Psychology in Architecture

Richard Jedon

01 / 04 / 2025

Green Spaces – Restorative Environments

- Biophilia
- Attention Restoration Theory
- Stress Recovery Theory
- Perceptual Fluency Account

Biophilia hypothesis (BET)

- Edward O. Wilson, 1984
- “[we] …are responding to memory of mankind’s optimal environment. That given a completely free choice, people gravitate statistically toward a savanna-like environment.”
- “Is it unreasonable to suppose that the human mind is primed to respond most strongly to some narrowly defined qualities that had the greatest impact on survival in the past?”

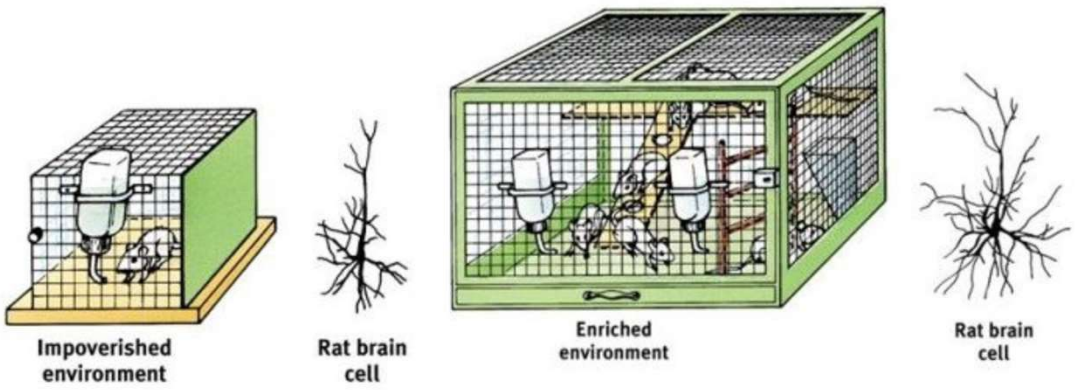
Environment as a stressor

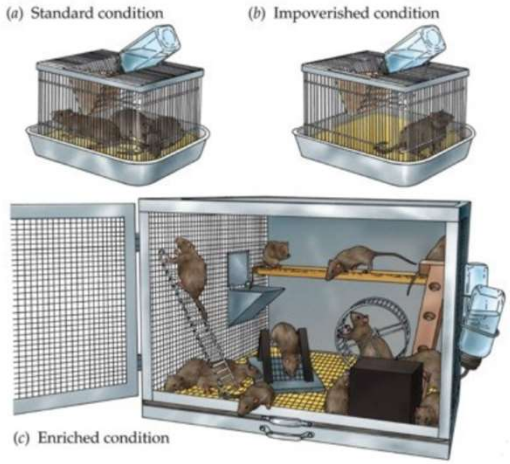
Environment: key information source about stressors and coping opportunities

Environmental conditions may interfere with optimal human functioning (e.g., crowding, noise, heat, air pollution)

Stimulus level hypothesis (closely tied to physiological arousal) Inverted U shape: overload (too much) VS sensory deprivation (too little)

Enriched / Impoverished Environments





Cognitive (Urban) Overload

Stress and attention

Attentional decline as a consequence of stress

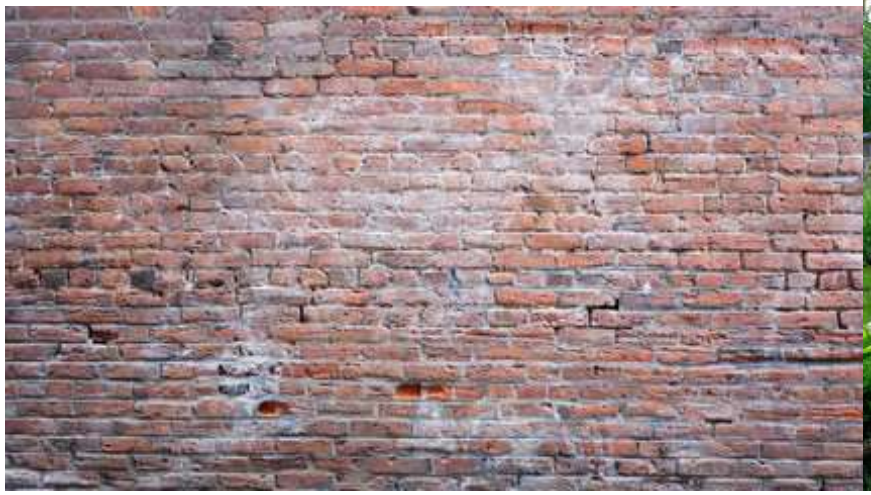
versus

Stress as a consequence of attentional fatigue

?

Stress Recovery Theory (SRT)

- Roger S. Ulrich (1991)



SRT Overview

Fast, precognitive affective response (preference, aesthetic experience) guides:

- Attention
- Arousal
- Approach / avoidance behaviour

⇨ An attractive natural view might:

- induce feelings of pleasantness,
- hold interest,
- block or reduce stressful thoughts, and therefore
- induce psychophysiological restoration

SRT Restoration

- Viewing natural environments should help people restore from stress by:
  - reducing negative affect,
  - increasing positive affect,
  - and decreasing physiological arousal
- Restorative responses according to SRT are “by-products” of immediate positive affect induced by unthreatening natural scenes, which is an evolved adaptive response

SRT Criticism

- “Unthreatening nature is stress-reducing” = Tautology
- Why is a rapid response necessary for facilitating food acquisition?
- What about unthreatening stimuli that offer no food or shelter? (e.g. clouds)
- Currently no evidence for ‘evolutionary’ differentiation between vegetation;
  - Positive effects for flowers, trees, plains, farmlands, office plants…
- What about beautiful (pleasant) cities and ugly (unpleasant) nature?

Attention Restoration Theory (ART)

- Rachel Kaplan & Stephen Kaplan, 1980
- Attempts to explain beneficial effects of nature on executive functioning
- Based on James (1892), ART distinguishes between two types of attention:
  - voluntary (directed) attention
  - involuntary attention
- Central concept: directed attention fatigue (DAF)

Directed attention

Directed attention is under voluntary control (“top down” process)

- Plays a central role in achieving focus
- Controls distraction through the use of inhibition
- Requires effort and is susceptible to fatigue
- May be critical in problem solving and effectiveness
- Not more important than knowledge, perception, or action, but fragile
- Its depletion impacts perception, cognition, action and affect

Directed attention fatigue

- Prolonged directing of attention -> depletion directed attention fatigue
- Occurs even for pleasant tasks
- Depletion of directed attention is characterized by:
  - fatigue,
  - inability to concentrate,
  - Irritability
- Restoration requires recovery from directed attention fatigue
- In order to rest directed attention, a person needs to find some other basis for maintaining their focus -> Involuntary attention (= fascination)

ART Restoration

- Replenishment of depleted cognitive (attentional) resources due to fascinating characteristics of natural scenes

- Fascination (necessary, but not sufficient)
- Being away
- Extent
- Compatibility

ART Criticism

- What is soft fascination (vague) and why is it necessary?
- Why are fascinating stimuli effortless? (what about processing?)
- Little evidence to support assumption that restoration is an evolutionary and adaptive human response

Attention Restoration Theory (ART)

- **Fascination**: the ability of an environment to generate awe in people; the amount of awe can give the directed attention a rest as the involuntary attention appears in its place.
- **Being away**: a feeling that can be objective or subjective in form, e.g., a person can be far away from a location or can let his or her mind go from everyday life and worries.
- **Extension**: the connection between each element found in an environment; the feeling of being able to travel through the environment in order to look for the information it provides.
- **Compatibility**: characteristics found in an environment that meet the preferences and goals of a person.

Scopelliti, M., Carrus, G. & Bonaiuto, M. (2019). Is it Really Nature That Restores People? A Comparison With Historical Sites With High Restorative Potential. Front. Psychology. doi: 10.3389/fpsyg.2018.02742

Perceptual Fluency Account

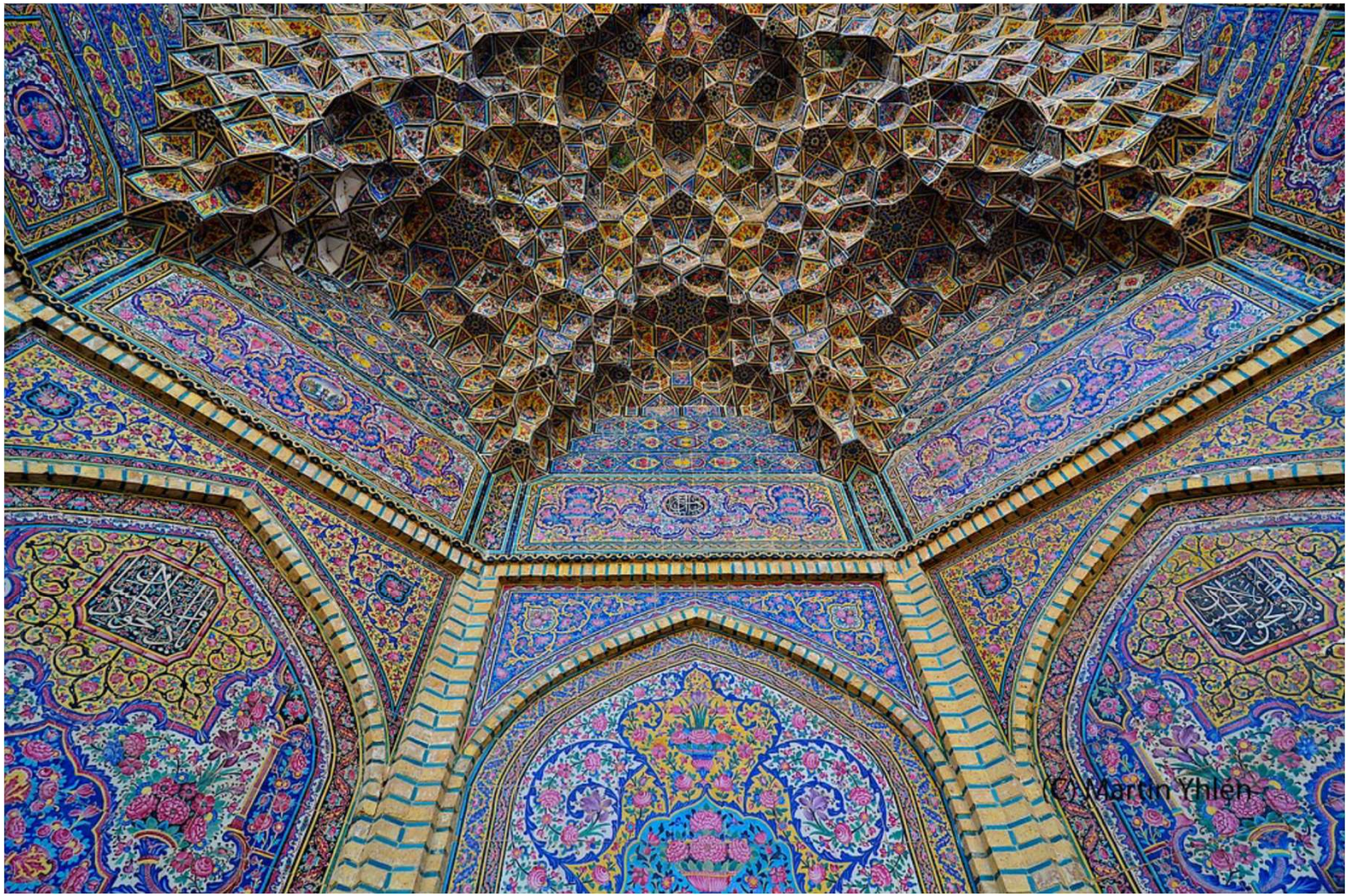
An integration of both SRT and ART (Joye, 2007; Joye & Van den Berg, 2011)

Assumption: **natural environments processed more fluently than urban**. Easier processing of nature thought to occur because brain can process more easily the way visual information is structured in natural than in built scenes

- within the PFA, the greater stress-reducing capacity of nature, as predicted by SRT, may be explained by the greater safety or familiarity commonly associated with fluent versus disfluent stimulus organisations
- the greater attention-restoring potential of natural environments, as predicted by ART, may be explained by the fact that fluent stimuli are lower on cognitive resource demands than disfluent ones, which leaves more place for replenishing attentional resources

Fractal (self-similar) patterns in nature contain more redundant information = could be more easily processed

Fractals


© Martin Yhlen

Environmental Stress

There exists a dichotomy between natural and built environments, illustrated by their different effectiveness in restorativeness.

MUST: Joye & Dewitte (2018) / Joye & van den Berg (2011) / Lindal & Hartig (2013) / Milgram (1970) / Scopelliti et al. (2019)

BONUS: Kaplan (1995) / Ulrich et al. (1991)