

The Neuroscience of Urban Places Building Communities that People Love



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A family of four is walking a large, fluffy white dog on a paved sidewalk. The mother, wearing a green shirt, is holding the leash. The father, in a light blue shirt, is walking behind her. Two young girls are running ahead of the dog; one is wearing a light blue shirt and the other a red and white striped shirt. They are all smiling and appear to be enjoying their walk. The background shows green trees and a parked car, suggesting a suburban neighborhood.

If walking is so beneficial,
why don't people just walk
more?

Urban Design is

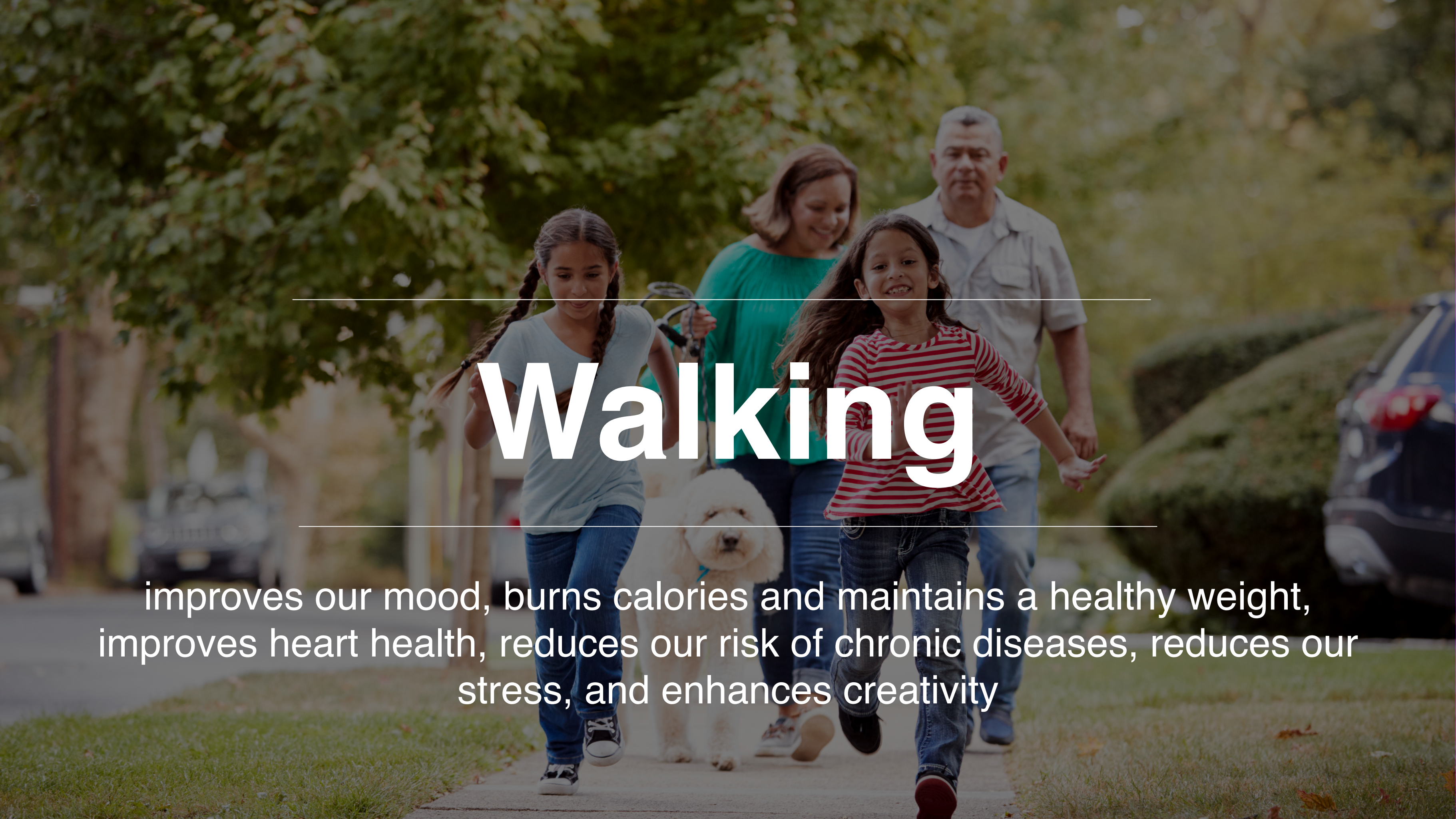
the arrangement and design of buildings,
public spaces, transport systems,
services, and amenities.

Urban Design is

about “shaping emotional infrastructure”

Charles Montgomery, Happy City: Transforming our Lives through Good Design

Placemaking is the curation of
JOURNEYS and **DESTINATIONS**
that are safe, comfortable,
memorable, and accessible.

A family consisting of a mother, a father, and two young girls are walking a white poodle on a paved sidewalk. The mother is in the center, holding the leash, and the father is walking behind her. The two girls are in the foreground, running and playing. The background shows green trees and a parked car. The image has a semi-transparent dark overlay.

Walking

improves our mood, burns calories and maintains a healthy weight, improves heart health, reduces our risk of chronic diseases, reduces our stress, and enhances creativity

A photograph of a street intersection with a large text overlay. The text is white and reads: "What makes one journey enjoyable and the other unpleasant?". The background shows a multi-lane road with a crosswalk, traffic lights, and commercial buildings including a PetSmart and a Michaels. A black SUV is visible on the right side of the road.

**What makes one journey
enjoyable and the other
unpleasant?**

Brain Science 101



Brain Science 101

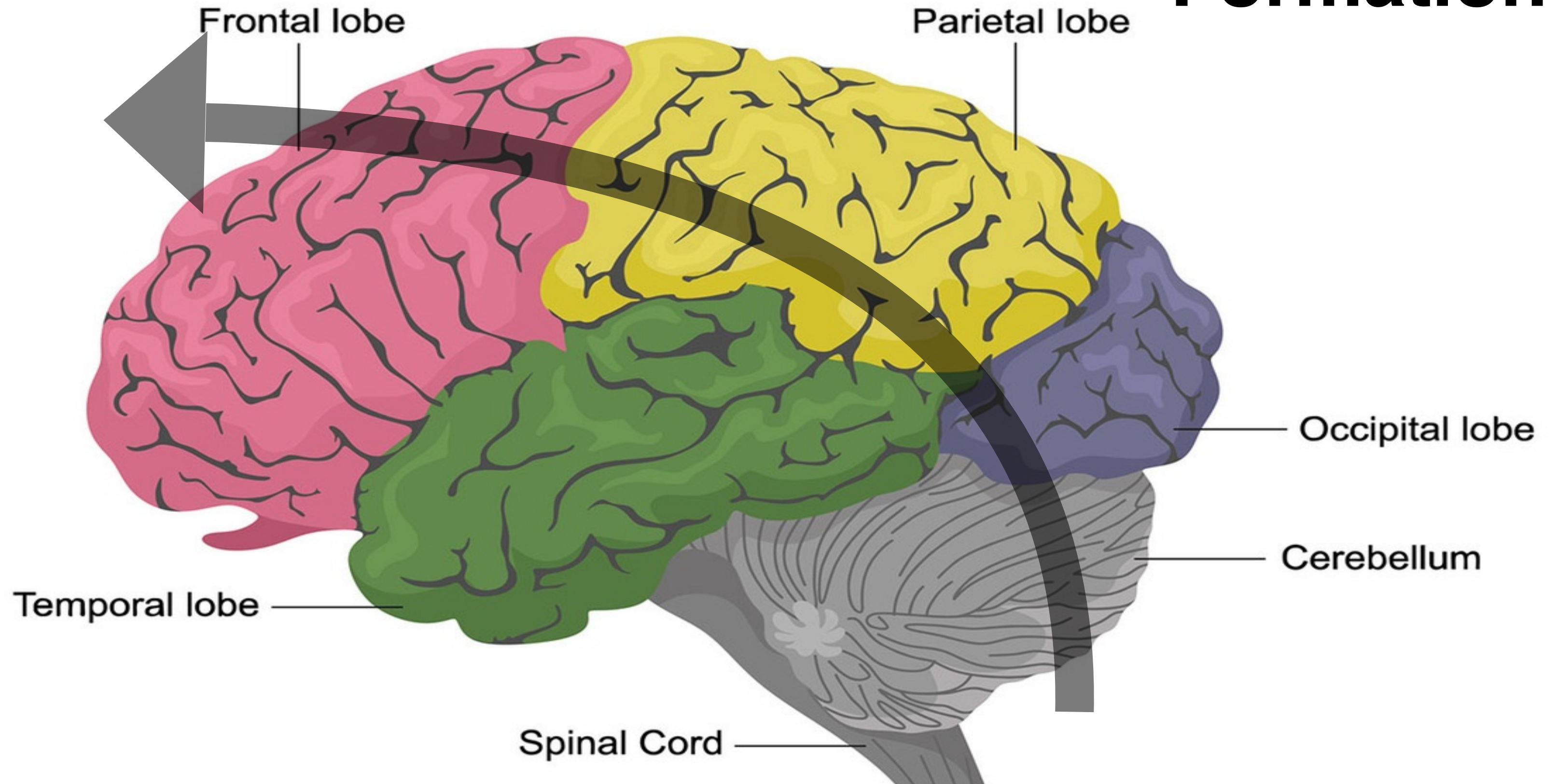
- These connected webs of **neurons** are called **neural networks**
- These neural networks are playing a very significant role in how you see, experience, and react to the world and

Your brain is an anticipation machine

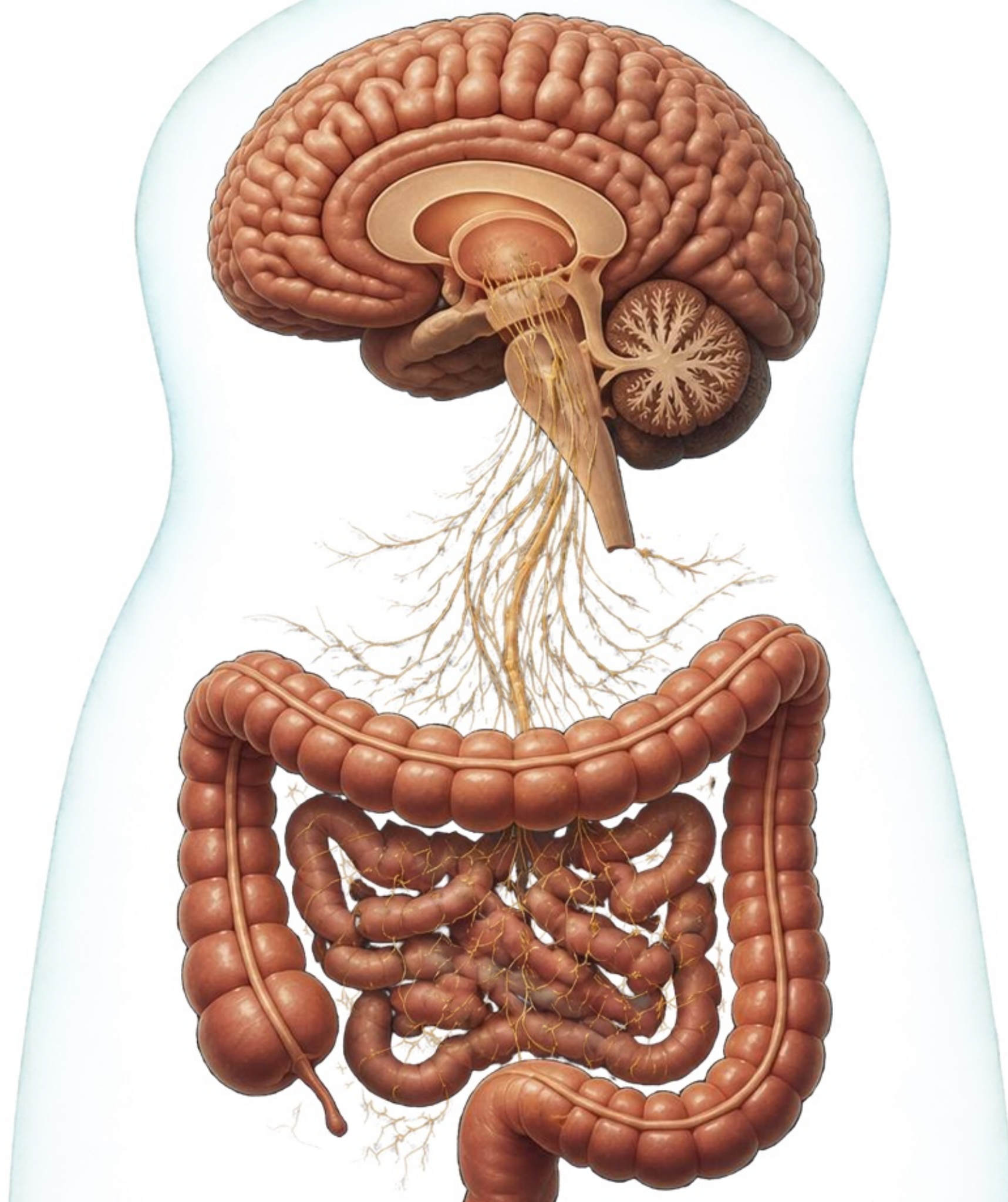


Human Brain Anatomy

Brain Formation



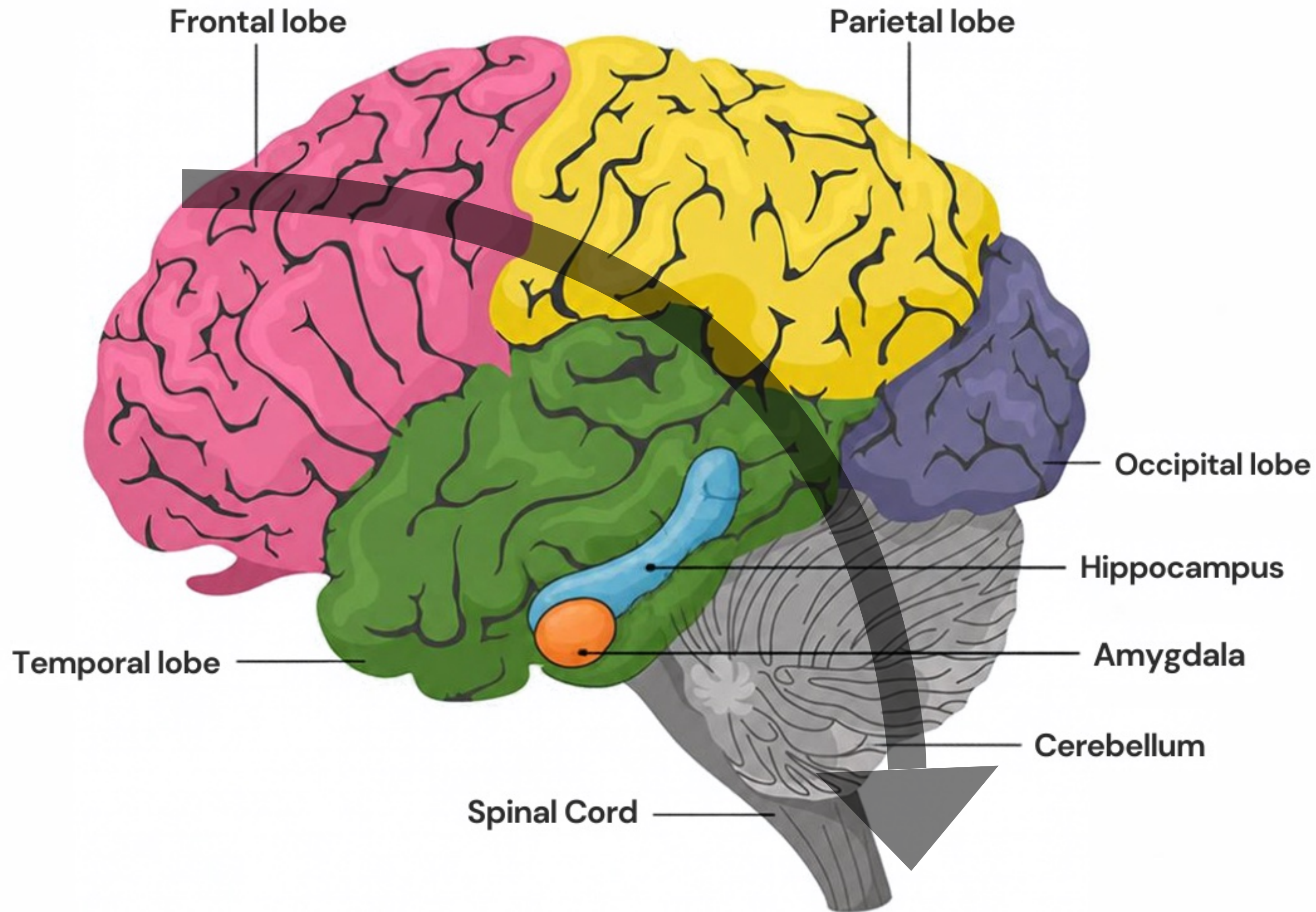
The Gut-Brain Axis



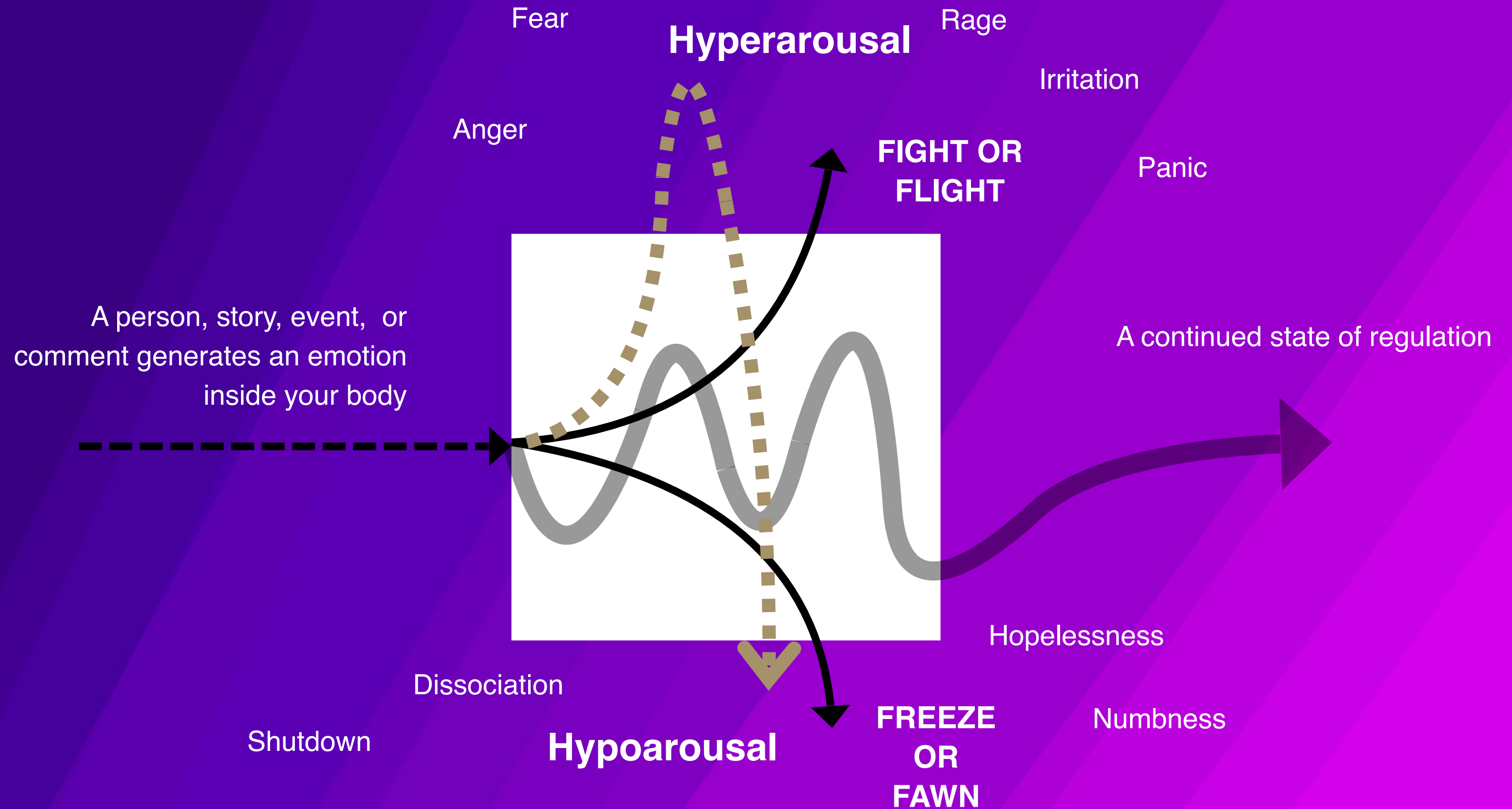
We are living in our heads



Brain in Survival Mode



Window of Tolerance (The Box)



**We are only born
with two fears...**

FEAR OF FALLING





**...All other fears are
learned behaviors.**

The designed environment is not a backdrop for healing — it is a direct intervention in brain chemistry. Every path, every canopy edge, every water sound is a neurological event.

What is Wholeness?

This is secure attachment.

Delight



**Spaces for play
and care**

Belonging



**Spaces for community
and sharing**

Justice



**Spaces that empower
and are accessible**

Chunking





TOW-AWAY
NO STOPPING
ANY TIME

MOTUL
BART
ba

Powell

NOV

Walgreens
PHARMACY

PHARMACY





Cortisol









Biological Effect 1: Regulate Stress Hormones

Choice

Natural
edges

Curved
Path

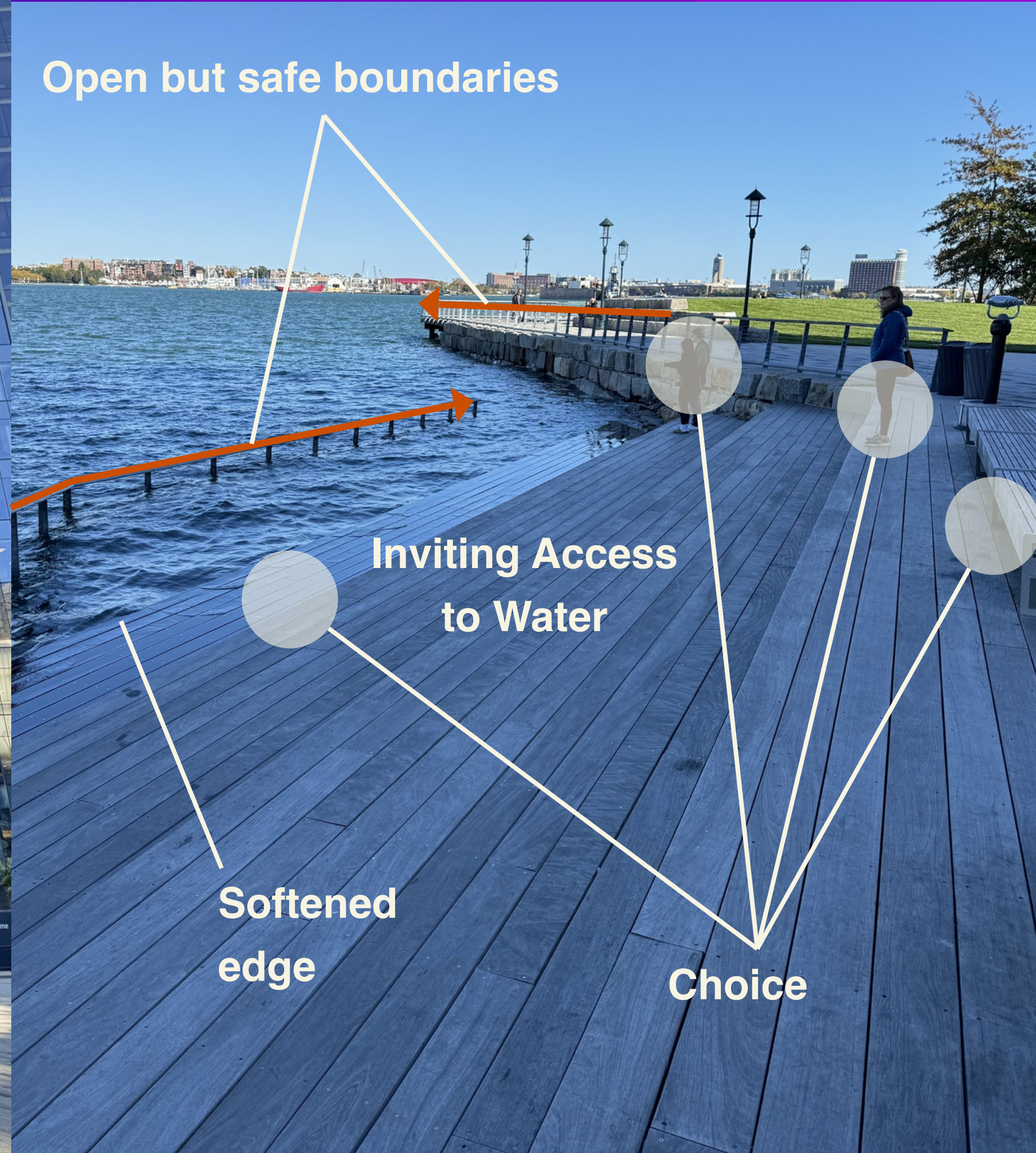
Soft
edges

Battersea Park, London



Organic lines leading
the visitor

Pier 4, Boston



Open but safe boundaries

Inviting Access
to Water

Softened
edge

Choice

Thigmotaxis











2 HR PARKING
MON - SAT
8:00 AM
TO
6:00 PM

GOOD DRIP
COFFEE
OPEN

JEWEL BOX
celebrate
GRADS
Perfect Gift!

MINE
the smaller shop by sandy

Jewel Box

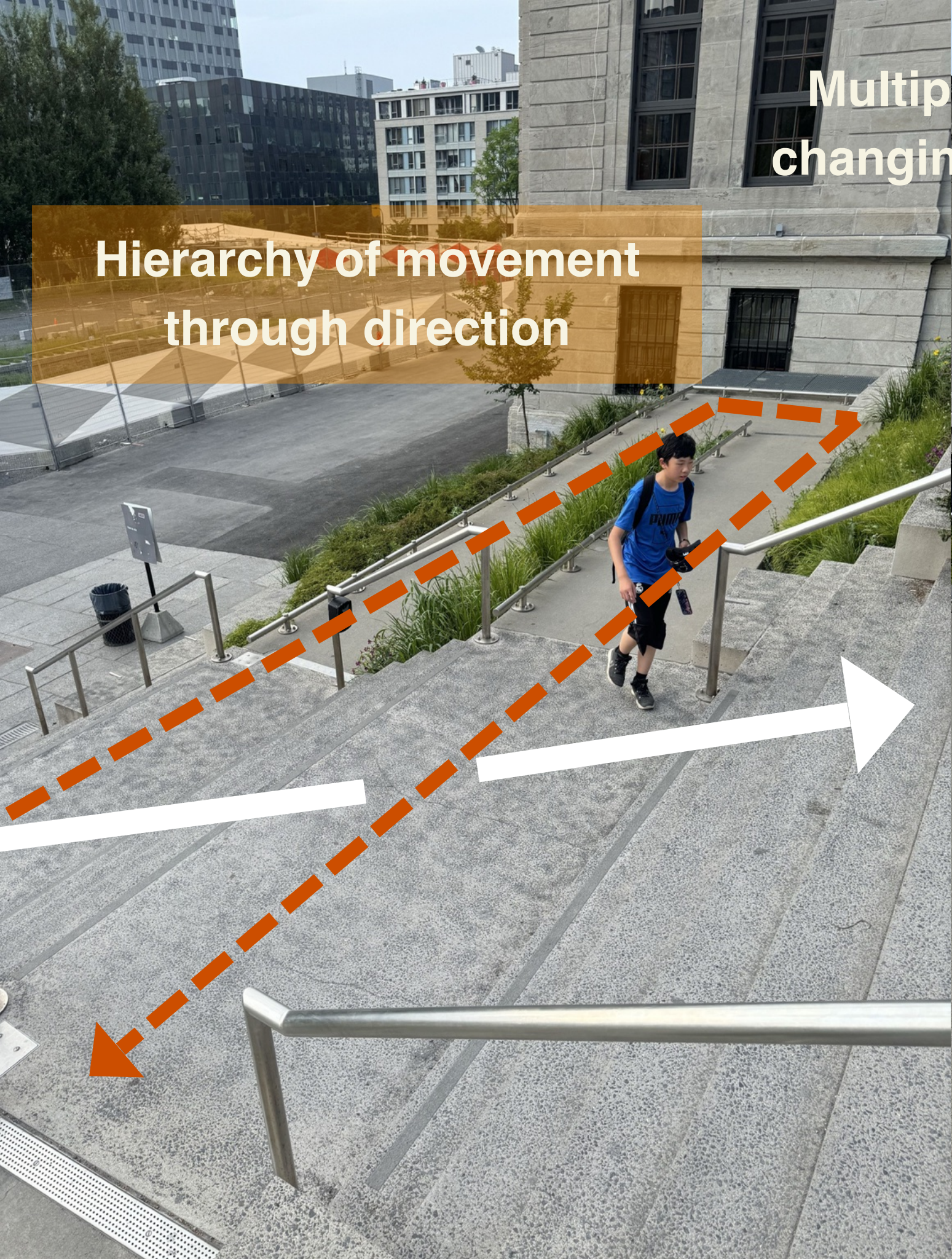
VISION
capital & management

GALLERY

Jewel Box

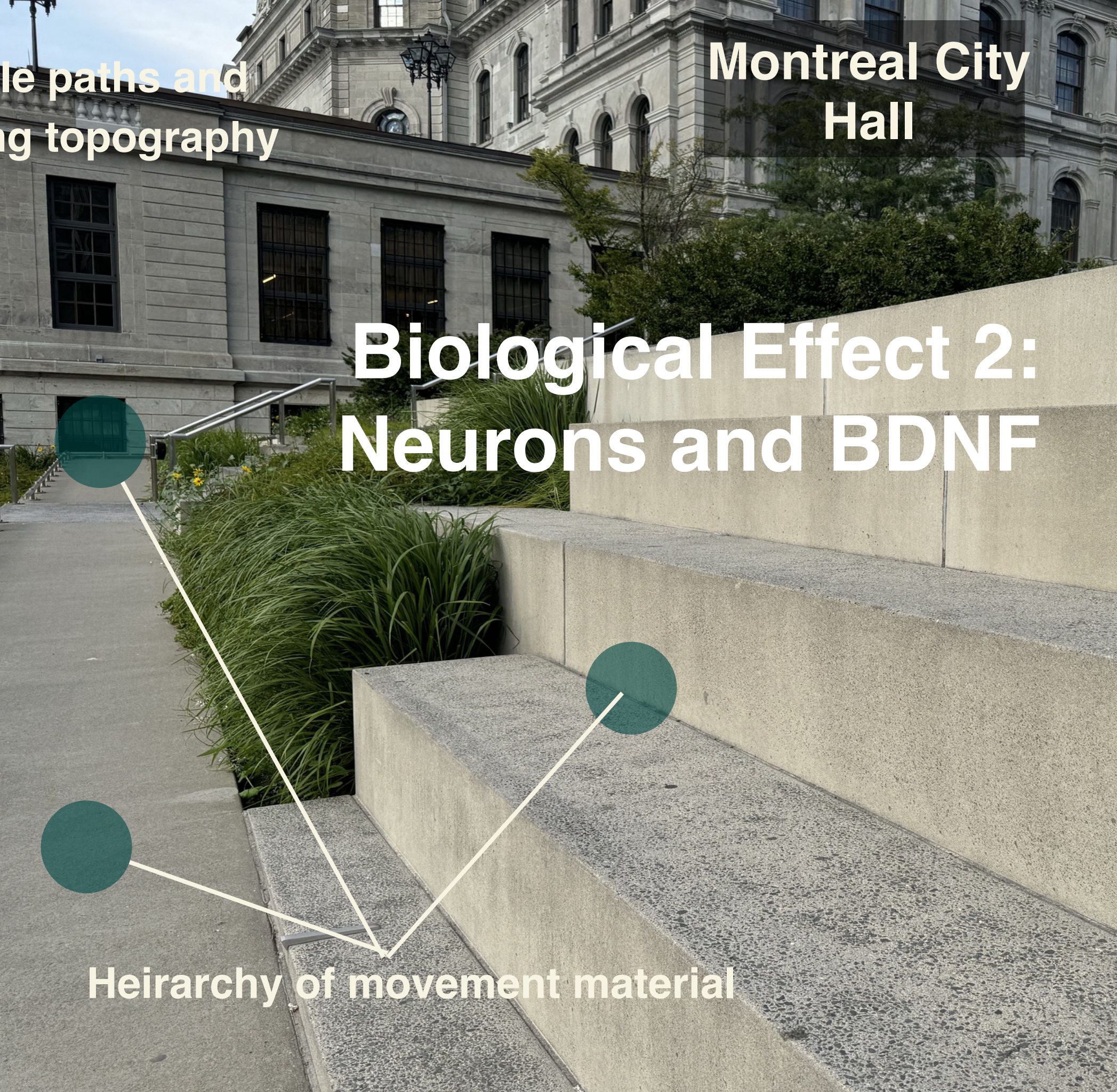






Multiple paths and
changing topography

Hierarchy of movement
through direction



Montreal City
Hall

Biological Effect 2:
Neurons and BDNF

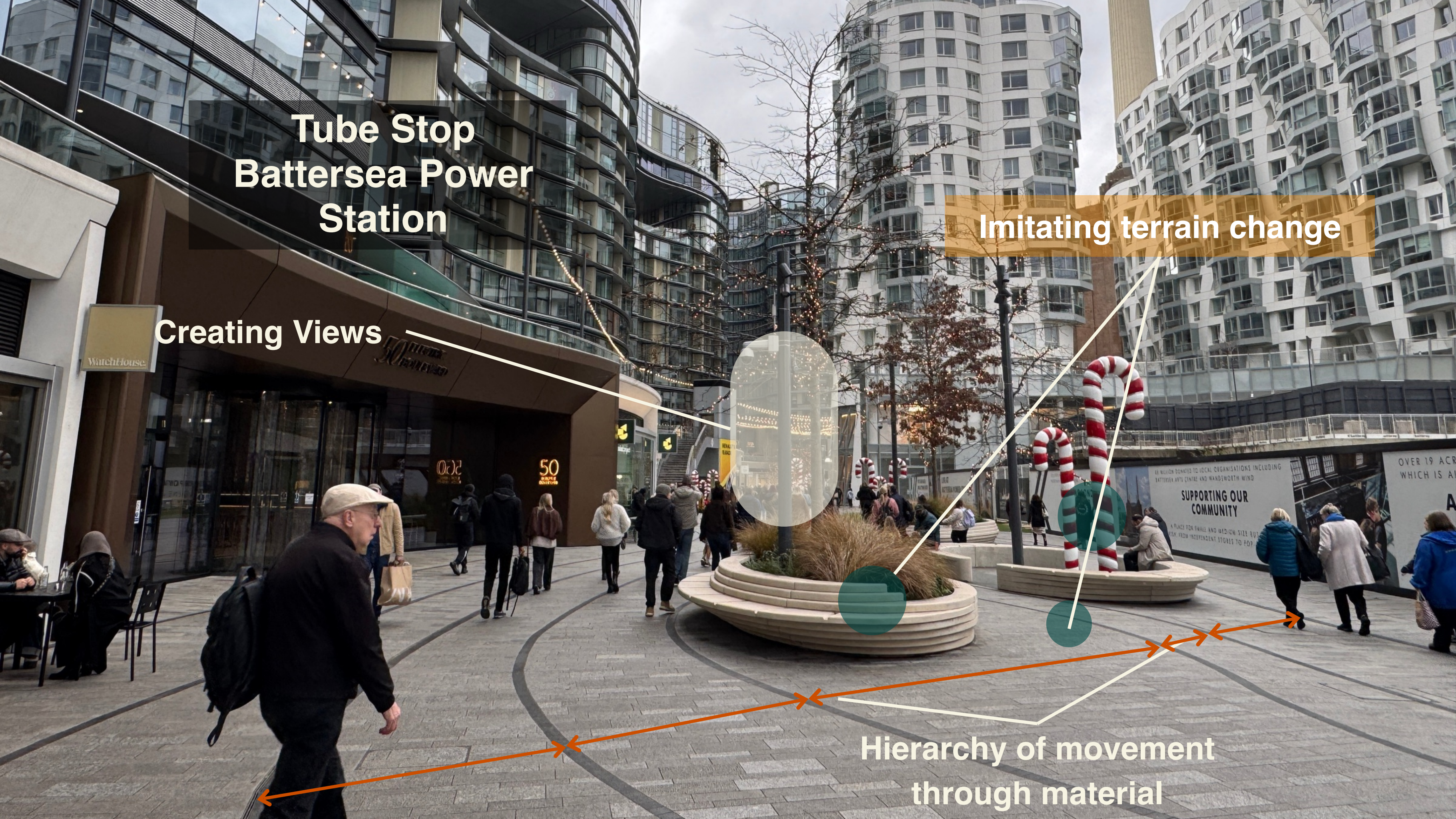
Heirarchy of movement material

Tube Stop Battersea Power Station

Creating Views

Imitating terrain change

Hierarchy of movement
through material



Biological Effect 3: Attention Restoration

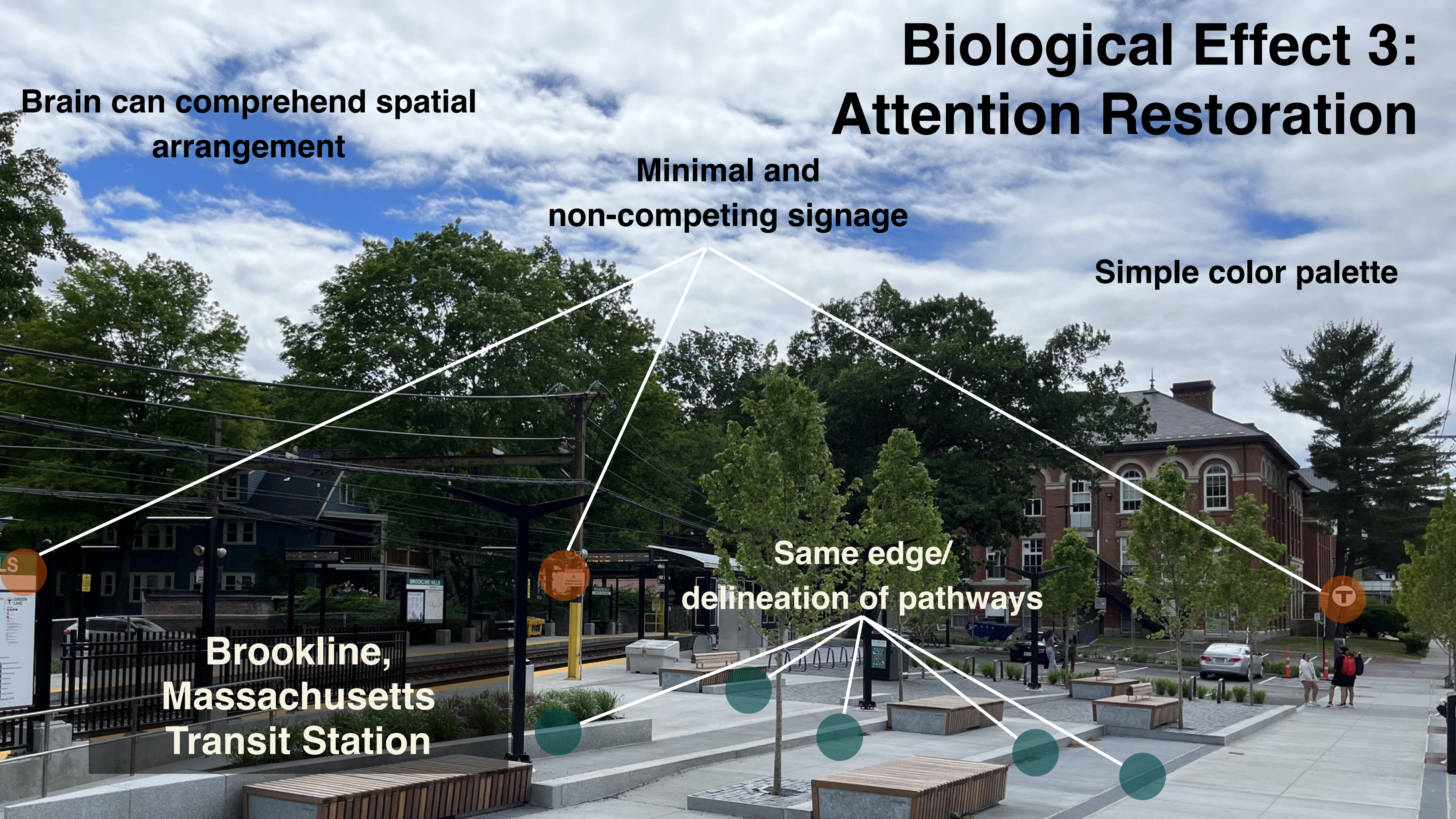
Brain can comprehend spatial
arrangement

Minimal and
non-competing signage

Simple color palette

Same edge/
delineation of pathways

Brookline,
Massachusetts
Transit Station





Clear wayfinding

Safety is
communicated

Plant palette
is digestible

Consistent treatments

Clear understanding
of pedestrian space

Intersection
Langley, Washington

Internal and external views

Invitation to touch/feel/smell

Tactile surfaces

The Collective
Edinburgh,
Scotland

Biological Effect 4:
Neural Integration



Acoustic variation

**Downtown Park
Cary, NC**

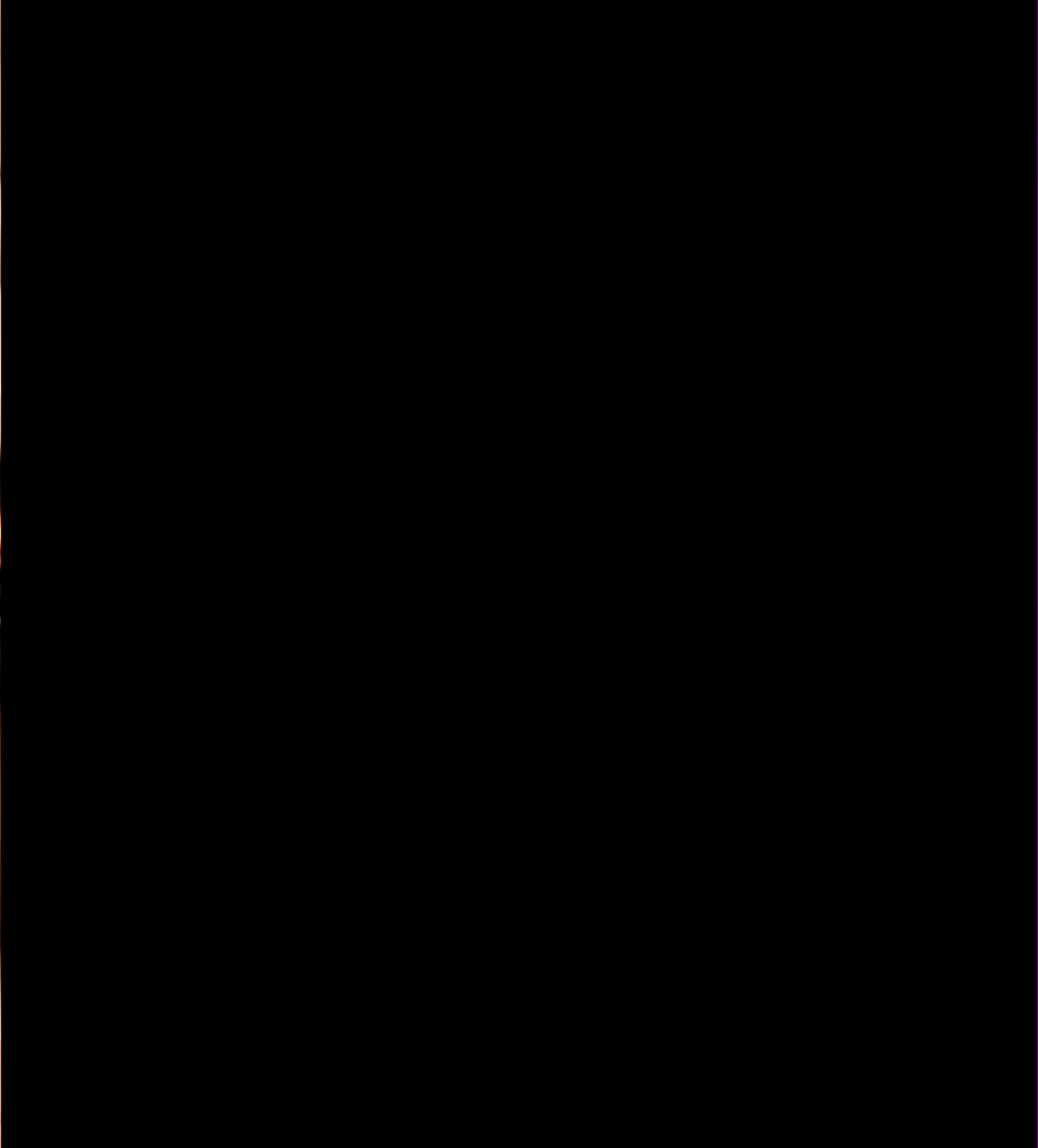
Invitation to touch/feel

Image Credits: Friends of Cary Park

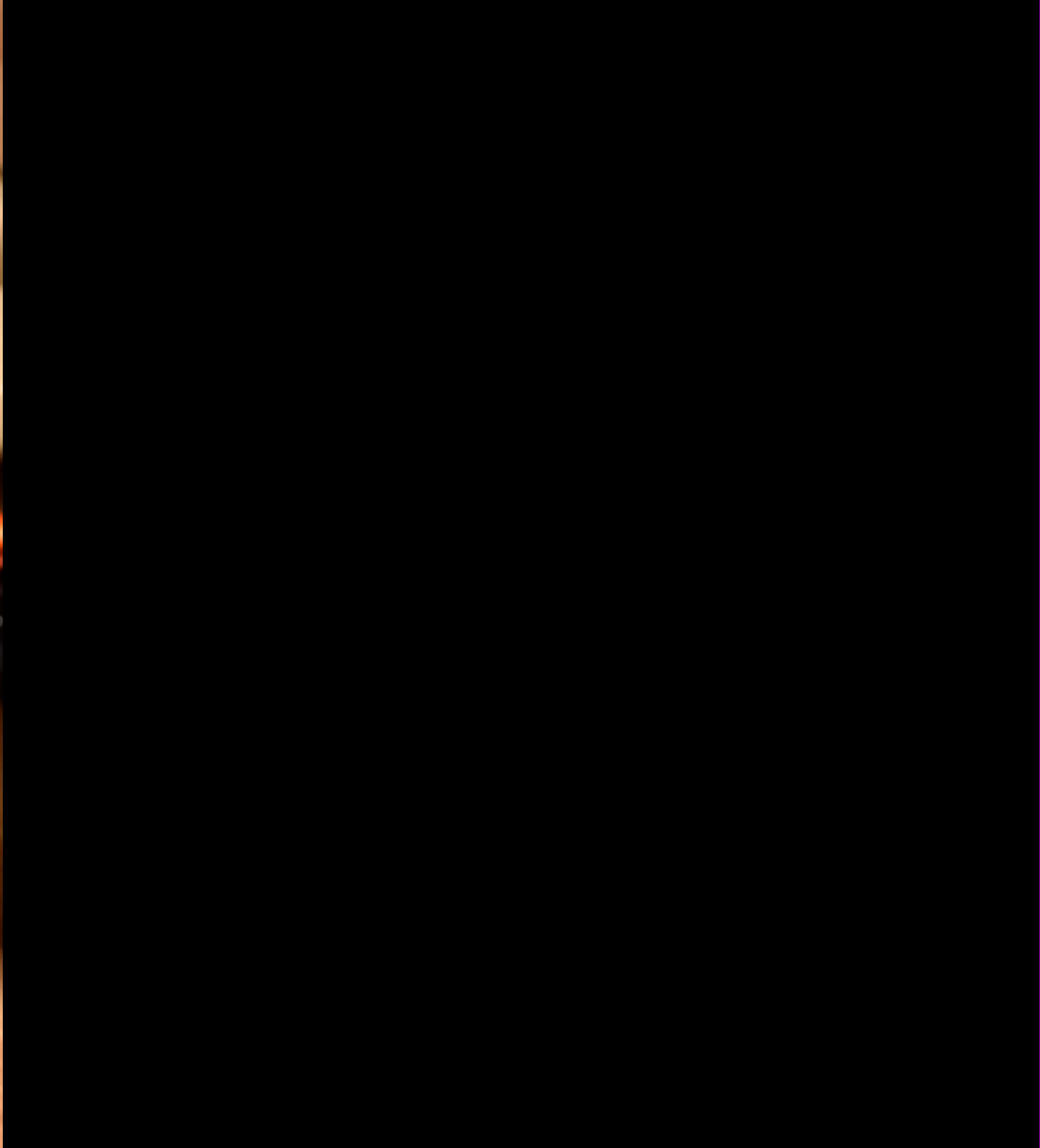
Visual stimulation

Image Credits: David Kugh

Place Cells













Cognitive Engagement

“The holy grail in urban design is to produce some kind of novelty or change every few seconds. Otherwise, we become cognitively disengaged.”

Colin Ellard, cognitive researcher and author



CHANEL

SHARK

Ermenegildo Zegna

BVLGARI

LV

LO



SHARK

Ermenegildo Zegna

BVLGARI

LOUIS VUITTON











Clean & Green



Color & Texture



And people...
lots of people

If we are cognitively engaged,
we are nicer humans...

*Research by Charles Montgomery, Author of Happy City

If we are cognitively engaged,
we are nicer humans...

5X

**More likely to help
others**

If we are cognitively engaged,
we are nicer humans....

5X

**More likely to help
others**

7X

**More likely to offer
use of their
phones**

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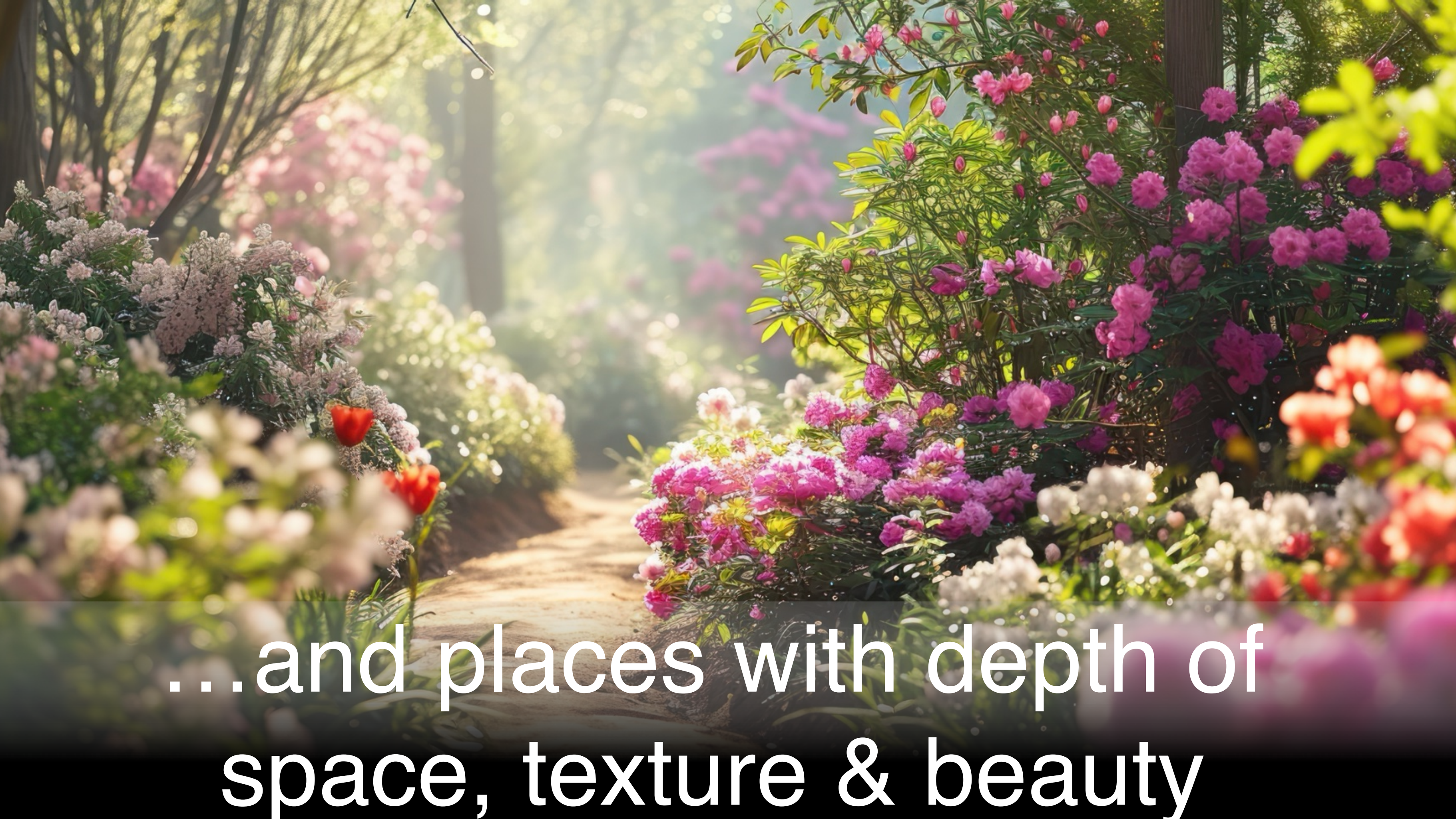
4X

**More likely to lead
a lost tourist to
their destination**

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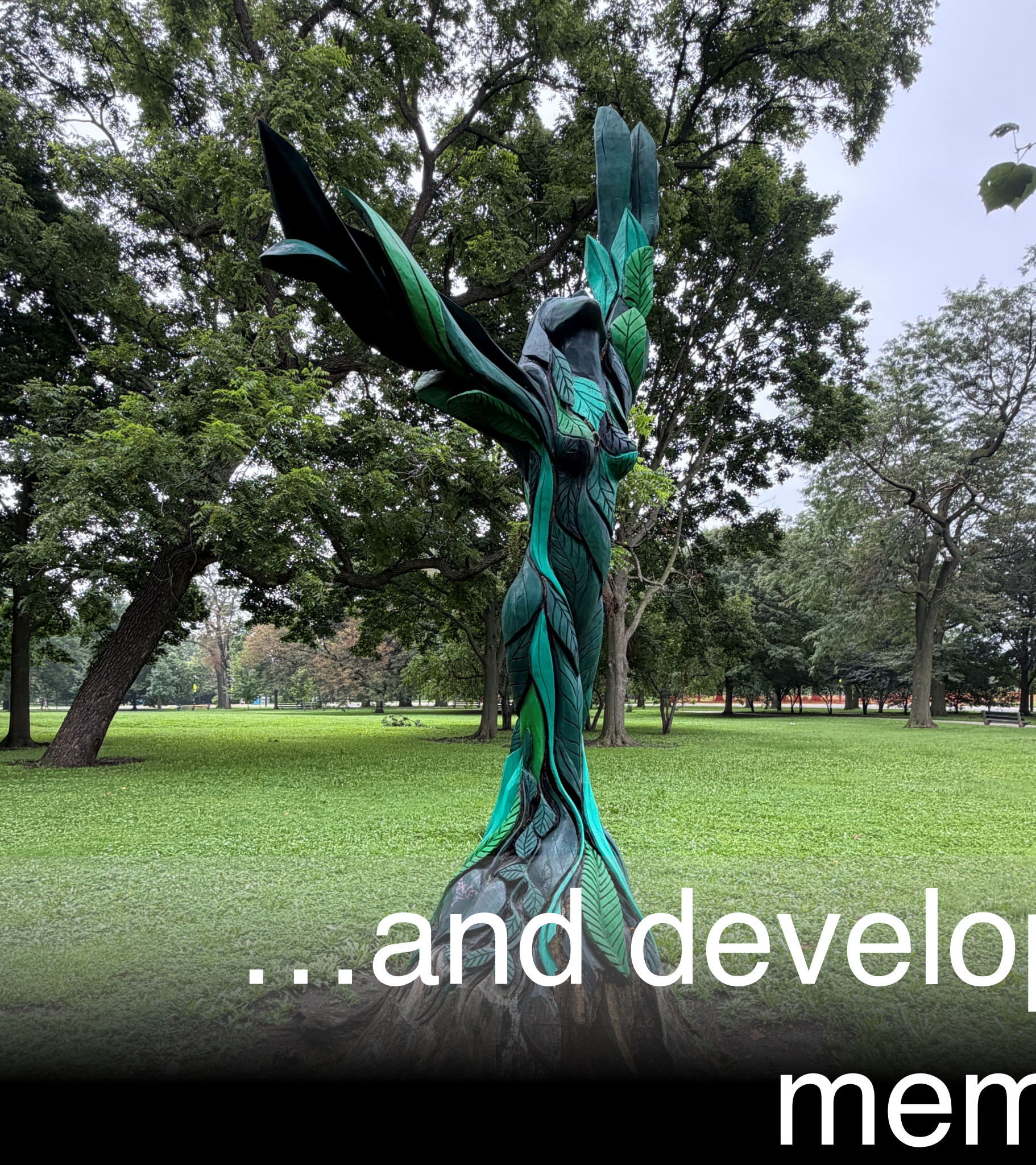
We need to provide permeable
edges for safety & comfort



...and places with depth of
space, texture & beauty



...and places that allow us to
reorient



...and develop a collective
memory