THE BIG IDEAS

Combinatorial Explosion
Incalculable potency.

Purposeful Practice
Streeeeettttttccchhhhhhh.

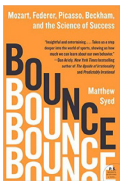
1 Million Balls
The logic + math of excellence.

The Iceberg Illusion
And chess prodigies.

Sparks —> Sustaining
Need a growth mindset.

Doublethink
Rational + irrational <— hold both.

EVERYONE
Has the capacity for excellence.



Bounce

Mozart, Federer, Picasso, Beckham, and the Science of Success

BY MATTHEW SYED · HARPER PERENNIAL © 2011 · 336 PAGES

"Now think about how often you have heard people dismiss their own potential with statements like 'I am not a natural linguist' or 'I don't have the brain for numbers' or 'I lack the coordination for sports.' Where is the evidence for such pessimism? Often it is based upon nothing more than a few weeks or a few months of halfhearted effort. What the science is telling us is that *many thousands of hours of practice* are necessary to break into the realm of excellence.

Before going on, it's worth emphasizing something about the upcoming chapters: the truth of the arguments will have urgent implications for the way we choose to live our lives. If we believe that attaining excellence hinges on talent, we are likely to give up if we show insufficient early promise. And this will be perfectly rational, given the premise.

If, on the other hand, we believe that talent is not (or only marginally) implicated in our future achievements, we are likely to persevere. Moreover, we will be inclined to move heaven and earth to get the right opportunities for ourselves and our families: the right teacher, access to decent facilities; the entire coalition of factors that lead us to the top. And, if we are right, we *will eventually excel*. What we decide about the nature of talent, then, could scarcely be more important."

~ Matthew Syed from *Bounce*

" But there is a catch: you can purchase access to this prime neural real estate only by building up a bank deposit of thousands of hours of purposeful practice. That, if you like, is the price of excellence."

~ Matthew Syed

What do you think about excellence?

Do you think it's primarily driven by natural, inborn talent? Or, do you think that it's primarily driven by effort?

It's a very important decision that has a broad impact on how we show up. So, let's choose wisely. (Hint: Think: EFFORT!!)

Matthew Syed is a brilliant, award-winning writer who also happens to be a former Olympic table-tennis player—the top-ranked English player for a decade.

He brings his big brain and high-level sports experience to this book, helping us understand, as the sub-title suggests, *"Mozart, Federer, Picasso, Beckham, and the Science of Success."*

It's a fascinating, quick-reading look at how greatness really grows. I read it in a day (after finishing Syed's newest book *Black Box Thinking* the day before) and, if you're into this sort of thing, I think you'll love it. (Get the book here.)

The book is packed with Big Ideas and I'm excited to share some of my favorites we can apply TODAY so let's jump straight in!

COMBINATORIAL EXPLOSION

"The best way to explain the strange power of combinatorial explosion is to imagine folding a piece of paper in two, making the paper twice as thick. Now repeat the process a hundred times. How thick is the paper now? Most people tend to guess in the range of a few inches to a few yards. In fact the thickness would stretch eight hundred thousand billion times the distance from Earth to the sun."

Combinatorial explosion.

It's similar to the final Big Idea we explored in *Black Box Thinking* in which we looked at the incalculable potency of the evolutionary mechanism: *"Throughout the book we have looked at other techniques such as marginal gains and the lean start-up. But the point about all these methods is that they harness the incalculable potency of the evolutionary mechanism. Providing they are used with an eye to context, and are fused with a growth-oriented mindset, they set the stage for an endlessly powerful process: cumulative adaptation."*

This is the essence of how extraordinary performance grows: through a rigorous, vigorous, total immersion in a field that leads to tiny improvements compounded over an extended period of time and voilà! Greatness.

That's VERY different than the notion that magic fairy dust is sprinkled on a baby and voilà! Greatness.

And, that's very exciting for us because, whether we aspire to world-class performance or simply aspire to create a little more happiness in our lives, we CAN do it via our diligent, patient, persistent efforts. Let's explore some key Ideas on *how* to do it!

PURPOSEFUL PRACTICE

" Excellence is about stepping outside the comfort zone, training with a spirit of endeavor, and accepting the inevitability of trials and tribulations. Progress is built, in effect, upon the foundations of necessary failure. That is the essential paradox of expert performance."

~ Matthew Syed

"'When most people practice, they focus on the things they can do effortlessly,' Ericsson has said. 'Expert practice is different. It entails considerable, specific, and sustained efforts to do something you can't do well—or even at all. Research across domains shows that it is only by working at what you can't do that you turn into the expert you want to become.'

Ericsson calls it 'deliberate practice,' to distinguish it from what most of the rest of us get up to. I am going to call it *purposeful practice*. Why? Because the practice sessions of aspiring champions have a specific and never-changing purpose: progress. Every second of every minute of every hour, the goal is to extend one's mind and body, to push oneself beyond the outer limits of one's capacities, to engage so deeply in the task that one leaves the training session, literally, a changed person."

Call it deliberate practice or purposeful practice (or whatever you'd like!).

The key?

We need to stretch ourselves beyond our current abilities and remember the fact that *"It is only by working at what you can't do that you turn into the expert you want to become."*

We touch on this in all the related Notes. In *The Rise of Superman*, Steven Kotler tells us the magic number is 4%: *"And that brings us back to the 'challenge/skill ratio,' the last of our internal flow triggers, and arguably the most important. The idea behind this trigger is that attention is most engaged (i.e., in the now) when there's a very specific relationship between the difficulty of a task and our ability to perform that task. If the challenge is too great, fear swamps the system. If the challenge is too easy, we stop paying attention. Flow appears near the emotional midpoint between boredom and anxiety, in what scientists call the flow channel—the spot where the task is hard enough to make us stretch but not hard enough to make us snap.*

How hard is that? Answers vary, but the general thinking is about 4 percent. That's it. That's the sweet spot. If you want to trigger flow, the challenge should be 4 percent greater than the skills. In technical terms, the sweet spot is the end result of what's known as the Yerkes-Dodson law— the fact that increased stress leads to increased performance up to a certain intensity, beyond which performance levels off or declines. In real-world terms, it's not much at all."

In *The Mindful Athlete,* George Mumford tells us *"Moving out of your comfort zone through experiencing eustress is a continuous incremental process of romancing your discomfort zone. It's not like you get to a certain level and then stay there. Things are always either going forward or backward; they're not staying static. If you are comfortable where you are and you just want to stay comfortable, that's fine, but that isn't the way to pursue excellence and wisdom."*

Syed tells us: "World-class performance comes by striving for a target just out of reach, but with a vivid awareness of how the gap might be breached. Over time, through constant repetition and deep concentration, the gap will disappear, only for a new target to be created, just out of reach once again."

Are YOU stretching?

How can you stretch a little more *today*?!

" Beckham concurs.' My secret is practice,' he said. ' I have always believed that if you want to achieve anything special in life you have to work, work, and then work some more.'"

~ Matthew Syed

LOGIC + MATH + ONE MILLION BALLS

"The arduous logic of sporting success has perhaps been most eloquently articulated by Andre Agassi. Reliving his early years in tennis in his autobiography *Open*, he wrote: 'My father says that if I hit 2,500 balls each day, I'll hit 17,500 balls each week, and at the end of one year, I'll have hit nearly one million balls. He believes in math. Numbers, he says, don't lie. A child who hits one million balls each year will be unbeatable.'

What does all this tell us? It tells us that if you want to bend it like Beckham or fade it like Tiger, you have to work like crazy, regardless of your genes, background, creed, or color. There is no shortcut, even if child prodigies bewitch us into thinking there is."

1 MILLION balls. Accumulated day in and day out one shot at a time.

Pause for a moment and think about that.

Reminds me of Mumford from *The Mindful Athlete*: *"Every high-performing mindful athlete knows that if you want to achieve something, there's a good chance that you can, no matter what, if—and this is a big if—you're willing to pay the price. You not only have to focus on your intention, but you also have to be willing to get up early in the morning and do the same thing thousands and thousands of times—and then another thousand times—with intention. Which leads me to deliberate practice. ...*

When I worked with Kobe Bryant, he was making about thirteen hundred three-pointers a day in the off-season when he was working on his three-point shot."

I *love* the math of practice.

Repetition. Repetition. Repetition.Whether we want to master tennis or optimal living, it's ALL about repetition.

As Dan Coyle tells us in *The Little Book of Talent* (see Notes): *"Repetition has a bad reputation. We tend to think of it as dull and uninspiring. But this perception is titanically wrong. Repetition is the single most powerful lever we have to improve skills, because it uses the built-in mechanism for making the wires of our brains faster and more accurate."*

How's YOUR practice? What can you put a few more reps into?

CHESS PRODIGIES + THE ICEBERG ILLUSION

" The illusion of talent arises because we only see a tiny proportion of the work that goes into the construction of virtuosity. If we were to examine the incalculable hours of practice, the thousands of baby steps taken by world-class performers to get to the top, the skills would not seem quite so mystical, or so inborn."

~ Matthew Syed

"The tale of the Polgar sisters provides scintillating evidence for the practice theory of excellence. Polgar had publicly declared that his yet-to-be-born children would become world-beaters—setting himself up for a fall in the time-honored tradition of science—and had been proved right. His girls lived up to the prebirth hype and thensome.

Note, also, the public reaction to the girls' success. When Susan stormed to victory in a local competition at the age of five, everyone present was convinced that this was a consequence of unique talent. She was described by the local newspaper as a prodigy, and Polgar remembers being congratulated by another parent on having a daughter with such amazing talent. 'That is not something my little Olga could do,' the parent said.

But this is the iceberg illusion: onlookers took the performance to be the consequence of special abilities because they had witnessed only a tiny percentage of the activity that had gone into its making. As Polgar puts it: 'If they had seen the painfully slow progress, the inch-by-inch improvements, they would not have been so quick to call Susan a prodigy.'"

Laszlo Polgar is a FASCINATING human being.

Syed tells us that Laszlo was one of the earliest advocates of the practice theory of expertise. As an educational psychologist in communist Hungary, he found a woman from the Ukraine who was excited to help him run a grand experiment: to see if they could deliberately create a prodigy!!

The domain? Chess.

Although he was only a hobby player and his wife had no background in the game, they figured it was perfect because the chess ranking system provided such an objective measure of excellence to test his theory. You were either the best or you weren't.

Enter three girls—each trained rigorously in the game.

And, enter absolute WORLD-DOMINATION. (Hah.)

The oldest, Susan, became the top-rated female player in the world. And the first woman EVER to become a grandmaster.

The middle sister, Sofia, was also a young champion and once won eight straight games against many of the world's greatest male players (which one chess expert ranked as a top 5 moment in chess history).

The youngest sister, Judit, became the youngest grandmaster EVER (male or female). She's been the top-ranked female player in the world for a decade (minus the time she had a son—during which time her sister took her spot). Syed tells us she is universally considered the greatest female player ever.

How's that for a test of the practice theory of excellence/greatness? :)

That's Part 1. Part 2? The Iceberg Illusion.

As Laszlo's 5-year-old daughter was winning all her games in her first match against older players, the other parents could only see the tip of the iceberg—her performance that day—and thought, *"Wow! A natural genius!! REMARKABLE! How lucky!"*

What they missed was the enormous amount of effort that went on under the surface. It wasn't natural talent. It was a TON of systematic, deliberate/purposeful practice.

So, the next time you see someone performing in a mesmerizingly awesome way, remember you're just seeing the tip of the iceberg. Look a littler deeper and you'll see that tip is connected to a HUGE base of practice.

P.S. This story parallels Mozart's genius. As we've discussed before, his father *literally* wrote the book on how to teach kids music. Young Mozart dazzled at a super-young age. Iceberg! AND... He put in more practice time before he was ten than we can possibly imagine.

P.P.S. Syed tells us the parallel stories of Tiger Woods and the Williams sisters as well. He jokes that Tiger put in more practice time by the age of five than most golfers *ever* put in.

SPARKS + GROWTH MINDSETS

"A growth mind-set is perfectly suited to the achievement of excellence; a fixed mind-set, to the achievement of mediocrity. Even if the sparks that ignite us are sometimes enigmatic, lost in the deep and unfathomable mysteries of the mind, one thing is certain: if your chosen destination is within the domain of excellence, you'd better have a growth mind-set. Why? Because a spark ignited within a fixed mind-set is likely to be extinguished at the first sign of failure."

It's one thing to get a spark of inspiration. It's an *entirely* different thing to SUSTAIN that inspiration through the inevitable ups and downs and repeated failures on the journey.

Here's what we need to know: You simply can't do that with a fixed mindset. P.E.R.I.O.D. We must (!) have a growth mindset. We must KNOW that we can get better and that the only way we will is if we lean into our fears and failures and approach it all like the experimenter we talk about all the time. (See Notes on Carol Dweck's *Mindset* for more.)

For now: How's *your* mindset? What can you do to optimize it?

DOUBLETHINK IN ACTION

"Anyone who has read George Orwell's *1984* will find this idea curiously familiar. In that remarkably perceptive novel, Orwell introduces the term *doublethink*, which he describes as follows:

> *Doublethink* means the power of holding two contradictory beliefs in one's mind simultaneously, and accepting both of them . . [T]o forget any fact that has become inconvenient, and then, when it becomes necessary again, to draw it back from oblivion for just so long as it is needed . . . all this is indispensably necessary.

At the time of publication of *1984*, many critics argued that doublethink was psychologically implausible, but it is, in fact, commonplace. Doublethink is essential to the success of leading athletes and other top performers. ...

Nick Faldo, the six-time major winner, made precisely this point when I interviewed him at the Open Championship in 2008. 'You have to be very calculating in selecting the right shot,' he said. 'You have to make a decision based upon a realistic assessment of your own weaknesses and the scope of failure. But once you have committed to your decision, you have to flick the mental switch and execute the shot as if there was never any doubt that you would nail it.'

This is doublethink in action."

Doublethink.

The ability to hold two contradictory beliefs in your mind simultaneously while accepting both of them AND knowing when to bring the right one to the surface while casting the other aside.

Syed tells us great performers can think uber-rationally about the right course of action AND once they've decided, they can think uber-irrationally-optimistically that success is #done.

Reminds me of Nassim Taleb's *Antifragile* barbell strategy (see Micro Class) where we're simultaneously super conservative AND super aggressive.

Doublethinking. Although not easy to do, it's a skill worth building.

EVERYONE HAS THE CAPACITY FOR EXCELLENCE

"The talent theory of expertise is not merely flawed in theory; it is insidious in practice, robbing individuals and institutions of the motivation to change themselves and society."

~ Matthew Syed

"He [Laszlo Polgar] was not, of course, suggesting that all children should be put through ten thousand hours of rigorous, highly specific training before their sixteenth birthday; rather, he was saying that the application of purposeful practice, even in a modest way, can enable countless individuals to realize untapped potential. He was suggesting that everyone has the capacity for excellence, with the right opportunities and training."

Back to our friend Laszlo here to re-state an important point. When I share the whole 10,000-hours-to-world-class-awesome stories, I often get one of two types of responses.

The first from the (usually) young and (always) uber-ambitious: *"YES!!! LET'S DO THIS!!!"* And, the second, from the (usually a little/lot) older and (usually) not-quite-as-let's-do-this-ambitious: *"Really? 10,000 hours? Seriously? Um... Hmmm...."* (Hah.)

So, I love the distinction Syed makes here. The point of the Polgar sisters (and all of our incessant chat about practice) is NOT that we can/should all put ourselves or our children through super-crazy-awesome training regimens to become the next big world-beating thing. (Unless that's your thing, of course.)

It's to remember the SCIENTIFIC FACT that excellence is cultivated via attention and deliberate, consistent practice over an extended period of time. That's EXHILARATING because we can ALL achieve a deeper level of mastery in *whatever* we commit our energy to—whether that's creating a better relationship or a little more meaning or fill-in-the-blank-aspiration.

So, here's to cultivating excellence in whatever style floats your boat as we Bounce our ways to optimizing and actualizing! :)

Brian Johnson,
Chief Philosopher

If you liked this Note, you'll probably like…

- Black Box Thinking
- Talent Is Overrated
- Mindset
- The Talent Code
- The Little Book of Talent

About the Author of "Bounce"

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Brian Johnson loves helping people optimize their lives as he studies, embodies and teaches the fundamentals of optimal living—integrating ancient wisdom + modern science + common sense + virtue + mastery + fun. Learn more and optimize your life at brianjohnson.me.