

## *Stephanie and the Study Fern*

*Designing Restorative Library Spaces with Biophilia, Attention Restoration Theory, and Stress Reduction Theory*

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### *The Dread before the Door*

**S**tephanie is nearing the end of her first year of a Master of Divinity and is about to cry. There is no single trigger—just the slow, cumulative unraveling of fatigue, shame, and mental exhaustion. Last night’s assignment is still unfinished; today’s three-hour Old Testament lecture was lost before it could even be remembered. She just wants to go home to bed. Instead, she is facing five more hours hunched over a desk in stifling silence. She has exhausted every online resource—the library is the only option left. She stares blankly at the keypad before trying the code a third time. Ready for the worst, she steps into the library and stops....

What happens next depends on how librarians view the library: as a static repository of printed material, or as a dynamic service that

shapes the user's experience. Whether we realise it or not, we help determine Stephanie's emotional state while she is in the library.

## *The Librarian's Challenge*

Theological librarians serve diverse communities across a wide range of contexts—from academic institutions to church libraries and public collections. Whether patrons are preparing sermons, writing essays, or seeking spiritual insight, the work they do in the library demands deep focus. Like Stephanie, many arrive already fatigued by life, ministry, and study. These challenges are further compounded by the aftereffects of the pandemic's restrictions, resulting in lingering anxiety toward indoor environments. In such conditions, traditional library settings, characterised by silence, stillness, and prolonged concentration, may feel more suffocating than supportive. Librarians, therefore, are challenged to consider how to provide spaces that not only accommodate study but also actively restore well-being.

## *Mental Fatigue: Fruitless and Frustrating*

Stephanie demonstrates several signs of mental fatigue, including making frequent errors (Kaplan 1995), difficulty focusing and planning (Pham and Sanocki 2024), and a negative attitude toward related tasks (Liu et al. 2024). Being in such a state not only makes the prospect of working in a library unappealing, but the results of that work can be fruitless and frustrating as well. “Directed attention plays an important role in human information processing: its fatigue, in turn, has far-reaching consequences” (Kaplan 1995, 169). William James first contrasted directed (or voluntary) and passive (nonvoluntary) attention in 1890. He defined directed attention as the mind's ability to focus on a particular object or thought while filtering out distractions. This active selection process requires sustained mental effort, which over time leads to its depletion and resulting mental fatigue. One hundred thirty years later, in a world constantly vying for our attention, our use of directed attention has grown (Rodwick 2022), but not our opportunities for recovery.

Stephanie's desire to cry is a sign that she is also suffering the physiological symptoms of stress. The negative effects of stress are being observed across society due to changes in modern lifestyles (Liu et al. 2024), particularly among university students as they contend with societal, life, and academic pressures (Song et al. 2024). Stress, as opposed to mental fatigue, refers to the psychological and physiological responses to a situation that threatens one's well-being (Ulrich et al. 1991). "This difference is important because stress does not always cause mental fatigue and mental fatigue does not always cause some of the most common symptoms of stress" (Diller 2014, 20). In simpler terms, attention fatigue is the feeling that one's brain just will not work anymore, while stress is the feeling of a body on high alert. The answer to both of these, supported by psychological and environmental research, lies significantly in our connection to nature.

## *Reduction and Restoration*

Research in Stress Reduction Theory (SRT) and Attention Restoration Theory (ART), which originated in environmental psychology, consistently demonstrates the effectiveness of experiences with nature as a means of recovering from the physiological and psychological aspects of stress and rejuvenating depleted attentional resources.

The first of these two theories to emerge was SRT, primarily associated with Roger Ulrich and his work, which began in the 1980s. The theory suggests that exposure to natural settings triggers rapid, automatic physiological responses that reduce stress, such as lowered heart rate and blood pressure, in measurable ways.

One of Ulrich's (1984) original studies into the physiological effects of exposure to natural elements monitored patients recovering from surgery. Within the same hospital setting, some rooms were situated with a window view of a natural setting, while others had views of brick walls. He found that those with windows were discharged from the hospital earlier, took less potent pain medication, and nurses noted more positive behavioral patterns.

A decade later, Stephen Kaplan (1995) formalised the ART, which focuses on ways to restore the mental reserve of direct attention, rather than reducing the physiological effects of stress. Similar to SRT, studies have provided substantial evidence for the role of

experiences with nature in rejuvenating attention. In a study conducted at the University of Melbourne, 150 university students were required to complete an attention-intensive task and then given a forty-second micro-break before repeating the same task. In those forty seconds, some students had a view of a green rooftop, while others had a bare concrete one. Lee et al. (2015) found that, during the second attempt, those who had looked at the green rooftop had significantly higher accuracy and greater consistency in response time.

In summary, attention restoration is refreshing the mind, while stress reduction is calming the body. Underlying both ART and SRT is a more fundamental truth: our bond with the natural world is not incidental, but intrinsic. As theological librarians, these insights resonate deeply—they reflect values of creation care and our God-given connection to the world around us. Our libraries are not merely academic spaces, but places of formation, rest, and spiritual engagement. This is the heart of the biophilia hypothesis.

### *Biophilia: Life-Loving*

The term “biophilia”—from the Greek *bios* (life) and *philia* (love)—was popularised by E. O. Wilson (1984) and later refined by Stephen Kellert (Kellert and Wilson 1993; see also Kellert et al. 2008).<sup>1</sup> It suggests that humans have an innate need to connect with nature. Kellert, in particular, explored how this affinity influences emotional, cognitive, and even spiritual well-being. Throughout his lifetime of work, he discovered that environments that reflect natural forms, processes, and patterns not only reduce stress but also support creativity, concentration, and overall well-being: “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, vii).


While initially applied to homes, workplaces, and hospitals, these insights are equally valuable in learning spaces—especially libraries. Biophilic design invites us to think beyond potted plants or skylights. It asks how space can evoke a sense of refuge, curiosity, and connection. For theological libraries, the implications are




deeply resonant: could our spaces not only house sacred texts, but also embody sacred rhythms of restoration?

## Implementing Biophilic Design

Architects and environmental psychologists have developed many ways to incorporate biophilic elements. One organising structure that is often used was developed by Kellert and Calabrese (2015), who suggested grouping attributes of the natural world into three categories based on the type of experience they evoke. Browning et al. (2024) provided further details by identifying fifteen key biophilic design patterns within these three categories. The tables below introduce each element within its category, including a guide on how to recognise it in everyday spaces, an example and some initial ideas for practical implementation in theological libraries. For a guide on evaluating and applying these principles to one’s own library, please see the supplementary booklet *The Study Fern Workbook: A Practical Guide to Biophilic Design in Theological Libraries* on the Atla Open Press site: <https://books.atla.com/atlapress/catalog/book/109>.


### I. Nature in the Space (Direct Experience): *Providing connections to nature within the library environment, like bringing in plants.*<sup>2</sup>



PATTERN	WHAT TO LOOK FOR	LIBRARY POSSIBILITIES	EXAMPLES
<b>Visual Connection with Nature</b>	Can you see plants, water, or other natural elements from inside the library?	Position chairs near windows, add indoor plants, and hang landscape art.	

<p><b>Nonvisual Connection with Nature</b></p>	<p>Can you hear natural sounds, feel a natural breeze, or smell natural scents?</p>	<p>Open windows for fresh air, introduce subtle natural sounds, and use gentle scents.</p>	
<p><b>Nonrhythmic Sensory Stimuli</b></p>	<p>Do you notice gentle, shifting movement or light, like dappled shadows or rustling leaves?</p>	<p>Let light filter through blinds or patterned window film; hang mobiles or gentle wind chimes.</p>	
<p><b>Thermal and Airflow Variability</b></p>	<p>Does the space feel the same everywhere, or are there natural shifts in temperature and airflow?</p>	<p>Open windows when possible; use fans to create gentle air movement; allow for cooler and warmer spots.</p>	
<p><b>Presence of Water</b></p>	<p>Can you see, hear, or touch water?</p>	<p>Add a tabletop fountain or aquarium; place seating near views of rain or outside water features.</p>	


<p><b>Dynamic and Diffuse Light</b></p>	<p>Does the light in the space change during the day, rather than staying flat and harsh?</p>	<p>Use sheer curtains or light-diffusing blinds; add lamps to create softer pools of light.</p>	
<p><b>Connection with Natural Systems</b></p>	<p>Do you notice signs of seasons, weather, or time of day in the space?</p>	<p>Place displays near windows to showcase changing seasons; use seasonal plants or decorations inside.</p>	





**II. Natural Analogues (Indirect Experience):** *Using representations of nature in material, form, and pattern.*

PATTERN	WHAT TO LOOK FOR	LIBRARY POSSIBILITIES	EXAMPLES
<p><b>Biomorphic Forms and Patterns</b></p>	<p>Do shapes, patterns, or decorations remind you of forms in nature?</p>	<p>Choose curved furniture; add textiles or artwork that have plant patterns; avoid only-straight lines.</p>	

<p><b>Material Connection with Nature</b></p>	<p>Do you see or touch natural materials, such as wood, stone, or wool?</p>	<p>Use wood finishes for furniture; add stone surfaces; include natural fabrics (cotton, wool).</p>	
<p><b>Complexity and Order</b></p>	<p>Does the space strike a balance between richness and variety, while maintaining a sense of order?</p>	<p>Layer textures and displays thoughtfully; create visual interest without clutter.</p>	

**III. Nature of the Space (Spatial Experience):** *Designing spatial configurations that reflect natural landscapes and evoke similar emotional responses.*

<p><b>PATTERN</b></p>	<p><b>WHAT TO LOOK FOR</b></p>	<p><b>LIBRARY POSSIBILITIES</b></p>	<p><b>EXAMPLES</b></p>
<p><b>Prospect</b></p>	<p>Can you look out over a distance, seeing clearly across a space?</p>	<p>Position study spaces to overlook the room or outdoors; clear shelves or partitions to provide a line of sight across the library.</p>	

<p><b>Refuge</b></p>	<p>Are there small, sheltered spots where someone can feel safe and enclosed?</p>	<p>Add high-back chairs; create cozy corners or screened-off study areas.</p>	
<p><b>Mystery</b></p>	<p>Does the layout invite you to explore, with partial views or hidden corners?</p>	<p>Arrange shelves or plants to create gentle pathways; tuck away a special reading nook for added comfort.</p>	
<p><b>Risk/ Peril</b></p>	<p>Is there a mild sense of excitement or thrill, paired with safety?</p>	<p>Display items in high places; create mezzanine or balcony study spots (if safe); use traditional library ladders.</p>	
<p><b>Awe</b></p>	<p>Does any part of the space make you feel wonder, reverence, or beauty?</p>	<p>Utilize uplighting for high ceilings; display sacred art or large-scale natural imagery to create a focal point for reflection.</p>	

## *Creating a Tapestry*

While every biophilic intervention offers benefits, the consensus in biophilic design research and practice suggests layering multiple biophilic patterns: “Incorporating a diverse range of design strategies can accommodate the needs of various user groups from differing cultures and demographics and create an environment that is psycho-physiologically and cognitively restorative” (Browning et al. 2024, 16). This approach is particularly true when Browning et al.’s patterns are selected from across Kellert and Calabrese’s (2015) three categories, often leading to a more profound and synergistic effect than focusing solely on one category. The cross-selection helps create a rich tapestry of natural connections, by which each enhances the other, as can be seen in the examples below.

### ***Example 1:*** The Contemplative Reading Nook

Position a high-back armchair (Refuge—Category III) upholstered in natural fabrics, such as wool or cotton (Material Connection with Nature—Category II), beside a window offering views of trees or the sky. Where views are limited, a high-quality landscape print can evoke a similar effect (Visual Connection with Nature—Category I).

*Synergy:* The visual connection with nature reduces cognitive fatigue; the sense of enclosure fosters emotional safety and focus; and natural materials lend warmth and a sense of grounding. Together, they create a haven for deep thought, spiritual reflection, or personal study.

### ***Example 2:*** The Collaborative Study Table

Install a rounded, organically shaped study table (Biomorphic Forms and Patterns—Category II) in an area with abundant natural daylight (Dynamic and Diffuse Light—Category I). Arrange seating to offer clear outward views across the library or to windows (Prospect—Category III), allowing for soft visual breaks during study.

*Synergy:* Natural light boosts alertness and mood; gentle organic curves reduce tension.

## *Finally, Chucky the Study Fern*

For all the theory and planning, sometimes it is the smallest change that makes the biggest difference. My initial step when I began exploring biophilic design was simple: I introduced a single potted plant—a maidenhair fern. One afternoon, noticing it was not getting enough light, I reached to move it when a student looked up in alarm:

“Not Chucky! He’s my study fern!”

And just like that, the little plant had a name, a role, and a quiet presence in someone’s learning experience. We negotiated a small shift in position—just a little closer to the sun—and then all returned to our work, Chucky included.

Designing with biophilia is not about grand gestures. It is about noticing what brings comfort, focus, and delight. As theological librarians, we are stewards of more than books—we are stewards of people, possibility, and peace. Even a fern can be part of that formation.

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## *Notes*

- 1 I would like to acknowledge that the disconnect from nature since the industrial revolution is perhaps a particularly Western phenomenon, and that many cultures have continued to include natural elements within their architecture, landscapes, and spiritual spaces.
- 2 All photos in this chapter are of the author's own biophilic experiments in the Brisbane School of Theology library. Even the turtle.