

Background Information

Origin of 'Living Walls'

The idea of living walls stemmed from the invention of 'botanical bricks' by Stanley Hart White, whilst studying at the University of Illinois. Built in his own garden, Stanley White developed the first prototype of a living green wall and was granted a patent on Vegetation-Bearing Architectonic Structure and System in 1938. White's work and vision is heavily celebrated to this day, with the anniversary of his invention taking place on February 15th annually (Pritchard & Pritchard, 2022). The construction community widely acknowledges his work and vision to create greener infrastructures. By reading White's diaries and personal journals entries it is evident that his earliest ideas of a botanical brick began as early as 1931, with heavily detailed drawings and in-depth research included. It is apparent that Stanley White was an innovative and exceptionally creative person who was regarded as a pioneer of his time. Botanical bricks were initially designed as solution to enhance the bland architecture of his surroundings, the aim of the green wall was to create a modern, unique, and elevated topography, consisting of a soil filled wall, composed of decorative inserts and topical coverings. The idea is to modify a non-structurally bearing wall to create a more decorative background for existing structures. White's astonishing work has been recognised as 'new art' and was labelled a great step forward in modernism (Hindle, 2012).

The concept of a green wall was first officially put into practice decades later by a French botanist called Patrick Blanc. Blanc took out a patent of his own 'Mur Vegetal' and is now arguably seen as one of the original pioneers of vertical green walls. Following its remarkable success in Paris, living walls have become increasingly desirable being introduced and popularized in many countries across the world as a new form of modernism, upscaling traditionally boring and plain landscapes (Respira, 2020). Blanc's first green wall now sits in the Museum of Science and Industry in Paris where its full hydroponic system and inserts can be admired. Long before the innovative work of both Stanley Hart White and Patrick Blanc, the idea of merging city life with outdoor greenery was a concept greatly sought after. The concept of a green façade has been appreciated for several decades with subtle notions such as vegetated rocks and the use of climbing plants over brick walls becoming more apparent. Scientists have more recently confirmed that the use of greener more natural habitats within construction can lead to serious health benefits.

Not only does introducing greener landscapes to more traditional buildings create a more attractive view, but it also paves the way for a proven healthier lifestyle. An article published by (Gaskell, 2017) printed in Forbes in 2015, examines the results of a study conducted by Harvard earlier that year. Based on the U.S. alone the study surveyed top performing buildings to compare both

productivity and overall well-being of the users. The study found a 30% decrease in time taken off by occupants due to sickness in addition to a 26% rise in cognition. This information can be seen throughout studies and experiments from years prior, with the University of Exeter conducting a similar study the previous year where they found an increase of productivity by 15% based solely on having ‘greener’ offices (University of Exeter, 2014). Since the early 2010’s various reports, experiments and studies have been conducted on the beneficial effects of having greener work or living spaces to occupants’ well-being, as seen in *The Relative Benefits of Green Versus Lean Office Space: Three Field Experiments* by (Nieuwenhuis, et al., 2014).

With such positive results from these studies and clear benefits of utilising greener workspaces, it is no surprise that living walls have found themselves largely introduced across much of the UK on buildings heavily associated with potentially stressful environments such as universities, government buildings and heavily populated areas. Living walls can be found scattered across the UK in the form of decorative vertical gardens or part of structural walls as seen in several locations across London alone (Gray, 2019). When considering London’s landscape and the dominant Georgian architecture throughout the capital city it is easy to understand how the introduction of living walls or vertical gardens can have huge effects on the occupant’s wellbeing and overall aesthetic of the area. The contrasting appearance between concrete and greenery references back to the initial need and want to merge the tranquillity of a green façade to a sometimes-overpowering built environment. However, dissimilarly in smaller more coastal locations it is a rare occasion to feel overwhelmed by tall, dark, and gloomy skyscrapers. Swansea sits approximately 200 miles horizontally west of London on the south coast of Wales (Google, 2022). Less associated with fast-paced urban living, Swansea is a nearshore settlement with many areas being heavily populated with retirees. This lifestyle is a great contrast to the much faster paced environment found in London. The city centre is free of many problems related to overpopulation associated with heavily built-up areas such as London. With Swansea’s city centre based less than 2 miles away from the beach, it begs the question whether Swansea necessarily needs the same green façade offered by using living walls.

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