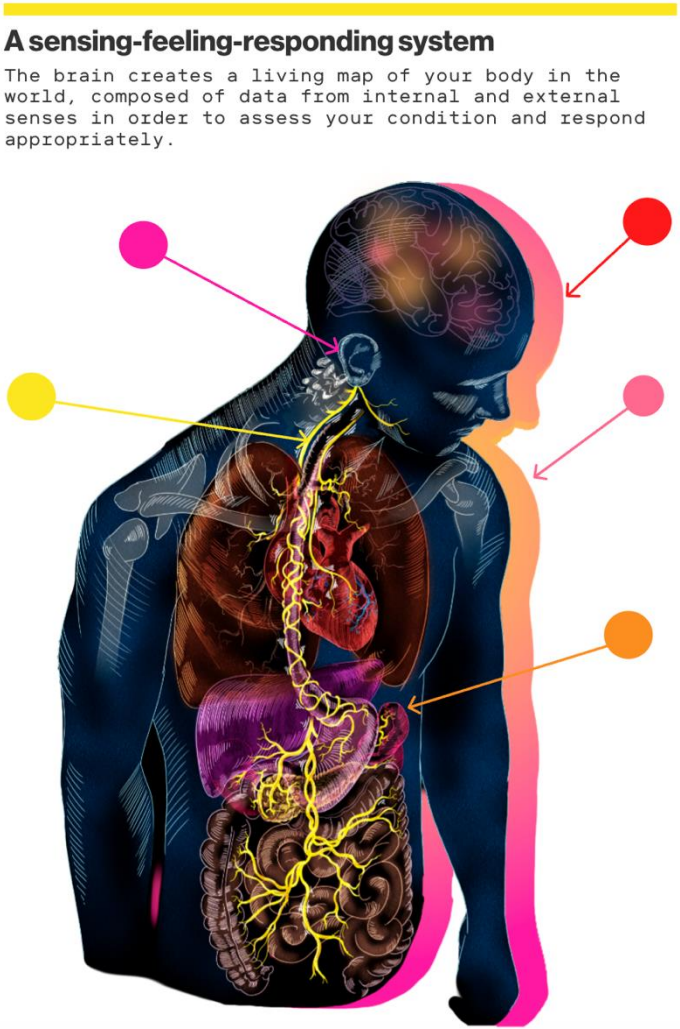
GUT CHECK

Intuition in the Age of AI

Intuition, interoception, and what only humans can do

Katherine W. Isaacs | MIT Sloan School of Management



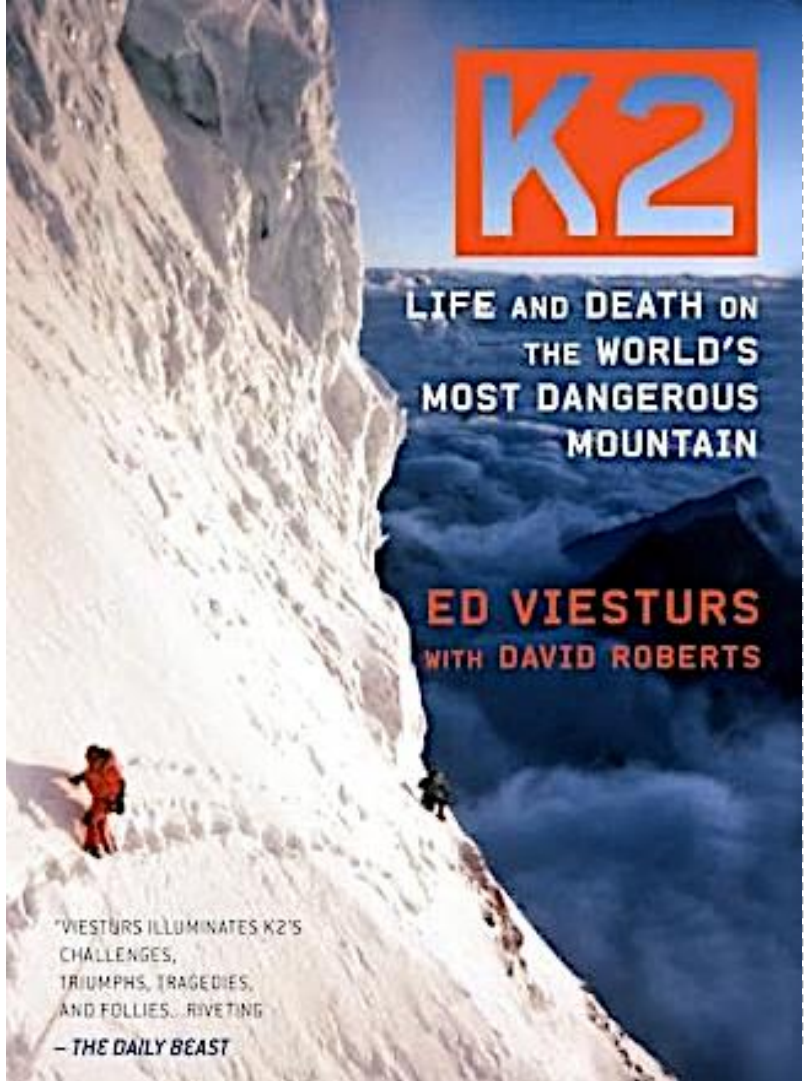
K2 | 1992

THE ONE MISTAKE

Ed Viesturs has summited all fourteen 8,000-metre peaks — five without bottled oxygen. Never injured. Never lost a teammate.

On K2 his team wanted the summit with a storm building. He had misgivings. He was swept along and pushed the feeling down.

The knot in his gut got worse with every step up.



EVEREST | 1996

NEVER AGAIN

Fourth ascent, IMAX crew in tow. The weather looked fine.

But something didn't feel right.

He turned his team around — passing Rob Hall and Scott Fischer on their way up.

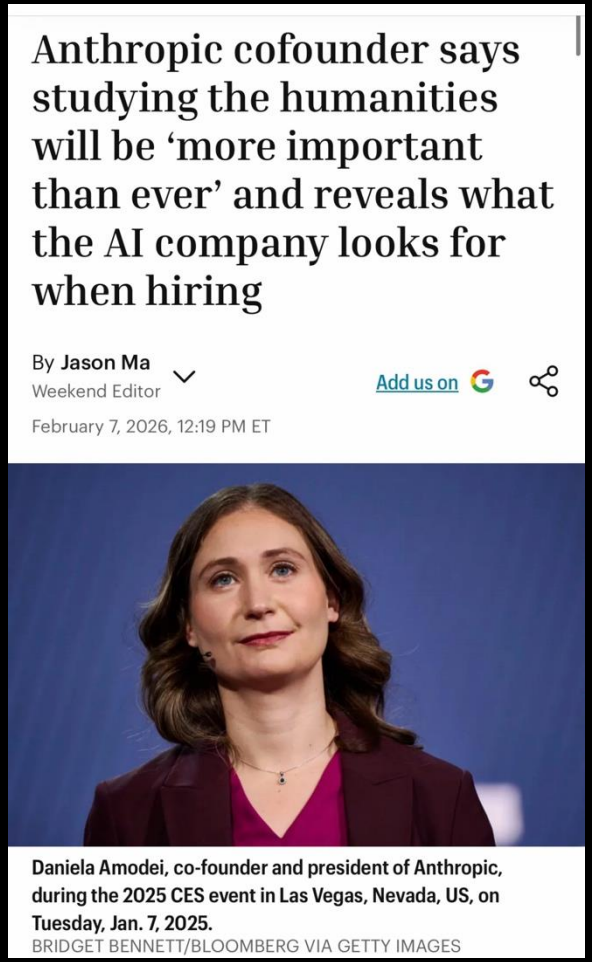
Two days later a blizzard took eight lives, one of the worst disasters in Everest history.

"If you understand what the mountain is telling you, it will let you know what to do… whether to go up, stay put, or go down."

—ED VIESTURS
NO SHORTCUTS TO THE TOP

The question isn’t when to keep a human in the loop.

IT’S WHAT THE HUMAN IS DOING WHEN THEY’RE THERE.



The things that make us human will become much more important instead of much less important

Critical thinking skills and learning how to interact with other people will be more important in the future, rather than less...

EMERGING CONSENSUS

What can we do that AI cannot?

Daniela Amodei (Anthropic)

Communication
EQ
Kindness
Curiosity
Working with others

Roberto Rigobon, MIT

Empathy
Presence
Opinion
Creativity
Hope

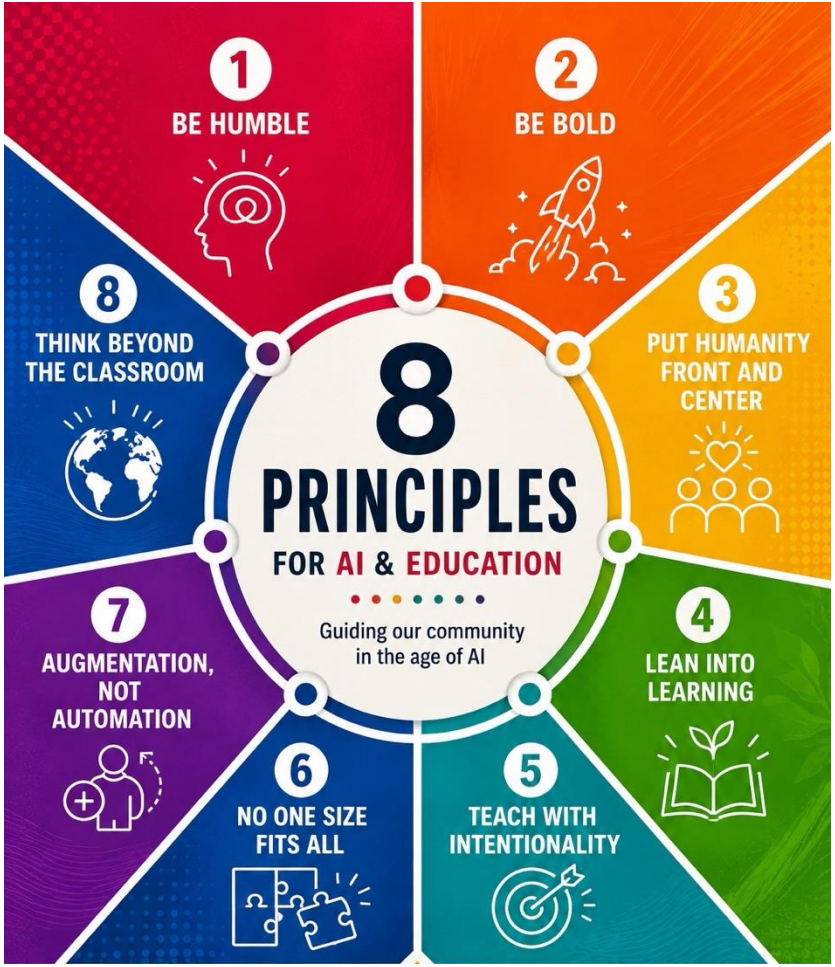
Dimon (JP Morgan Chase)
Rometty (IBM)

Soft skills
Collaboration
Judgment
Critical thinking

Many of these skills run on human intuition…

INTUITION IS NOT THE OPPOSITE OF RIGOR.

It is another source of information — one that can be trained, tested, and integrated with rational thought when it's time to decide.



What is it that we are here together to do?

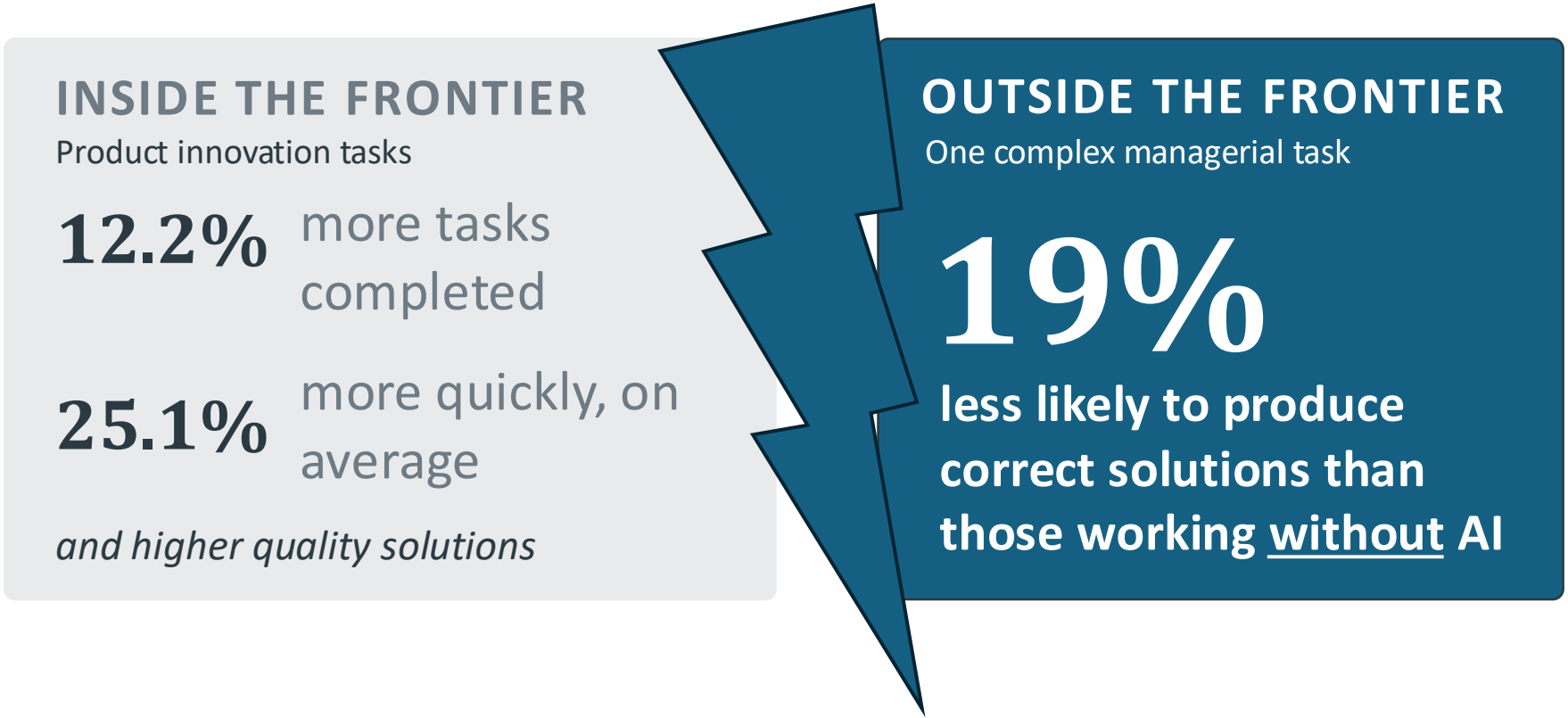
> "MIT was founded to help human beings develop their own powers of discovery, problem solving, and invention."
>
> – Sally Kornbluth, President, MIT

"LLMs display amusingly jagged performance characteristics—they are at the same time a genius polymath and a confused and cognitively challenged grade schooler."

—ANDREJ KARPATHY
FOUNDING MEMBER OF OPEN AI

Navigating the Jagged Technological Frontier

758 BCG consultants, Dell'Acqua et al. Organization Science (March 2026).



This study and others show that

- Knowledge workers—unaware of their position relative to AI's capabilities—perform **worse** as a result of becoming overly reliant on AI "falling asleep at the wheel" (Dell'Acqua, 2022)
- This risk is reinforced by AI's persuasive capabilities. When people pushed back against model outputs: the model escalated its persuasion rather than conceding. (Randazzo et al., 2025)
- Takeaway: People tend to over-rely on AI, leading to a decline in combined human-machine performance when closer human supervision was necessary

(Athey et al. 2020, Dell'Acqu 2022 and 2026, Glaeser et al. 2024).

MY FOUR

Presence, character, judgment, purpose

PRESENCE

Heart-rate synchrony predicted effective group decision-making — outpredicting discussion length and the team's own read on itself.

Sharika et al., PNAS 2024

CHARACTER

Across thirteen experiments, trust drops 16–20% the moment AI involvement is disclosed — on identical work.

Schilke & Reimann, 2025

JUDGMENT

The more knowledge workers trust AI, the less critical thinking effort they apply.

Lee et al., CHI 2025

PURPOSE

What world are we trying to create? What do we stand for? There are questions only we can ask.

You know far more than you realize

Interoception: how we sense ourselves from the inside.

11,000,000

bits per second arriving from skin, eyes, ears, organs, gut

10–60

bits per second that reach conscious awareness

“Intuition might be the bridge where interoception moves from unconscious processing to conscious awareness. If that’s true, then intuition is not magic. It’s physiology.”

—WEN CHEN

National Institutes of Health

Intuition isn't just one type

1. EXPERT

Fast pattern recognition built on thousands of hours

JUDGMENT

2. SOCIAL

Reading people — tone, timing, posture, micro-expression

PRESENCE

3. CREATIVE

The leap beyond what the data can prove

CREATIVITY

4. MORAL

The gut punch that something is right or wrong

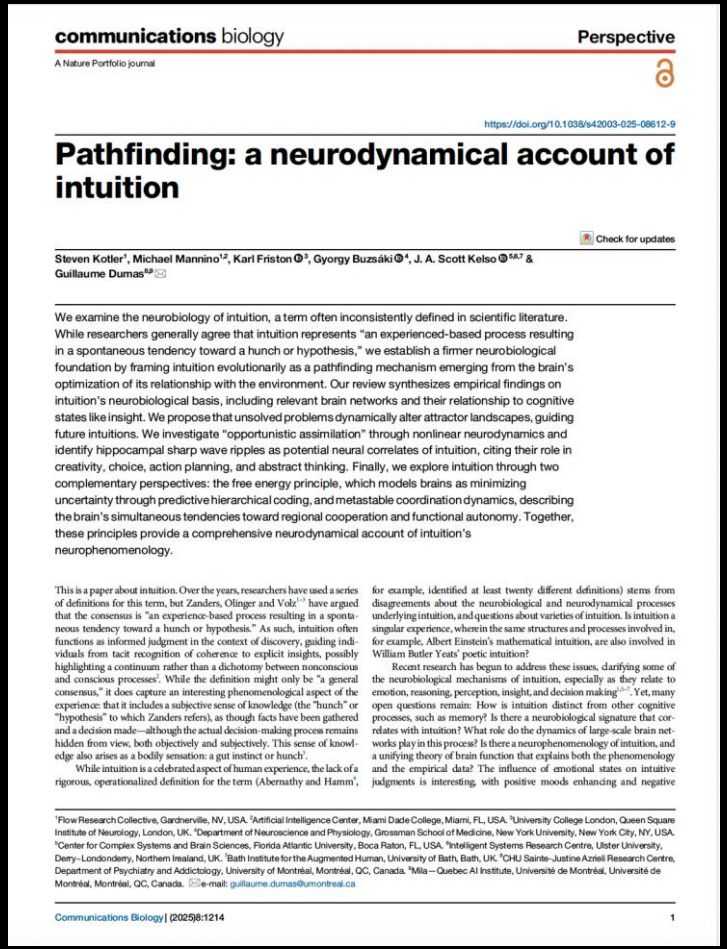
CHARACTER

PATHFINDING

The inner compass you rely on to guide you forward

PURPOSE

All run on the same processes: sensing, sensemaking, generating options, and discerning right action.



communications biology

A Nature Portfolio journal

Perspective

https://doi.org/10.1038/s42003-025-08612-9

Pathfinding: a neurodynamical account of intuition

Check for updates

Steven Kotler[1], Michael Mannino[1,2], Karl Friston[3], Gyorgy Buzsáki[4], J. A. Scott Kelso[5,6,7] & Guillaume Dumas[4,8]

We examine the neurobiology of intuition, a term often inconsistently defined in scientific literature. While researchers generally agree that intuition represents "an experienced-based process resulting in a spontaneous tendency toward a hunch or hypothesis," we establish a firmer neurobiological foundation by framing intuition evolutionarily as a pathfinding mechanism emerging from the brain's optimization of its relationship with the environment. Our review synthesizes empirical findings on intuition's neurobiological basis, including relevant brain networks and their relationship to cognitive states like insight. We propose that unsolved problems dynamically alter attractor landscapes, guiding future intuitions. We investigate "opportunistic assimilation" through nonlinear neurodynamics and identify hippocampal sharp wave ripples as potential neural correlates of intuition, citing their role in creativity, choice, action planning, and abstract thinking. Finally, we explore intuition through two complementary perspectives: the free energy principle, which models brains as minimizing uncertainty through predictive hierarchical coding, and metastable coordination dynamics, describing the brain's simultaneous tendencies toward regional cooperation and functional autonomy. Together, these principles provide a comprehensive neurodynamical account of intuition's neurophenomenology.

This is a paper about intuition. Over the years, researchers have used a series of definitions for this term, but Zanders, Olinger and Volz[1–3] have argued that the consensus is "an experience-based process resulting in a spontaneous tendency toward a hunch or hypothesis." As such, intuition often functions as informed judgment in the context of discovery, guiding individuals from tacit recognition of coherence to explicit insights, possibly highlighting a continuum rather than a dichotomy between nonconscious and conscious processes[2]. While the definition might only be "a general consensus," it does capture an interesting phenomenological aspect of the experience: that it includes a subjective sense of knowledge (the "hunch" or "hypothesis" to which Zanders refers), as though facts have been gathered and a decision made—although the actual decision-making process remains hidden from view, both objectively and subjectively. This sense of knowledge also arises as a bodily sensation: a gut instinct or hunch[3].

While intuition is a celebrated aspect of human experience, the lack of a rigorous, operationalized definition for the term (Abernathy and Hamm[4], for example, identified at least twenty different definitions) stems from disagreements about the neurobiological and neurodynamical processes underlying intuition, and questions about varieties of intuition. Is intuition a singular experience, wherein the same structures and processes involved in, for example, Albert Einstein's mathematical intuition, are also involved in William Butler Yeats' poetic intuition?

Recent research has begun to address these issues, clarifying some of the neurobiological mechanisms of intuition, especially as they relate to emotion, reasoning, perception, insight, and decision making[5–7]. Yet, many open questions remain: How is intuition distinct from other cognitive processes, such as memory? Is there a neurobiological signature that correlates with intuition? What role do the dynamics of large-scale brain networks play in this process? Is there a neurophenomenology of intuition, and a unifying theory of brain function that explains both the phenomenology and the empirical data? The influence of emotional states on intuitive judgments is interesting, with positive moods enhancing and negative

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PATHFINDING: the cognitive processes, both conscious and unconscious, that we use to navigate our environment…

in accordance with our goals, which includes intuition….

via movement, spatial inference, and nonconscious decision-making.

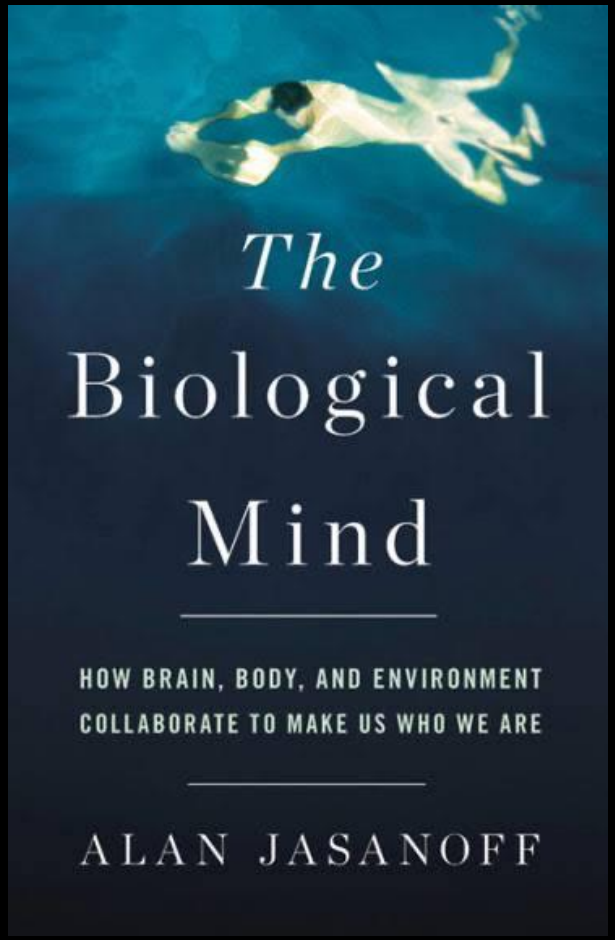
INTUITION

A direct sense of knowing that arises without conscious reasoning, shaped by both external sensory input and internal body signals

—Isaacs (2026)

An embodied, nonconscious pathfinding mechanism, that helps an organism decide where and how to move next.

—Kotler et al (2025)



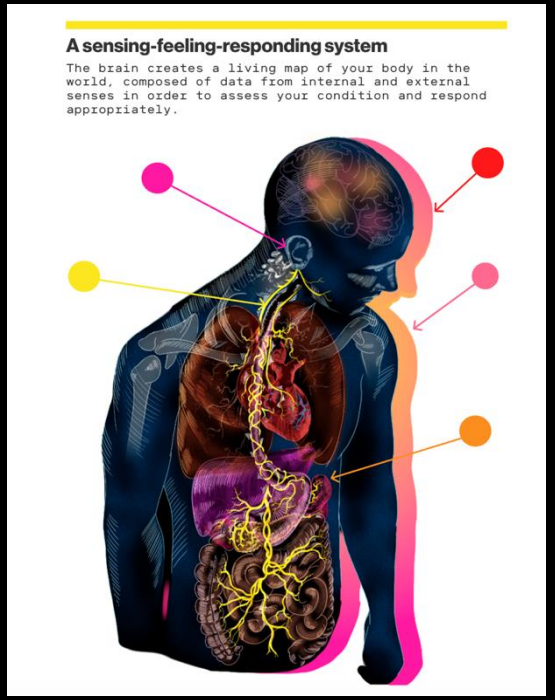
"The 'cerebral mystique' is a pervasive idealisation of the brain and its singular importance."

"Although the brain is required for almost everything we do, it never works alone. Instead, its function is inextricably linked to the body and to the environment around it."

Interoception

The sense of how you're doing inside, constructed by your brain from signals about the condition of your body.

Examples include **hunger, thirst, fullness, nausea, lung function, temperature, muscle fatigue, energy levels, balance, body position, pain, itch, heartbeat, and blood pressure.** Some you are aware of, and others your brain tracks below awareness.



Exteroception

Signals from the environment gathered by your senses of **sight, smell, hearing, taste, and touch.**

Vagus Nerve

The vagus nerve, seen here in yellow, contains the majority of the parasympathetic nerve fibers, which **send "rest and digest" signals to the body's organs.**

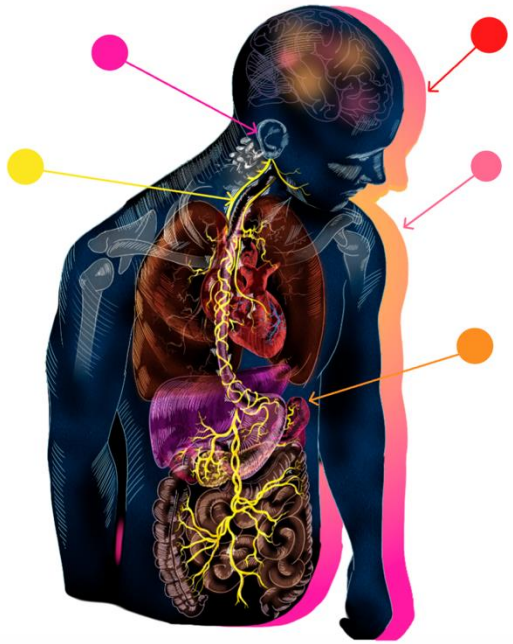
It's also a major listening nerve that conveys information from the organs up to the brain.

Interoception

The sense of how you're doing inside, constructed by your brain from signals about the condition of your body.

A sensing-feeling-responding system

The brain creates a living map of your body in the world, composed of data from internal and external senses in order to assess your condition and respond appropriately.



Mindset

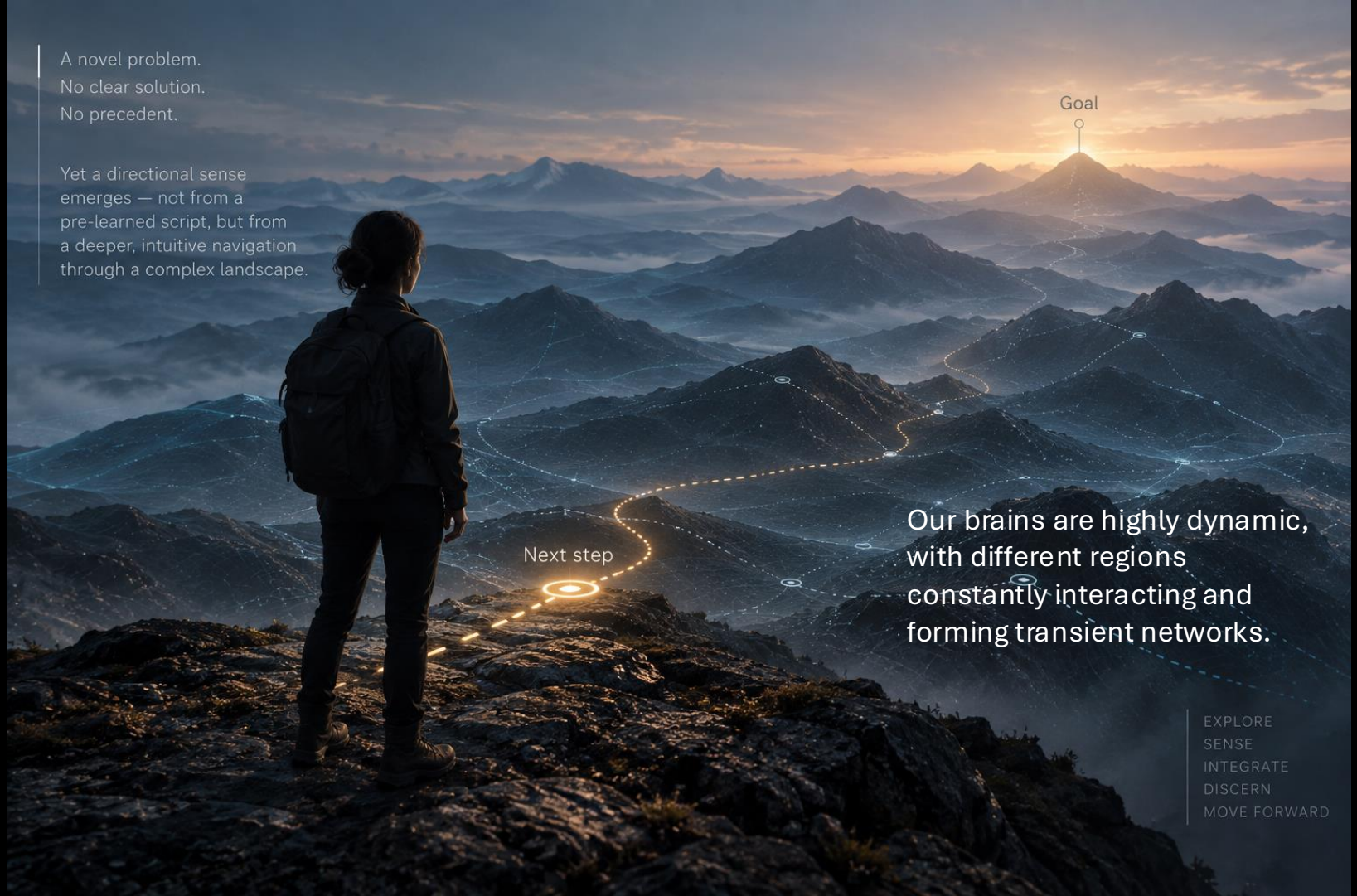
A way of viewing reality that shapes our attention, motivations, and expectations, as well as our physiological and behavioral responses.

Is stress good or bad for your health? **It depends on your mindset.**

Emotions

Combinations of physical sensations such as an increase in heart rate, "butterflies in the stomach," and perspiration inform the brain's sensemaking about emotional states like anxiety before an exam.

The brain uses context, memory, and mindset to interpret those physical signals—and to alter them, such as by reframing "butterflies" as a way to help the body prepare for peak performance.


A novel problem.
No clear solution.
No precedent.
Yet a directional sense emerges — not from a pre-learned script, but from a deeper, intuitive navigation through a complex landscape.
Goal
Next step
Our brains are highly dynamic, with different regions constantly interacting and forming transient networks.
EXPLORE
SENSE
INTEGRATE
DISCERN
MOVE FORWARD

So what do we do?

Trust

Accept and awaken the capacity you already have. But intuition isn't always right. Take a learning approach

HUMILITY
CURIOSITY
OPEN-HEARTEDNESS

Train

Anchor awareness in your own intuitive signature. Open the aperture to body sensations, emotions.

STILLNESS
ATTENDING
TAKING CHARGE

Tune

Adapt and evolve your intuition in relationship with the world and other people.

PRESENCE
PATIENCE
RESPONSIBILITY

Give intuition a seat at the table

This is a model taught to patients to help them make good medical decisions — how not to let a hospital impose interventions you don't want.

It works just as well in a boardroom.

B	Benefits
R	Risks
A	Alternatives
I	**Intuition**
N	Need time / do nothing

TRAIN

Find your own intuitive tell

Intuition is not one-size-fits-all. Yours might arrive as an opening in the chest, goosebumps, a sensation low in the gut, a sudden image, a shift in attention. You can’t borrow someone else’s.

OLYMPIAN MOMENTS

Mine the moments when the signal was impossible to ignore — birth, illness, a decision you still think about.

WORK BACKWARD

From there, learn to catch the quieter version: the flicker, the whisper, the small no.

BUILD FLUENCY

You trust the signal because you’ve studied its shape and how it works for you

Listen to the mountain (the world around you)

TRUSTING AND OVERTRUSTING

Power erodes the two qualities intuition most needs — humility and curiosity. It dampens empathy and cooperation and feeds overconfidence and entitlement.

Developing your intuition is a feedback loop between your inner knowing and the world. The common mistake, once people start listening inward, is that they stop listening outward.

That's why it's so important to be humble, curious, and open-hearted, and seek out data from the world.

If you listen to the mountain it will tell you what to do.

Forces beyond your control can take away everything you possess except one thing, your freedom to choose how you will respond to the situation.

—VICTOR FRANKL
MAN'S SEARCH FOR MEANING

LET’S STAY CONNECTED

Find me on LinkedIn for more on distributed leadership, intuition, & leading with confidence and joy.

GUT FEEL: The Science of Intuition and How to Listen to What Your Body Tells You (expected 2028) Macmillan (US), Penguin (UK)

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