

Life-Loving Libraries: Creating Restorative Spaces Through Biophilic Design Principles, AKA The Great Turtle Project

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Background

This paper is developed from a talk presented at the 2023 ANZTLA Annual Conference in New Zealand. The talk juxtaposed an academic research review with a show-and-tell inspired application.

I have decided to keep this balance as I believe it echoes the character of the topic: mixing the constructed with the natural.

Biophilia, if it exists, and I believe it exists, is the innately emotional affiliation of human beings to other living organisms. (E. O. Wilson 1993)

Pre-Reading Quiz

On a scale of 1 to 10 how mentally, physically, and emotionally fatigued would you say you feel right now?

1 being you feel like you've just jumped out of bed after a full night's rest and 10 being you feel like you've pulled three all-nighters and exhausted all nearby sources of caffeine?



Part 1: The Problem and a Hypothesis

While many in the general population may feel like a ten, for a university library patron it could be literally true. The majority arrive already stressed and exhausted after trying to stay awake through hours of lectures. They are engulfed by the general sense of despair assignments induce, and burdened by the prospect of sitting in unmoving silence for as long as they can possibly hold out. This negative association with the physical library has been further complicated post-COVID. The general anxiety towards indoor environments created by lockdowns is intensified by the unnaturally silent and isolated atmosphere of an academic library. However, this prospect of spending hours in the library could be turned into a source of healing.

In the context of COVID-19, there is increased anxiety around indoor environments and an urgent focus on creating spaces that promote emotional and physical health. (Peters and D’Penna 2020)

In 1984, biologist Edward Wilson, identified a problem in the development of human culture, arguing that from a biological evolutionary point of view, humans were innately biophilic – literally ‘love of life’ from the Greek – and only thrived in environments that allowed this connection (Edward O. Wilson 1984). In 1993, Wilson, along with Stephen Kellert, an environmental psychologist, developed the ‘biophilia hypothesis.’


The Biophilia Hypothesis:

[There is] a human dependence on nature that extends far beyond the simple issues of material and physical sustenance to encompass as well the human craving for aesthetic, intellectual, cognitive, and even spiritual meaning and satisfaction. (Kellert and Wilson 1993)

Kellert continued his work on biophilia until his death in 2016, developing the general hypothesis into principles of design that could be directly applied. During his lifetime, his strong assertions about the importance of incorporating biophilic design into constructed environments continued to gain interest, with other researchers building on his work. For example, see Appendix 1:15 Patterns of Biophilic Design (Browning and Ryan 2020). Though with the increased attention has come increased complexity and confusion.

For some it has become a very specialised field. Zhong, Schroder and Bekkering (2022) conducted a review of the use of ‘nature’ in architectural biophilic frameworks. “The results indicate that biophilic design is more complex and richer than the mere application of vegetation in buildings; it broadens the variety through encompassing different types of nature from physical, sensory, metaphorical, morphological, material to spiritual.”

Statements such as this can be daunting for a non-architect hoping to improve their library space.



On the other hand, particularly since 2020, there is a growing acknowledgement that any change is helpful for mental health. With the unprecedented amount of global data thanks to COVID's lockdowns and isolations, studies show that even the Zhong, et. al's 'mere application of vegetation' does have positive effects. Zhang, et al, (2023), studied the association between indoor/outdoor greenery and depressive symptoms during lockdowns in Shanghai. Their results showed that not only was an increase in greenery associated with a decrease in depressive symptoms, but it also increased the perception of the restorativeness of the home environment.

Comprehensive enhancements of greenery in living environments could be nature-based solutions for mitigating COVID-19 related mental stressors (Zhang et al. 2023).

Therefore, to test the hypothesis that even an isolated biophilic intervention could reduce anxiety and improve student engagement with the library, in 2023, the Brisbane School of Theology library instigated the Great Turtle Project.

One year on, it is with great pleasure I now reveal and assess the results.

Part 2: The Great Turtle Experiment

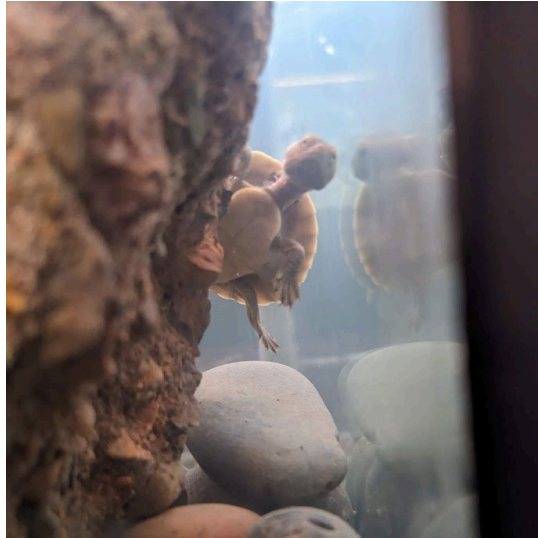
One of the great challenges of our time is to bring the beneficial experience of nature into the design of contemporary buildings, landscapes, communities, and cities. Devising strategies for including the natural experience in these built structures requires engaging all of the broad tenets and principles of biophilic design. (Kellert 2018)

The Beginnings of an Idea

Among the many patterns of direct contact with nature, Kellert and Calabrese point out that animals have been integral to people's experience throughout history. "Still, its occurrence in the built environment can be challenging and occasionally contentious." (Kellert and Calabrese 2015). He is quite correct about that.

After a few years of contention with our property manager about how we could overcome some of the challenges of having a library pet, I had given up hope. Then, at the end of 2022, he moved to NSW. The full implication of this did not hit me straight away, as I was very sad he was going. However, during the period between his leaving and the new manager starting, I thought aloud near a faculty member, "What about a turtle?" To which she immediately responded: "A turtle? Yes, get a turtle!"

One week later, on the 17th of January 2023, the BST library had its first Pastoral Care team member: Eve, the Murray River short-necked turtle, born Christmas Eve 2022.



First week in the library.

Initial Set-up

Murray River turtles are aquatic, so live most of the time in the water needing only access to dry areas to bask. In the beginning I set up a large tank in the library as her main residence, and a smaller “weekend” tank for her in my unit on campus.



The initial set up in the library and at home.

Theoretically she could live in the library permanently, as the tank keeps her contained and a floating platform allows her to bask. However, I noticed she became anxious when I left her overnight (possibly because students played with her too much). Also, she is super cute, and I love waking up to her good morning dance.

Adaption And Growth

This initial set-up was quickly expanded as new needs came along and more people became invested.

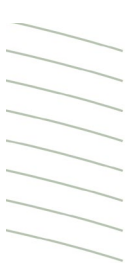
1. To enrich her environment, the previously mentioned faculty member donated 17 guppies for her to chase, and as she gets older, snack on. 17 guppies quickly became many, many guppies.



The "Birthing Suite"

2. This then led to the establishment of a 'guppy nursery' in the computer room next door.





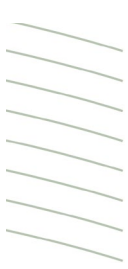
3. Plants were soon added for guppy camouflage and turtle snacking purposes.



4. A small outbreak of algae called for a catfish. He did an amazing job right up until the library volunteers filled the tank with untreated tap water and he jumped out to escape.



RIP Mr. Cat



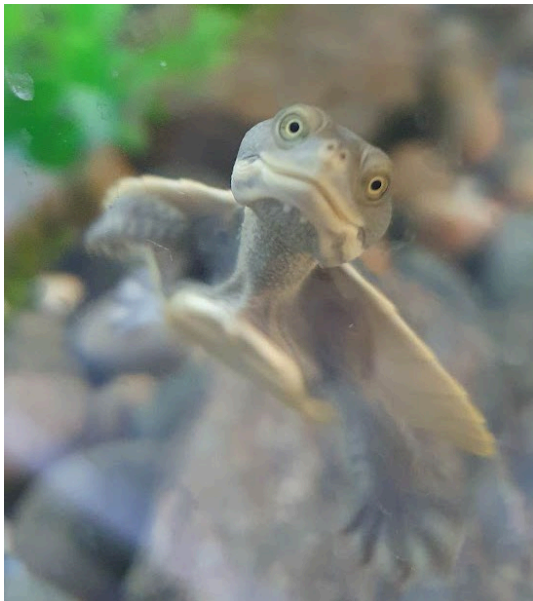
5. A student asked if I would baby sit her 9 neon tetras while she was away, and when she returned, she thought they looked so much happier here she donated them to the library.

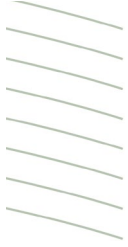


Student Interaction Options

1. In Situ

Many students find joy just watching her swim around. Anyone who goes up to the tank will be rewarded by her swimming over to check them out. She's always happy to pose for photos and is a great art critic:





2. Exploring:

As she needs some dry time most days, students can take her out adventuring. She loves being let loose to explore around near her tank, though needs to be held tightly as she likes to jump from heights.



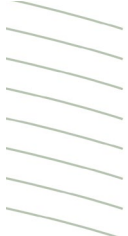
3. Help with study:

She's a natural at Greek, and as her legs get longer she'll get better at typing.



4. Time in the Sun

As Eve needs some real UV to help harden her shell, students can take her in the 'turtle paddock' or sun-bathing box for a study break. Some students have even created obstacle courses to keep her amused.



Though, she's not always kept on being locked up.



A happy solution: one official Turtle Leash.



My volunteer sees that she gets exercised every time he's in.

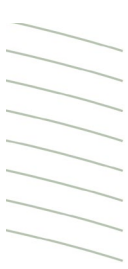


5. Feeding time.

Usually, I feed her myself for fear of unintended reptile obesity. However, students bring her in snacks, such as this mini-grasshopper fresh from attacking the veggie garden outside.

Results

Based on qualitative data, the extent of Eve's effectiveness in encouraging students back into the library has been far beyond anything expected. Anxiety about entering the library has decreased, with students and faculty dropping by in their free time for a dose of 'turtle therapy.' More interestingly, non-students are coming onto campus specifically to meet her, including children of faculty begging to be allowed to visit. A video of Eve taken by a faculty member and sent to a nephew for entertainment ended up as the most talked about show-and-tell in the school, even making it into the newsletter.



Eve appears also to have success in helping students overcome assessment anxiety. One student attributes completing her master's to Eve, who time after time sat with her while she cried, trying to headbutt her tears.

There are unique challenges faced by [post-secondary] students and implementing health promoting and restorative, environmental design strategies could improve the quality of life and learning outcomes of university students. (Peters and D'Penna 2020)

Beyond the qualitative data, there is evidence of objective data that could be collected through further research. One PhD student studying in child abuse prevention struggled to undertake long periods of reading because of the confronting nature of the material. She then started sitting in front of Eve's tank so she could read a few paragraphs, then watch Eve swim up and down as she regulated her emotions, then keep reading. She notes a significant increase in the time she can spend studying that way. It would be interesting to see if the effects are the same across other subject matter.

Conclusion

Turtles live for around 30 years and require someone with a licence to care for them, so Eve and I will be linked for a very long time. That is to say, this is not the experiment for those looking for quick fixes. However, all the studies I've so far reviewed agree that even small changes have positive effects that justify the effort, and, interestingly, the cost.

In one healthcare related quarantine study, Lan and Lui (2023) introduced indoor biophilic elements and recorded both the patient's perception of the space's restorativeness and the more objective measure of their willingness-to-pay (WTP). "The findings consistently demonstrated that incorporating biophilic interventions had a significantly positive impact on perceived outcomes and WTP compared to non-biophilic interventions."

You may want to remember this one when discussing your next budget allocation with administration.

A Final Surprise

An unforeseen consequence of the experiment is my new identity within the BST community: apparently a past student who was looking for someone to adopt his melanistic blue-tongue lizard was told I am 'a reptile lady' - not the term I am encouraging. Thought it might make another exciting addition to the library.

Considering the differences between an aquatic turtle and a blue-tongue skink, I was going to say no. However, when he sent me this photo, I found I couldn't say no:



The newest member of the library Pastoral Care team: the BST Dragon - Mr. Sambuca Black

In terms of the experiment, he has added interesting data. So far, I haven't met a single person who hasn't fallen under Eve's spell. On the other hand, many students on meeting Mr. B have an immediate negative response because of his similarity to a snake. Since this is the opposite effect to what I hope to have in the library, when I do bring Sammy B in, I set him up in my office and students come and visit him there.

Luckily, Eve and Sammy B have become besties:



BST's Library Dragon and Dinosaur

Post-Reading Quiz

On a scale of 1 to 10, how tired do you feel now?



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Photo Acknowledgements: The photos of Eve have been taken by students then shared with me and the college community. Permissions from all people in the photos published above have been obtained.



Appendix 1: 15 PATTERNS OF BIOPHILIC DESIGN (Browning and Ryan 2020)

NATURE IN THE SPACE

1. Visual Connection with Nature — a view to an element of nature, living systems and natural processes.
2. Non-Visual Connection with Nature — auditory, haptic, olfactory, or other stimuli that engender a deliberate and positive reference to nature, living systems and/or natural processes.
3. Non-Rhythmic Sensory Stimuli — stochastic and ephemeral connection with nature that may be analysed statistically but may not be predicted precisely.
4. Thermal and Airflow Variability — changes in air temperature, relative humidity, airflow and/or surface temperatures that mimic natural environments.
5. Presence of Water — a condition that enhances the experience of a place through seeing, hearing or touching water.
6. Dynamic and Diffuse Light — varying intensities and colour of light and shadow that change over time to create conditions similar to those that occur in nature.
7. Connection with Natural Systems — awareness of natural processes, especially seasonal and temporal changes characteristic of healthy ecosystems.

NATURAL ANALOGUES

8. Biomorphic Forms and Patterns — symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.
9. Material Connection with Nature — materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place.
10. Complexity and Order — rich sensory information that adheres to spatial hierarchies similar to those encountered in nature.

NATURE OF THE SPACE

11. Prospect — an unimpeded view over a distance for surveillance and decision making.
12. Refuge — a place for withdrawal, from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.
13. Mystery — the promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to venture deeper into the physical environment.
14. Risk/Peril — an identifiable threat coupled with a reliable safeguard.
15. Awe — stimuli including other biophilic patterns that defy an existing frame of reference and lead to a change in perception.