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DEDICATED TO

Lizzie, Atticus, and Aurelius

&

Bean, Iggy, and Obe

*Without question, our resilience is grounded
in the loving support of our families.*

ABOUT THE AUTHORS



IAN SNAPE

Dr. Ian Snape is former research leader and executive at the Australian Antarctic Division. He has led teams on 14 polar expeditions to both polar regions.

A fan of the Harry Potter books, he's the real-life Professor Snape, previously holding Professorial Fellowships at the University of Melbourne and Macquarie University. He is the author of more than 100 academic papers across a wide range of scientific disciplines.

In a parallel life, just like Snape from Hogwarts, he's a master in defense against the dark arts, holding black belts in Taekwondo and Hapkido. He is also a flow junkie, a passionate ski mountaineer, a climber, and a competitive sailor.

Using the techniques in this book, he coaches and trains CEOs, olympic athletes, and frontline professionals.



MIKE WEEKS

Mike Weeks is a former free solo climber and adventurer. He began coaching in 2004, famously working on screen with Jack Osbourne in the globally broadcast *Jack Osbourne: Adrenaline Junkie*.

After a brief flirtation with celebrity, Mike began training and coaching elite athletes, members of the UK special forces, and frontline workers, including medics responding to humanitarian disasters. In 2010, he was placed in charge of developing a mental health clinic and program for Sean Penn's JPHRO, which supported over 50,000 displaced Haitians following the catastrophic earthquake. He's also provided resilience and recovery training across the USA, in Peru, the Philippines, and Ukraine.

Mike currently leads sovereign-security resilience initiatives with the Indonesian government, to combat illegal fishing and trafficking, as well as clean energy transition.

In 2014, Ian and Mike were introduced by their shared friend and mentor John Grinder. Realizing their parallel interests and experience in training frontline professionals, they formed Frontline Mind. Mike focused on developing the company's creative and media arm, and Ian focused on science, leadership, and program design.

OUR MISSION:

"To enable individuals, teams, and organizations to survive and thrive in a complex, turbulent world."

To do this, we created a state-of-the-art online learning platform. We aimed for a fusion of science, art, and effective learning design. This book mirrors that program.

Though we live in different countries, we continue to train teams together, seeking new opportunities to learn and challenge each other. Our relationship goes beyond business. We are like brothers; our families have become one, and we regularly adventure together in the outdoors.

ABOUT THIS BOOK

As humans, it can sometimes seem that we're flawed by quirks of evolution, each seemingly destined to experience a lifelong rollercoaster of ups and downs, joys and sorrows, gains and losses, health and disease, stress and resilience.

One popular Eastern philosophy goes as far as saying: "All life is suffering."

We disagree!

Suffering may be the experience for some people, sometimes, but our view, backed by scientific evidence, is that we can create a better life and become more resilient to life's ups and downs. We are not predestined to suffer, or in fact predestined for anything. We each have agency, and we can craft and shape our continually evolving sense of identity, lifestyle, and the contexts we inhabit.

We agree that people are experiencing unprecedented pressure to respond to rapid change, increasing resource demands, and uncertainty. Reported cases of stress, burnout, anxiety, depression, and a multitude of connected illnesses are on a steady rise in most of the modern world. However, as we will reveal, we always have a choice in how we respond to pressures, demands, and uncertainty.

For millions of people, learning how to be resilient isn't just a benefit for the constantly shifting demands of their work. Resilience can improve every element of their lives. With the world changing so quickly around us, this is no longer just nice to have. It's absolutely essential if we are to survive and thrive in a complex, turbulent world.

We've given talks to, trained, and coached thousands of people around the world, including during humanitarian disasters, in the extremes of Antarctica, and in the jungles of the Amazon. We've helped people develop resilience everywhere from the slums of Haiti to the polished board rooms of major corporations.

Across these varied domains, we've modeled, studied, and interviewed individuals who stand out. We call these people the resilient elite. They range from mountain guides and Olympians, special-forces soldiers, mental health nurses, correctional officers and first responders, to entrepreneurs and scientists. The resilient elite are also hidden in plain sight. They are the single mums and dads bringing up disabled children with very little external support, or the elder-care workers who deal with grief and loss on a daily basis and somehow manage to leave this behind when they step through their front door.

One fact we discovered again and again:

There is no such thing as a stressful situation.

How well we survive and thrive is entirely down to how we perceive ourselves and the world around us. Our resilience depends on our ability to access the behavioral patterns that have enabled our species to sense, respond, adapt, and thrive through both feast and famine, calm and chaos.

Resilience by Design is the world's most detailed and evidence-based how-to manual for resilience. It bridges the gap between neuroscience theory and practical techniques that can be used every day. We wrote it for the people we care about, the people we love, and the people we have yet to meet who want to change their lives for the better. We wrote it because, right now, more

than ever, millions of people are living in uncertainty and need a guide for the unknown paths ahead. Whether you're a formal leader in an organization or community, or an informal one in a family or social setting, you can use the techniques we cover in this book to simultaneously develop resilience for yourself and to help those around you. Every input into the complex system that is our world affects all of the connected parts, often in unpredictable ways. You'll find that, by developing personal resilience, you'll become a catalyst for positive change in all the contexts in which you play a small or a large part. By becoming resilient, we can positively influence our families, friends, work colleagues, and even new acquaintances, to become more resilient as well.

As you read these pages, you'll learn how to perceive the world differently, how to think and act differently at work and across other situations. If you want to bring resilience to a challenging home life, or if you want to excel in whatever field you choose, this book will help. This book can be read from end to end, or you can thumb through the book, dipping in here and there for a story that catches your eye, exploring some of our research, or experimenting with an activity, or adopting time-tested techniques.

OUR APPROACH IS:

Practitioner-led. Our priorities, program design, and the structure of this book reflect what resilient practitioners actually do when operating under pressure or in a crisis.

Theory-backed. We present the scientific findings from neuroscience, psychology, complexity theory,

neurolinguistics, cognitive science, and philosophy, where these fields help to make sense or explain what practitioners actually do. Rather than leading with theory, we lead with practical advice. This is a conscious choice. We believe that much of the published theory on resilience is disconnected from real-world application.

Evidence-based. The techniques we present are tried and tested, and we have tracked evidence for efficacy in individuals, teams, and organizations.

By using the techniques we'll cover in this book for as little as five minutes per day, you'll be able to develop entirely new thinking skills. By practicing these skills, you'll find that they will arise reflexively in situations that you might have previously responded to with a stress response, or with anxiety, or confusion.

No matter where you presently are between stress and resilience, it's our intention to inspire you and the people you are connected with to take personal responsibility for your life and your choices. It is only when we take responsibility that we can begin working toward living our best life, which is adaptable to all circumstances.

We invite you to take a deep breath, forget everything you think you know about stress, switch to a state of curiosity, and allow us to show you how to develop your own elite level resilience — by design.

FOR MORE INFORMATION ABOUT RESILIENCE TRAINING:

info@frontlinemind.com
frontlinemind.com



01 —

RESILIENCE

STRESSED OR CONFUSED?

THE INSIDE-OUT UPSIDE-DOWN VIEW OF
WORKPLACE STRESS

CORRELATION IS NOT CAUSATION

LIFESTYLE RISK FACTORS CAN ADD UP

RESILIENT PEOPLE CREATE HEALTHY
WORKPLACES AND LIFESTYLES

RESILIENCE BY DESIGN

THE FOUR CHOICES MODEL

FAILURE TO BOUNCE

RESILIENT AT MY BEST

AND WHAT SUPPORT DO YOU NEED?

MAKE SPACE TO LEARN

STRESSED OR CONFUSED?



In the first half of the 20th century, the researcher and medical doctor Hans Selye brought to popular use the term “stress” as a “biologic response.”¹⁻³ Since then, the original concept and meaning of stress has mutated.^{1,4,5}

We often misuse the word “stress” in the context of both our health and our relationship with the external world, especially our immediate environment.



Stress often describes the **cause** or specific environment, such as the workplace or traffic jams on the motorway. For example, “it’s a stressful workplace” or “the traffic on the motorway is stressful.”



Stress is used to describe the **affect**, the mechanism of injury, or the process of doing. For example, “he winds me up,” or “the traffic is doing me in.”



Stress is also used to describe the **effect**, the felt state of being. For example, "I feel like I'm going to explode!"

The World Health Organization has a simple and precise definition of workplace stress:

*"Workplace stress is the **response** people may experience when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope."*⁶

Stress then is a response to pressure and demands — just one of a range of possible responses available to us. Unfortunately, the relationship between the demands and pressures of the workplace or any situation and the incidence of stress has been linked through causation.

THE INSIDE-OUT UPSIDE-DOWN VIEW OF WORKPLACE STRESS

When people talk about stress, they often assume a direct, causal relationship between the external context and a person's internal response. For example, Medibank⁷ describes how tight deadlines or job insecurity *cause* stress.

This kind of thinking permeates the scientific literature on stress. Studies have linked the number of deaths firefighters witness to incidences of PTSD.⁸ Burnout syndrome has been linked causally to Intensive Care Unit workplaces.^{9,10} The list goes on and on. We are told that events from persistent abuse, exposure to death and violence, working with trauma and suffering, through to bullying or unrealistic workloads cause stress.^{11–15}

This is the outside-in view of stress.

Thinking in this way creates victims by placing the blame on external factors that we're told are *sources* of stress. This ignores the role of personal choice in

a largely unconscious creative process of responding to external stimuli.

We look at stress differently. We view stress inside-out and upside-down. People create felt states of being, and then they call these emotional states stress. This stress is not external; it is internal, a response that is generated based on our unique perception of the world.

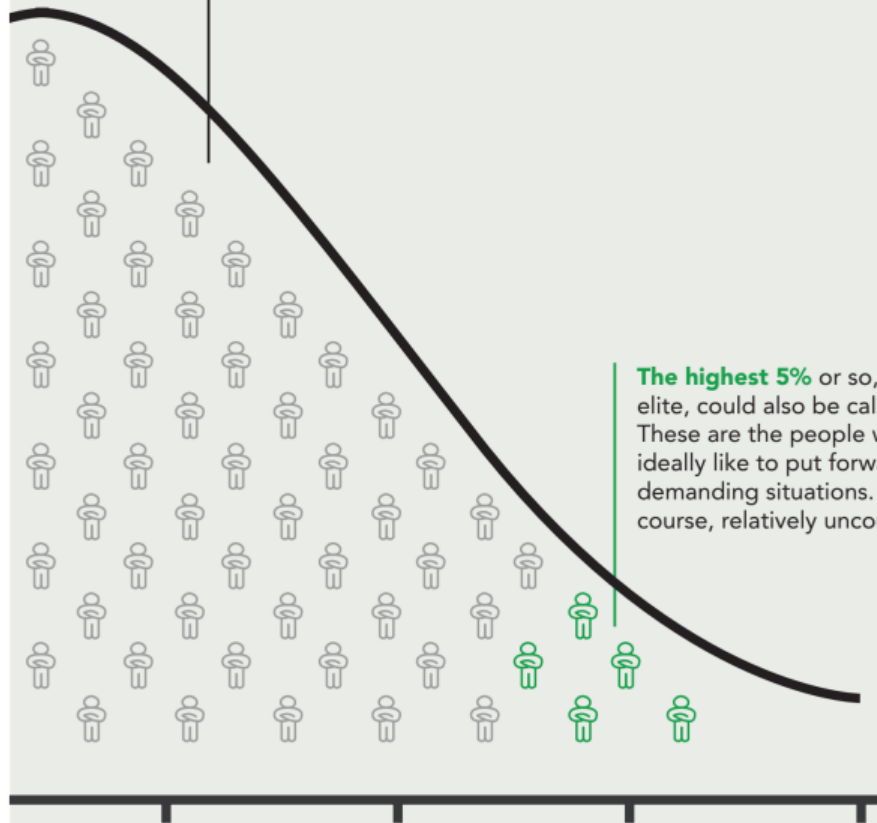
The term "stress" is inappropriately applied to both the cause or environment, and affect or mechanism, and it is also used in a highly ambiguous way to describe a variety of states that some people create unconsciously to cope with challenging environments.

Some people, especially those who believe stress is bad and is caused by their external environment, create a state that might be characterized by tightness in the chest, restriction of blood vessels, high blood pressure, and down the track, hypertension, cardiovascular disease, and premature death.^{16–25}

WINDUP MERCHANT

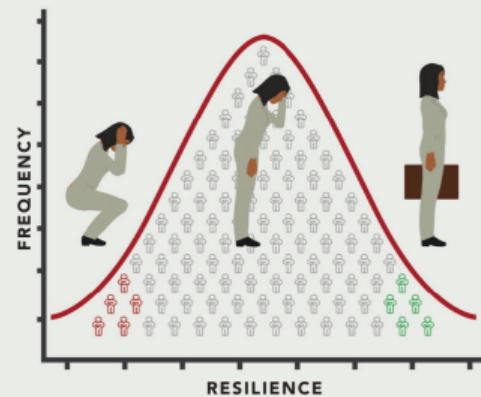


The majority, 90% of people, by statistical definition, are "normal." Most in this group have either above or below "average" resilience.



The highest 5% or so, the resilient elite, could also be called anti-fragile. These are the people who you would ideally like to put forward for the most demanding situations. They are, of course, relatively uncommon.

RESILIENCE

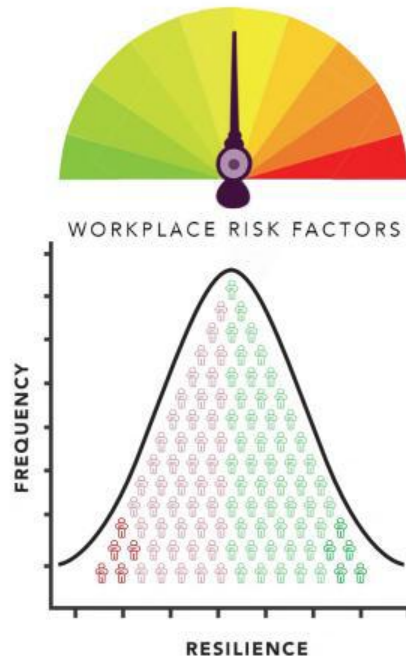


It's important to remember that resilience is not fixed. Many people go through periods when they are more or less resilient.

LIFESTYLE RISK FACTORS CAN ADD UP

Multiple lifestyle risk factors can easily add up in ways that challenge resilience.

The workplace is one context that commonly overwhelms resilience strategies, and very few organizations effectively screen for resilience. This often leads to a mismatch, where the demands, pressures, risks, and threats exceed the “normal” or “average” employee’s ability to cope.⁶



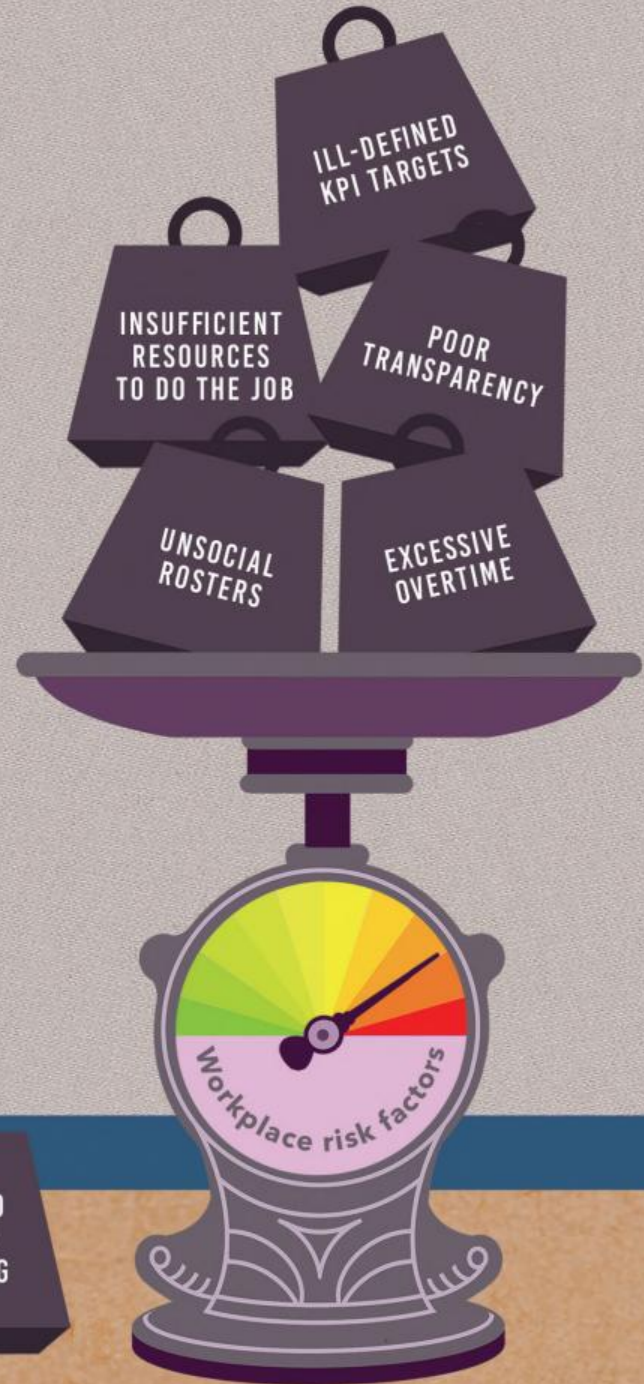
Some common workplace risk factors include:

- Overwhelming workload^{26–38}
- Insufficient resources to do the job
- Bullying
- Threats to physical well-being
- Poorly defined KPI targets
- Lack of transparency
- Unsocial rosters
- Excessive overtime

Collectively these workplace risk factors can easily add up.

Nearly half of frontline employees report being depressed, anxious, stressed, or having PTSD.^{39–44} These are mostly “normal” people who are operating in an environment where their current ability to cope has been exceeded.

RISK FACTORS ROOM



RESILIENT PEOPLE CREATE HEALTHY WORKPLACES AND LIFESTYLES



In our view, it is best to restrict the term “stress” to the description of an internal state of response to the external world. The term is misleading when used to describe either the external environment as a source or cause of stress, or the imagined causal link between stimulus and response.

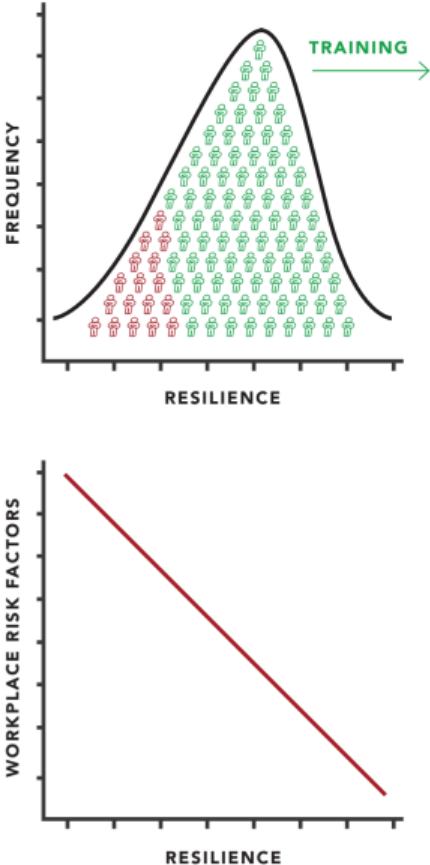
Continuing to use the workplace as an example, if there were a cause-effect relationship between workplace and stress, it would more likely be an upside-down one. Stressed-out people create high-risk workplaces; resilient people create healthy and productive ones.

It is better to think of states such as stress and the broader concept of personal resilience as embodied responses occurring in complex systems. Schools, workplaces, shopping malls, and even homes are examples of complex systems that change as a consequence of feedback based on our interaction with them.

We can take two approaches, preferably simultaneously, to bust the stress epidemic and develop resilience:

1. Train every individual to become more resilient in their responses, recognizing that this is an inside-out process. In this way the new “normal” becomes skewed toward resilient.
2. Reduce lifestyle and workplace risk factors, such as financial overcommitment or exposure to poor management practices, thereby lowering the threshold required for personal resilience.

Importantly, resilient people who choose their emotional states are in the best possible position to create a lifestyle that supports their intentions and supports others around them to do the same.



THE FOUR CHOICES MODEL

To enable people to better appreciate where they are placing attention in their response to their environment, whether professional, relational, or social, we created the Four Choices Model.



1. STAY STRESSED

The first choice is to stay stressed.

Choosing to do nothing about stress is choosing to remain stressed. It is a legitimate option, albeit one that has risks. Stress is linked to six of the top ten leading causes of death.⁴⁶ Blaming external circumstances and choosing not to accept personal responsibility for our well-being is akin to praying to win the lottery without buying a ticket.

We also occasionally meet people who have strong secondary gains for remaining in states of acute or chronic stress. For example, they might be receiving support in the form of workers' compensation or perhaps help from their family. Remaining in a state of stress may actually benefit them.

Often these responses are entirely unconscious. Do not confuse such responses with conscious manipulation and feigned ill health for personal gain.



2. DEVELOP RESILIENCE

The second choice is to develop resilience, which gives us access to a wide range of resourceful states, including flow, excitement, confidence, calm, and a feeling of being fully present. It might even mean temporary anger or frustration, or a determination to force a change.



3. CHANGE THE NATURE OF THE ENVIRONMENT YOU ARE IN

The third choice is to change your external environment. In the workplace, this can be done by constructively reducing risk factors such as unrealistic workloads or a poor relationship with your manager. In your community, this could mean getting involved with local youth initiatives to reduce crime, or planting communal gardens. If you have already developed resilience, this option becomes easier, as those with resilience often have increased agency, which allows them to better shape their environments.



4. LEAVE

The fourth choice is to change the external environment by getting out of it. Many people quickly discover new options and possibilities when they operate from a position of resilience, and leaving is one highly effective strategy.

Do not confuse leaving with quitting. Taking personal responsibility for our own health and well-being, even if it means a drastic change to where you work or live, is very important for resilience.

Sometimes the last resistance we encounter here is a belief that the situation a person finds themselves in is "not fair." Being bullied is a good example of this. The choice then comes down to pragmatics, such as balancing the likelihood of constructive change or winning a legal case, with the consequences of prolonged stress, a massive legal bill, and the potential downsides of change, such as less pay in a new job, or swapping familiarity for uncertainty and a new adventure if you relocate.



FAILURE TO BOUNCE



DOMINIC BAKER

Dominic Baker is the newly appointed CEO at Cricket Tasmania. Three months prior to this interview, Dom was off work, burned out with “nothing left in his resilience bucket.” As part of his road to recovery he trained in the techniques covered in this book.

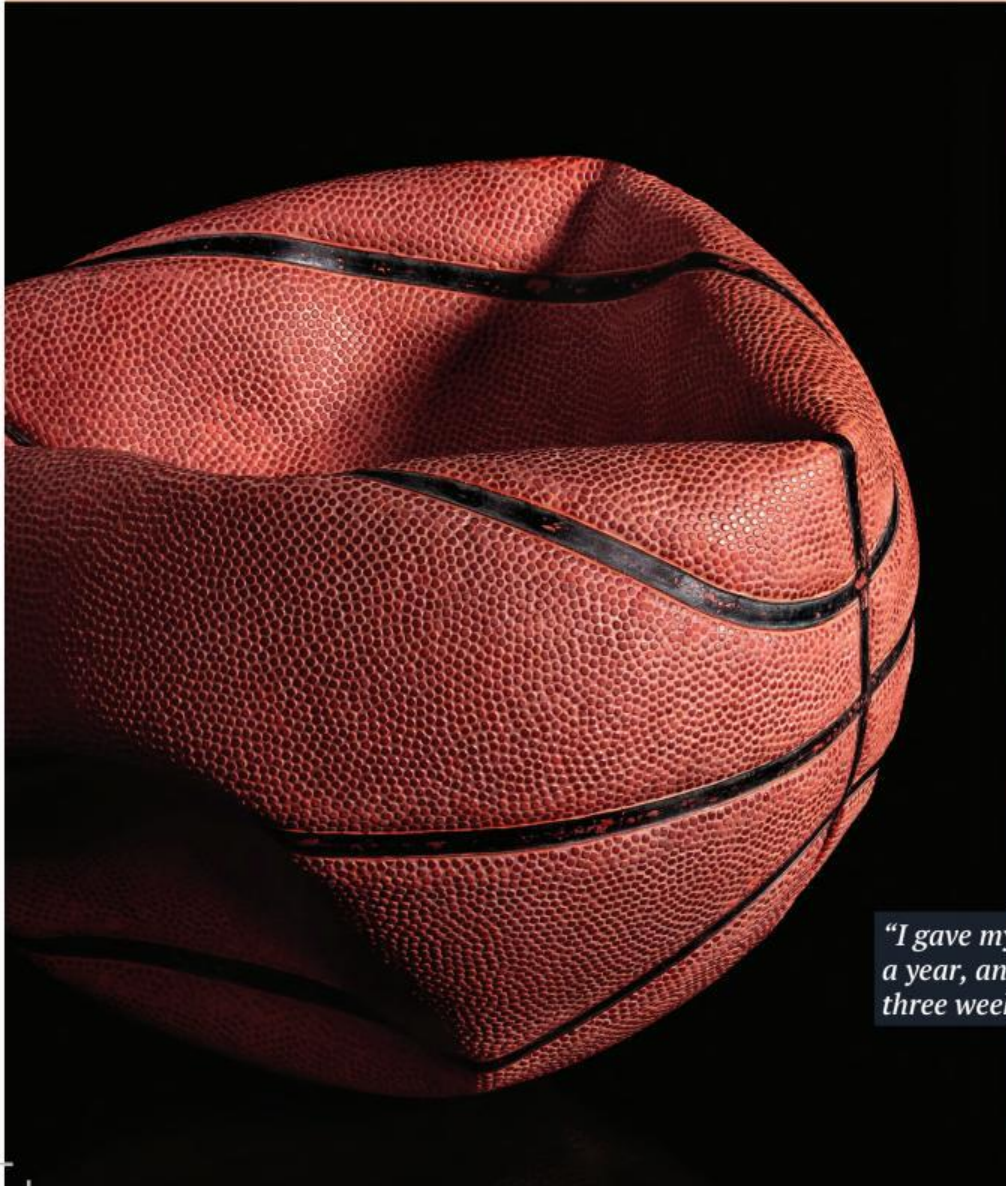
I’ve always viewed myself as the person who can fix what others cannot. The bigger the challenge, the better. And yet I got myself to a level of burnout where I had to acknowledge it was going to become unfixable. I was like a ball that had gone flat and no longer bounced back.

I asked myself, do I change my environment altogether, or like many people, do I stay trapped and stressed?

Some people run their resilience buckets so low that they become empty, after which you’ll see major mental health issues arise. Before that happens, it’s important to self-examine in an honest way.

For me, exhaustion set in, constant second-guessing, anxiety, and panic that came with not being able to succeed. My body operated at a heightened defensive level for far too long. I stopped spending quality time with my family and friends, isolating myself from my family because I didn’t want to put them through what I’d gone through that day. I never wanted to talk about work when I went home. It was bad enough going through it the first time, let alone a second time with my wife.

I didn’t sleep or exercise. I did nothing to stay resilient. I thought I could fight through it all, even though the signs were there that it wouldn’t end well.



When I removed the blinders, so many opportunities opened up to me. It's remarkable how quickly the human body and brain can recover from situations of high stress and low resilience; remarkable how struggling to get out of bed to face a new day can become rising with new energy to face the day's challenges.

By taking a mental health program and simply changing my breathing, my confidence was restored. I no longer had the feeling like someone was standing on my chest all day.

Just learning the ability to breathe correctly and center myself — the clarity that came from that is unbelievable.

I think that people often feel uncomfortable in the workplace to talk about their mental state. But it's important to work out how to put air back into the ball so you can bounce back once again.

I took six weeks off, and I needed every day of it. Time off allowed me to think, to really hit the ground running when I came back. I went straight back into an environment that really hadn't changed a lot. What had changed really was me, not the environment.

I needed that six weeks to ensure that I was ready to cope, that I had enough coping mechanisms that I was well practiced and well versed and confident with those. It gave me a completely different outlook when I went back into the exact same situation.

"I gave myself a target to be out within a year, and I think I was out within three weeks — into a new job that I love."



ACTIVITY

RESILIENT AT MY BEST

When uncovering how people do “resilient at their best,” we use a questioning process adapted from clean language. The syntax is a bit quirky, AND it avoids negations with “but,” AND it avoids the imposition of leading questions. It can be applied individually or with teams of up to twelve people.

If you wish to use this process with your own teams or family, sit in a semicircle. The process works best when it includes a facilitator to scribe and ask developing questions.

HERE ARE TWO EXAMPLES OF UNCOVERING “RESILIENT AT MY BEST” USING CLEAN QUESTIONS:

Step 1.

When you’re resilient at your best, that’s like what?

It’s like I’m on a bushwalk. There’s movement, a sense of going somewhere with people around.

Step 2.

And when **there’s movement, a sense of going somewhere**, and you are on a **bushwalk**, is there anything else about **bushwalk**?

It’s fun, energizing and I’m comfortable not knowing what’s coming up.

Step 3.

And when it’s **fun and energizing** what might we see or hear?

I’m upright [shows posture], and moving [shows gestures], and engaging with others.



Step 1.

And when resilient at your best, and for you to be **like a cat, relaxing** where you **let things go at the end of the day, leaving other people's issues with them** and where you **make your own choices, and are able to switch off**, where **you're accepting**, and you have **freedom**, what support do you need?

I need time alone, with planned time in nature. I need my immediate loved ones, and the support of my colleagues.



Step 2.

And when you **need time alone, planned time in nature, immediate loved ones, and the support from your colleagues**, is there anything else about that **support from your colleagues**?

It's knowing they have my back, and that we can resolve conflict quickly. There is an openness and calm as we resolve differences together.

Step 3.

And when you have that support [**gestures to list**] what might we see or hear?

You would see us all talking together calmly. Or you would see me spending quiet time by myself, and you might not hear very much at all.

MAKE SPACE TO LEARN

“Between stimulus and response, there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom.”

— Stephen Covey⁴⁷

Sometimes, we are able to create ample space and time between stimulus and our response. In those situations, we can think through options and develop alternatives. However, in an increasingly fast-paced, complex, and turbulent world, we also need to learn in a way that trains our unconscious or intuitive, reflexive responses.

The commonly presented view is that either rational or intuitive responses are best. We challenge such binary, black/white, yes/no categorizations throughout this book. We take the view that many resilient responses are more nuanced — often a constructive blend of both rational and intuitive modes.

Importantly, constructive doesn’t necessarily mean harmony. Sometimes it pays to hesitate, to experience conflict, at least briefly, when there is a tension between two different systems of thinking. We also challenge binary views of the external world. It is seldom black and white; rather, it is colored with a rich pallet.

Resilience, then, is not a static trait. It is an active and forever-evolving process of questioning, discovery, and learning. It is a process of recalibration of our internal responses to the shifting patterns in an ever-changing external world.

We don’t doubt that some aspects of resilience are innate — part of a long or short evolutionary trajectory that we inherited from our parents. Our focus is more on the epigenetic and behavioral choices that are available to us as we develop our own agency. At each fork in the road, we have an opportunity to shape ourselves and our surroundings in ways that are resourceful to us.

Sometimes, the space between stimulus and a necessary response is a matter of a fraction of a second. Even in these microscopic interstices, we can design or prepare responses and position choices ahead of time.





SENSEMAKING

LEARNING TO NAVIGATE

THE CASE AGAINST REALITY

WEIGHING UP PERCEPTIONS

FILTERING THROUGH THE SENSES

WE SEE WHAT WE EXPECT TO SEE

MORE MONKEY BUSINESS

PAIN IS REAL AND ALL IN THE
(EMBODIED) MIND

HOW LONG DOES THE NOW LAST?

WHERE IS YOUR ATTENTION NOW?

MEMORY AND THE SENSES

THEY WENT THIS WAY

KNOW THYSELF

METAPHORS ARE A BRIDGE BETWEEN
THE CONSCIOUS AND THE UNCONSCIOUS

THE CAT PLAYS WITH A BALL OF STRING

SMASHING NARRATIVE

IS THIS REALLY YOUR LAST CHANCE?

THE CASE AGAINST REALITY



The late anthropologist Gregory Bateson argued that it is impossible to know what any actual territory (reality) is. We rely exclusively on our senses. Though our eyes, ears, and other sense organs report back to us adequately, they give us an imperfect map of reality.

For Bateson the usefulness of a map is not necessarily its literal truthfulness. For a map to be useful, it simply needs a structure that matches the structure of the territory.

“We say the map is different from the territory. But what is the territory? Operationally, somebody went out with a retina or a measuring stick and made representations which were then put on paper. What is on the paper map is a representation of what was in the retinal representation of the man who made the map; and as you push the question back, what you find is an infinite regress, an infinite series of maps. The territory never gets in at all. Always, the process of representation will filter it out so that the mental world is only maps of maps, ad infinitum.”

— Gregory Bateson³

In *The Case Against Reality*, cognitive scientist Donald Hoffman argues that there is not even a benefit to having the structure of the map match the structure of reality. For Hoffman, fitness beats truth.⁴

Linking mathematical models and game theory to Darwin’s theory of natural selection, Hoffman argues that our perceptions evolved to detect patterns that convey evolutionary advantage, and having maps that are truer to life would be a disadvantage in an evolutionary sense.

From the perspective of resilience, those who strive to ground their beliefs in evidence don’t appear to be immune to stress. They possibly don’t even have any evolutionary advantage over those prone to magical thinking, like superstitions, divine protection or astrology.

Ignorance, so they say, is bliss!



“Taking the red pill” has become a popular metaphor for the adoption of a free-thinking attitude based on evidence.

No matter how challenging the conclusions are to accept, the red pill demands that we accept what the evidence tells us.

In the case of sensemaking and resilience, the red pill that we are inviting you to swallow is the realization that we can never know absolute reality. We can never know “truth” with certainty. All we have are approximations that may or may not be useful.

This book does not focus on the search for objective truths. Instead, we explore techniques that create perceptions and responses that are resilient and useful.

“This is your last chance. After this there is no turning back. You take the blue pill: the story ends, you wake up in your bed and believe whatever you want to believe. You take the red pill: you stay in Wonderland and I show you how deep the rabbit hole goes.”

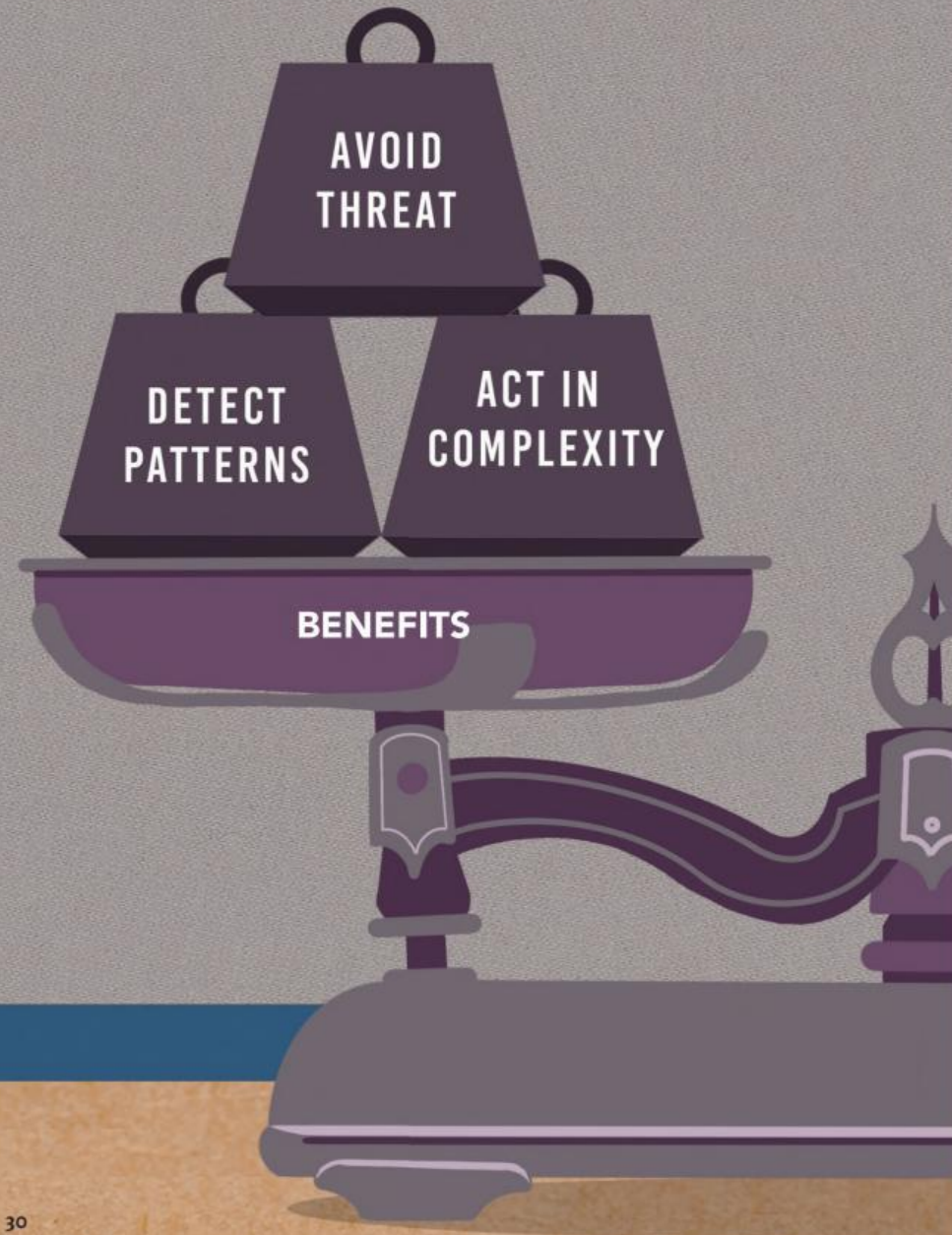
— Morpheus, *The Matrix*

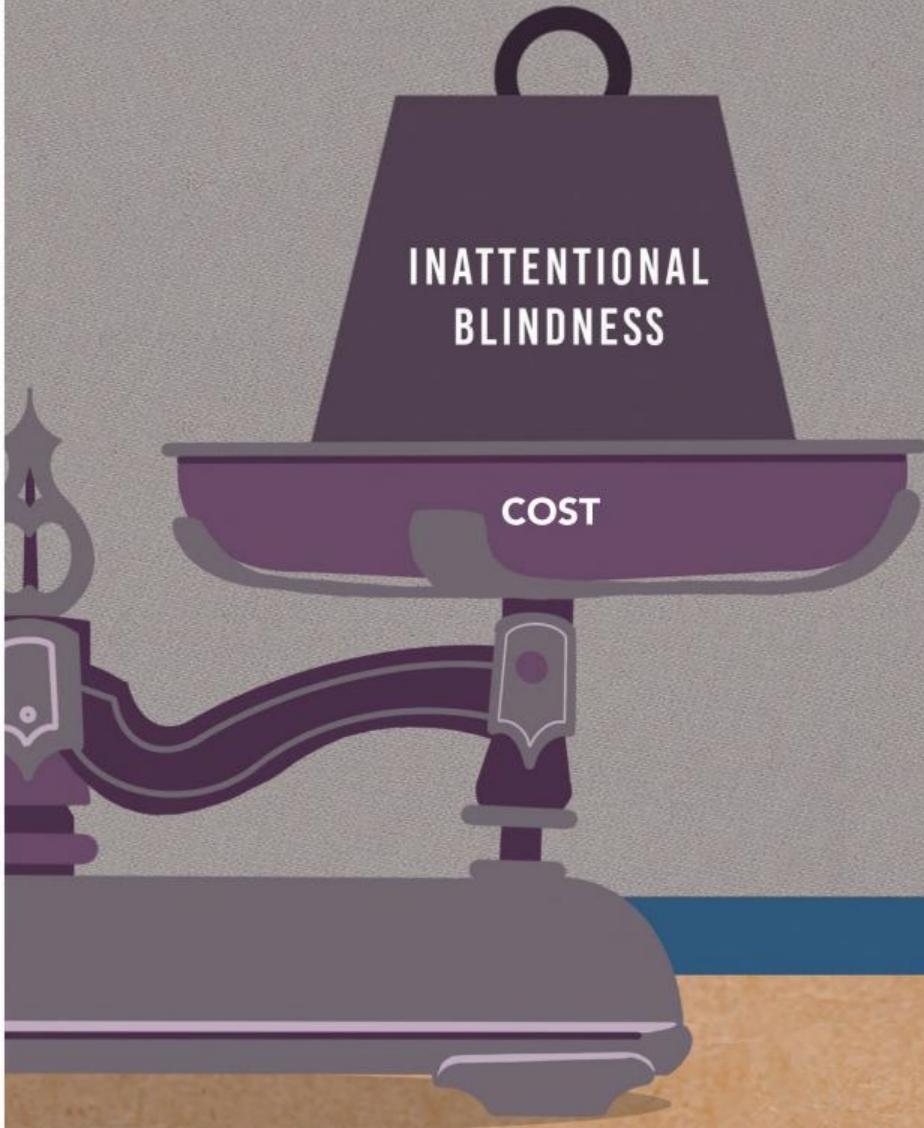
WEIGHING UP PERCEPTIONS

BENEFITS

Our senses are programmed to detect patterns. They do this by filtering out whatever does not fit into the pattern.

How we code the information our senses detect is subjective, not objective. As such, we can manipulate it for our benefit. We can, if we wish, change our coding, making subtle adjustments to the way that memories are formed and how we attribute meaning to past events.





COST

Being able to quickly detect patterns comes with a cost: we don't see what we are not looking for. This is called inattentional blindness, and it is what illusionists use to deceive us.

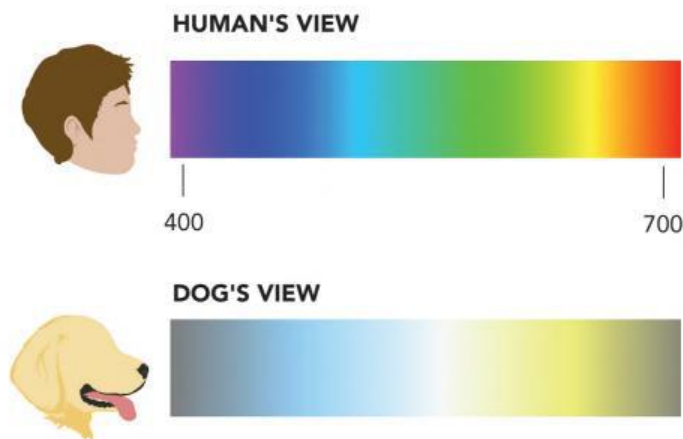
Ironically, the more expert we become at something, the more prone we are to inattentional blindness. Our focus becomes narrower, and we tune out more and more. We forget how to scan for novelty.

INATTENTIONAL BLINDNESS

When we are developing resilience, it is important to recognize that inattentional blindness leaves us open to missing change or novel differences. Improving how we perceive the world can lead to better situational assessment and more choice in our emotional states and the decisions we make.

Improved calibration of our outer and inner worlds also allows us to detect patterns when they are still early or weak signals. This gives us more time to create choices in the gap between stimulus and response.

FILTERING THROUGH THE SENSES



To illustrate some of our inherent biases, consider the visual spectrum.

For seeing, there is literally more than meets the eye. We can see in a very narrow bandwidth of the light spectrum — between about 400 and 700 nm in the visible spectrum. This immediately yields a very specific representation of the world around us in trichromatic shades of red, green, and blue.

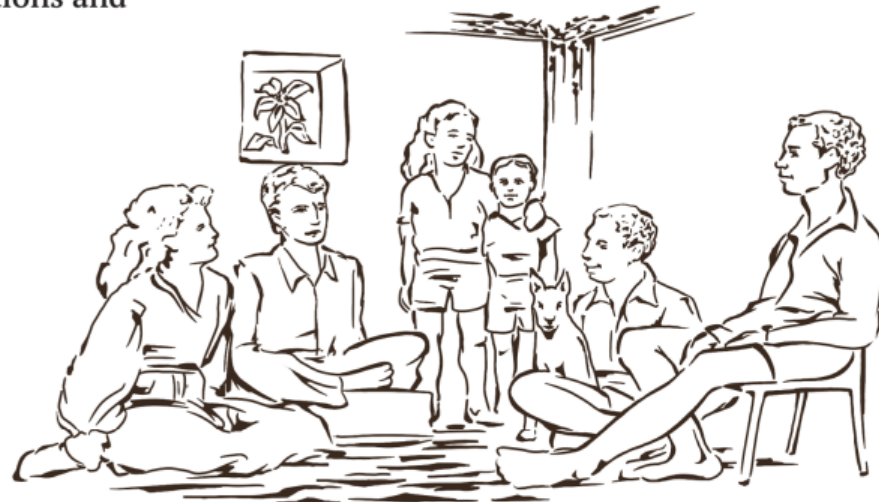
Dogs, by comparison, are thought to be dichromatic. They see the world very differently. What they lack in colour resolution, they make up for in low light sensitivity. They can see six times better than we can in the dark.

Our visual system is also used to create internal representations of the past or future as we remember, visualize, imagine, hallucinate, or fantasize. These images can be moving or still, 2D or 3D, color or black and white, or vary in many subtle ways not unlike the incredible flexibility offered by a desktop video editing suite.

Cna yuo raelyl
trsut yuor sesnes?

WE SEE WHAT WE EXPECT TO SEE

Depth and motion are constructed from shadow, intraposition, and space cues, but there's more than meets the eye. Cultural or belief bias is a kind of feedback that can also filter our perceptions and contribute to inattention blindness.



Modified after Anon⁵

Australians were asked to describe the picture here. The most common response was:

"It's a family in a room with a dog...(or sometimes, with a dog that looks like a kangaroo!)."

When the same question was asked in Africa,⁵ or framed in Australia as being set in Africa, the response was more commonly:

"It's a family sitting under a tree, and there is a woman with a box on her head."

The stories and inferences about this family scene vary wildly. Some people make inferences about the family dynamics, such as who likes who and how the people are related. Others point to clues that suggest something about the family's socioeconomic status.

We have demonstrated that the visual system constructs a version of reality that is mostly useful to us. It can't take in everything at once, so it filters in ways that are strongly influenced at the cellular level in the human eye, as well as by our cultural, social, and economic context.



One of the best examples of inattention blindness is the Monkey Business Illusion.

The original illusion, created by Daniel Simons and Christopher Chabris, has two groups of people, some dressed in white, some in black, passing basketballs back and forth whilst moving randomly. Observers are tasked to count how many times the participants in white pass the ball.⁶



Engrossed in the task of counting, about half of those given these directions fail to notice that somebody in a gorilla suit walks into the circle and pounds their chest while facing the camera before walking off. The gorilla is on screen for nearly nine seconds.

In a follow-up study, the same researchers explored whether those who know an unexpected event is likely to occur are any better at noticing other unexpected events. The second video again uses white and black clothed players moving randomly, with the same rules and a chest-thumping gorilla.

Only 17% of those who were familiar with the original gorilla video noticed one or both of the other unexpected events, like the curtains changing color, or someone stepping out, compared with 29% of those who were unfamiliar with the original gorilla video.

The study demonstrates that, even when we are primed to the possibility of an unexpected event, this does not substantially enhance our ability to recognize them when they occur. We only see what we are looking for.

MORE MONKEY BUSINESS



“Working with the reality of inattentional blindness is part of the core science of better sense-making in complex systems.”

— Dave Snowden

In an extension of the Monkey Business Illusion, additional experiments have tracked inattentional blindness into frontline work domains. Researchers asked 24 radiologists, expert observers of x-ray images, to perform a lung nodule detection task.⁷ A gorilla 48 times larger than the average nodule was inserted in one of the images.

83% of radiologists did not see the gorilla. Eye-tracking revealed the majority of those who missed the gorilla looked directly at it.



The implications for inattention blindness in healthcare are enormous. Experts of all specializations risk missing unexpected illnesses the more attuned they become to the patterns they expect to see.

In a different example, it's possible that inattention blindness led to false imprisonment of a Boston police officer.

At 2.00am on January 25, 1995, Officer Kenny Conley chased a shooting suspect who climbed a chain-link fence to escape. Michael Cox, an undercover officer, had arrived at the scene moments earlier. In the dark, other officers mistook the arriving officer for the fleeing suspect, brutally assaulting him from behind.

In his statement, Officer Conley said that he ran right past the place where Cox was being attacked, but he claimed not to have seen the incident.

The prosecution successfully argued that Officer Conley must have seen the incident and was therefore lying to protect his comrades. Conley was convicted of perjury and obstruction of justice and was sentenced to 34 months in jail.

Chabris and Simons explored this scenario using principles illustrated by the Monkey Business Illusion. They simulated the Boston incident by having someone run after an actor along a route near which three other actors staged a fight.⁸

At night, 65% of subjects did not notice the fight; during the day 44% failed to notice.

It is apparent from the Monkey Business experiments that we literally don't see what we don't expect to see.



ACTIVITY

HOW LONG DOES THE NOW LAST?

“Mindfulness is the quality of being present and fully engaged with whatever we’re doing at the moment — free from distraction or judgment, and aware of our thoughts and feelings without getting caught up in them.”

— Headspace

What we call mindfulness is a widespread and enduring philosophy that is at least 3,500 years old. At its core, mindfulness is an appreciation of the benefits of being fully aware in the moment.

Mindfulness, yoga, breath work, tantric practice, meditation, prayer, qi gong, and a host of other practices all aim to appreciate the benefits of mindfulness, being fully present in the moment, and what author Eckhart Tolle calls “The Power of Now.”¹⁷

So what exactly is “the now” and how long does it last?

What is the other stuff that is “not the now”?

We invite you to take part in a simple thought experiment.



PAST



Step 1.

Remember a time and place from your past when you enjoyed doing an activity you are passionate about.

Immerse yourself in that memory, reliving the moment as if you were really there.

See events through your eyes. Inhabit the memory rather than looking on as an observer.

Are you remembering in color? Are the colors true to life?

Focus on the sounds. Are there voices? Become aware of sounds both near and far. Are there any internal sounds? Do you hear your own inner voice running a commentary, or is there inner quiet?

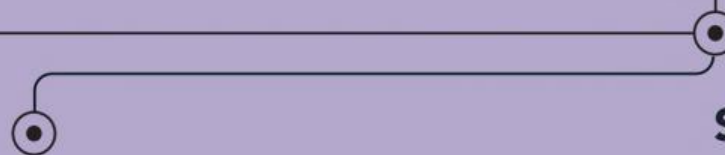
Experience the sense of movement in your body. How do you feel? How is your breathing?

What can you smell? What can you taste?

Now, return to the present.



FUTURE



Step 3.

Now compare the two experiences.

For most people there is no discernible difference. Neither is any more “real” than the other. For the minority of people who do experience some small difference between the past memory and future created experience (for which we now have a memory!), it usually only takes a few minutes of coaching to match the experiences precisely.

Past and future experiences are practically identical. Most of us can separate the remembered past and the imagined future in some way.

What then, is “the now”?

Neuroscientists have measured the time it takes for the senses to rattle around the body and brain into consciousness: it’s perhaps a few hundred milliseconds (around half a second).¹⁸⁻²⁰

So, let’s assume then that being in the now is a fleetingly brief experience, which almost immediately becomes memory.

Step 2.

Get up and move around. Shake that memory out of your body by jumping up and down. Vigorous movement for ten seconds or so is usually enough.

Now direct your attention to a time in the future when you could enjoy a similar experience to the one you were remembering.

Create an imagined experience which is *similar*, but not identical, to the previous memory.

Deeply immerse yourself in this created experience. As before, check that the images, sounds, body sensations, smells, and tastes are all present.

Now, return to the present.

Get up, move around and, once more, shake that created memory out of the body.

Where is your a

Being in the now is to experience that which is fleeting — no sooner experienced than it is gone, passing into the realm of memory.

Once an experience passes into memory, it can be replayed or modified, and we can create immersive experiences that are practically identical, or radically different, to past reference experiences.

Memory is malleable, and experiences can be re-experienced from different perspectives, and we can also change the meaning we attribute to such sensory-based experiences.

We live entirely in a created or recreated experience of "reality."

attention now?

This being so, there is no excuse for not having a resourceful experience, moment by moment. Emotions like happiness are 100% created internally and have zero causation from events in the external world. As people discover their own innate creative process for how they experience the past, present, and future, performance naturally lifts as they discover more choice.

By all means, be "in the now," and also remember that, using the same techniques, you can immerse yourself in the future. By vividly imagining a possible future and engaging all the embodied senses, peak performance can be rehearsed authentically. When the future arrives, you'll be ready for its demands.

If recollection of past experiences is debilitating today, you can also access or re-imprint those memories in more useful ways for the purpose of learning and creating the life you most want to inhabit.

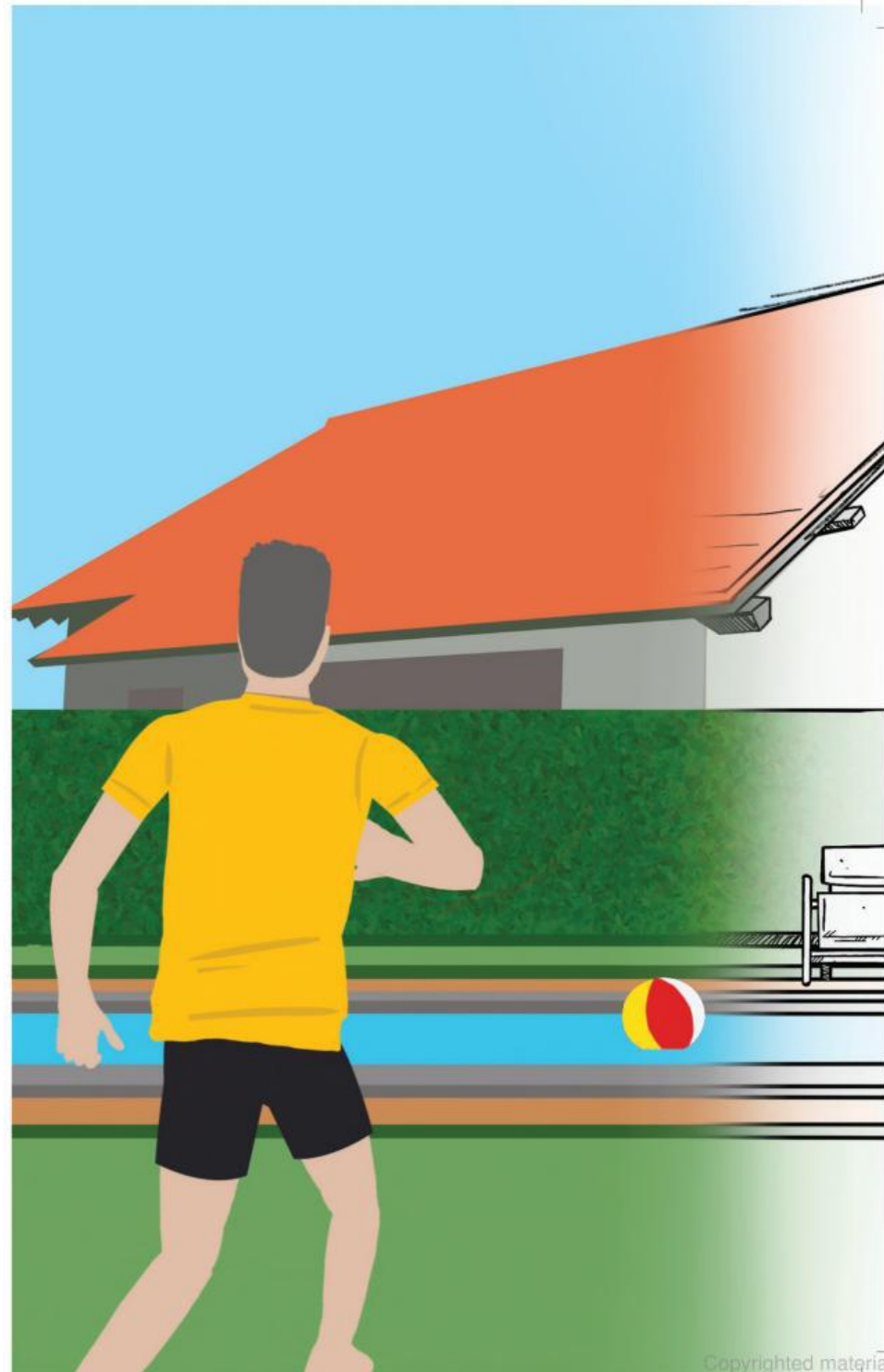
MEMORY AND THE SENSES

If you've witnessed a disaster or potentially traumatic event, you'll know there could be advantages in being able to forget the experience or only recall aspects of it that are salient and required for the purposes of learning.

Memories can be debilitating if they invoke involuntarily felt sensations. As an example, some people experiencing a traumatic stress response can remember events as if they are full-color movies with surround sound, linked to the same (or different) dysfunctional felt sensations. It is literally like they are reliving the experience over and over again as vividly, or even more vividly, than they felt the first time.

Instead they might choose to remember the traumatic event differently. It could be as a movie in black and white with no sound. This typically lessens the emotional impact.

By changing *how* memory presents itself, we can change how we respond to it.



I've been alone on a dark trail and heard just a light boot scuff on a rock. That's all I hear, and because my senses are completely with the experience, I begin to assess, "Okay, that sounds like it's maybe another 20 to 40 meters or yards down the trail for me, so I still have time to listen to see what I'm dealing with here." Then I'll start hearing the crunch of more footsteps. If they're moving very slowly and very tactically, I assume these will be bad guys. This might be a point man, armed with a rifle or a pistol. It's essential to be aware and sensitized to the fact that I must not stand out in the middle of the road or trail, or turn on my flashlight and go, hey, everybody, you're all under arrest. Because doing that will likely get me shot in the face.

Over the years, smugglers have gotten pretty tricky about how they hide their trails. They bring a roll of carpet, walk across the road, roll the carpet back and go on. We've caught them with the leaf blowers where they blow out the dust or sand behind their trail and they will tie the hooves of cattle to their feet and walk, thinking that it will trick us. They walk backwards thinking that somehow that would fool us. There's a number of novel ways that they try to disguise their illegal activity.

What they don't realize is that anything occurring between the lawful port of entry on the ground and in the desert is going to be pretty much illegal, unless of course you have an open range for cattle running and activities like that. We get some legitimate agriculture and cowboys working the area but everyone else is likely to be there illegally.

If you're seeing footprints, especially large groups walking north from the border with Mexico, then you can assume that something or someone is breaking the law either smuggling in narcotics or human trafficking.

The art of man tracking is really evidence gathering. Forensics in its simplest form. The skillset comes from the experience of the tracker, and of course his or her vision and ability to interpret or make sense of what they're seeing on the earth, on the ground, usually a disturbance

of some sort. It can be very subtle like discoloration. As a person is walking, they may kick over a rock that has been there for decades, shone on with UV and sun-derived infrared light which tends to bleach the rock on the top.

If the rock is kicked over it'll be darker on the bottom. That will catch the tracker's eye, as well as the shadows. When a footprint or boot print of a horse is in deep sand, the angle of the sun can show the shadow from far away.

I love the old movies and cowboy shows where they're looking at a branch about shoulder height that's bent one way, and they say, "They went this way." Unless somebody actually walks into a bush, which at night they sometimes do by accident, you rarely see something like that as an indicator. It's going to be at the ground level where there are indications of someone passing through a particular area.

Smugglers often toe out as they walk, which hints that they may be carrying heavy loads. When they have 10 people with 40 pounds [each] of marijuana on their backs, you may have a trailing guy with a gun and a point guy with a gun. Or you may have 30 people, 10 of who are women and one's carrying a baby. If the woman's walking up front with the guide and you don't have good night vision you might think that person is carrying something other than a baby, such as a bundle of drugs or a weapon. I've jumped out on groups like that in the middle of the night, and on more than one occasion had people instantly pass out from the shock or lose control of their bladders.

During my time as a border patrol agent, I was in a lot of survival fights and I got hospitalized half a dozen times, but thankfully never killed anyone. It gets tough out there, especially when you work alone. It's why we're always sensing and interpreting our environment so that we can make rapid decisions.

In this line of work, bad decisions cost lives.

KNOW THYSELF

Dating back to 300 BC and inscribed in the Temple of Apollo at Delphi are the words “Know Thyself.” From at least as far back as the ancient Greeks, people have understood the importance of self-knowledge and self-calibration as a foundation for learning.

Post Greek philosophy, neuroscience is exploring the same territory, providing important insights into how we make sense of the world around us. We can use these insights in a practical way to extend our sensemaking calibration range, such as by training breathing and heart rate variability to support our response to pressure or challenge.^{21,22} We can also learn to filter information differently to overcome cognitive biases, and we can re-experience memories in more useful ways like Mike did with the near drowning of his son.²³ We can literally improve how we make sense of the world moment by moment.

Most people have five prominent senses: sight, hearing, touch, taste, and smell. What is up for debate are the less-well-understood aspects of sensing such as proprioception (the sense that helps us locate our bodies in physical space), our sense of movement, and even our ability to detect electromagnetic fields. As another practical

example, Ian spent six months wandering the world wearing a magnetic sense belt, a compass of sorts that sends a signal to the body to develop a better intuitive felt understanding of direction and space.²⁴

After receiving sensory information, we create a corresponding system of internal representations of our experience (visual, auditory, kinaesthetic, gustatory, and olfactory, and other less well-defined representations such as space and time). These are known as modalities, and these re-presentations can be a re-creation or memory of an experience we have already had, or they can be entirely new imagined experiences.

Traumatic memories show us how the senses can co-create experience through what we call “cross-modal association.” People vividly recall images, sounds, sensations, and even smells and taste, activating a felt sensation that can be so strong that it is debilitating.