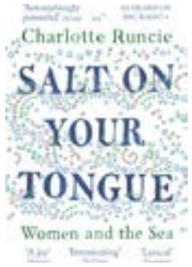
How to Rewild describes what Jonathan Thomson has done and learnt at Underhill Wood Nature Reserve over the past seven years. It draws on the steps he has taken to develop and enhance a range of habitats and what he has learnt through this work. This is a practical 'how to' manual for people who own one to fifty acres and want to increase biodiversity.

Published in Dorset (£9.00)
https://www.foldedorset.com/product/how-to-rewild-a-practical-manual/1143?cp=true&sa=-false&sbp=false&q=false&category_id=16

Wild Swimming Walks: Dorset and East Devon

This best-selling series visits beautiful Dorset, with 28 enchanting walks that visit the coves and caves of the Jurassic Coast and lush river beaches and water meadows of the countryside.

Published by Wild Things Publishing (£14.99)
https://uk.bookshop.org/a/8995/9781910636329

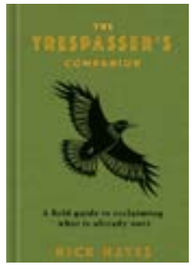


Salt On Your Tongue : Women and the Sea

In Salt On Your Tongue, Charlotte Runcie explores what the sea means to us, and particularly what it has meant to women through the ages. In mesmerising prose, she explores how the sea has inspired, fascinated and terrified us, and how she herself fell in love with the deep blue.

Published by Canongate (£9.99)
https://uk.bookshop.org/a/8995/9781786891211

The Trespasser's Companion



The Trespasser's Companion is a rallying cry for greater public access to nature and a gently seditious guide to how to get it: by trespassing. We are excluded from the majority of our land and waterways in England, but bestselling writer Nick Hayes shows how reclaiming our connection to nature would be better both for us, and for nature.

Published by Bloomsbury (£14.99)
https://uk.bookshop.org/a/8995/9781526646453

The Way Home

"It was 11pm when I checked my email for the last time and turned off my phone for what I hoped would be forever." In this honest and lyrical account of a remarkable life without modern technology, Mark Boyle explores the hard won joys of building a home with his bare hands, learning to make fire, collecting water from the spring, foraging and fishing.

Published by Oneworld Publications (£9.99)
https://uk.bookshop.org/a/8995/9781786077271

FINAL WORD

Dr Vanessa Champion,
Editor

At the end of every podcast I ask our interviewees the same question, and I think it's my favourite part of the show. What I love about it, is that although each person is an expert in a different field, whether it's lighting, environmental psychology, healthcare, workplace, design, architecture, landscaping, psychology, acoustics, you name it, they all have a beautiful dream of a world and environments where nature and Biophilic Design is the magic that not only sweeps a beautiful connection with the natural world but the ideas are often so simple they feel achievable!

Some of the replies have been so uplifting that I've come off the podcast wishing I could fast-forward a decade to see some of these dreams materialise. The more I hear people's visions, the more I feel optimistic.

The Biophilic Design movement is really exciting. We have the opportunity now, right now, to make a difference to everyone, to every living creature, to our immediate environment, our towns, cities, our countries and ultimately our planet. Let's continue talking, sharing ideas, research, examples and make a better world together.

So, in keeping with the format, I'm also asking you, "If you could paint the world with a magic brush of Biophilia what would the world look like?"

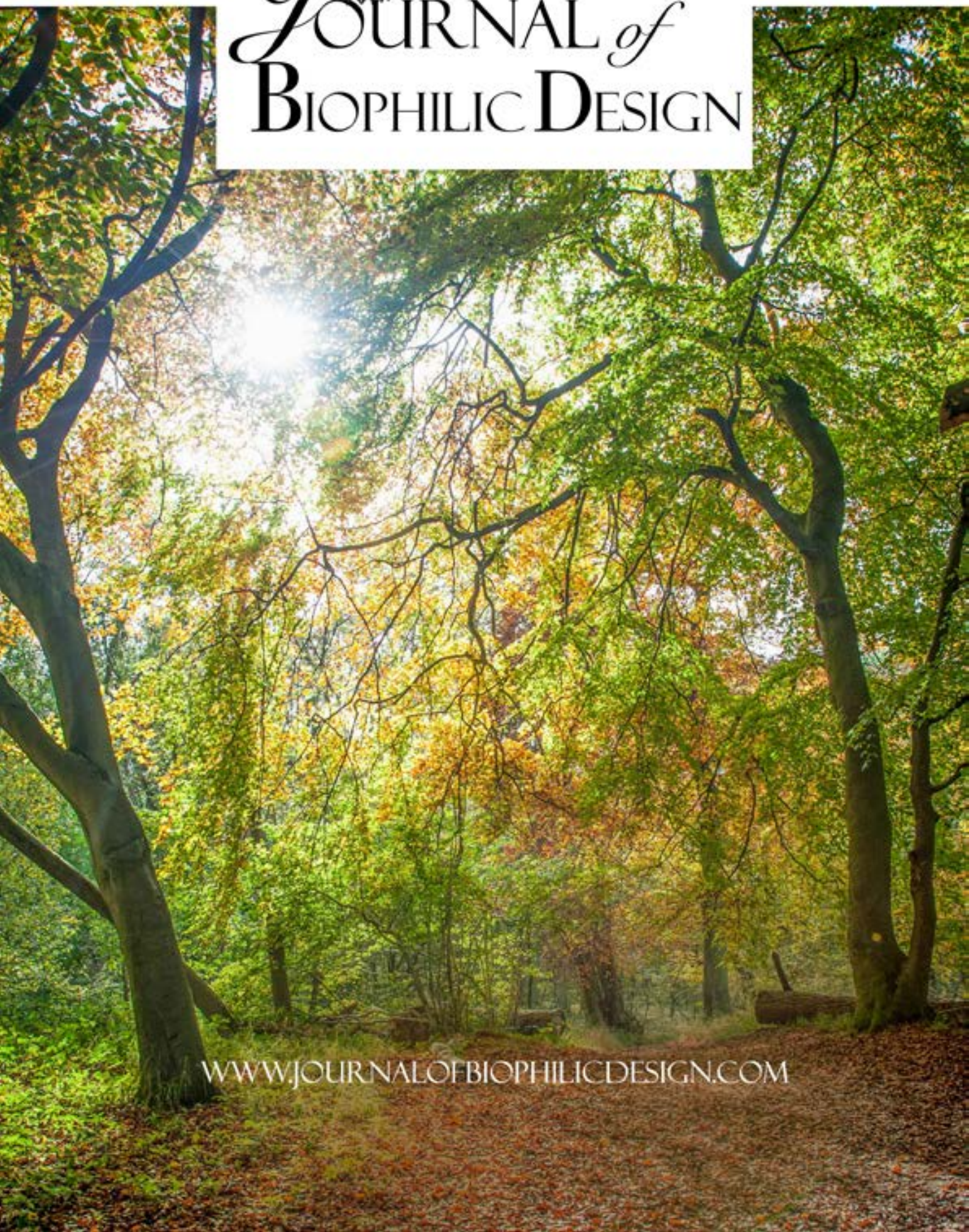
Email me your answers to editor@journalofbiophilicdesign.com and I will feature some in the next edition of The Journal of Biophilic Design.

If you haven't listened to the Journal of Biophilic Design podcast as yet, you can find it on YouTube, Audible, Spotify, Amazon Music, iTunes, Stitcher and all the RSS feeds, as well of course on our website.

See you next time.

www.journalofbiophilicdesign.com

Journal of Biophilic Design



WWW.JOURNALOFBIOPHILICDESIGN.COM