

places and spaces

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Inspired by nature

Biophilic design focuses on people and the natural world. This improves wellbeing in buildings and also has economic benefits.

By Elke Hildebrandt

A place to immerse oneself in the forest in order to nourish body and soul may not sound like the typical description of a new-build project with 20 apartments and a car park. But that is exactly what Het Bosbad in Eindhoven is (see photos p. 60–61). The development by architectural firm Gaaga is inspired by the Japanese practice of shinrin-yoku (forest bathing), which

reached Europe several years ago. This form of city detox is an officially recognised therapy in Japan. Immersing oneself in the forest has a stress-reducing, mood-enhancing effect. Even a short forest bath improves breathing, pulse and blood pressure. Anyone who lives near a forest, like the residents of Het Bosbad, can consider themselves doubly lucky. A green walkway winds through ▶

Photos: Shutterstock (3)



Birds' nest meeting point: Amazon has created a unique jungle atmosphere for its staff. In the Spheres, the futuristic domes on the Amazon Campus in Seattle, USA, employees can escape the traditional office environment in nature-inspired havens. Some 40,000 plants from the cloud forest regions of more than 30 countries, cascading waterfalls, suspension bridges, tree houses and a birds' nest all provide an inspiring environment for relaxation and creative exchange. The Spheres are also open to visitors.





“We talk about sustainable construction and sustainable materials, but only biophilic design creates experiential added value for us humans.”

Martino Hutz,
MHA Martino Hutz
Architecture

the middle of the residential building like a forest path, leading directly to hiking trails in the surrounding area. Open spaces are covered with ferns, climbing plants twist around the structure and rainwater collects in a gully, or wadi. The building has been created based on biophilic design principles, connecting the occupants with nature.

Flagship projects and research studies drive forward biophilic design

The word biophilia is derived from the Greek words “bios”, meaning “life”, and “philia”, meaning “love of”. Biophilic design is based on this understanding. It is an approach to architecture and design that centres on people and nature. Biophilic design not only enhances feelings of wellbeing, it also has economic benefits for companies. Major corporations like Google and Apple are investing substantial amounts of money in incorporating natural elements into their work environments. With the words

Photos: MHA; Martino Hutz Architecture; Yucon; Max Hart Nibbrig; GAAGA; Design: GAAGA

“Alexa, open the Spheres!”, Amazon CEO Jeff Bezos celebrated the opening of three large, plant-filled glass domes in Seattle in 2018 (photos p. 58–59). They are designed to make staff feel as if they are in the Amazon rainforest.

The futuristic, 65,000-square-metre domed structure designed by architects NBBJ creates an authentic jungle atmosphere for visitors. Benches, terraces and an overhanging birds’ nest in the multi-storey botanical garden provide a haven for escaping the traditional office environment and taking time out in nature. The spheres contain 40,000 plants, a four-storey high green wall, towering trees, waterfalls with suspension bridges and lofty tree houses. Amazon has invested an impressive \$4 billion in expanding its campus, including the glass domes. But why would an employer invest so much in biophilic design?

The aim is to help employees relax, find inspiration and hold meetings in a laid-

back atmosphere. As a result, they are enabled to think more creatively and come up with new ideas they might not have had in a conventional office. Meetings take place on green pathways or in tree houses. The assumption is that the green environment will be a source of special inspiration for work. Garden design expert Ben Eiben, Horticulture Program Manager at Amazon, confirms this: “You feel a little bit more creative if you’re removing yourself from all of the human implements and you’re just out in nature.”

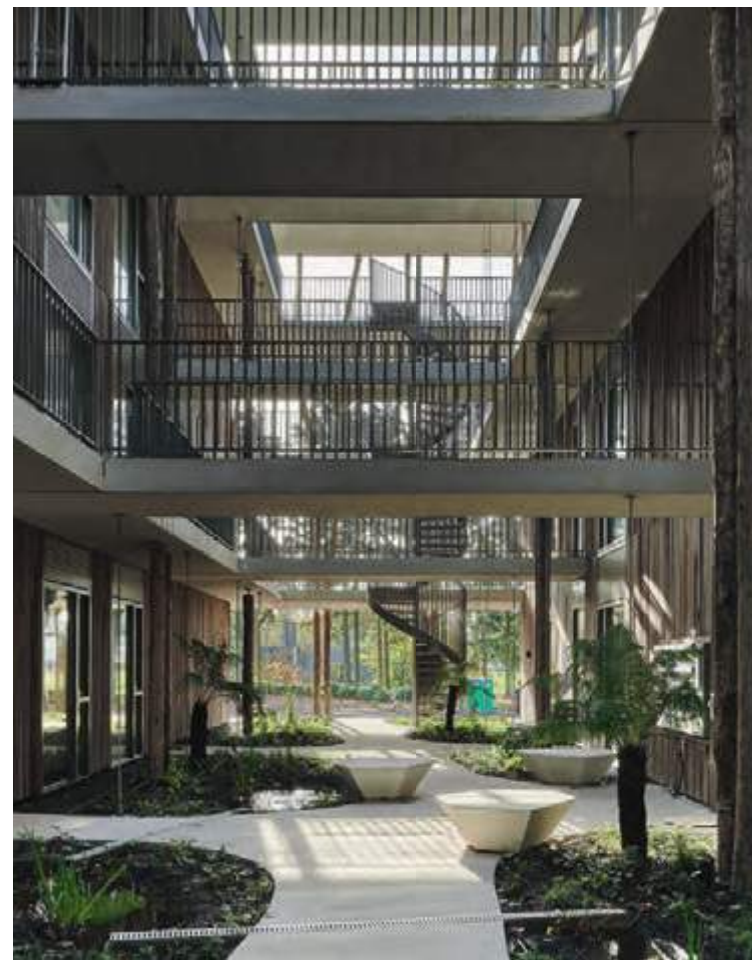
Office workers feel better and are more productive and creative

Spaces with biophilic design elements stimulate the brain and inspire creativity. Interface, a global manufacturer of modular textile flooring, conducted a study examining the connection between employee productivity and wellbeing in the workplace. Some 7,600 office workers in 16 countries were asked what impact the physical work

environment had on their wellbeing. The report, published in 2015 and entitled “The Global Impact of Biophilic Design in the Workplace”, set out four fundamental benefits of biophilic design in offices: attractiveness to recruits, better employee retention, fewer costs relating to sickness absence, and higher levels of motivation and identification. Professor Sir Cary Cooper, Professor of Organizational Psychology and Health, who carried out the study, found that office workers who have natural elements in their work environment feel better and are on average 6 percent more productive and 15 percent more creative.

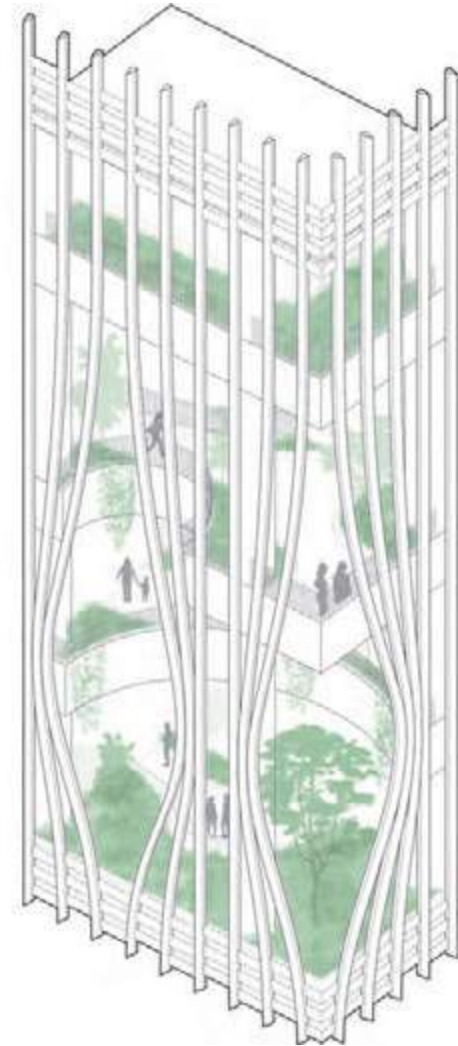
“We know nature does us good. Paradoxically, however, we lock ourselves in buildings. Americans spend 93 percent and Europeans 85 to 90 percent of their time in closed spaces,” says Anne Salditt, Director of EMEA Marketing Activation at Interface. There is no improvement in sight because, with increasing urban densification, we are becoming more and more removed from nature, she adds. ▶

Het Bosbad, a residential building in Eindhoven, is inspired by Japanese forest bathing. Bridges cross a planted walkway that helps to cool the building in summer. The wooden façade and distinctive tree trunks forge a connection with the natural surroundings.





CapitaSpring is a biophilic skyscraper built by Bjarke Ingels Group (BIG) and Carlo Ratti Associati (CRA). The exterior façade of the building is pulled apart in several places to frame views of the green oases in the interior. The tower houses more than 80,000 plants, enhancing Singapore's reputation as a garden city.



This makes biophilic design all the more important, says Salditt: "We believe it is a powerful and easily understood approach that can inspire architects and users." Flooring like that sold by Interface could be part of the whole. Natural design doesn't just mean bringing nature into a space with live plants, flowing water and access to sensory stimuli like daylight. "Natural analogues can also be used to create a sense of wellbeing," explains Salditt. As examples, she mentions nature-inspired lighting, such as lamps that look like droplets of water, and flooring that resembles pebbles. Photo wallpaper would have a similar effect. The space itself also plays an important role. Biophilic design could be used to create a calm retreat space within an office.

Anne Salditt thus addresses the basic principles of biophilic design, which are set out by environmental consultancy

Photos: Finbarr Fallon (2); BIG



Terrapin Bright Green in its report "14 Patterns of Biophilic Design". The 14 patterns are based on neurobiological and psychological findings and are organised into three categories: Nature in the Space, Natural Analogues, and Nature of the Space. The patterns thus correlate with human experiences. For example, water belongs in the Nature in the Space category. Water, as the cradle of all life, enhances the experience of a place through seeing, hearing or touching it, and therefore helps to create a calming and stimulating environment.

The 14 Patterns of Biophilic Design present universal possibilities

Biophilic concepts are universal and work in a range of different fields, including urban planning, architecture and interior design. They are incorporated in various building types, such as residential accommodation, office buildings, healthcare and educational facilities, shopping centres and hotels. Time and financial considerations also play a role for builders and investors. For example, Amazon built the Spheres over a period of seven years. This flagship project is not necessarily a benchmark, though; nature-inspired design is possible at many different levels. As Birte Wildung says: "We can no longer afford to have work environments without plants nowadays." Her business, Akzente Raumbegrünung, specialises in vertical green systems and office planting schemes. She notes that it is becoming increasingly important for companies to integrate natural systems and processes into urban work environments with the aim of turning them into places that people want to come to and spend time in, and also where they are healthier and more productive once there.

Conventional offices can be transformed with natural analogues

The Latitude building in La Défense, Paris, is an impressive example of biophilic design. At the beginning of 2022, real estate developer Générale Continentale Investissements handed over the 22,000-square-metre office building to tenant Sopra Steria, a leading Eu- ▶



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Source: Interface, The Global Impact of Biophilic Design in the Workplace, 2015



The 14 Patterns of Biophilic Design are organised into three categories: Nature in the Space, Natural Analogues, and Nature of the Space.

Source: Terrapin Bright Green, 2014; Interface, 2020 (examples and tips)

Garden pods in the conservatory: as an alternative to traditional meeting rooms, Citibank Singapore built meeting pods surrounded by tropical plants. They are equipped with curved TV screens, hidden sockets and cable connections.

European technology company. Built in the 1970s, Latitude had been comprehensively refurbished and extended. The natural analogues are an ingenious design concept. Each level of the building has its own ambience inspired by the different latitudes and climate zones of the world (photos p. 65). The interior design concept was developed by Atelier Annie Vitipon, who worked with Interface to create a subtle blend of different textures, colours and materials. Different moods were chosen for each of the eight floors: white and cool colours for the North Pole, sand and terracotta for the desert. "The building invites people to take an inspiring trip through our planet's natural environments," says Anne Salditt.

Given the positive effects on well-being and health, it is not surprising that aspects of nature-inspired design can be found in certification systems

that rate the sustainability of buildings. The WELL Building Standard (current version WELL V2) is a good example. One of the criteria calls for nature and natural elements to be integrated into the interior and exterior of a project. Where LEED certification is sought, some biophilic design strategies should also be used. Similarly, the German Sustainable Building Council (DGNB) has developed a practical module for interior spaces that takes biophilic design into account. "Where it's clear that someone has a biophilic building, that has a positive impact on DGNB criteria," says Felix Jansen, Director of PR, Communications and Marketing at DGNB.

Jansen points out that an honest economic assessment of the acquisition and maintenance costs is also required, although the prestige effect should not be underestimated. However, he is unable to identify any clear trend in



Latitude office building in La Défense, Paris: a subtle blend of different textures, colours and materials was chosen as flooring. The design concept is based on natural analogues and inspired by the Earth's different climate zones.

Germany. By contrast, a different ethos is emerging in Singapore, the island country and city-state south of Malaysia. Here, the government is planning the greenest city in the world. Biophilia is therefore the measure of all things for property owners as well. This can be seen in many buildings, such as the Parkroyal on Pickering, one of the most exceptional garden hotels in Asia. The principle is: where nature can no longer grow sideways, it is planted upwards.

Nature-inspired design as a competitive advantage in Singapore

Another example is the CapitaSpring, which was completed in 2022. The skyscraper developed by multinational asset management firm CapitaLand is a project realised by Bjarke Ingels Group (BIG) and Carlo Ratti Associati (CRA) in the financial district. The 280-metre-high tower houses more than 80,000 plants with a green space ratio of more than 1:1.4. "The planted area is significantly bigger than the sealed site area," explains architect Martino Hutz, who managed the project and then acted as local advisor to BIG and CRA in Singapore.

Existing buildings are also being re-structured and upgraded in line with

biophilic design principles. For example, Citibank Singapore has had several floors of an office building on Orchard Road transformed into an abundantly planted conservatory for the bank (photos p. 64). The new meeting rooms are surrounded by tropical plants.

Due to the unique character of Singapore's urban landscape – both dense and green – there is clearly pressure on investors to make buildings attractive and unique with biophilic design, says Hutz. In CapitaSpring, for example, a multi-storey, highly visible vertical park was constructed in the middle of the tower. The different floors are connected by a unique spiralling walkway lined with tropical plants (photos p. 62–63). Experience has taught Hutz that "A project like this depends entirely on the determination and motivation of the developer. Compared to a simple office floor, we put a lot more time and energy into implementing the complex green concept here."

If nature is connected to the city, all the effort is worth it, says architect Hutz: "We talk about sustainable construction and sustainable materials, but only biophilic design creates experiential added value for us humans."



Photos: Courtesy of Ministry of Design Pte Ltd; Interior Design: Ministry of Design Pte Ltd; Photograph © Coutant Delphine, Architect © Atelier Vitipon, Enduser © Sopra Steria