

## THE BIG IDEAS

### It's All About the Myelin

The secret sauce to awesomeness.

### Deep Practice

How deeply are you practicing?

### Deep Practice Q & A

Get the low-down.

### Muscles & Myelin

Time to grow!

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vs. Working hard.

### Michelangelo & Myelin

Hammering away.

### Baby Steps

The royal road to skill.

### Ignition & 4-Minute Miles

Are you ignited?

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It's hard work.

### Toyota's Kaizen

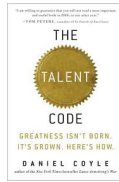
= Corporate deep practice.

### Action, Action, Action

Neurosis is a fancy word for whining.

*"I have always maintained that excepting fools, men did not differ much in intellect, only in zeal and hard work."*

~ Charles Darwin



# The Talent Code

Greatness Isn't Born. It's Grown. Here's How.

BY DANIEL COYLE · A BANTAM BOOK © 2009 · 246 PAGES

"The idea that all skills grow by the same cellular mechanism seems strange and surprising because the skills are so dazzlingly varied. But then again, all of this planet's variety is built from shared, adaptive mechanism; evolution could have it no other way. Redwoods differ from roses but both grow through photosynthesis. Elephants differ from amoebas but both use the same cellular mechanism to convert food into energy. Tennis players, singers, and painters don't seem to have much in common but they all get better by gradually improving timing and speed and accuracy, by honing neural circuitry, by obeying the rules of the talent code—in short, by growing more myelin."

~ Daniel Coyle from *The Talent Code*

The sub-title of *The Talent Code* says it all: "*Greatness Isn't Born. It's Grown. Here's How.*"

Fact is, Michael Jordan and Michelangelo weren't *born* great. They *created* their greatness.

In this book, [Daniel Coyle](#) gives us a brilliant, fun, inspiring look at precisely *how* extraordinary performers became so extraordinary.

And, more importantly, how we can shape our own destinies (and that of our kids and loved ones and communities) through rockin' the three basic elements of the talent code: deep practice, ignition, and master coaching.

The book's extremely well-written and is packed with great stories and Big Ideas. I highly recommend it if you're interested in tapping into your ultimate potential. I'm excited to share some of my favorite goodness with you in this Note.

But, first, let's start with a look at what makes it all come together: the microscopic substance called myelin.

## IT'S ALL ABOUT THE MYELIN

"The talent code is built on a revolutionary scientific discovery involving a neural insulator called myelin, which some neurologists now consider to be the holy grail of acquiring skill. Here's why. Every human skill, whether it's playing baseball or playing Bach, is created by chains of nerve fibers carrying a tiny electrical impulse—basically, a signal traveling through a circuit. Myelin's vital role is to wrap those nerve fibers the same way that rubber insulation wraps a copper wire, making the signal stronger and faster by preventing the electrical impulses from leaking out. When we fire our circuits the right way—when we practice swinging that bat or playing that note—our myelin responds by wrapping layers of insulation around the neural circuit, each new layer adding a bit more skill and speed. The thicker the myelin gets, the better it insulates, and the faster and more accurate our movements and thoughts become."

Myelin. Myelin. Myelin.

It's the secret sauce to awesomeness.

And the book is all about helping us understand what goes into its creation.

So, how do we develop this myelin goodness?

## DEEP PRACTICE

*"To sum up: it's time to rewrite the maxim that practice makes perfect. The truth is, practice makes myelin, and myelin makes perfect."*

~ Daniel Coyle

"Deep practice is built on a paradox: struggling in certain targeted ways—operating at the edges of your ability, where you make mistakes—makes you smarter. Or to put it a slightly different way, experiences where you're forced to slow down, make errors, and correct them—as you would if you were walking up an ice-covered hill, slipping and stumbling as you go—end up making you swift and graceful without you realizing it."

Learning and mastery is all about engaging in activities that challenge us and move us out of our comfort zone—not \*so\* much that we're out of control, but enough so that we're stretching as we master a new skill. (Think of [Tal Ben-Shahar](#)'s comfort-stretch-panic model we talk about in the Note on [Happier](#), for example.)

Deep practice. THAT's where it's at.

Unfortunately, most of us don't like to do things that don't come to us easily.

*Especially* with the New-Agey side of self-development, where there's this odd allergy to hard work. It's as if things have to effortlessly (and *immediately*) "manifest" for us or we must not be aligned with some magical force and therefore should give up. (Weird.)

Fact is, as Robert Bjork, the chair of psychology at UCLA tells us: "*We think of effortless performance as desirable, but it's really a terrible way to learn.*"

I like to think of it this way: Effortless *performance* is breath-taking to watch. But a master only gets to that point through effortful, challenging, deep practice.

How 'bout you? Are *you* challenging yourself in your life?

Whether that means practicing being more authentic in your conversations or stretching yourself creatively, let's put in some more deep practice!!

## SOME DEEP PRACTICE Q & A

*"As Dr. George Bartzokis, a UCLA neurologist and myelin researcher, put it: "All skills, all language, all musical, all movements, are made of living circuits, and all circuits grow according to certain rules.""*

~ Daniel Coyle

**Q:** Why is targeted, mistake-focused practice so effective?

**A:** Because the best way to build a good circuit is to fire it, attend to mistakes, then fire it again, over and over. Struggle is not an option. It's a biological requirement.

**Q:** Why are passion and persistence key ingredients of talent?

**A:** Because wrapping myelin around a big circuit requires energy and time. If you don't love it, you'll never work hard enough to be great.

**Q:** What's the best way to get to Carnegie Hall?

**A:** Go straight down Myelin Street."

Love this line: "*Struggle is not an option. It's a biological requirement.*"

Just as muscles are only developed through what's known as the training effect (where you "overload" your muscles, which "overcompensate" and make you stronger over time), myelination (and therefore skill development), only occurs when we put ourselves at our current edge of competence and put in the deliberate, deep practice.

So, if you're looking to reach the top of your field, remember the path is clear: Head straight down Myelin Street. :)

*"Skill is insulation that wraps neural circuits and grows according to certain signals."*

~ Daniel Coyle

## MUSCLES & MYELIN

"On one level, the study of myelin sounds like an exotic new neuroscience. But on another level, myelin is similar to another evolution-built mechanism you use every day: muscles. If you use your muscles a certain way—by trying hard to lift things you can barely lift—those muscles will respond by getting stronger. If you fire your skill circuits the right way—by trying hard to do things you can barely do, in deep practice—then your skill circuits will respond by getting faster and more fluent."

Love that. We just mentioned "the training effect" and have talked about it a few times throughout these Notes, but it's a Big Idea worth repeating—especially as we wrap our brains around this whole myelination thing—so let's take a quick peek again.

The essence: If you want stronger muscles, first you've gotta "Overload" them—you need to lift more weight or run a little faster/further than you're currently comfortable lifting/running. Not TOO much or you'll injure yourself, but a bit out of your comfort zone and into your stretch zone so you're challenged and properly *overloaded*.

Now, your body doesn't like to get it's butt kicked and it basically says, "OK. Apparently you want me to be able to lift that weight/run that mile. Got it. We'll get to work to make sure next time it's easier for you."

That response is called "Overcompensating." Your body *overcompensates* to the demands you just put on it by strengthening your muscles/heart/lungs/whatever needs to be stronger for you to perform at your new level.

This training effect process of overloading and overcompensating is basically how ALL growth occurs—from muscles to myelin.

And, it shows up in all aspects of our lives—from the gym where we're getting stronger, the office where we're developing a strategy for our business and the dining room where we're having more loving, authentic conversations with our family.

So, here's to embracing the training effect in all aspects of our lives! :)

## COSMIC DICE & WORKING HARD

"For the last few hundred years, Western culture has understood and explained talent using the idea of unique identity—the tumble of cosmic dice that makes everyone different, and a few lucky people special. According to that way of thinking, the Brontës and the Z-Boys succeeded because they were exceptional—mysteriously gifted outsiders, destiny-kissed Kids from Nowhere. Seen through the lens of deep practice, however, the story flips. Uniqueness still matters, but its significance resides in the way the Brontës and the Z-Boys do the things necessary to build their remarkable skills: firing the right signals, honing circuits, making tiny books and filling them with childish stories, searching out empty swimming pools so that they can spend hours riding and falling inside them. The truth is, plenty of other Yorkshire girls had lives just as parochial and constricted as the Brontës', just as plenty of other Los Angeles kids were as edgy and cool as the Z-Boys. But myelin doesn't care who you are. It only cares about what you do."

One of the main ideas of this book and the others that are dispelling the myth that genius is made not born, is the fact (yes, it's a fact), that when you scratch the surface of the great people we admire, you see an EXTRAORDINARY amount of effort put into their craft.

The Brontë sisters, for example, wrote an \*incredible\* number of stories growing up—constantly "practicing" what would become their trade.

Let's look at another brilliant guy who most people think was born a genius: Michelangelo.

*"They each took part in the greatest work of art anyone can construct: the architecture of their own talent."*

~ Daniel Coyle

*"Education is not the filling of a pot but the lighting of a fire."*

~ W.B. Yeats

*"A teacher is one who makes himself progressively unnecessary."*

~ Thomas Carruthers

*"Carol Dweck, the psychologist who studies motivation, likes to say that all the world's parenting advice can be distilled to two simple rules: pay attention to what your children are fascinated by, and praise them for their effort."*

~ Daniel Coyle

## MICHELANGELO & MYELIN

"Consider Michelangelo. From ages six to ten he lived with a stonecutter and his family, learning how to handle a hammer and chisel before he could even write. After a brief, unhappy attempt at schooling, he apprenticed to the great Ghirlandaio. He worked on blockbuster commissions, sketching, copying, and preparing frescoes in one of Florence's largest churches. He was then taught by master sculptor Bertoldo and tutored by other luminaries at the home of Lorenzo de' Medici, where Michelangelo lived until he was seventeen. He was a promising but little-known artist until he produced the *Pietà* at age twenty-four. People called the *Pietà* pure genius, but its creator begged to differ. "If people knew how hard I had to work to gain my mastery," Michelangelo said, "it would not seem so wonderful at all."

What an awesome story. (The book is \*packed\* with great mini-biographies like this, btw. If you find them fascinating, you'll love the book.)

And this reminds me of [Eric Butterworth](#)'s story in his great book, [Spiritual Economics](#) (see Notes) where he tells us: "The great piano virtuoso Paderewski was once playing before an audience of the rich and the royal. After a brilliant performance, an elegant lady waxed ecstatic over the great artist. She said, 'Ah Maestro, you are a genius!' Paderewski tartly replied, 'Ah yes, madam, but before I was a genius I was a clod!' What he was saying was that his present acclaim was not handed to him on a silver platter. He, too, was once a little boy laboriously practicing his scales. And even at his peak, behind every brilliant performance there were countless hours of practice and preparation."

You might notice a theme here: Behind every exceptional performer is a LOT of hard work. (And a lot of well-laid myelin! :)

## BABY STEPS: THE ROYAL ROAD TO SKILL

"Long story short: a few years ago a group of American and Norwegian researchers did a study to see what made babies improve at walking. They discovered that the key factor wasn't height or weight or age or brain development or any other innate trait but rather (surprise!) the amount of time they spent firing their circuits, trying to walk.

However well this finding might support our thesis, its real use is to paint a vivid picture of what deep practice feels like. It's the feeling, in short, of being a staggering baby, of intensely, clumsily lurching toward a goal and toppling over. It's a wobbly, discomfiting sensation that any sensible person would instinctively seek to avoid. Yet the longer the babies remained in that state—the more willing they were to endure it, and to permit themselves to fail—the more myelin they built, and the more skill they earned. The staggering babies embody the deepest truth about deep practice: to get good, it's helpful to be willing, even enthusiastic, about being bad. Baby steps are the royal road to skill."

That's AWESOME.

And love this line: "Baby steps are the royal road to skill."

We talk about this idea quite a bit. Here's how [Dan Millman](#) puts it in his great book, [Body Mind Mastery](#) (see Notes): "If babies held the same tendency toward self-criticism as adults, they might never learn to walk or talk. Can you imagine infants stomping, 'Aargh! Screwed up again!' Fortunately, babies are free of self-criticism. They just keep practicing."

And here's how [Louise Hay](#) puts it in [You Can Heal Your Life](#) (see Notes): "When a little child is learning to walk or talk, we encourage him and praise him for every tiny improvement he makes. The child beams and eagerly tries to do better. Is this the way you encourage yourself when you are learning something new? Or do you make it harder to learn because you tell yourself that you are stupid or clumsy or a 'failure'?"

Baby steps. They're the royal road to skill.

## IGNITION & 4-MINUTE MILES

*"What ignited the process wasn't any innate skill or gene. It was a small, ephemeral, yet powerful idea: a vision of their ideal future selves, a vision that oriented, energized, and accelerated progress, and that originated in the outside world."*

~ Daniel Coyle

Coyle tells the story of Roger Bannister—the “skinny Oxford medical student” who, in 1954, became the first person to run a mile in less than four minutes. It's pretty well-known that Bannister did what most physiologists and athletes thought was impossible as he accomplished what Sports Illustrated described as the single greatest athletic accomplishment of the 20th century.

Coyle goes on to tell us: “Less well known is what happened in the weeks after Bannister's feat: another runner, an Australian named John Landy, also broke the four-minute barrier. The next season a few more runners did too. Then they started breaking it in droves. Within three years no fewer than seventeen runners had matched the greatest sporting accomplishment of the twentieth century. Nothing profound had changed. The track surfaces were the same, the genes were the same. To chalk it up to self-belief or positive thinking misses the point. The change didn't come from inside the athletes: they were responding to something outside them. The seventeen runners had received a clear signal—you can do this too—and the four-minute mark, once an insurmountable wall, was instantly recast as a stepping stone.”

That's awesome.

And it's the lead-in to Coyle's description of the second element of the talent code: Ignition.

As he says: “Where deep practice is all about staggering baby-steps, ignition is about the set of signals and subconscious forces that create our identity; the moments that lead us to say *that is who I want to be.*”

... So, who do *you* want to be?

## IT'S NOT MAGIC

*"It turns out that self-discipline was twice as accurate as IQ in predicting the students' grade-point average."*

~ Daniel Coyle

One of the people Coyle interviewed for the book was Linda Septien—a world-class singing teacher who's worked with performers like Jessica Simpson.

Here's Coyle quoting her: “Everybody said Jessica was a Texas girl who'd been singing in her church choir. That's ridiculous—that girl *worked* to become the singer she was. They said [American Idol winner] Kelly Clarkson was a waitress, like she never sang before. Waitress? Excuse me? Kelly Clarkson was a *singer*—we all knew Kelly Clarkson. She had training, and she worked her tail off like anybody else does. She didn't come from nowhere any more than Jessica came from nowhere. It's not magic, you know.”

It's not magic, you know. ;)

## TOYOTA'S KAIZEN = CORPORATE DEEP PRACTICE

“Thirty years ago Toyota was a middling-size car company. Now it is the world's largest automaker. Most analysts attribute Toyota's success to its strategy of *kaizen*, which is Japanese for “continuous improvement” and which just as easily could be called corporate deep practice.”

The whole idea of “kaizen” has become enormously popular and we talk about it in a bunch of Notes, including the one on [Marci Schimoff's \*Happy for No Reason\*](#) where she says: “To make the quickest progress, you don't have to take huge leaps. You just have to take baby steps—and keep on taking them. In Japan, they call this approach *kaizen*, which literally translates as “continual improvement.” Using *kaizen*, great and lasting success is achieved through small, consistent steps. It turns out that slow and steady is the best way to overcome your resistance to change.”

From now on, let's think of kaizen as the deep practice that gets our myelin rockin'!

## ACTION, ACTION, ACTION

*“Neurosis is just a high-class word for whining. The trouble with most therapy is that it helps you to feel better. But you don’t get better. You have to back it up with action, action, action.”*

~ Dr. Albert Ellis

“[Albert] Ellis, who went on to write dozens of books, built a straight-talk, action-oriented approach that challenged the Freudian model of examining childhood experience. “Neurosis is just a high-class word for whining,” he said. “The trouble with most therapy is that it helps you to feel better. But you don’t get better. You have to back it up with action, action, action.””

Love that. :) Coyle tells us that Ellis’s approach, combined with that of Dr. Aaron Beck, became known as cognitive-behavioral therapy—which we scientifically know is as effective as drugs in reducing depression, anxiety and other not-so-fun stuff.

At the heart of their model is practicing a new way of seeing the world and taking more effective actions in the face of our ickiness. We talk about it in our Note on [Jonathan Haidt’s](#) \*genius\* [The Happiness Hypothesis](#) where he says: “*Depressed people are caught in a feedback loop in which distorted thoughts cause negative feelings, which then distort thinking further. Beck’s discovery is that you can break the cycle by changing the thoughts. A big part of cognitive therapy is training clients to catch their thoughts, write them down, name the distortions, and then find alternative and more accurate ways of thinking. Over many weeks, the client’s anxiety or depression abates. Cognitive therapy works because it teaches the rider how to train the elephant rather than how to defeat it directly in an argument.*”

As we know from that Note, Haidt tells us that we have an Elephant that needs to be re-trained. Coyle’s model tells us how: It’s all about deep practice ignited by a vision of what’s possible fueled by passion and supported by strong teachers that enables us to re-wire our brains with myelin in all the right places.

Here’s to rockin’ that!

**Brian Johnson,**  
Chief Philosopher

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### About the Author of “The Talent Code”

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Daniel Coyle is the author of the *New York Times* bestseller *Lance Armstrong’s War* and *Hardball: A Season in the Projects*, and is a contributing editor for *Outside* magazine. He lives with his wife and four children in Homer, Alaska, where he coaches a rapidly improving Little League team.

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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](http://brianjohnson.me).