The New Science of Momentum

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How the Best Coaches and Leaders Build a Fire from a Single Spark

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Jeanette, Will, and Maddie:
Adding you to my life has given me momentum I could never have imagined. Thank you for being the team that makes everything possible and the journey worth taking!
DY

I dedicate this book to the family, friends, and colleagues who have inspired me throughout the years.
BBB

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Introduction

During the first quarter of Super Bowl LI in February 2017, the Nielsen Company estimated two hundred million viewers around the globe were tuned to their televisions, ready for that year's most-watched sporting event. By the third quarter, nearly half the audience was gone. The Atlanta Falcons were pounding the favored New England Patriots, and few outside of Georgia's capital city wanted to watch a rout.

Through the first half, everything that could go right for the Falcons did. Conversely, New England was not much fun to watch, with quarterback Tom Brady getting sacked multiple times, throwing incomplete passes to wide open receivers, and nightmare of all nightmares for a Bill Belichick team, making silly mistakes like fumbling a handoff to running back LeGarrette Blount that the Falcons converted into a touchdown soon after. Even when the Falcons faltered, as they did during the final seven minutes of the first half, the hapless Pats could manage only a field goal. Three points. That was all the scoring the high-powered New England offense registered during the first thirty minutes of play.

"In football you're always playing for what we call the second half swing," Patriots cornerback Devin McCourty said in an interview for this book. "That's where you want to get the ball and go down and score just before halftime, then get it again to start the second half and score again. You take over the momentum of the game and the other team feels like they are done. For us in that game, it was the complete opposite."

Coming out of the locker room, the Falcons scored again and, midway through the third quarter, led New England 28–3. "If you're New England, that's not what you want to see," announcer Joe Buck said, as the camera zoomed to Belichick deadpanning on the sideline.

No, it was not.

"I was sitting on the sidelines saying to myself you are getting your butt embarrassed," Brady recalled years later. "Go out and do something. Let's just get one touchdown."

And then a small victory came New England's way. On third down with eight yards to go, Brady was forced out of the pocket—always an uneasy moment for Patriots fans—but scrambled convincingly for a first down. A few plays later, he threw a short touchdown pass to running back James White to make it 28–9. The crowd cheered but, at this point, the outcome still seemed foregone. The Patriots missed the extra point, but at least the score seemed a bit more respectable.

"Once we scored, I asked the defense to just get one stop, just one," Brady said. "They did and then we drove the field and kicked a field goal." There was 9:44 left in the game. "I looked over at the scoreboard and said it was only a two-score game."

Just over a minute of game time later, with Atlanta still leading 28–12, Falcons quarterback Matt Ryan dropped back to pass and was engulfed by Patriot linebacker Dont'a Hightower, causing Ryan to fumble. The Patriots recovered the ball on the Falcons' 25-yard line.

"That strip sack by Dont'a was the moment when you could feel it turn," McCourty said. "In that moment, we all looked at each other and said, 'We can win this game.' Guys on both sides of the ball started making plays off the energy we gained from that one play and the belief was on our side."

"You felt it," Brady said. "We had some juice. Those little plays were becoming a snowball."

Not long after that, Brady found Danny Amendola in the end zone for a touchdown. Immediately, Belichick lifted two fingers, signaling his team was going for two points. They earned the two with a classic bit of Belichickian deception as the ball was directly snapped to White (rather than Brady), who converted. Suddenly, the score was 28–20 and, with just under six minutes to play, the contest that seemed out of reach was anybody's game. At that point, a change was noticeable when looking at the body language of players on both teams. McCourty summed it up: "When we were only down by a touchdown, their players . . . their eyes started to get big. They knew we were coming. They knew we had Tom Brady and no one wants to be in a one-score game if he's on the other side. Our eyes, they started to narrow. We were locked in. It was a complete reversal of the first three-and-a-half quarters. They had a special teams player who, for most of the game, was barking at our sideline, talking trash after every kickoff. When we were down only one score, you could see him turn quietly after the kickoff and just jog off the field. Now we're the ones screaming. What people don't realize is that there are so many defensive players on the kickoff that the energy flows right into the next play as their offense comes out. And both sides know it. You both feel it. It's almost like an out-of-body experience."

With four minutes remaining in the game, Atlanta moved the ball to the New England 22-yard line, close enough for a field goal that would make any further New England comeback unlikely. But

once again the Patriots defense answered the call. McCourty tackled a Falcons ball carrier for a loss, then Trey Flower sacked Ryan back near the 40-yard line. On the next play, the New England defense's pressure forced one of the Atlanta linemen into a penalty, pushing the ball back yet farther. The Falcons were certainly moving the ball . . . the problem was they were moving it in the wrong direction.

The Patriots forced the Falcons to punt and recovered the punt just inside their own 10-yard line. They had a little over three minutes to go ninety yards for a touchdown, after which they had to go for two again. Brady completed three passes in a row to three different players. One tripped and fell running his route, got up, and still made the catch. Another, Julian Edelman, had the pass tipped in front of him, making the pass available to the outstretched hands of no fewer than three Falcons players who converged on the ball.

Game over.

Except it wasn't. Somehow, Edelman snaked his way among them and came up with the catch, the replay showing that his concentration was so absolute you could see him pin the ball against the opponent's leg to keep it off the ground, where it would have been ruled incomplete.

With one minute left to play, White ran for a touchdown to bring the Patriots within two points of the Falcons. During the two-point conversion, a Falcons lineman jumped offsides but still couldn't prevent Edelman from catching a short screen pass and stretching the ball over the goal line. At this point, those watching the game were witnessing the greatest Super Bowl comeback of all time.

"The energy is so completely with New England," Aikman said. "This has been two completely different games. I don't have any idea how the Falcons respond in overtime."

They didn't get the chance. The Patriots won the coin toss and chose to receive the ball first. Now well protected by his offensive

line, Brady proceeded to pick apart the Falcons' defense and brought the Patriots to a first and goal after a Falcon defender was whistled for pass interference in the end zone. Two plays later, White ran it in for yet another New England Super Bowl victory.

As the confetti fell like snow on the players and the crowds who rushed onto the field, a national radio announcer summed it up, saying: "Final score is 34–28 in overtime, and the New England Patriots have redefined the word *momentum* here tonight."

The next morning, this book was born when a sports author gathered a team in Florida, turned to a large whiteboard, and scribbled the words *How does a team turn a moment into momentum?* Over the next seven-plus years, the project would grow to include a retired Army general whose last duty assignment was to serve as the chair of the Department of Behavioral Sciences and Leadership at the US Military Academy at West Point; a highly respected research scientist from the world of academics; and one of the best data analysts working in the worlds of public opinion and politics. The list of questions on the whiteboard grew: How do you prepare for "the moment"? Can momentum be generated? Can it be extended? What can be done if it has turned against you?

Hundreds of interviews with and thousands of surveys of world-renowned experts, championship coaches, military leaders, political campaign strategists, and corporate leaders conducted over the past few years led us to the words you hold today.

One thing became clear: Momentum is real to those we sought to learn from. How to prepare for, manipulate, extend, or reverse it became our assignment. This book will provide you with a model to do exactly that.

So, use the energy from that sentence to propel you to the next chapter. Let's go!

The New Science of Momentum

1

Premise: From Flow to Mo

When Mihaly Csikszentmihalyi began exploring his theory of "flow," he was called crazy, a crackpot. The venerable professor and researcher was convinced that people who found themselves in "flow" were able to stay focused longer and were thus capable of greater things. He knew he had felt it while he was writing. He knew he had seen it among athletes who seemingly come to a place where they can't miss. But when he proposed this idea that "flow" was a "state" and should be pursued, his professional colleagues originally scoffed.

Thirty years later, Csikszentmihalyi's seminal book *Flow: The Psychology of Optimal Experience* is not only widely accepted but a bestseller that is celebrated as one of the most transformative theories in the psychology of performance. We were lucky for a chance to sit down with him for a lengthy dinner interview, prior to his passing in 2021, where he shared his thoughts on the evolution of "flow" and debated with us the intersection of this concept with momentum—both in the experiences of individuals and for teams.

Flow state has gained a great deal of attention recently as biohackers seek ways to tap into this state of intense creativity and productivity, particularly for individuals seeking to maximize performance. What has long been known to athletes as "being in the zone," flow state is now widely recognized as a phenomenon in no way limited

to sports but an almost-euphoric sense of possibility and accomplishment with little sense of time, limitations, or practical constraints.

Flow states have implications for teams, as well as individuals. Emerging science is beginning to prove something that has long been theorized: the existence of "mirror neurons," which seem to be the basis for human empathy and intuition. These are the chemical messengers that transmit anticipated actions and evoke automatic responses from those around us. A simple example: How often have you felt like yawning after watching one or two others do so? But in a larger sense, mirror neurons seem to be the key to how any kind of collective emotion—excitement, hysteria, momentum—spreads organically through a group. The study of mirror neurons is at the cutting edge of neurological research and has the potential to redefine the way we understand the social aspect of the human brain.

Transference of energy is one of the key properties of creating momentum in physics; it is also the secret to building momentum within a team. But how does this process happen? Enter mirror neurons as one possibility. As one team member begins to experience success, the mirror neurons of their teammates begin to register those accomplishments as their own. Combined with procedural adaptation and an understanding of body language, the receptivity of mirror neurons can help make momentum contagious—and virtually unstoppable. Our interviews with neuroscientists Marco Iacoboni and Jaime Pineda detail the process where as one person achieves something positive, the psychological impact of tribal identity ("you are in my group, which means that you are like me and aligned with my goals") triggers a verifiable, biological mental response in teammates. If teammates are properly aligned, their mirror neurons respond to the victory as if they, too, had successfully completed the task. This creates a kind of "mental muscle memory" within the brain, triggering growing confidence and feelings of accomplishment

within the entire group. It is this kind of contagious success that becomes momentum.

Csikszentmihalyi embraced as an extension of individual flow states our model of momentum, which is focused on how organizations can foster environments in which momentum can easily be transferred from one to another.

"The role of the leader or the coach is to be aware, to know what the strengths of the set of individuals are and to recognize the opportunity for using those strengths in the activity that you are doing together," Csikszentmihalyi told us, agreeing that the experience of "flow" is transferable between members of an organization—"if they are in synchrony and supporting each other. And things like faith are very important."

Csikszentmihalyi conducted extensive research to develop the ideas presented in *Flow*. His research methods were rigorous and innovative, particularly in how he gathered data from participants. One of the key methods he used was the Experience Sampling Method (ESM), which involved having participants keep detailed daily logs or journals about their experiences throughout the day. Participants were provided with pagers or other devices (in later studies, they used smartphones) that would alert them at random times throughout the day. When signaled, participants were asked to stop what they were doing and fill out a short survey or journal entry. In these entries, participants recorded what they were doing at that moment, how they felt, their level of concentration, and their overall sense of engagement or satisfaction with the activity. This method allowed Csikszentmihalyi to gather real-time data on people's experiences, rather than relying on retrospective accounts.

In addition to the real-time sampling, participants were sometimes asked to keep more detailed journals about their experiences, particularly those that involved deep concentration or enjoyment, to help identify patterns in how flow experiences occurred. Csikszentmihalyi analyzed the data from these logs and journals to identify common conditions that facilitated the flow state. He found that flow experiences often occurred when individuals were engaged in activities that were challenging but achievable, where they had clear goals and immediate feedback, and where they were fully absorbed in the task at hand.

The insights gained from these detailed logs were crucial in shaping the concept of flow. Csikszentmihalyi was able to define flow as a state where individuals are so engrossed in an activity that they lose track of time and self-consciousness, finding deep satisfaction in the process itself. This ESM method not only was instrumental in developing Csikszentmihalyi's "flow" but has since been widely applied in psychology, education, sports, and many other fields.

Our research for this book also involved the solicitation of people's thoughts, feelings, and experiences with personal and team momentum, via three alternative methods: in-depth interviews; targeted surveys of leaders in business, politics, sports, and the military; and large-scale, scientific surveys of the general public.

In all of these surveys and interviews, we asked: "Does momentum exist?" A staggering number said yes, it does. This was the answer for 91 percent of the twenty-five-hundred-plus Americans we asked in random sample surveys, and for an even greater portion—99 percent of the thousand coaches, business leaders, and National War College military officers we targeted in our surveys of leaders. There were, of course, a few outliers—including an ESPN statistician who argued vociferously that momentum is an artifact or fallacy rather than a real phenomenon. That said, our research found that the more groups or

teams a person has been a member of, the more likely they are to state a belief in the realness of momentum. More on that later. For now, it's clear that nearly everyone we contacted believed they had lived momentum in some context and perhaps fallen victim to it as well. Pressed to define momentum outside of a feeling, however, no uniform descriptions emerged. Our respondents offered diverse descriptions, with professionals in these four fields—politics, sports, the military, and business—providing particularly colorful ones of the phenomenon.

Florida State University assistant basketball coach Stan Jones described momentum to us as a "competitive energy tsunami," a powerful surge that propels a team forward, elevating their performance beyond expectations. In our talk with acclaimed leadership expert John Maxwell, he described momentum as the "great exaggerator," magnifying existing currents and intensifying their impact. And perhaps most vividly, NBA champion assistant coach Kevin Eastman told us he thinks of momentum as a "force multiplier"—that momentum is "the force of energy, the force of enthusiasm, the force of *we're coming at you*."

Defining momentum may be like trying to catch lightning in a bottle—it's something you can feel, but it's elusive when you try to put it into words. You can feel things shift, but it's challenging to quantify or measure. The debate over momentum even served as the reason one major figure, legendary political consultant James Carville, decided to participate in this book. "Momentum is absolutely real. I think it's a noble thing you're doing in writing this book," Carville said, before qualifying his reason for offering such a superlative. "I think it's noble because you're going to try to explain something and you're going to fail, but I just don't want you to fail too big." He made it clear he was offering a little of his trademark sarcasm but was fascinated enough that he invited the authors to spend a day with him at his Virginia home.

These individuals, at the pinnacle of their fields, share a visceral understanding of momentum through their firsthand experiences. Their ability to articulate its essence suggests that those who have been deeply immersed in the ebbs and flows of competitive environments are more attuned to its effects.

These professionals weren't coached or taught about how to describe momentum; rather, the largely common experience of this phenomenon led to a remarkably similar view: When momentum is happening, captured energy is released with a greater yield than expected.

Momentum magnifies.

While those at the tops of their respective fields may have seen and felt momentum in their personal lives more than the average person, in our surveys of American adults, more than eight in ten say they've experienced it firsthand too.

Perhaps most telling, however, is the wide gap between the belief in momentum and a confident understanding of what contributes to it. Nearly nine in ten respondents in our surveys say they believe certain conditions can help create momentum or make it more likely to occur; but when asked to elaborate on what those conditions might be, most said they aren't sure.

This book explores those conditions and how to build them. But first, it's important to start with the basics: the scientific basis and definition of momentum, concepts that are related to but distinct from momentum, and an exploration of some efforts to "catch" or measure "Mo" in social contexts.

2

Momentum Defined

"Try to define it."

Try to define love or pornography. Supreme Court Justice Potter Stewart tried with the latter but defaulted to what became among the best-known phrases in US legal history: "I know it when I see it."

Momentum joins the list of phenomena that can be perceived more easily than described. And it's described . . . a lot.

Think of the number of idioms that allude to momentum: "keep the ball rolling"; "gather steam"; "hit one's stride"; "in full swing"; "gain traction"; "ride the wave"; "snowball effect"; "run with it."

And, of course, there are various clichés that dance around the same concept: "strike while the iron is hot," "a rolling stone gathers no moss," "the more you do, the more you can do," "stay in the flow," "success breeds success." It's no surprise, then, that most people believe—perhaps even without having consciously considered the question—that momentum is real.

Most come to understand momentum long before they learn there's a word for what such an experience feels like. Indeed, the concept becomes a lot easier to explain when you've felt it yourself—and more importantly, when you've been given the tools to spot it when it's happening and to prepare for that moment.

In physics, momentum—that is, transferred energy—is a property of a moving object that's defined as the product of its mass and

velocity. It is a vector quantity, meaning it has both magnitude and direction. The formula for momentum is:

$$\text{Momentum} = \text{Mass} \times \text{Velocity}$$

Here's what each part means:

- Momentum: This tells us how much "push" an object has when it's moving. If something has more momentum, it means it's harder to stop.

- Mass: This is how much stuff is in the object, like how heavy it is. The more mass an object has, the more momentum it can have.

- Velocity: This is how fast the object is moving and in what direction. The faster something moves, the more momentum it has.

In other words, in physics, momentum depends on both the mass and the velocity of an object. An object with a greater mass or a higher velocity will have greater momentum. For example, a truck moving at a high speed will have a greater momentum than a bicycle moving at the same speed. Beyond mass and velocity, there are other variables that also predict or describe motion. These include:

- Vectors: Quantities that have both magnitude and direction. Vectors are used to represent physical quantities like force and displacement. For example, a force vector might be described as "ten newtons to the right," where ten newtons is the magnitude and "to the right" is the direction.

- Direction: The line or path along which something is moving, pointing, or aiming. For example, direction tells you where a vector is pointing, such as "north," "upward," or "thirty degrees east of north."

- Magnitude: The size or quantity of something. For example, the magnitude of a velocity vector tells you how fast something is moving, while the magnitude of a force vector tells you how strong the force is.

It is the combination of these elements that creates the conditions in which momentum can be generated and sustained. These elements also provide scientists and laypeople multiple opportunities for observing and measuring momentum—detecting it in the physical world, and exploring how it may appear in the psychological experience for those in the midst of it.

The History of Momentum in Science

It is not our intention that this book become a textbook. However, numerous scientists have examined important elements of the science of momentum over the years and integrating their insights was paramount in our work.

The concept of momentum has been studied for thousands of years. But the modern scientific understanding of momentum began to take shape during the sixteenth and seventeenth centuries with the work of scientists such as Galileo Galilei, Johannes Kepler, and Isaac Newton. Galileo is credited with first describing the concept of inertia, which is the property of matter that resists changes in motion. His experiments with rolling balls down inclined planes demonstrated

that the speed of a moving object remained constant as long as no external forces acted upon it.

Kepler's laws of planetary motion, which he developed based on observations of the movements of planets, also contributed to the development of the modern understanding of momentum. His laws describe the relationships between the speed and position of planets as they orbit the sun.

Isaac Newton's laws of motion, which he published in 1687 in his work *Philosophiæ Naturalis Principia Mathematica* (*Mathematical Principles of Natural Philosophy*), represented a significant milestone in the understanding of momentum. Newton's laws state that an object will remain at rest or in uniform motion in a straight line unless acted upon by an external force and that the force acting on an object is proportional to its mass times its acceleration.

These laws provide a framework for understanding the behavior of objects in motion, including the concepts of momentum and kinetic energy.

Generations of scientists since have conducted experiments and made discoveries that have contributed to the refinement of the concept of momentum. Some notable examples include the work of James Joule in the mid-nineteenth century, who demonstrated the relationship between heat and energy, and the experiments of Albert Einstein in the early twentieth century, which led to the development of the theory of relativity.

Modern scientists from various fields of physics continue to study and explore the concept of momentum in specific conditions. For example, Steven Chu studies momentum at the atomic level; Wolfgang Ketterle studies momentum in microscopic systems; and William Phillips, Claude Cohen-Tannoudji, and Eric Cornell all study momentum in atoms at extremely low temperatures. These Nobel laureates are advancing the scientific understanding

of momentum in directions Newton and Kepler could never have imagined possible.

Momentum and Its Cousins, Inertia and Success

There are a few concepts related to momentum, and sometimes confused for it: inertia and success. While inertia and momentum are related concepts in physics and in life, they have distinct meanings and applications.

Inertia is the property of matter that resists changes in its state of motion. It is related to Newton's First Law of Motion, which states that an object at rest will remain at rest and an object in motion will continue moving at a constant velocity along a straight line unless acted upon by an external force. Inertia is directly linked to an object's mass—the greater the mass, the greater the inertia.

Inertia is often associated with an object's resistance to changes in its velocity or motion. For example, a heavy object requires more force to set it in motion or to stop it compared to a lighter object with less inertia. Inertia is also responsible for the tendency of moving objects to continue moving in the absence of external forces.

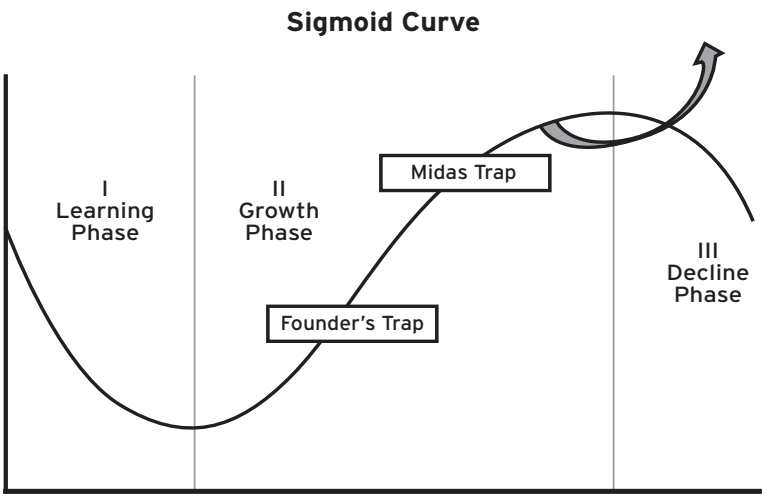
Similarly—at least in terms of the popular concept of momentum—"success" is a related term. Momentum and success are linked, yes—but they are also distinct from each other in a few important ways. Success refers to achieving a goal or desired outcome, often as a result of hard work, talent, skill, or some combination of these factors. Success can be a onetime event, such as winning a championship or securing a major business deal, or it can be an ongoing state, such as a successful career or a thriving business. Momentum, on the other hand, is more the feeling or state of mind that builds over time as a result of a series of successful outcomes or positive events. It is the sense that things are

going in a positive direction and that success (or more success) is on the horizon.

One way to think about the difference between momentum and success is to consider an athlete who has won a major championship. The athlete has achieved success, but they may or may not have a sense of momentum. If the athlete feels that their win was a fluke or that they got lucky, they may not have a sense of momentum going into their next competition.

Finally, it's important to consider that momentum is time-limited and fragile. Even a single setback or failure can break the positive feedback loop that generated the momentum, leading to a loss of confidence and energy. This is why momentum is often described as a "fleeting" or "transient" state.

The temporality of momentum is noted by many scientists and practitioners alike. In our interviews, various people noted that momentum isn't (and shouldn't be) endlessly sustainable but rather a force that comes in waves. Visualizing momentum through various



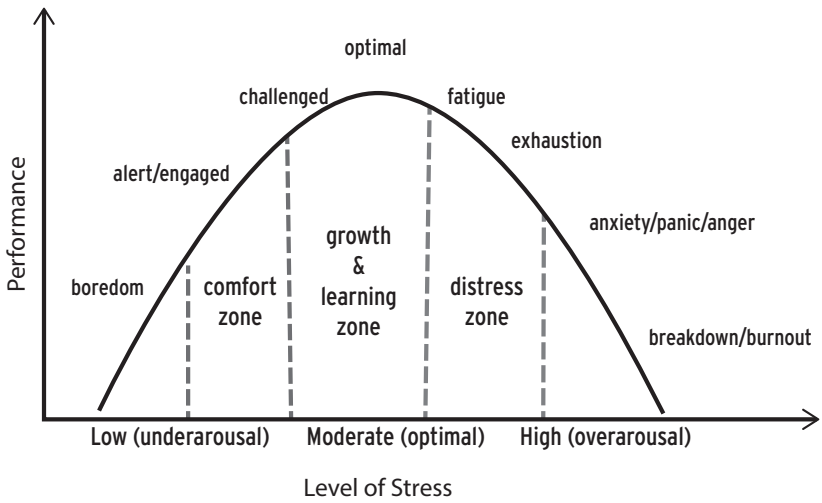
models, Coach Sue Semrau sees momentum as a sigmoid curve, and General Bernie Banks thinks about it as something analogous to how the Yerkes-Dodson curve depicts the relationship between arousal and performance.

In both of these models, successes punctuate, and momentum ebbs and flows.

We recognize momentum as a cycle—it can't and shouldn't be the constant goal. We aren't suggesting that if you get on a roll that it goes forever. The question is—how to make it go five plays longer, five minutes longer, one quarter longer.

Measuring Mo

To measure something, it first must be perceptible. While there's a range of how momentum is perceived, there's no doubt it can be felt. And people sure put their money where their Mo is.



Large-scale data studies have demonstrated that professional gamblers bet more on teams that they perceive as having momentum, and not just by a little bit. One study analyzed a high-frequency dataset of a major bookmaker in German football, and found that bettors stake about 40 percent more on teams that they believe have momentum versus those that just lost a game.

Even though this analysis also found no evidence that perceived momentum mattered on average for match outcomes, and didn't seem to be associated with the bookmaker offering more favorable odds, the perception of momentum nevertheless influenced betting behavior.

Another study, looking at sports betting in the NBA, similarly found the existence of a "momentum effect" in which gamblers incorporate beliefs about momentum into their bets. These studies illustrate that sports bettors trust momentum as a variable that matters to future outcomes but, at the same time, seem to overstate its influence relative to other factors.

Indeed, there's a spectrum of where people place Mo in terms of its relative influence on outcomes—sometimes depending on whether they're on the giving or receiving side of it.

In social psychology, there are various concepts relating to how, or what, people attribute successes or failures to. With attribution bias, people tend to explain others' behavior based on individual characteristics rather than considering external factors. For example—to assume that a person struggling to find employment is lazy rather than to believe that situations in that person's life have left them at a difficult disadvantage. The opposite concept, "self-serving bias," reverses these assumptions. Here a person may attribute their own successes to their personal characteristics or efforts rather than to the environment around them. To keep with the prior analogy, a young person who scores a high-paying job may attribute this hiring to

their own competence versus family connections to the company's leadership.

Sometimes, though, Mo can be felt even before an outcome happens—before the winning shot is scored or a battlefield captured. People self-report how they, or full crowds, seem to recognize momentum when it's just about to happen—not just as a retrospective explanation for a success but as a qualitative feeling as it's approaching.

How, then, can Mo be measured?

Finding the Right Indicators and Tools

The issue with momentum isn't an "I'll believe it when I see it" kind of thing. Because people do believe it exists and do believe they've seen it. Rather, the challenge is finding scientific tools that are sensitive enough to measure Mo in social contexts—such as in military, sports, business, or politics.

Unlike in a controlled physics experiment where mass and speed can be precisely measured, momentum in everyday life may lack clear, objective indicators.

While all instances of momentum involve motion, or a surge in progress, not all occurrences of progress are, in fact, momentum. We know that success isn't itself momentum. How much progress or how much success does it take for something to reach a threshold of being momentous? Is it a quantity of progress, or a feeling of it?

Questions like these, where the dependent variable itself is uncertain, can be uncomfortable in hard science, but not impossible. The scientific method requires investigators to disprove a hypothesis that an observed outcome is simply chance. In some studies, the dependent variable (outcome) and independent variables (factors that may influence it) are easy to measure and are highly distinct from one another.

Take, for example, a study on how light travels in different conditions. The null hypothesis could be something like "There's no difference in the speed of light in a vacuum and in water." Data would be collected by objective tools, and the null hypothesis would ultimately be rejected—after tests and retests, it would be shown that light does in fact travel at different speeds in different mediums.

Other questions involve some degree of subjectivity, such as in drug trials on the effectiveness of pain medication. For example, the "null hypothesis" may be that there's no difference in pain relief between drug A and a placebo. In a controlled trial, researchers may find that patients who took drug A and patients given a placebo look about the same, statistically, in terms of self-reported pain levels. In this case, the null hypothesis couldn't be rejected, and any differences in pain levels between treatment and placebo groups may be explained by mere chance.

Finally, there are questions that involve either huge numbers of variables, high levels of subjectivity, or both. That's where studies on momentum in social situations often fall. In a classic social experiment on momentum, researchers are tasked with disproving the assumption that a sustained surge in performance falls within a range that could be explained by chance.

Recently, a study by University of Wisconsin–Milwaukee professor Paul Roebber found evidence that momentum is real in football and can improve a team's chances of winning. His research defined momentum as a consistent change in win probability over at least three successive changes of possession. The results showed momentum streaks occur more often than random chance would predict. Roebber's study identified a physiological basis for momentum called the "winner effect," where success leads to increased testosterone and reduced stress hormones. This provides a biological explanation for how momentum could manifest.

These efforts, largely designed to prove the existence or influence of momentum, are a great starting point. But it's another set of questions that interests us the most: What are the differences between surging teams that win in overtime compared with the surging teams that don't? What separates organizations that are able to maintain momentum between quarters and those that can't? What types of communications between group members maximize cohesion and reduce friction—a top enemy of Mo?

We start with the premise that momentum exists and can be manipulated by intentional types of preparation and organizational structure, and we give the following definition:

> Momentum is a synergistic force that influences the progress, resilience, and focus of a team; and its impact on the mindset of a team—positively or negatively—can be manipulated and extended.

From here, this book explores research to inform leaders and teams about the elements that will amplify their chances of preparing for momentum, seizing the reins of a surge, and carrying it into sustained momentum.

That's what our model offers, and we look forward to going there with you.

3

Overview of the Momentum Model

The fabled social psychologist Kurt Lewin once said, "There is nothing so practical as a good theory." When leaders leverage rigorous models, frameworks, and theories, they can enhance their probability of generating a successful outcome because they think more holistically about their approach. A recent example of utilizing such an approach is Microsoft under Satya Nadella's stewardship.

Steve Ballmer served as the chief executive officer of Microsoft from 2000 to 2014. During his tenure, the company's revenue grew by 300 percent, and the profit rose by 200 percent. Yet the company's stock price was lower when he departed than when he took over. Why? Investors thought the company was overreliant on legacy products and resistant to championing emerging opportunities (for example, open-source computing and smartphones). Conversely, Apple's stock had risen from $50 to $500 during that same time frame. It was apparent to the Microsoft board that the company needed to generate positive momentum, and Satya Nadella was their choice to make it happen.

Nadella joined Microsoft in 1992 and rose through its ranks, ultimately serving as the executive vice president of the Cloud and Enterprise Group before it was announced on February 4, 2014, that he would become the company's third chief executive officer. In the years since then, Nadella and his team have executed a brilliant

strategic pivot that relied on generating positive innovation momentum through the firm while using some noted change frameworks.

A brief examination of Nadella's (and his team's) early years of repositioning the company reveals that they strongly adhered to John Kotter's and Kurt Lewin's celebrated change models and Edgar Schein's cultural change mechanisms. Most importantly, Nadella recognized the need to generate positive momentum and declared shortly after assuming the CEO role that it was time to "rediscover the soul of Microsoft, our reason for being."

Once he assumed the CEO role, Nadella immediately sought to establish a "sense of urgency" while "unfreezing" the organization. He "induced anxiety" by highlighting the changing technology landscape and why it was imperative to compete with cloud-first companies (for example, Google and Amazon). Nadella employed data to show the reality of Microsoft's situation while also emphasizing to the workforce that he was one of them. He undertook all the aforementioned actions in service of shocking people out of their comfort zone.

Two actions were emblematic of Nadella's commitment to building a core group of change leaders. First was his directive to invite the former CEOs and chief technology officers (CTOs) of every company Microsoft had acquired in 2013 to the organization's prized executive retreat (the executive retreat traditionally involved taking the top 150 leaders in the company to a luxurious off-site location for high-level discussions). The summit invitation was noteworthy because many individuals did not possess high enough role responsibility post-acquisition to qualify for attending the conclave. Furthermore, the managers of the invited group fell below the codified invitation qualification level! Nadella was challenging convention and culture in taking this approach. But he was committed to leveraging the different perspectives as a forcing function.

Second was the decision to conduct customer visits to a cross section of the company's accounts by senior leaders together. This edict, too, was unusual. There were many leaders who pushed back on the need to conduct such visits. An undercurrent of the resistance was rooted in the perspective that account leads had a good handle on how to best serve their customers. Thus, there was no need to bring leaders from across the company to conduct visits together. Yet, Nadella held people accountable for following through on his instruction. The ensuing interactions fostered more effective alignment among business units and revealed friction points that could be addressed through cultural modifications.

In the mid-1970s, Bill Gates had established the mission of Microsoft as "a computer on every desk and in every home." The reality in 2014 was that the company had effectively accomplished that mission in developed and industrialized countries. Consequently, the statement was no longer a driver of significant growth and innovation. Nadella understood the need to reimagine and "communicate the company's vision" as part of the effort to reestablish its momentum. Ultimately, Nadella's team landed on "to empower every person and every organization on the planet to achieve more" as the coalescing vision and started sharing it during customer visits and company gatherings.

The ability to unlock dormant organizational potential is highly correlated with "empowering others to act." Prior to Nadella's tenure, software development teams could not share code within the company. He quickly removed that restriction as an act of empowerment. Nadella also encouraged the company's employees to more intentionally explore emerging technologies regardless of their perceived linkage to Windows. He wanted to let great talent figure out how to make great things possible by loosening the restrictions placed on them.

The ability to generate momentum is aided by leveraging short-term wins that demonstrate tangible accomplishments. Nadella reduced some of the organization's anxiety regarding internal competition by eliminating the process that forced managers to designate a small percentage of their team as underperformers. He also moved to create partnerships with longtime competitors in service of expanding the company's product portfolio. Such actions heralded an "it's a new day" mentality that people perceived as positive momentum.

Finally, Nadella has continued to build upon the varied initiatives and sustain the change momentum while also actively modifying the company's culture. He's reorganized the company, tied executive bonuses to talent objectives, and instilled a "learn it all" set of norms. In doing so, the company's market capitalization has grown from approximately $300 billion in 2014 to $3.10 trillion in 2024! The explosion in market capitalization came in no small measure through the reinstallation and sustainment of momentum.

Just as Nadella created a model to make bold changes within Microsoft, we have distilled hundreds of interviews with leaders to create a model for teams and leaders hoping to ride the wave that momentum can provide. In this chapter, we'll share our model and give you a quick understanding of each element.

Why a Model and Not a Formula?

If you've picked up this book, it's likely you've read other texts relating to leadership, business theory, or team building. It's also likely you've seen guides that offer a "recipe for success" or a "blueprint for action" that promise leaders that if they follow a certain script, they can expect a certain result.

Indeed, that's what most formulas promise: You plug your own content in, and those inputs will generate an expected result.

In various fields of study, from mathematics and science to economics and engineering, the terms *formula* and *model* are frequently used. Although these terms might seem interchangeable at first glance—and often are in popular speech—they represent different concepts and serve distinct purposes in the analysis, interpretation, and understanding of complex systems.

Formulas are ubiquitous in science and engineering. In physics, for example, Newton's Second Law of Motion is expressed as $F = ma$ where F represents force, m represents mass, and a represents acceleration. This formula precisely quantifies how much force is needed to accelerate an object of a given mass. Formulas are typically more straightforward, focusing on a single relationship at a time.

In contrast, a model is fundamentally a simplified representation of a real-world system, process, or concept. It is a tool used to explain, predict, or understand how different components of a system interact with one another. Their primary purpose is to help practitioners make sense of complex phenomena by breaking them down into more manageable components.

For instance, in economics, a model might represent the relationship between supply and demand in a market. This model might include various factors such as price, consumer behavior, and production costs, all of which interact in complex ways. By simplifying these relationships into a model, economists can predict how changes in one variable, like a price increase, might affect the overall market.

No model is a perfect representation of reality; instead, it is a useful approximation that helps us navigate and make decisions in the real world.

Models provide the broad framework for understanding complex systems. They aren't plug-and-play like formulas are, and they are by design an overgeneralization that can be applied to multiple conditions.

Our model for momentum is just that.

In the early days of our research, through hundreds of hours of interviews, original surveys, and deep dives into the literature on team dynamics, we noticed a pattern emerging across various fields—whether in business, military operations, politics, or sports. Leaders and strategists in each domain faced similar challenges when it came to optimizing team performance, fostering a positive climate, and achieving their objectives. Despite the apparent differences in context, the underlying principles of effective teamwork and leadership seemed to be strikingly similar.

This observation led us to a question: Could there be a workable model that can be applied across these diverse domains, one that could adapt to teams of different natures, sizes, and structures? The resulting model is both flexible and robust, capable of addressing the unique demands of any context while maintaining a core set of principles that drive success.

But even a great model—one that explains performance in other teams and can drive success for your own—doesn't mean that if you do *a*, *b*, and *c*, you're guaranteed momentum. A good model allows you to start preparing yourself. A great model allows many people to create action.

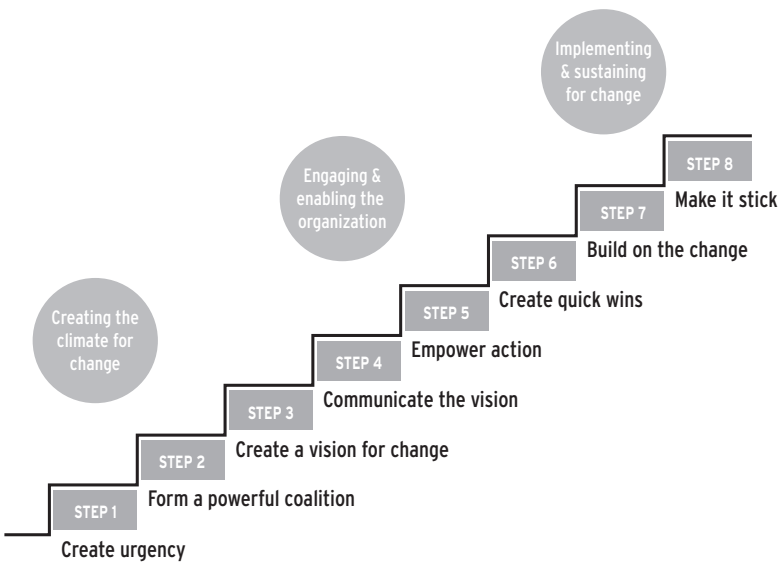
Formulas are great—for baking, chemists, and predicting the paths of physical objects in space. But formulas have their limits when it comes to human interactions and group dynamics. Rather, we look to models as our guide.

The story we shared about the transformation of Microsoft under Satya Nadella's leadership highlights a process of organizational renewal guided in part by leveraging John P. Kotter's research

and famed "8-step change model" from his 1995 management classic, *Leading Change*, and follow-up 2014 book, *Accelerate: Building Strategic Agility for a Faster Moving World*. Just as Kotter's model helped to guide Nadella's actions, it also informed our exploration of generating organizational momentum.

Our model of momentum draws on the flywheel concept in Jim Collins's *Good to Great*; it's a powerful conceptual model for how successful companies achieve sustained growth. Where Kotter's model is more linear—a set of eight steps that generally follow from one to the next—Collins's model is a bit more cyclical or dynamic, representing the cumulative effect of consistent effort and strategic decisions over time, which ultimately leads to a breakthrough.

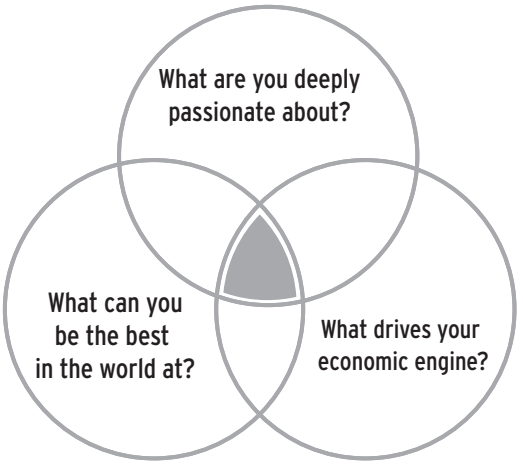
Kotter's 8 Step Change Model



Kotter's model starts with creating a sense of urgency, building a coalition, and forming strategic vision. From there, leadership would enlist a "volunteer army" and enable action by removing barriers to change. Finally, in Kotter's model, short-term wins would be generated and leveraged to sustain acceleration and, ultimately, institute more lasting change.

Collins's "flywheel" includes some similar elements, such as leadership curating a team of disciplined people who engage in disciplined thought and action. His model begins with the building of momentum, which he describes as the force that starts the flywheel spinning. Subsequently, Collins detailed a construct called the "Hedgehog Concept" to help people understand the optimal place to direct organizational energy as part of the flywheel process. The concept seeks to ensure actions are focused on operating at the intersection of three questions: (1) What are you deeply passionate about? (2) What can you be the best in the world at? and (3) What best drives your

The Hedgehog Concept



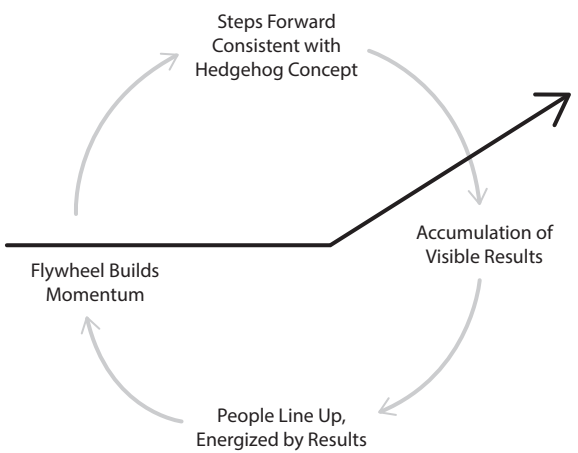
economic or resource engine? Adhering to the Hedgehog Concept generates the energy to move the flywheel. It can require immense effort to get this started, but with consistent effort, you can ultimately reach a "breakthrough point" where the wheel moves more on its own—with its own momentum.

Our model of momentum shares elements of both Kotter's and Collins's ideas: a sequence of events that includes a series of inputs that repeat, feeding progress. In other words, our model is both linear and cyclical, and it could be seen as a precursor or prequel to Collins's flywheel—a model that zooms in on what it takes to get element one—momentum—started.

A Model for Momentum

Just as Jim Collins and John Kotter have provided foundational frameworks in the fields of leadership and organizational change, our

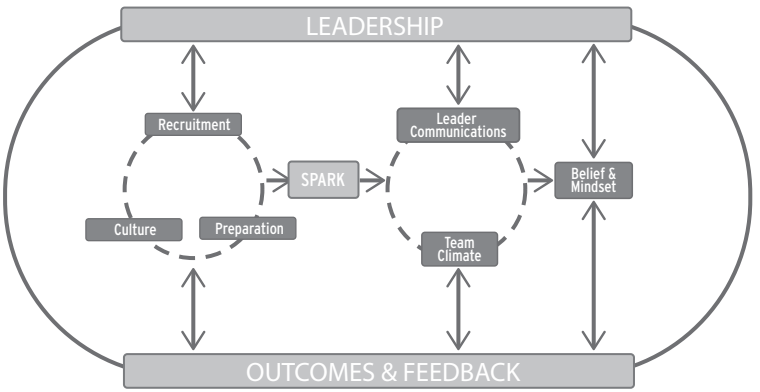
The Flywheel Concept by Jim Collins



research has led to the creation of a comprehensive model for understanding and generating momentum within teams and organizations. Through extensive interviews, rigorous data analysis, and a thorough review of the existing literature, we have identified nine interconnected elements that are crucial for optimizing momentum: leadership, culture, recruitment, preparation, spark, leader communications, team climate, belief and mindset, and outcomes and feedback. These elements not only work together to maximize the positive effects of momentum but can also serve as tools for reversing its downturn when an organization finds itself struggling. Each of these factors will be explored in depth in the following chapters, providing you with actionable insights and strategies.

Before diving into the specific chapters, we want to give you a clear overview of how these components interact and reinforce one another. By considering how they show up in your own organization, you can begin to assess where the sparks of momentum may emerge and how you can harness them to drive sustained success. Momentum

Our Model Of Momentum



isn't simply about capitalizing on favorable moments—it's about understanding how to prepare for them, actively create them, shape them, and even work against them when things seem to be going against your team.

LEADERSHIP

> "A leader takes people where they want to go. A great leader takes people where they don't necessarily want to go but ought to be."
>
> —ROSALYNN CARTER

For the purposes of this model, the focus is on the action leaders take across multiple domains in service of effectively building upon moments. Leadership is a phenomenon examined at the individual, group, and organizational levels of analysis. Countless people have sought to codify the knowledge, skills, and attributes associated with effective leaders.

In the following chapter, you'll hear from renowned leaders we interviewed for this book, including General David Petraeus, sharing both theoretical and tactical tips for structuring leadership in a way that maximizes impact on every other element of this model: Leaders recruit; leaders shape culture; leaders drive preparation and the ability for team members to recognize both the various forms and shapes of spark; leaders communicate with teams to take action when it happens; leaders set the tone for team climate; and leaders foster beliefs and mindsets. Finally, leaders provide and accept feedback from major and passing outcomes, processing these inputs and using them to inform the next actions—the next recruitments, preparations, communications, and more.

CULTURE

> "The only thing of real importance that leaders do is to create and manage culture. If you do not manage culture, it manages you, and you may not even be aware of the extent to which this is happening."
>
> —EDGAR SCHEIN

In "The Leader's Guide to Corporate Culture," Boris Groysberg, Jeremiah Lee, Jesse Price, and J. Yo-Jud Cheng characterized culture as "an organization's tacit social order that shapes attitudes and behaviors in a lasting way." Edgar Schein's key article "Issues in Understanding and Changing Culture" defined culture as a "pattern of basic assumptions—invented, discovered, or developed by a given group as it learns to cope with its problems, external adaptation, and internal integration—that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." Said in the most basic of ways, culture is all about the norms, values, and shared beliefs that guide the behavior of people in a social group.

In the culture chapter, you will take lessons from our interview with Coach Steve Kerr and others to gain insights about what types of organizational norms and behaviors support the generation of positive momentum and reversal of negative momentum. Creating an effective culture is the responsibility of organizational leaders, because culture's proper role is to facilitate an entity's ability to execute its desired strategy in an efficient and effective manner. Therefore, leaders must always examine the question "What is the culture we require in order to do the things we desire?"

RECRUITMENT

For a team to seize momentum, it requires that nearly all the team members are willing to do what is best for the team. Team success must be a higher priority than individual success. A culture of "We" as opposed to "I" is essential in this pursuit.

In the recruitment chapter, you'll be given the opportunity to identify which elements, or qualities in individuals, may maximize an organization's chances to set the stage for momentum to occur or be enhanced. We will discuss the elements of team building across our four pillars, and will conclude with a discussion of interpersonal dynamics and potential assessment tools that can aid in identifying and recruiting "team players" and developing a "momentum culture."

You'll also hear from our original interviews with a handful of leaders in sports, government administration, and business—including renowned basketball coach Sue Semrau, manager and World Series winner David Ross, Veterans Administration leader and CEO Bob McDonald, and FanDuel CEO Amy Howe. While recruitment, culture, and preparation all share space on a wheel, which lacks hierarchy, there's a reason why we place recruitment on the top of the circle.

PREPARATION

Preparation may be the most widely studied and acknowledged input for success: John Wooden, Vince Lombardi, Peter Drucker, Jim Collins, and many others have popularized the deep importance of preparation and practice for success. But in our model, preparation means something more: being prepared not only to perform your role optimally but to spot and react to momentum, to sparks.

Specifically, how does one prepare to seize a moment?

If you're only reacting to momentum once it's happening, you're already at a disadvantage—whether you're on the positive or negative side of the phenomenon. Spotting Mo—and the spark(s) that precedes it—isn't just about predicting game outcomes or enjoying the thrill of those moments. The ability to spot Mo is essential for individuals and teams in order to capitalize on momentum.

Here, you'll read from our conversations with Nvidia cofounder Chris Malachowsky, Coach Buzz Williams, and famed political consultants James Carville and John McLaughlin to explore the elements necessary to prepare for and generate momentum before the surge begins, and lay the groundwork to make yourself receptive to the mental and physical processes triggered by a realization of momentum.

SPARK

> "Momentum doesn't exist until you get that first victory. Before that, it's just motivation."
>
> —JOHN MAXWELL

Victories aren't always ultimate wins. In the military context, there are battles, and they may be a long way from determining the outcome of the war. Momentum is not static. Momentum is, by its very definition, movement. Sparks can initiate the movement if the right team has been recruited, they are communicating, and they are prepared.

In this chapter, we continue our conversation with Nvidia's Chris Malachowsky and others to define and flesh out the various forms of spark that exist and that can be leveraged. In every competition there will be moments of opportunity—though sometimes it's a matter of knowing what to look for. An improperly prepared team may miss a spark entirely or fail to react to it. Then the moment is gone. In sports,

they call these "sudden change situations." These are events that must be responded to immediately, such as an interception or fumble. In politics, we've all seen squandered opportunities for a candidate to react or respond to events or opponents' foibles. In business, one of the most certain ways to fail to capture a spark is to assign a committee to evaluate an issue rather than taking decisive action.

You'll get a feel for the various shapes, sizes, and feels of spark—and through this, become equipped to spot it . . . and, better yet, to act upon it with your team.

LEADER COMMUNICATIONS

A spark has happened! The catalyst—the opportunity a team has waited for—is at hand. What now? This chapter explores the instrumental role of coaches, CEOs, and other leaders who have prepared their teams for momentum and then must communicate to teams that *this* is the moment. You'll learn from our conversations with General David Petraeus, Blue Cross CEO Pat Geraghty, and prolific tech exec Rohan Chandran about tools that can be developed and deployed to maximize how your teams respond to sparks and leader inputs, and you'll be given a concrete guide for how to navigate dynamics where multiple leaders must communicate in concert.

TEAM CLIMATE

> "Trust comes from intimacy, and the leader has got to build that intimacy, and then you've got to develop these quick wins."
>
> —BOB MCDONALD

Transference of energy is one of the key properties of creating momentum. It is also the secret to building momentum within a team. But how does this process happen? Here, you'll explore multiple phenomena including imitation, mirroring, and "emotional contagion" between members of an organization or team.

This chapter also incorporates what we've learned from interviews with WD-40 CEO Garry Ridge and neuroscientist Marco Iacoboni on the role of intrateam competition and other related dynamics, and you'll get your hands on practical tips from leaders in diverse fields on ways to strengthen connections between members of a team.

BELIEF AND MINDSET

Beliefs are what individuals and organizations hold to be true. Mindsets are ways of thinking or relating to these shared beliefs. At the very least, belief and mindset are complementary concepts, but when it comes to manipulating momentum, our model suggests that both are essential. Members of a team can believe that momentum is real. But if they don't share a common mindset or ethos of how to approach momentum, opportunities will quickly be lost.

This chapter, with insights from our discussions with basketball coach Cori Close, researcher John Hollenbeck, and neuroscientist Jaime Pineda, dives deep into how the mind processes information

and, in turn, shapes behavior, performance, and outcomes. Through scientific evidence and anecdotal exploration, you'll examine how shared belief systems, and shared mindsets, can be developed and fine-tuned to perceive signals of momentum and enhance a team's ability to cohesively respond.

OUTCOMES AND FEEDBACK

An essential factor in generating or maintaining Mo relates to feedback. Feedback is a widely studied topic in psychological research, and it is among the most relatable concepts for people when thinking about their own life experiences. When it comes to momentum, this body of literature has significant application. You'll be given broad context for understanding how feedback works in various settings, and more specifically, how positive feedback fuels the process of momentum.

Through our interview with Blue Angels commander Alexander Armatas and a deep review of the feedback science, you'll learn how to observe feedback in your own organizations, and how to create new channels for receiving and responding to feedback in ways that can generate and sustain team momentum.