

Flow History, Flow Foundations, Flow Science and Triggers

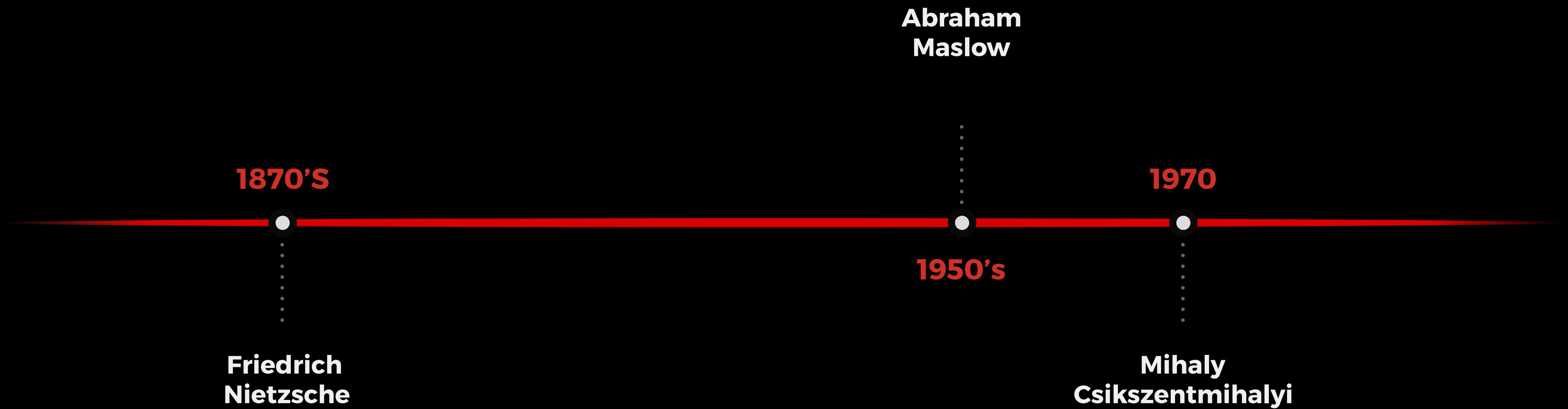
Today's Gameplan

- 1 A Full Flow Overview

What is **Flow**

An Optimal State of Consciousness ...

Timeline of flow science....



Csikszentmihalyi's Big Six

Flow is...

- 1 Complete Concentration**
- 2 Action and Awareness**
- 3 Merge Self Vanishes**
- 4 Time Dilates**
- 5 Sense of Control**
- 6 Autotelic Experience**



The (Early) Core Characteristics of Flow

- 1 Complete Concentration**
- 2 Merger of Action and Awareness**
- 3 Loss of Self**
- 4 Time Dilation**
- 5 A Sense of Control**
- 6 Autotelic Experience**
- 7 Immediate Feedback**
- 8 Clear Goals**
- 9 A Balance Between Challenge and Skills**



Csikszentmihalyi's Big Six

1 | Complete Concentration

More specifically, complete concentration on a limited field of information. Engagement, enjoyment and total absorption in right here, right now. Attention locked on the task-at-hand.

Dorsal Attention Network, Frontoparietal control network, task engaged attentional regulation



Csikszentmihalyi's Big Six

2 | The Merger of Action and Awareness

This is the front edge of that “oceanic boundlessness,” that sense of oneness with everything. It means that sense of duality, that sense of being both an outside observer and an active participant in your life melts away.

This is what Taoist philosophers describe as “harmony”... of being swept away by the river of ultimate performance. Less poetically, it’s heavy duty task-specific focus w/ deadly-accurate, high-speed problem-solving.

Possible + visual system



Csikszentmihalyi's Big Six

3 | The Vanishing of Self

Self vanishes. Our sense of self-consciousness as well. The inner critic is silenced. The voice of doubt disappears.

* -IPS, -TPJ



Csikszentmihalyi's Big Six

4 | An Altered Sense of Time

Technically, “time dilation.” Either time slows down, and we get that freeze frame effect, or time speeds up, and five hours pass by in five minutes. Past and future vanish, and we are plunged into an eternal present, what Stanford psychologist Philip Zimbardo nicknamed “the deep now.”

Maybe: -PFC, -IPS, +Cerebellum

Maybe: Time Vanishes Before Self (FRC, 2018)



Csikszentmihalyi's Big Six

5 | Paradox of Control

We have a powerful sense of control over the situation - often in a situation that is normally not (quite so) controllable. In this moment, we are captain of our own ship, master of our destiny.

- + corticothalamic networks,
- - temporal polar structures, - bilateral angular gyrus



Csikszentmihalyi's Big Six

6 | Autotelic Experience

“ Flow is what people feel when they enjoy what they are doing, when they don't want to be doing anything else. What makes flow so intrinsically motivating? The evidence suggests a simple answer: in flow, the human organism is functioning at its fullest capacity. When this happens, the experience is its own reward. ”

- Csik.

* No data available, but hypothesis is + Default Mode Network



How Psychologists Measure Flow

Items of the Flow Short Scale by Rheinberg, Vollmeyer, and Engeser (2003; cf. Engeser & Rheinberg, 2008). Items 1–10 measure the components of flow experience. The items 11, 12, and 13 measure the perceived importance or perceived outcome importance (cf. Abuhamdeh, Chap. 6 of this volume). The flow items could be separated into two factors: (1) fluency of performance (items 2, 4, 5, 7, 8, 9) and (2) absorption by activity (items 1, 3, 6, 10). With the additional items, demand, skills, and the perceived fit of demands and skills are measured (cf. Keller and Landhäuser, Chap. 3 of this volume).

	Not at all	Partly	Very much
1. I feel just the right amount of challenge	○	○	○
2. My thoughts/activities run fluidly and smoothly	○	○	○
3. I do not notice time passing	○	○	○
4. I have no difficulty concentrating	○	○	○
5. My mind is completely clear	○	○	○
6. I am totally absorbed in what I am doing	○	○	○
7. The right thoughts/movements occur of their own accord	○	○	○
8. I know what I have to do each step of the way	○	○	○
9. I feel that I have everything under control	○	○	○
10. I am completely lost in thought	○	○	○
11. Something important to me is at stake here	○	○	○
12. I must not make any mistakes here	○	○	○
13. I am worried about failing	○	○	○

S. Engeser (ed.), *Advances in Flow Research*, DOI 10.1007/978-1-4614-2359-1,
© Springer Science+Business Media, LLC 2012

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Flow is on a spectrum



The High Flow Advantage

+500%

Motivation &
Productivity

+200%

Learning &
Memory

+430%

Creativity &
Innovation

+100%

Meaning &
Purpose



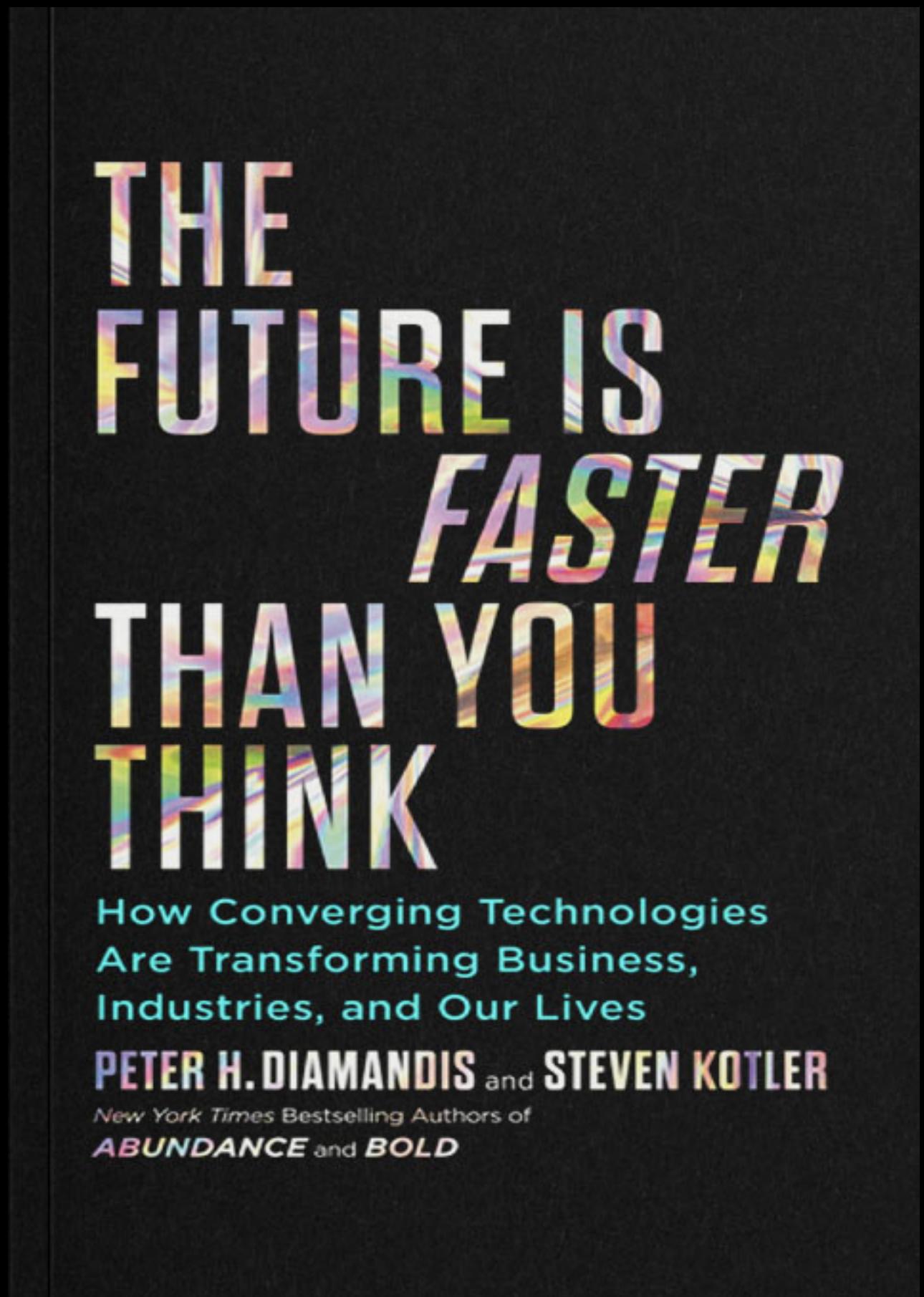
Grit &
Persistence

Collaboration &
Cooperation

Empathy/ Ecological
Awareness

Entering an Era of Convergence

- Local and Linear Brains
- Global and Exponential World
- Poor Long Term Thinking

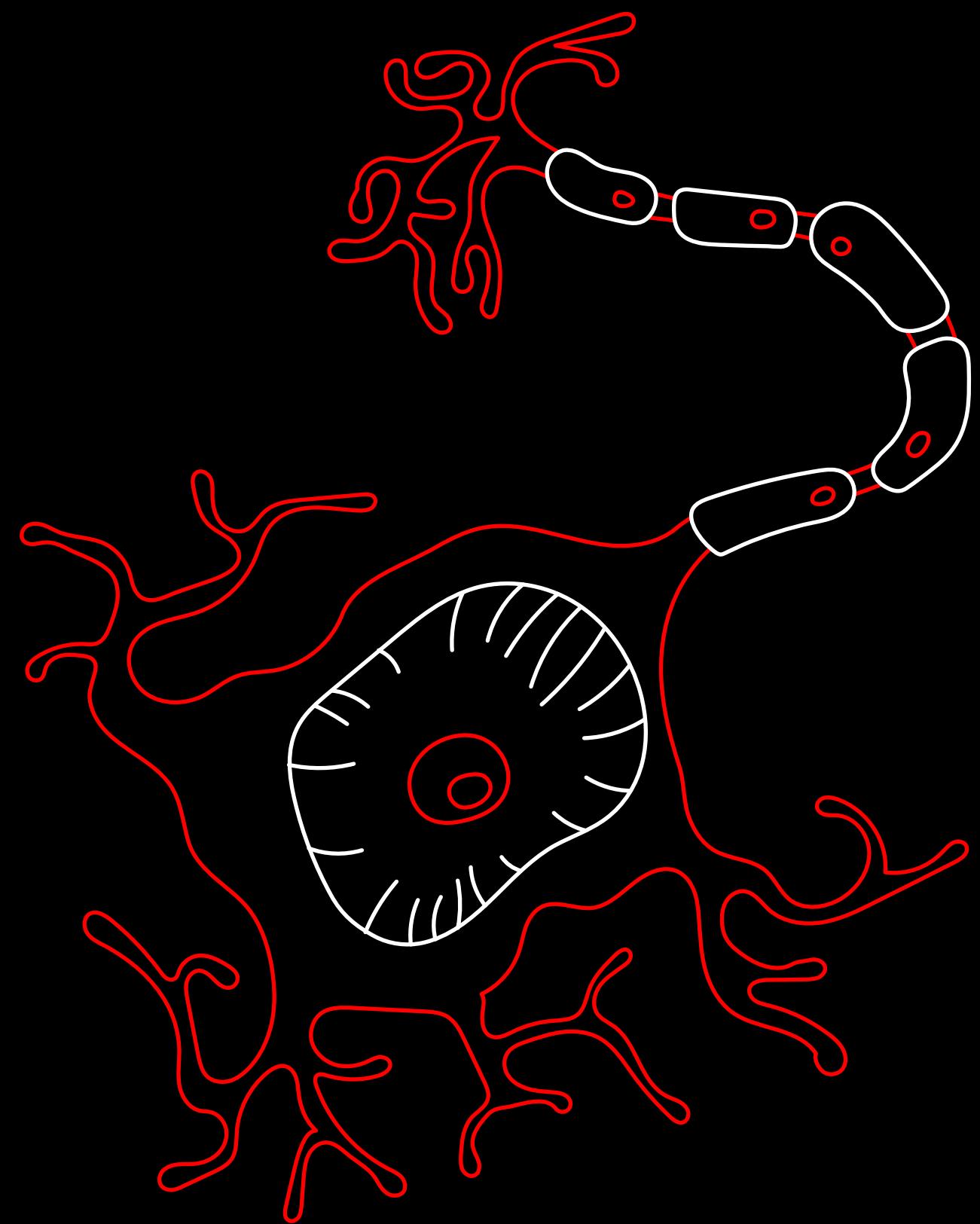


The Flow Advantage: **Speed and Scale**



Flow Science

- 1 Psychology**
- 2 Benefits of Flow**
- 3 Neurobiology**
- 4 Positive Psychology**
- 5 Evolution**
- 6 Genetics**
- 7 Physiology**



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Csikszentmihalyi's Big Six

Flow is...

- 1** Definable
- 2** Measurable
- 3** Universal
- 4** Spectrum
- 5** Flowy
- 6** Fundamental



The Phenomenology of Flow (STER)

S

Selfless

T

Timeless

E

Effortless

R

Richness

The Neurobiology of Flow (maybe)

- Transient and/or Localized Hypofrontality
- Brainwaves near Alpha/Theta borderline
- Seven Neurochemicals (DA, NE, AND, END, 5-HT, OT +ACH)
- Fight Response (thalamus)
- P300 Surprise Signaling
- SA+ Network +EA Network + (some) DM Network
- Cortisol Increases (inverted-U)
- HRV increases (higher variability) Heart rate increases (Fl study)
- Respiratory period and depth increase (slower, deeper breathing)
- Respiratory sinus arrhythmia (HRV matches respiration)
- Galvanic skin response increases (sympathetic nervous system)
- Core body temperature decreases (blood moving to the extremities)
- Negative facial micro-expressions show decreased muscular activity
- Positive facial micro-expression show increased muscular activity

Flow (Re)-Defined

An optimal state of consciousness where we feel our best and perform our best

Psychology

- Complete Concentration
- Merger of Action and Awareness
- Time Dilation
- Diminishment of Self
- A Sense of Control
- Autotelic Experience
- Universal (found in everyone, everywhere)
- Definable (by six core characteristics)
- Measurable (major psychometric instruments)
- Spectrum (micro-to-macro experiences)
- Flowy (how the state actually feels)
- Fundamental to overall life satisfaction

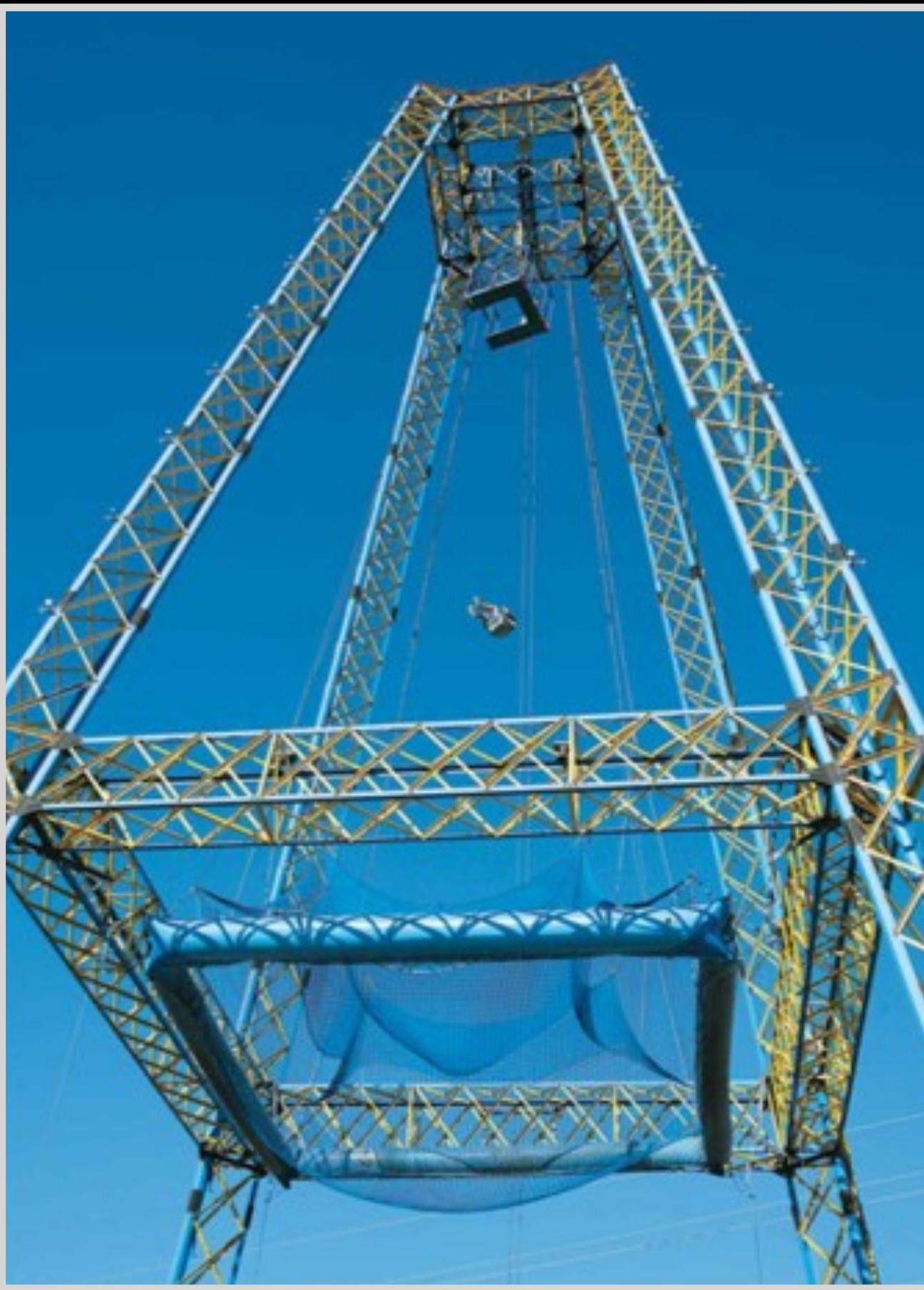
Neurobiology

- Neuroanatomy: Transient Hypofrontality
- Neuro Electricity: Alpha/Theta borderline
- Neurochemicals: DA, NE, AND, 2-AG, END, 5-HT, OT, ACH +?
- Networks: Salience + +Exec. Attention + (some) Default Mode
- Circuit (?): BG+ Thalamus + Amygdala + ACC + PFC

Physiology

- Cortisol Increases (inverted-U)
- HRV increases (higher variability)
- Heart rate increases
- Respiratory period & depth increase (slower, deeper breathing)
- Respiratory sinus arrhythmia (HRV matches respiration)
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Decoding the Science of Ultimate Human Performance



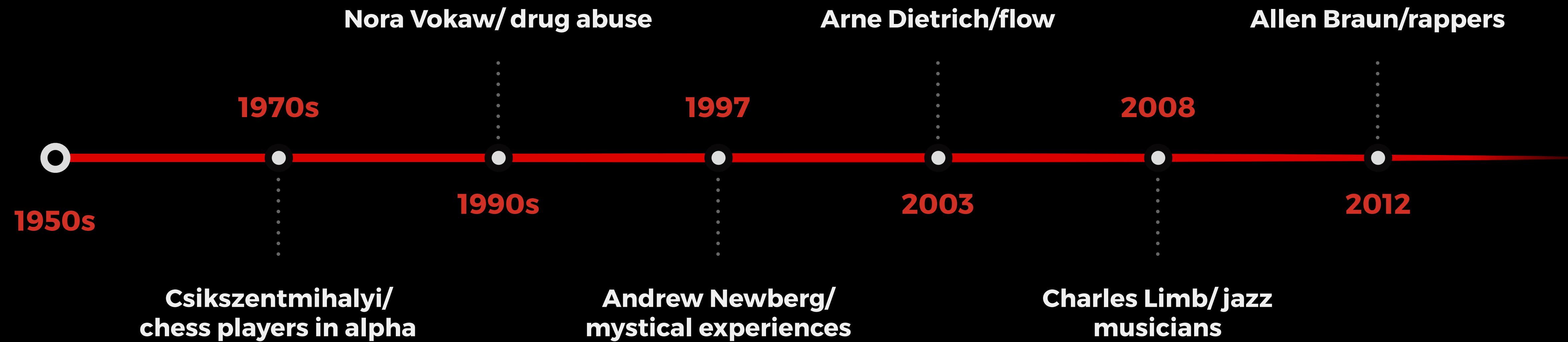
1 Neuroanatomy

2 Networks

3 Neuroelectricity

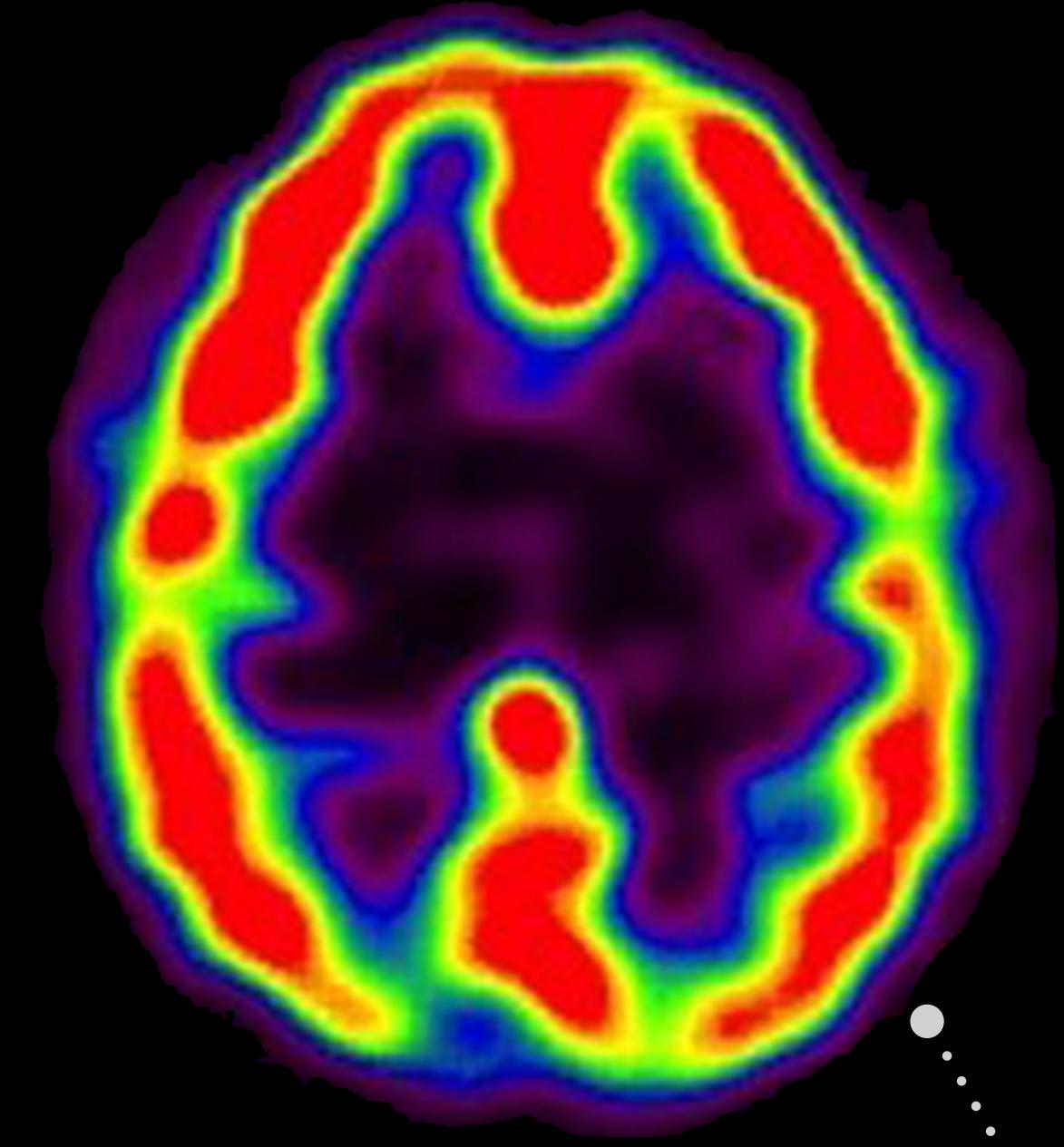
4 Neurochemistry

History of Transient Hypofrontality



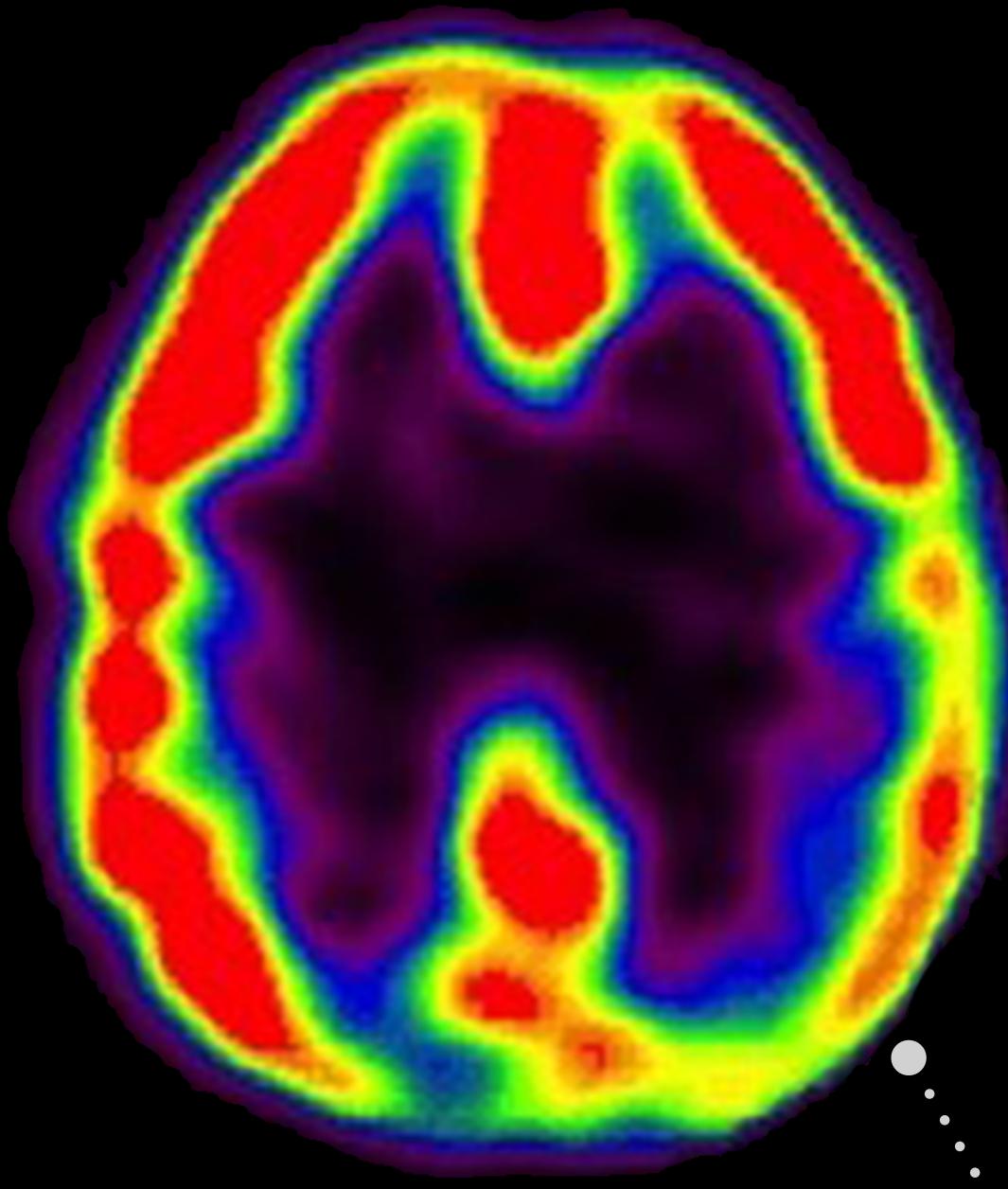
SPECT Images at Baseline and During Meditation

Baseline



Orientation
Area

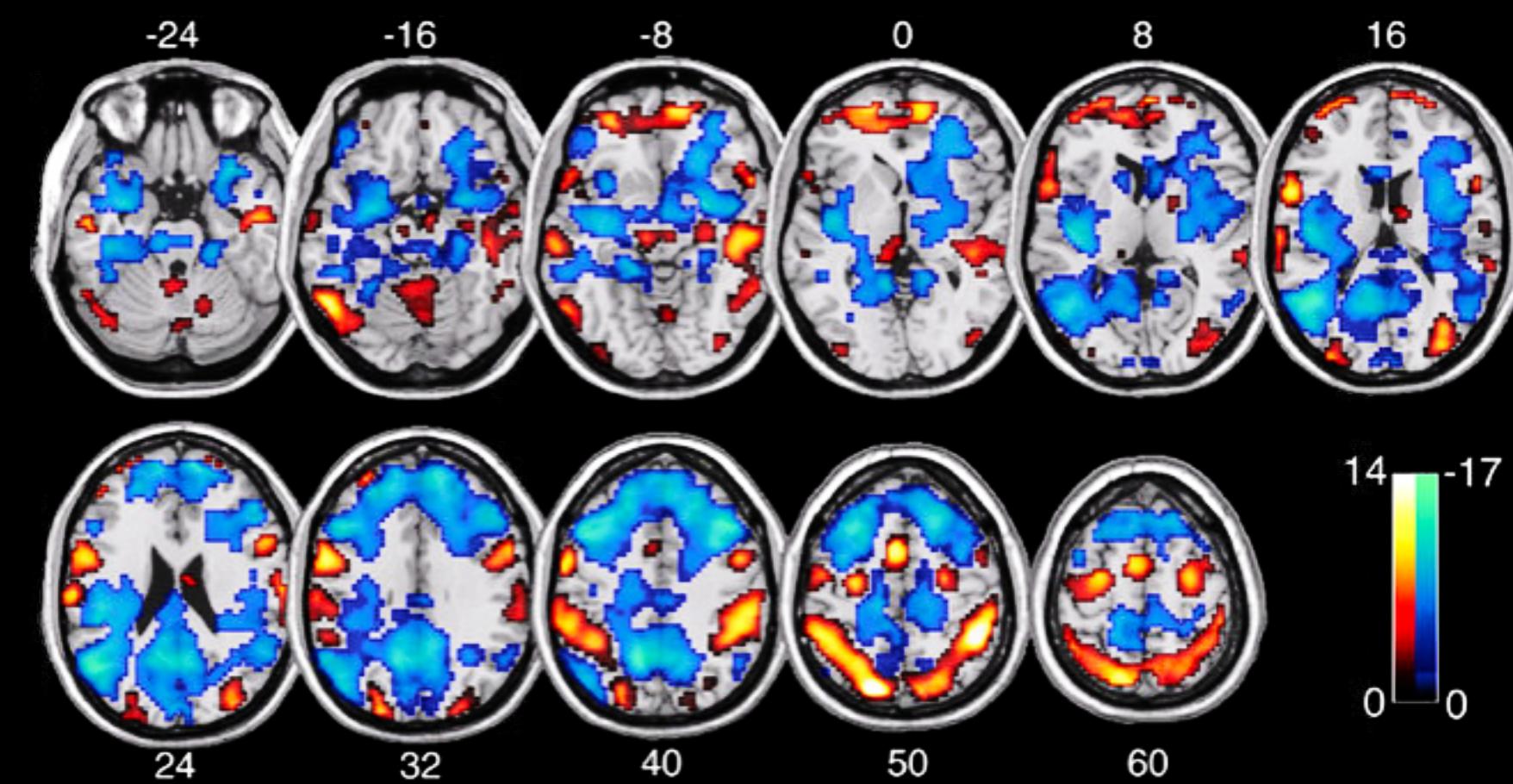
Meditation



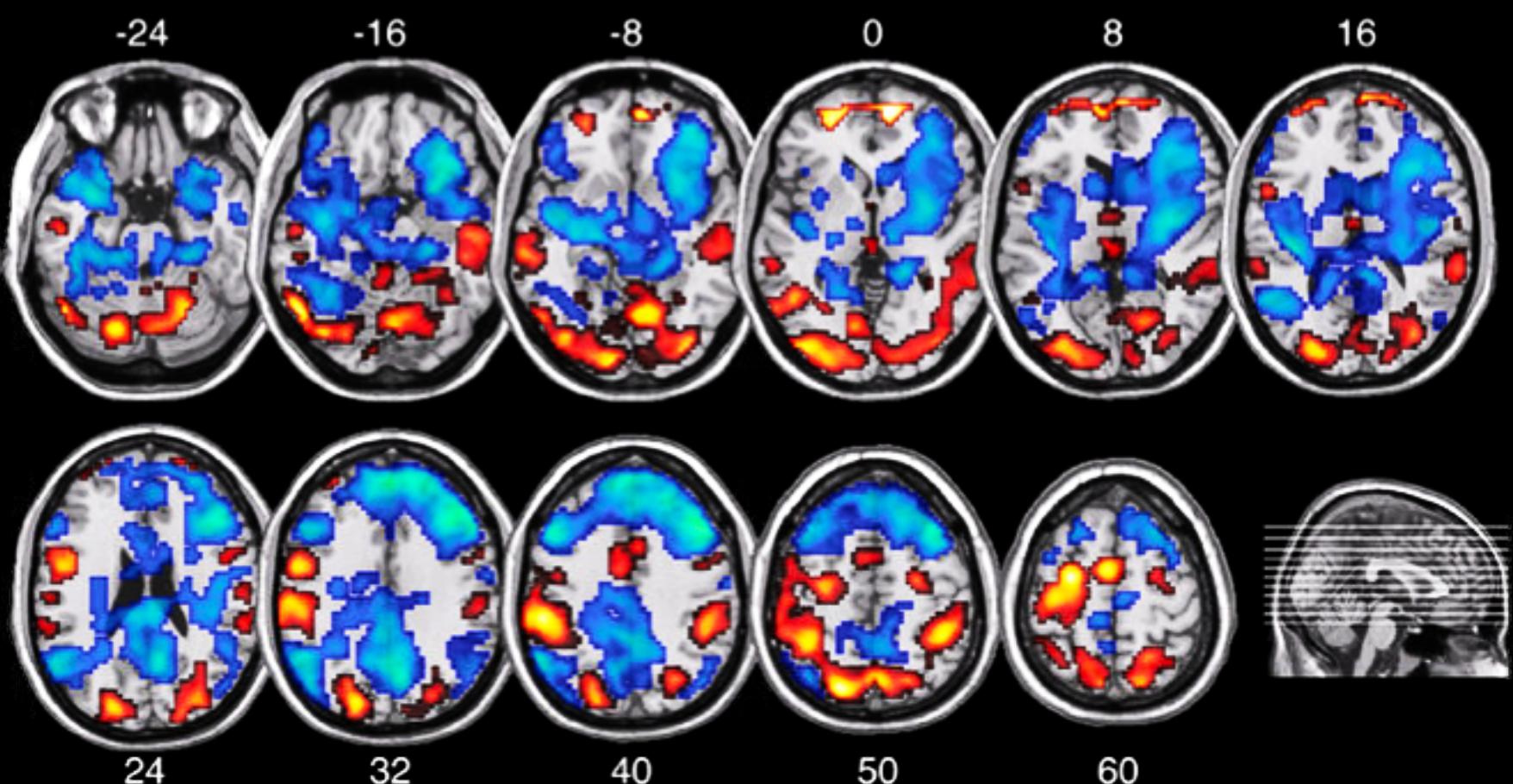
Orientation
Area

Improv

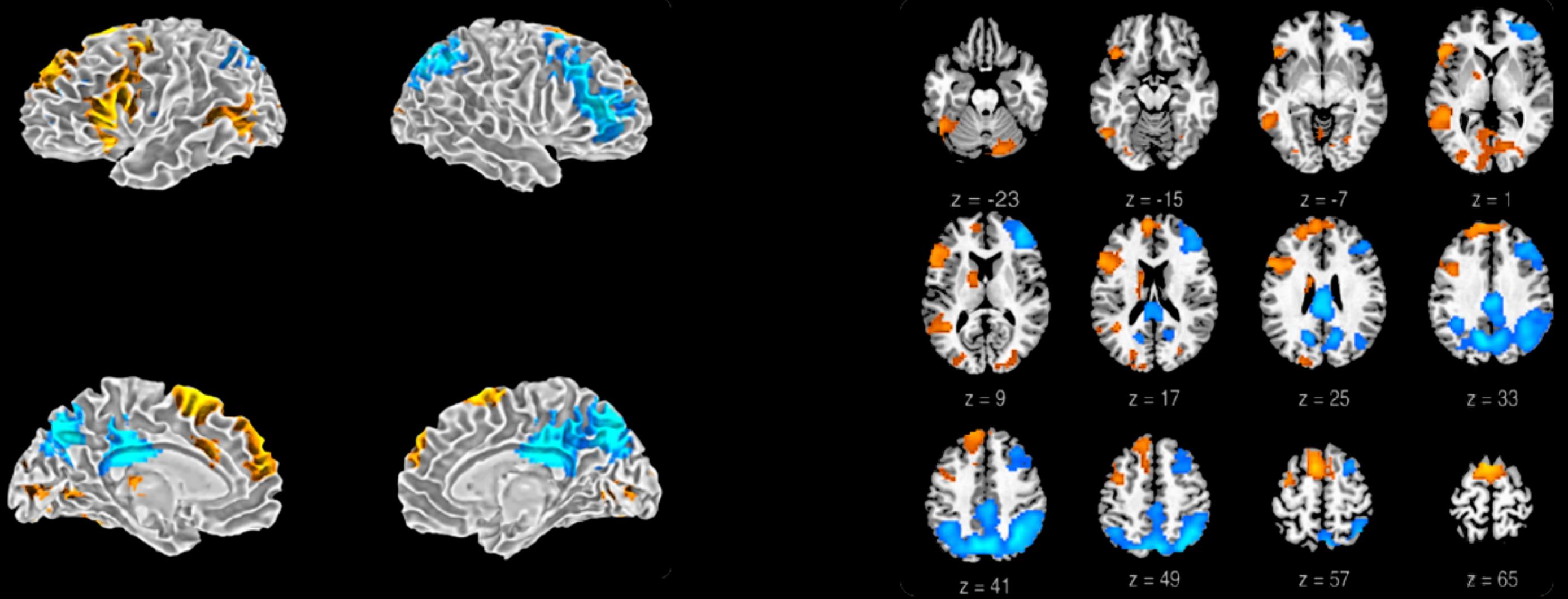
ScaleImprov



JazzImprov



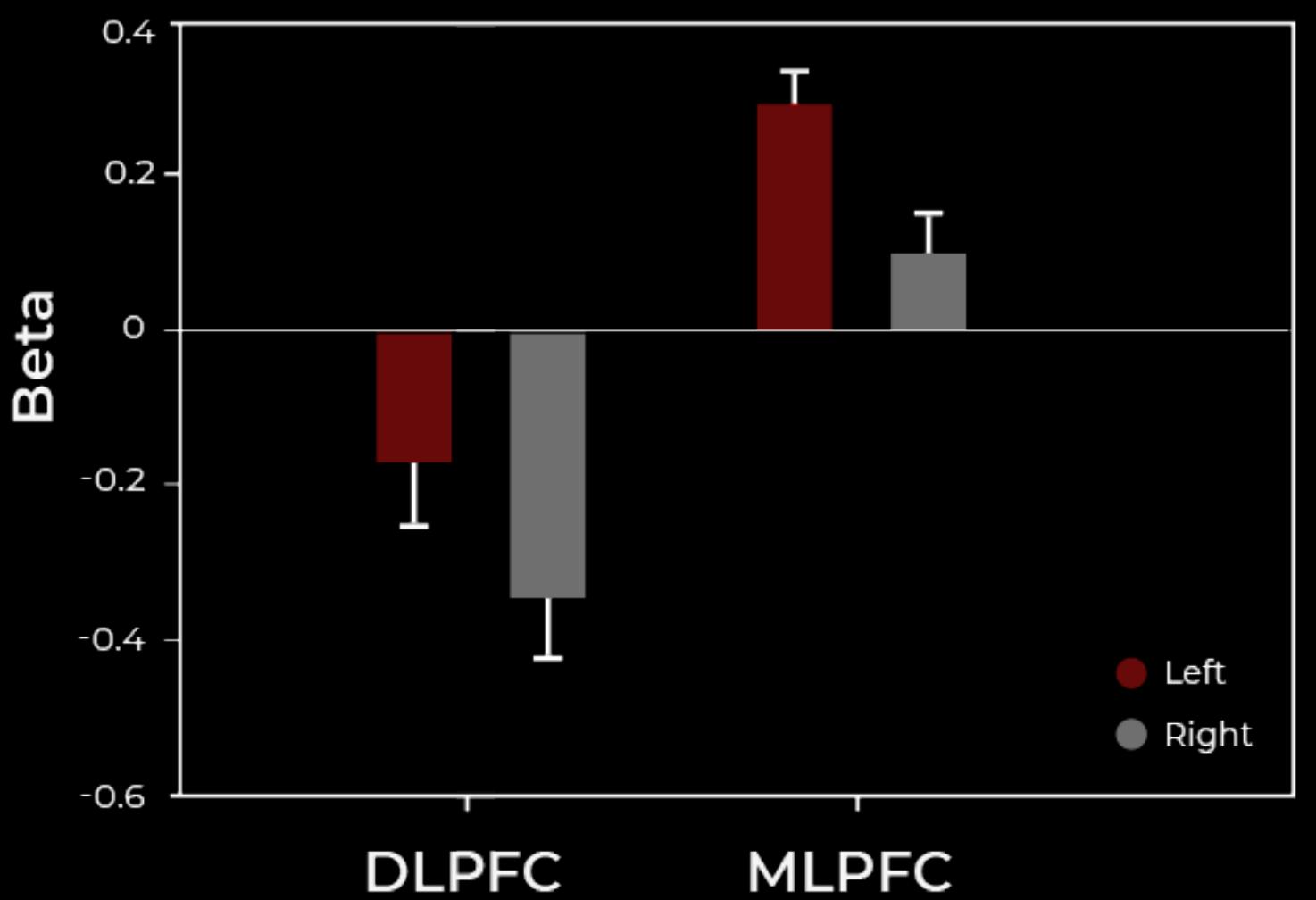
Rapper's Delight, Allen Braun, 2013



A

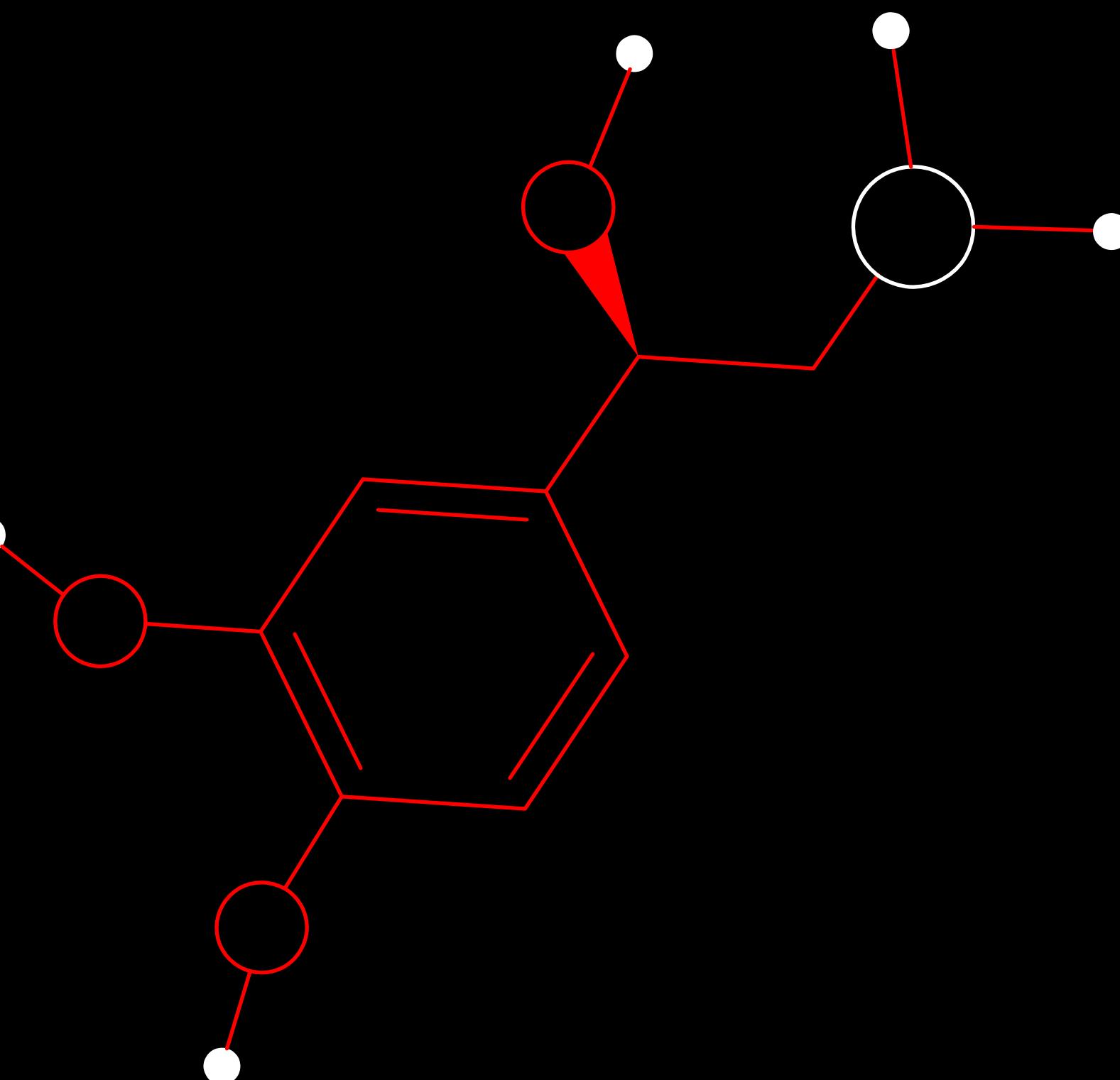
B

C

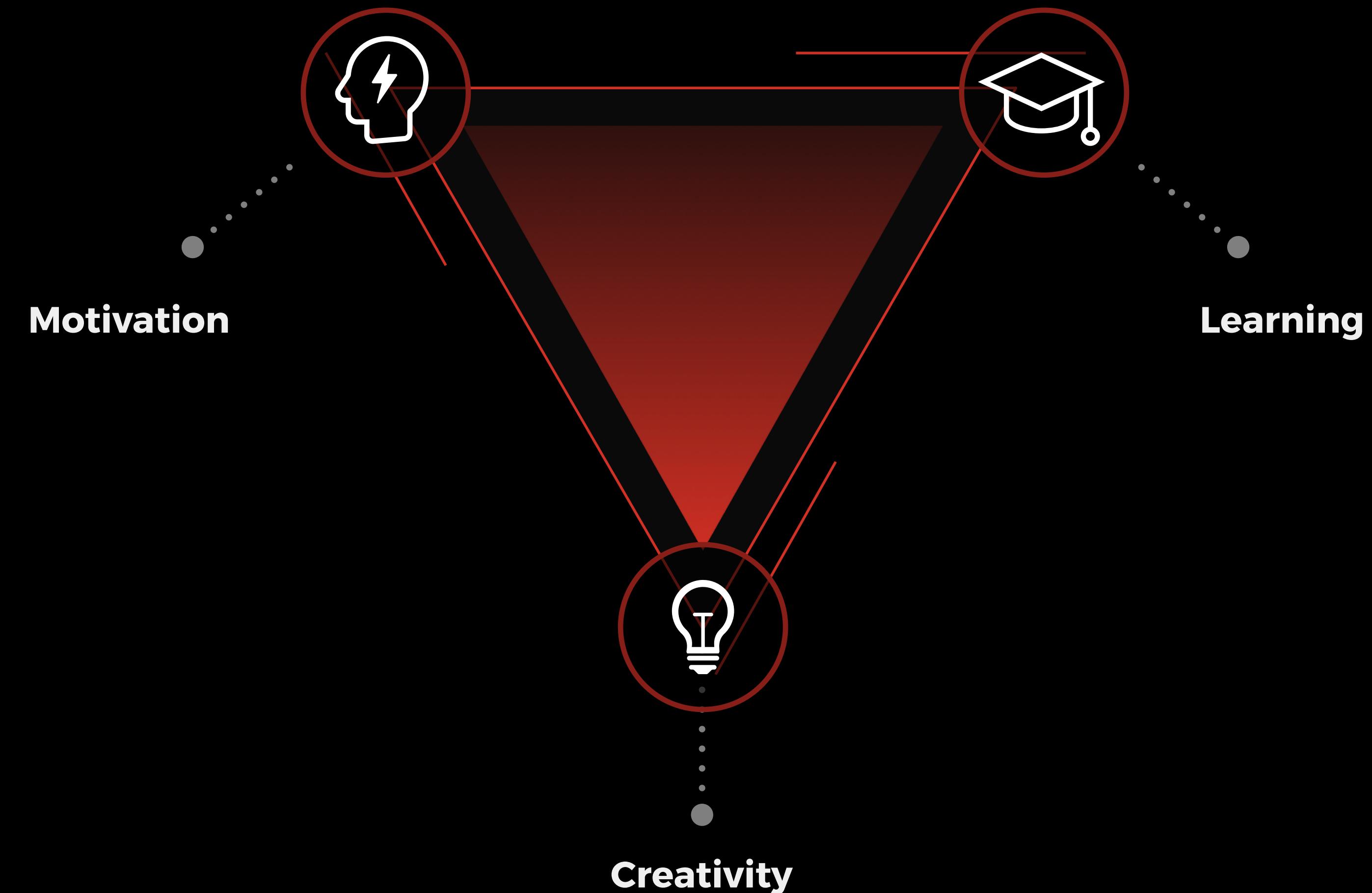


The Neurochemistry of Flow

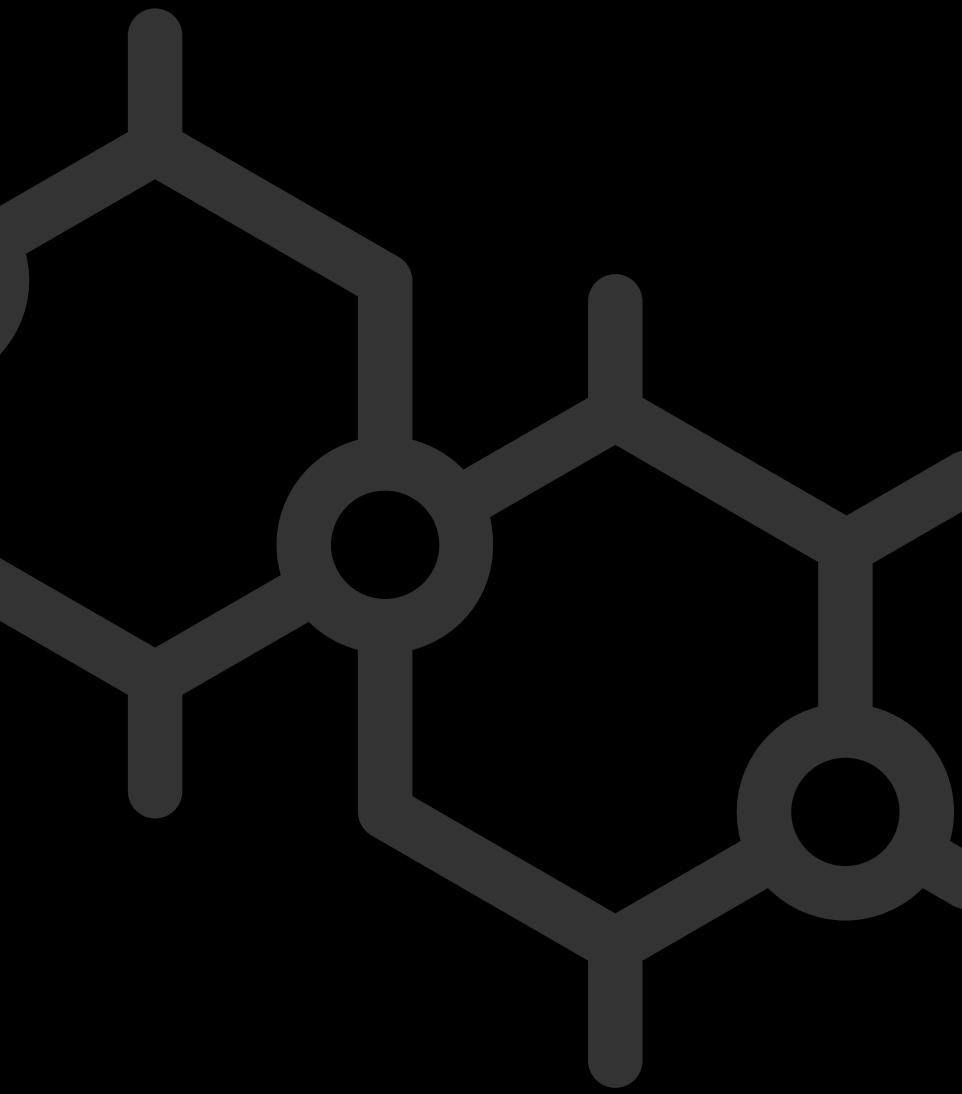
- 1 Acetylcholine**
- 2 Norepinephrine**
- 3 Dopamine**
- 4 Anandamide + 2AG (endocannabinoids)**
- 5 Endorphins**
- 6 Serotonin**
- 7 Oxytocin (only in social flow)**
- 8 * Gaba-aminobutyric acid (GABA)**
- 9 * Glutamate**



The High Performance Triangle



Social Bonding Chemistry



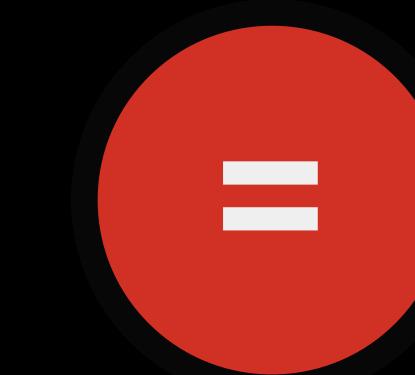
Norepinephrine + Dopamine

Endorphins

Serotonin

Anandamide

Oxytocin



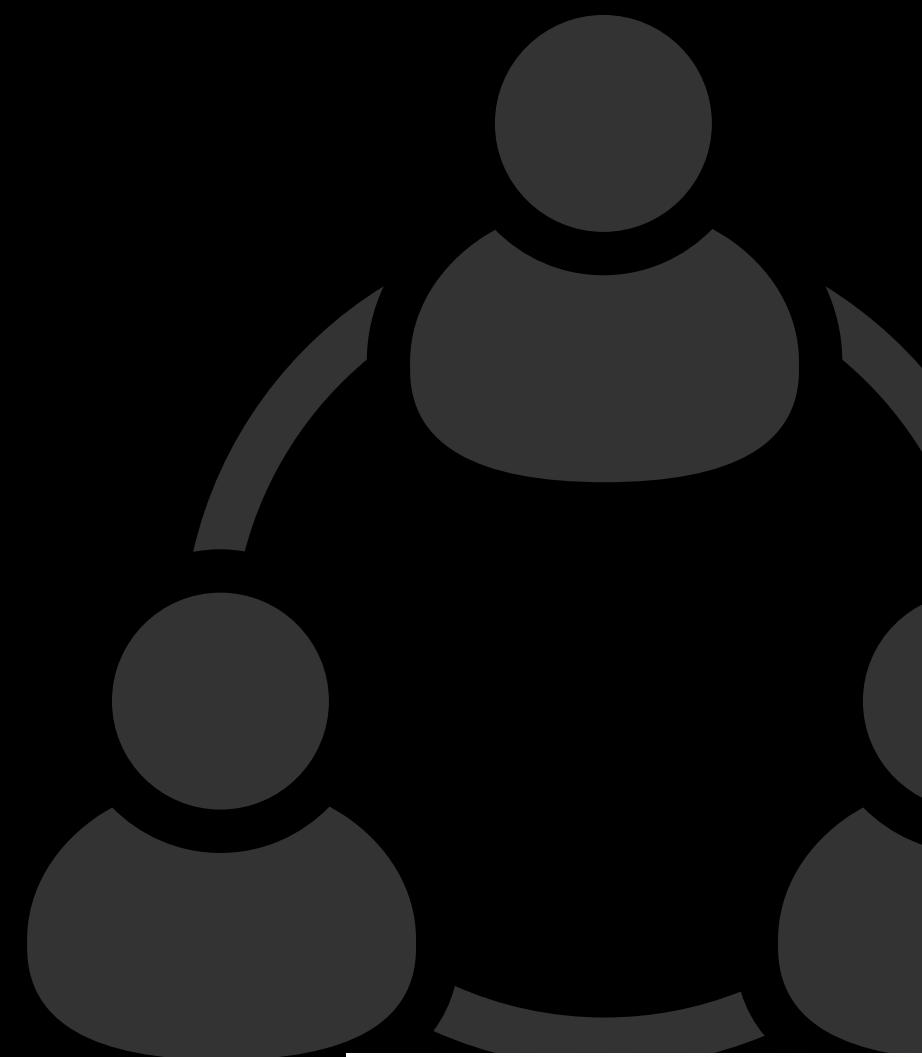
Romantic Love

Maternal Bonding

Social Security/Satisfaction

Openness to Experience/Others

Trust



Brainwaves in the Alpha/Theta Range



The Networks of Flow

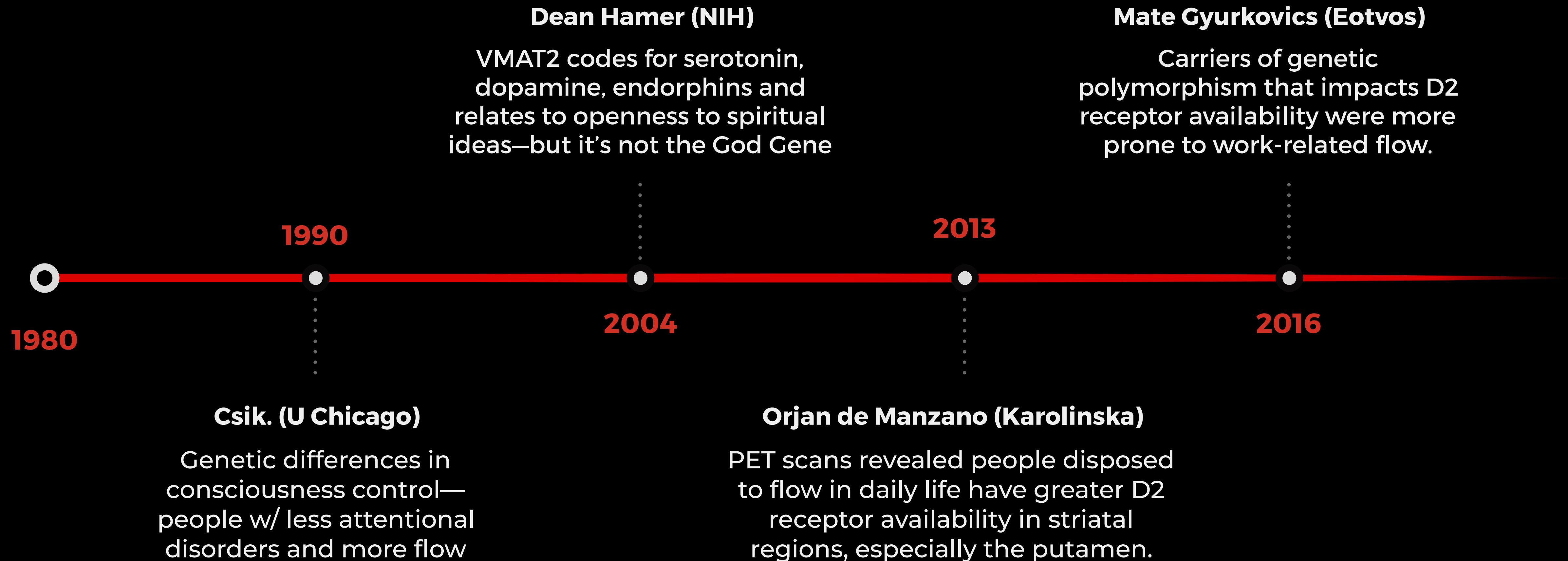
- 1 Salience Goes Up**
- 2 Executive Attention Goes Up**
- 3 Default Mode Goes Down**
- 4 The DMN/Creativity Issue**



Evolution of Flow (perhaps...)



The Genetics of Flow (ish...)

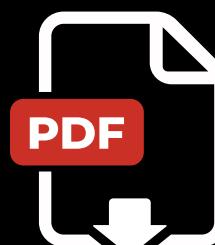


The Physiology of Flow (maybe)

- HRV increases (higher variability)
- Vagus Nerve Activation (Hardwired to LC/NE increase)
- Heart rate increases (this is what we saw in the F1 study)
- Respiratory period increases (slower breathing)
- Respiratory depth increases (deeper breathing)
- Respiratory sinus arrhythmia shows that heart rate variability is matching respiration
- Galvanic skin response increases (higher activation of the sympathetic nervous system)
- Core body temperature decreases (blood moving to the extremities)
- Facial micro-expressions show decreased muscular activity

Exercise:

Biographical Flow Audit and Schedule Your Primary Flow Activity



Download Workbook
To get started

- 1** What three periods of your life (at least one month long) did you experience the most flow?
What were the common denominators within those periods? (e.g. Living with friends, regularly practicing yoga, eating a ketogenic diet, meditating a lot)
What activity, as a child drove you most deeply into flow? (e.g. Soccer, martial arts, painting)
- 2** What recent activity drives you most deeply into flow? (e.g. Writing, snowboarding, speaking)
What 3 words describe your deepest flow states?
- 3** Schedule at least 90 mins this week for your Primary Flow Activity. Make sure you handle objections now. Clarify your intentions with people whose schedule will be affected and ask for their support. If you are worried that you won't follow through, ask a friend to join you. Make sure you plan well for this time. This is your rocket fuel for the week. Prioritize it.