



# Neuroplasticity in Business: Is AI Hindering our Agility?

August 10, 2026

*Welcome members and  
guests! Thank you for joining  
us today – be sure to turn your  
cameras on!*



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# Welcome!

*Let's do some brief introductions in the chat.*

**NAME**

**JOB TITLE**

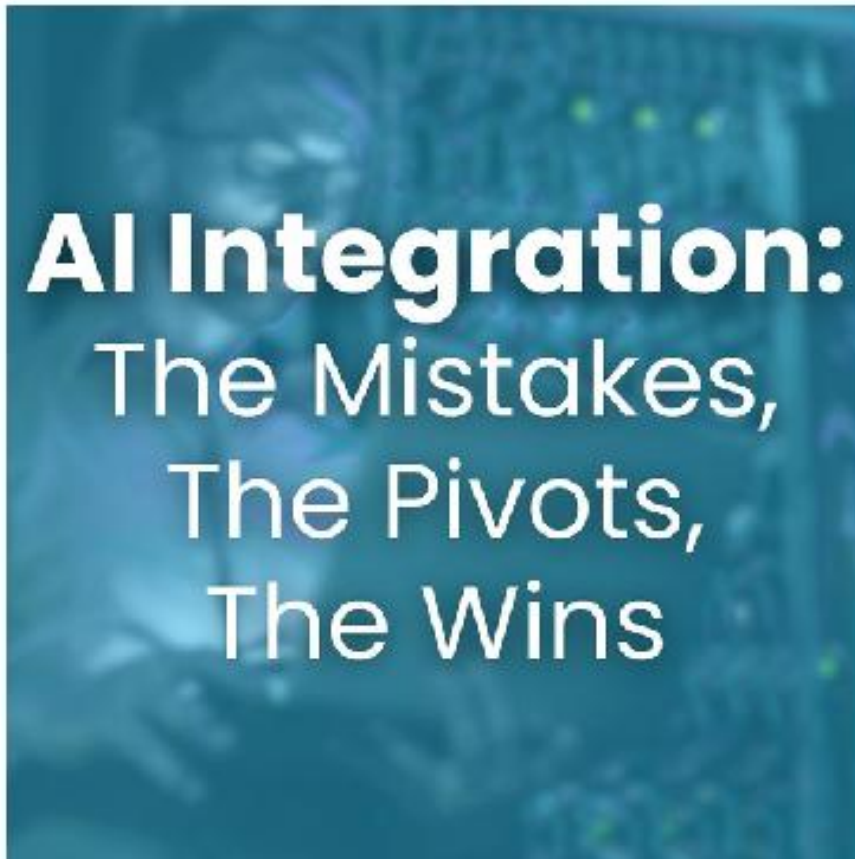
**ORGANIZATION**

**LOCATION**

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**August 20**  
**11-11:30 AM ET**



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# **NEUROPLASTICITY IN BUSINESS: IS AI HINDERING OUR AGILITY?**

# Neuroplasticity in Business: Is AI hindering our Agility?

**Leveraging Neuroplasticity to Drive Critical Thinking and Resilience in the Age of AI**

**Laura M. Muir – Polaris Transportation Group**

Featuring input from Madeline M. Jagannath – University of Edinburgh  
Student of Neuroscience



# The Dynamic Brain: Your Organization's Ultimate Competitive Asset

1

## Biological Agility

Neuroplasticity is the brain's inherent capacity to reorganize its structure and functions in response to external stimuli, serving as the biological foundation for all human learning

2

## Strategic Adaptability

In a volatile business environment, the ability of employees to 'rewire' their thinking is what separates resilience from those paralyzed by change fatigue

3

## Cognitive Fuel

High-level executive functions, including complex problem-solving and insight, are not fixed traits but results of continuous neural architecture refinement

4

## The AI Challenge

As automation accelerates, preserving these innate human capabilities becomes a matter of long-term strategic survival rather than just professional development

5

## Strategic Convergence

Together, these factors converge to define the 'Neuro-Agile' organization—a workplace that treats brain health as a core performance metric





# Synaptic Plasticity: The Micro-Mechanisms of Learning and Efficiency

## Comparison

The dual nature of synaptic tuning that optimizes the limited mental capacities and processing power your brain uses to pay attention, store information in working memory, think logically and make decisions

## Long-Term Potentiation (LTP)

The persistent strengthening of synaptic connections based on activity, following the Hebbian principle that '*cells that fire together, wire together*' to hardwire new skills | Functions to encode new information and build fast-path associations for optimal performance

## Long-Term Depression (LTD)

The long-term weakening and pruning of unused or irrelevant synapses to prevent neural saturation | Functions to eliminate 'noise' and ensure that significant neural pathways are prioritized for maximum cognitive efficiency

## Key Takeaway

This bidirectional system ensures the brain remains a lean, highly responsive instrument capable of mastering new domains while discarding obsolete habits

# Structural Reconfiguration: How the Brain Scales for Complexity

## Adult Hippocampal Neurogenesis

The lifelong process by which new functional neurons are generated from neural stem cells and the “*dentate gyrus*” region of the brain’s hippocampus. This biological process supports learning, memory formation and emotional regulation

## Large-Scale Network Reconfiguration

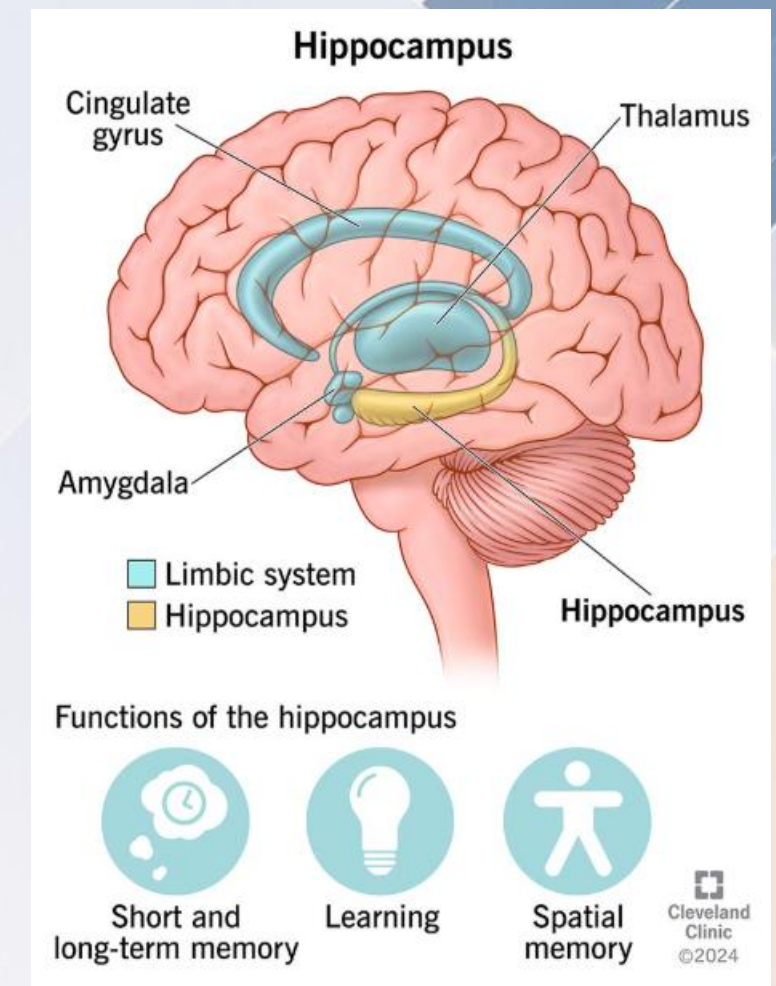
Beyond single neurons, the brain alters functional connectivity between remote regions to shift from rigid patterns to flexible, integrative states

## Top-Down Regulation

Robust neural networks facilitate the executive functions required for focus and reevaluation, allowing leaders to manage stress and emotional volatility effectively

## Adaptive Architecture

This continuous structural flux ensures the brain does not become stuck in suboptimal habits, maintaining the flexibility needed for strategic pivots



# The Engine of Insight: From Neural Plasticity to Critical Thinking

1

## Stage 1 — Information Intake

Deep study and exposure to novel challenges trigger initial synaptic firing, marking the start of a potential new neural pathway

2

## Stage 2 — Pattern Recognition

Through Long-Term Potentiation (LTP), the brain hardwires associations between related concepts, allowing for rapid retrieval and identification of familiar structures

3

## Stage 3 — Cognitive Flexibility

When a strategy fails, Long-Term Depression (LTD) weakens the ineffective approach while new connections facilitate the pivot to a superior solution

4

## Stage 4 — Insight Generation

The 'Aha!' moment occurs when plastic processes facilitate unexpected connections between distant, previously unrelated neural networks

5

## Stage 5 — Mastery & Reserve

Repeated engagement builds 'cognitive reserve,' a buffer that protects high-level functioning against aging and environmental stressors

# Cognitive Reserve: Building a Buffer Against Future Turbulence

1

## Base Level — Baseline Function

Standard cognitive operations maintained through routine tasks and established professional habits

2

## Step 1 — Skill Acquisition

Mastering new tools or languages forces the brain to build fresh neural scaffolding, moving beyond existing comfort zones

3

## Step 2 — Environmental Enrichment

Exposure to diverse perspectives and complex, non-linear problems stimulates neurogenesis and network density

4

## Step 3 — High-Level Reserve

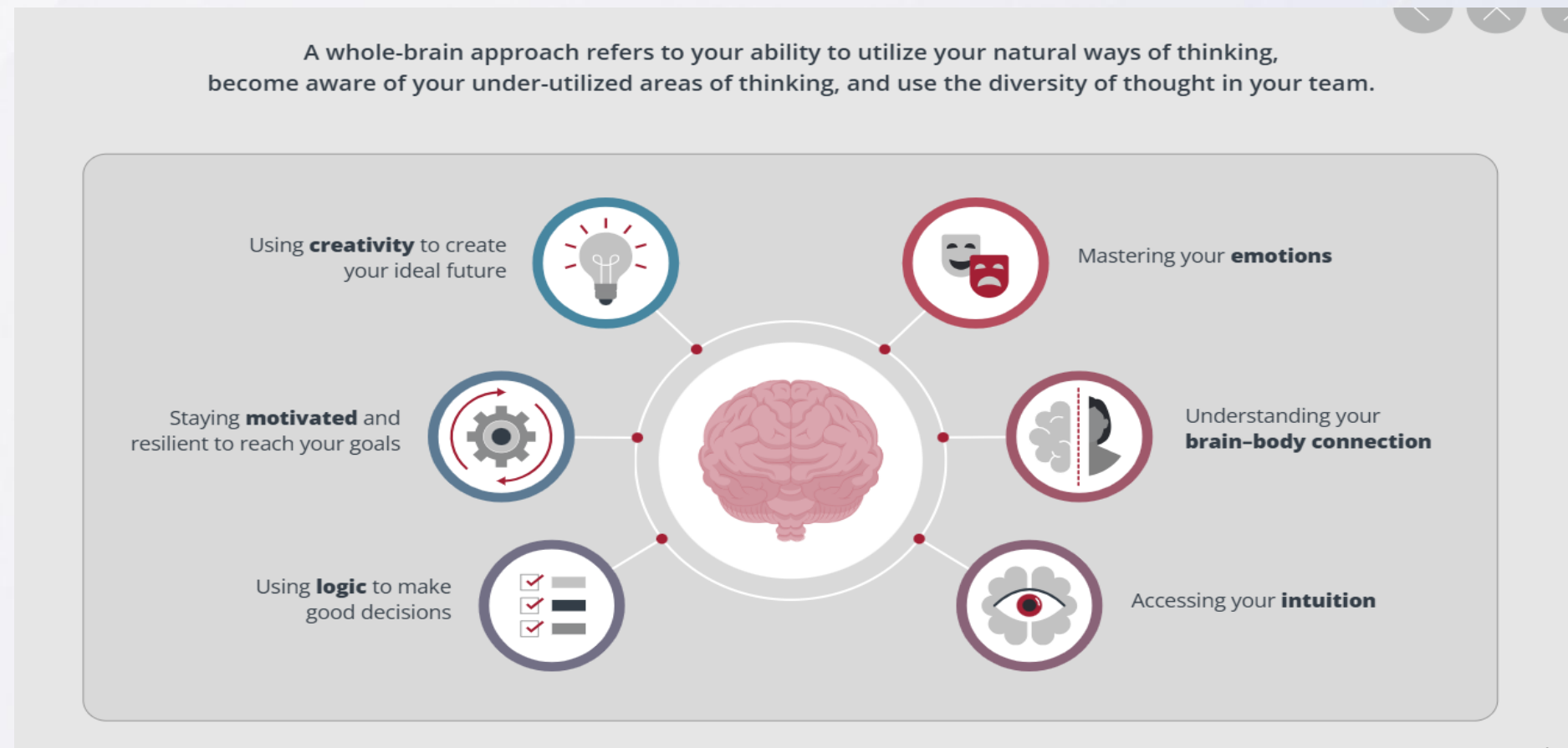
A dense web of neural connections that allows the brain to maintain executive function despite high-stress environments or physiological fatigue

5

## Goal — Resilience & Agility

The ultimate state where the brain can seamlessly adapt to market disruptions without experiencing cognitive overload or burnout

# Diversity of Thinking



Swart 2019 – Neuroplasticity for Business MIT

## Diversity of Thinking

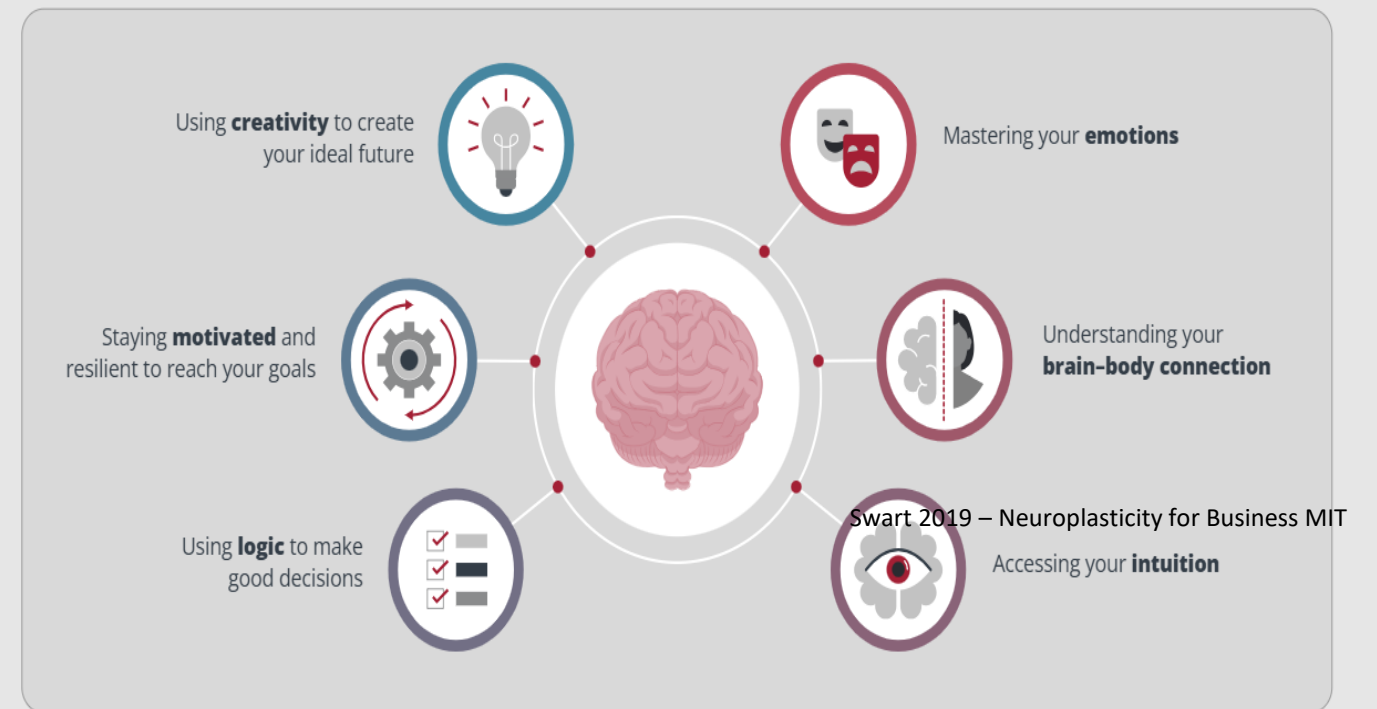
Your ability to switch between different ways of thinking and developing multiple pathways for evaluation as well as your ability to draw on the perspectives of other people with different strengths of your own

# Survey Diversity of Thinking

What are the top 3 ways of thinking you have a tendency to utilize:

1. Mastering your emotions
2. Understanding your brain-body connection
3. Accessing your intuition
4. Using logic to make decisions
5. Staying motivated and resilient to reach your goals
6. Using creativity to create your ideal future

A whole-brain approach refers to your ability to utilize your natural ways of thinking, become aware of your under-utilized areas of thinking, and use the diversity of thought in your team.



# The Plastic Organization: Quantifiable Benefits of Neural Growth



## Reduced Change Fatigue

By leveraging neuroplasticity for resilience, employees recover faster from stress and transition more smoothly during organizational restructures



## Strengthened Engagement

Psychological safety and trust release oxytocin, creating the biological conditions necessary for employees to step outside their comfort zones and learn



## Accelerated Innovation Cycles

A growth mindset culture encourages the experimentation that triggers neural growth, leading to more frequent 'Aha!' moments and creative breakthroughs



## Durable Talent Assets

Organizations that prioritize brain health build a workforce with higher cognitive reserve, ensuring long-term productivity and lower turnover

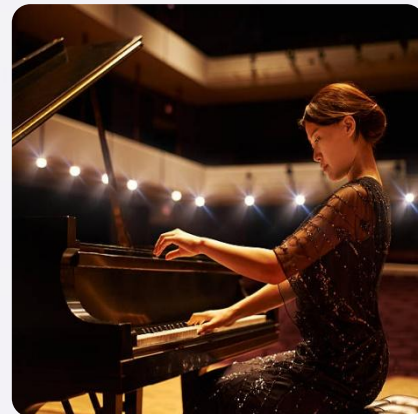


# Individual Strategies: Modifiable Habits to Protect Your 'Mental Muscle'



## Aerobic Exercise

Consistent physical activity boosts Brain-Derived Neurotrophic Factor (BDNF), a crucial protein that supports the growth and survival of new neurons



## Lifelong Learning

Mastering a new instrument, language, or complex hobby forms fresh neural pathways and keeps the brain's plastic mechanisms active



## Optimized Nutrition & Sleep

A nutrient-dense diet and 7–9 hours of quality sleep are non-negotiable for memory consolidation and the clearing of neural metabolic waste



## Mindful Technology Use

Shifting from passive scrolling to active 'deep work' ensures the brain maintains the focus required for high-level executive function and neural health

# The AI Paradox: Balancing Efficiency with the Risk of Atrophy

1

## Comparison

Evaluating the tension between technological speed and biological cognitive health

2

## Row Productivity Gains

AI tools can generate summaries, research, and initial drafts in seconds, dramatically increasing the volume of output per employee | Potential for 'Cognitive Offloading' where the brain stops doing the heavy lifting of synthesis

3

## Row Critical Thinking Risk

Passive reliance on algorithms can lead to the pruning of neural pathways responsible for deep reasoning and independent evaluation | The 'use it or lose it' principle suggests that unused connections for analysis will eventually weaken

4

## Row Strategic Window

AI handles the right work, theoretically freeing up time for high-level creative synthesis | Requires intentional effort to ensure that 'freed-up' time is spent on deeper cognitive challenges rather than just more volume

5

## Key Takeaway

The organizational challenge is to integrate AI as a tool for augmentation rather than a total substitute for human thought

# From Dependency to Co-Creation: A New Framework for AI Interaction



## Independent Framing

Start every complex task with manual brainstorming and goal-setting to engage the prefrontal cortex before involving AI



## Targeted Augmentation

Use AI for specific data-gathering or drafting tasks while maintaining a 'no-AI' core for final reasoning and synthesis



## Rigorous Auditing

Actively question and fact-check AI outputs against your own judgment, which forces the brain to engage in active evaluation rather than passive acceptance



## Deep Work Synthesis

Integrate AI findings into a broader human-led narrative, ensuring that the final 'connecting of the dots' remains a biological process



## Iterative Refinement

Use the efficiency gains to cycle through more versions of a solution, using the extra time to push into higher levels of creative complexity

# Cultivating a Neuro-Agile Culture: Institutional Recommendations

## Continuous Learning

Move away from one-off training to 'microlearning' and learning-by-doing, which anchor knowledge incrementally in the neural structure

## Psychological Safety

Create a culture where mistakes are viewed as necessary data for neural adaptation, encouraging the risk-taking that fuels long-term innovation

## Learning Culture

## Collaborative Mentoring

Social interaction and peer teaching are powerful drivers of memory consolidation and cognitive perspective-sharing

## Institutionalized Thinking Time

Carve out 'analog hours' or experimental rooms where teams solve problems without AI to keep their independent analytical skills sharp

**The Learning Culture: A shared commitment to inquiry and growth that prioritizes the 'how' of thinking over the speed of results**

# Survey Action Plan

Will you consider mental agility training as part of learning and development at your organization?

Yes/No



# Measuring Neuro-Agile Success: KPIs for Cognitive Excellence



## BrainHealth Index Metrics

Implement composite measures that integrate cognitive, emotional, social, and real-life functioning data to provide a holistic view of organizational brain fitness



## Cognitive Flexibility Assessment

Deploy validated instruments like the Cognitive Flexibility Scale to measure employees' awareness of alternative approaches and adaptive thinking capacity



## Objective Performance Tracking

Supplement self-reports with computerized executive function testing to assess working memory, inhibitory control, and strategic adaptation in real-time



## ROI Evidence

Organizations investing in brain-based training see 218% higher income per employee; strategic upskilling programs demonstrate up to 323% ROI with recovery within four months



## Business Impact Markers

Track productivity rates, internal mobility, reduced absenteeism, and decreased reliance on external mental health services as tangible outcomes of neuroplasticity initiatives

# **Thank You**

**Let us build organizations where human brilliance and artificial intelligence amplify, rather than replace, one another.**



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Thank you for joining us today!

**Let's keep the conversation going on the  
Association's LinkedIn page!**



**AI Integration:**  
The Mistakes,  
The Pivots,  
The Wins

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