

TALENT IS OVERRATED

What Really Separates World-Class Performers From Everybody Else

GEOFF COLVIN

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MAIN IDEA

The assumption has always been that the world-class performers in any field are born with what it takes to excel – it's a gift you either have or you do not have. A growing body of scientific research is now showing this is not in fact the case at all. Genuinely superior performance is based on what researchers term "deliberate practice" – a very well-defined set of activities which world-class performers pursue diligently. The more deliberate practice they do, the better they perform. To deliver a genuine world-class performance, tons of deliberate practice is put in well past the point at which other people give up and it is this which tends to be the differentiating characteristic of top achievers.

Put another way, success is 99 percent hard work. High achievement in any field isn't reserved for those few who are genetically equipped one way or another. It's available to anyone and everyone who is willing to pay the price. As individuals, if we learn how to harness the principles of deliberate practice more fully, we can become much better at everything we do. And similarly, if organizations become better at deliberate practice, a sustainable competitive advantage can be earned and ultimately enjoyed.

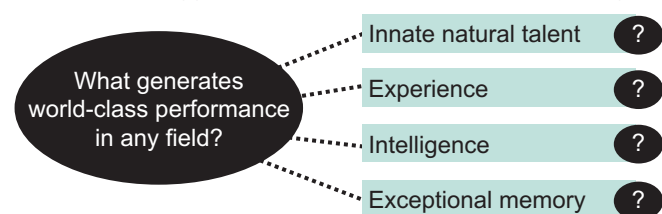
The central question remains not what we were born with but whether or not we are willing to pay the price that is required for greatness.

"It turns out that our knowledge of great performance, like our knowledge of everything else, has actually advanced quite a bit in the past couple of millennia. Scientists began turning their attention to it in a big way about 150 years ago, but what's most important is the growing mountain of research that has accumulated in just the past 30 years. These hundreds of research projects have converged on some major conclusions that directly contradict most of what we all think we know about great performance".

– Geoff Colvin

The Mystery – What generates world-class performance in any field? Pages 2 - 3

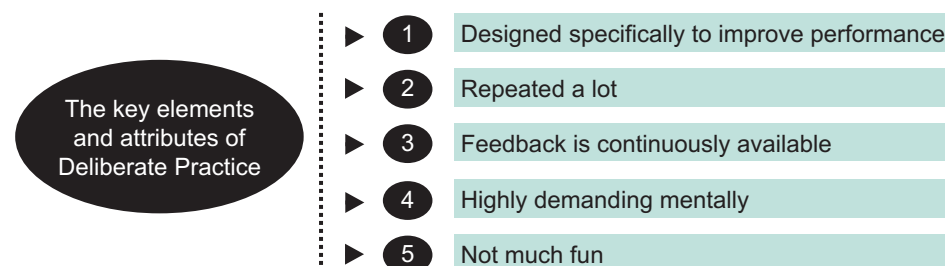
What is it that sets world-class performers in any field apart from the average performers? All kinds of theories and suggestions have been put forward including:



The only problem is none of these suggestions turn out to be correct when you examine the data.

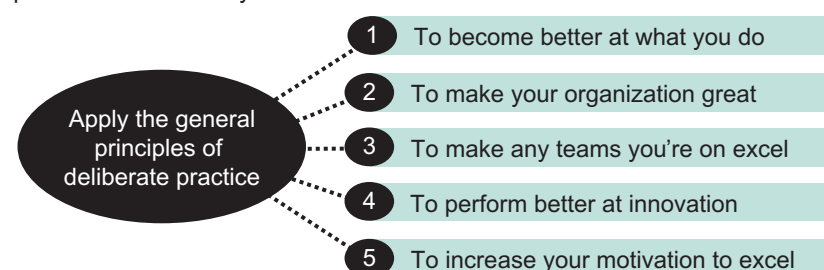
The Answer – A specific style of development training termed "Deliberate Practice" Pages 3 - 5

Scientific evidence has shown the real key to world-class performance is to engage in a specific style of development training termed "Deliberate Practice". Deliberate practice has some very specific attributes which are part and parcel of its overall effectiveness:



Application – How to make deliberate practice work Pages 5 - 8

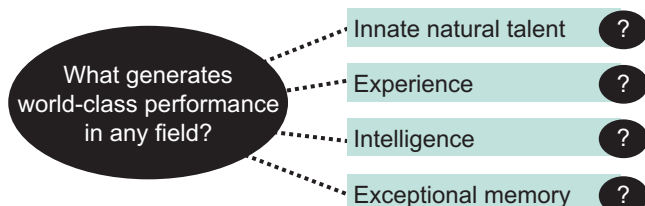
Evidence abounds deliberate practice is a genuine performance multiplier. It is not, however, a panacea for any and all problems. It simply takes too much work and effort to be considered a short cut to success. If you're smart, however, you can and should apply the general principles and practices of deliberate practice in several key areas:



The
Mystery

What generates world-class performance in any field?

What is it that sets world-class performers in any field apart from the average performers? All kinds of theories and suggestions have been put forward including:



The only problem is none of these suggestions turn out to be correct when you examine the data.

Innate natural talent ⇒ World-class performance ?

It's comforting to think exceptional performers are obviously born with different natural gifts which allow them to excel. This explains very neatly:

- Why they find it easy to do what we consider to be hard.
- Why high performers are so rare.
- Why excellence can sometimes come at a very young age.

The other added advantage of this explanation is it can also explain why we are average performers in our field – we just weren't born with the right genes. This is a very tidy cop out and rationale for adequate performance rather than exceptional performance of our own responsibilities.

The only problem is performance research carried out over the past 30 years or so has pretty much discounted the concept of natural gifts as a reason for the achievements of top performers. When you scratch beneath the surface, you'll find phenomenal success is based much more on hard work and training than it ever is on an innate gift of any kind.

Whenever people speak about natural-born talent, the two most prominent examples which get mentioned are Tiger Woods and Mozart. Both are considered to be child prodigies who were doing amazing things at very young ages. When you look at these and other top performers, however, some rather different explanations become plausible:

- Wolfgang Mozart's father, Leopold Mozart, was a famous composer and performer in his own right. Even more than that, he was a specialist in how music was taught to children. When Wolfgang was born, Leopold resigned from all his other duties so that he could exclusively focus on training his son to be a composer. Therefore, it comes as no real surprise that by age eight, Wolfgang had started putting together his own music compositions. Many of Wolfgang Mozart's early pieces were openly copies and imitations of the works of other composers of the era including Johann Christian Bach with whom Mozart studied. In other words, Mozart learned music the same way everyone else does – by copying, rearranging and then imitating what other composers had previously done. By the time Mozart published his Piano Concerto No. 9 at age twenty one, he already have eighteen years of extremely hard musical training under the guidance of a live-in expert teacher behind him.

- A similar pattern of furious hard work rather than God-given gifts also appears in the life of Tiger Woods. His father Earl was a teacher who had a lifelong passion for golf. At the age of seven months, Tiger was given his first golf club. His high chair is set up in the garage where Earl hits golf balls into a net for hours on end – like a movie being played into Tiger's mind over and over again. Earl Woods begins teaching Tiger how to putt and how to grip the golf club before he can even talk and by age two, Tiger is at the golf course playing and practicing regularly. It should, therefore, be little wonder that by age nineteen Tiger is made a member of the U.S. Walker Cup team. By that stage, he had already been practicing golf for seventeen years under the intensive tutelage of his father and other specialist coaches and teachers who his father had hired from the time Tiger was four years old.
- Jack Welch didn't even decide to go into business until around age twenty-five. He studied chemical engineering in college and considered going into academia before accepting an offer to work at a chemical development operation owned by General Electric. He would ultimately rise to become CEO of that company even though none of his early life experiences had suggested he had any special or innate talent for business.
- Admittedly, Bill Gates did get a reasonably early start on his business career by dropping out of Harvard to start Microsoft. It's also noteworthy that Gates is considered to be intelligent using the classical measures like IQ. But then again, there are thousands if not millions of people who have similar passions and talents as Bill Gates. It's difficult to argue that his demonstrated track record of building Microsoft into the largest and most successful software company in the world is the result of any innate talent which showed up early in his life.
- John D. Rockefeller grew up poor, hardworking and ambitious. People who knew him at an early stage of his life said he was very average and quite indistinguishable. His stated intention was to become rich but that was hardly exceptional – everyone from a poor background harbors the same hopes and dreams.
- David Ogilvy was expelled from Oxford, worked as a hotel kitchen hand in Paris, sold stoves in Scotland and was a farmer in Pennsylvania before he went into advertising. He is now regarded by many as the greatest advertising executive of the twentieth century.

While it seems so much less romantic than the idea of great performance being the result of innate talents and gifts, the simple reality is talent is overrated. The people who rise to the top of their fields do so through hard work and tenaciousness. The ones who excel at an early age have generally started doing their basic groundwork well before others have got around to it. Others have shown no early indications whatsoever of their ultimate success, and instead seem to have almost stumbled on to later success.

"It seems we need to recalibrate our views on the role of specific, innate talents. We need not be absolutists about the matter. Heated arguments over whether such talents exist at all are best left to the scholarly researchers. For most of us, the critically important point is that, at the very least, these talents are much less important than we usually think. They seem to not play the crucial role that we generally assign to them, and it's far from clear what role they do play".

– Geoff Colvin

Experience ⇒ World-class performance ?

At one time, it was assumed experience in business was important. Once a person has been in a career for twenty or thirty years, the natural assumption is they become better at what they're doing as a result of all that experience. Today, researchers have all but disproven this theory. In field after field, it has now been shown people actually get worse with experience. This is especially true in some specialties where newly trained graduates perform better than those who have been in the industry for some time and were trained in different ways and using different technologies.

It's also equally obvious people can spend all their working lives doing the same job and never rise to world-class standards or even threaten to do so. Spending thirty or forty years doing the same task doesn't automatically ensure you become better at it. You're more likely to just be repeating the same things over and over rather than pushing the boundaries of your trade.

Intelligence ⇒ World-class performance ?

There is no doubt some outstanding performers have photographic memories, staggering intelligence or obviously high IQs. Equally true, however, is the fact many outstanding performers possess only average or even slightly below-average IQs. A great number of them are incredibly average in any area outside their area of specialization and expertise.

Research has shown that extraordinary natural intelligence or a prodigious natural memory is not important to achievement in business at all. There is at best a weak correlation and in many cases no correlation at all between what people achieve and their IQ levels. In field after field, people with modest IQs but who are passionate enough to learn intensively outperform others who have outstanding and impressive IQ levels.

Exceptional memory ⇒ World-class performance ?

It's tempting to align world-class performance levels with impressive memories. In part, this might be the result of the fact some business leaders have been revered for their ability to remember arcane details. Former GE chief Jack Welch was famous for being able to pick up on inconsistencies in the detailed financial statements of GE's operational subsidiaries. ITT's Harold Geneen was the same. Steve Ross, the founder of Warner Communications, was well known for his ability to analyze complex deals in his head without requiring anything to be written down. The same was said about Andy Grove, the former CEO of Intel, and Barry Diller who built multiple media companies from the ground up.

Over and over, however, research has proven there is no direct correlation between exceptional natural memory abilities and high achievement. These studies have shown repeatedly memory ability in every field is developed rather than innate. The world-class performers find ways to develop the level of memory power they need to do well rather than relying solely on their natural capacities in that area.

"The gifts possessed by the best performers are not at all what we think they are. They are certainly not enough to explain the achievements of such people – and that's if these gifts exist at all. You are not a natural-born clarinet virtuoso or car salesman or bond trader or brain surgeon – because no one is."

– Geoff Colvin

The Answer

A specific style of development training termed "Deliberate Practice"

Scientific evidence has shown the real key to world-class performance is to engage in a specific style of development training termed "Deliberate Practice". Deliberate practice has some very specific attributes which are part and parcel of its overall effectiveness:

The key elements and attributes of Deliberate Practice

- ▶ 1 Designed specifically to improve performance
- ▶ 2 Repeated a lot
- ▶ 3 Feedback is continuously available
- ▶ 4 Highly demanding mentally
- ▶ 5 Not much fun

When Anders Ericsson, Ralf Krampe and Clemens Tesch-Romer of the Max Planck Institute for Human Development and Education carried out a rigorous analysis trying to figure out why some violinists are better than others, they went to the Music Academy of West Berlin. This was known as a post-secondary school which turned out exceptionally good musicians many of whom went on to successful careers with major symphony orchestras or as solo performers. The school had collected loads of data about its students over the years but had never sat down to try and figure out what it was that made some students end up better than others.

When the results were analyzed, it was found the best violinists spent around twenty-four hours a week in solo practice whereas those who ended up being only average violinists practiced by themselves about nine hours a week. In fact, by age eighteen, the top violinists has already racked up 7,410 hours of lifetime solo practice while the average performers had 3,420 hours of practice behind them.

Based on their research, Ericsson and his coauthors put forward a very simple concept: "The differences between expert performers and normal adults reflect a life-long period of deliberate effort to improve performance in a specific domain". They actually coined the term "deliberate practice" to describe the type of practice which was required to generate expert performers and stated unequivocally it was the amount of deliberate practice a person did which made all the difference.

At the time of the publication of the Ericsson study, their conclusions were considered to be quite radical. They were noteworthy because they rejected the established you've-either-got-it-or-you-don't point of view and they also seemed to contradict a number of other studies which had previously showed people's achievements tended to level off at some stage and years of further work had not made them any better. Since then, a number of other researchers have gone into the concept of deliberate practice in far more detail and it is now very widely accepted.

The whole key to this lies in the fact deliberate practice is a very intensive and specific type of development activity rather than the more vague idea of "practice makes perfect".

Deliberate practice is characterized by several essential and necessary elements:

► 1 Designed specifically to improve performance

Deliberate practice is designed to produce results using the body of knowledge which exists in each field about how performance is developed and improved. It's not a case of someone trying to spend some time taking a few practice swings or fiddling around in a self-managed attempt to get better. Rather, deliberate practice is designed by someone who is an expert in the field and who can teach people how to get better.

A teacher or a coach can see things you yourself won't pick up on. They will know the theory of each activity and understand how performance can be improved in that area. An effective coach will also know how an individual can stretch beyond his or her current abilities and the type of development activities to engage in which will improve skills in those areas.

Great performers in any field isolate specific aspects of what they do and focus on improving those elements. Tiger Woods, for example, has been observed to drop golf balls into sand traps and stand on them so he can practice how to make shots from that nearly impossible lie. Once he practices that, he will then move on to some other shot.

Deliberate practice is like that. It is a structured and specific set of personalized development activities.

► 2 Repeated a lot

Deliberate practice involves doing something so many times in practice you can perform flawlessly in the heat of competition. Top performers repeat their practice activities an awe-inspiring number of times. Ted Williams, the greatest hitter in the history of baseball, would keep practicing until his hands bled. Professional golfer Moe Norman, who played from the 1950s to the 1970s, hit eight hundred golf balls a day, five days a week from age sixteen to thirty-two when he retired.

"The most effective deliberate practice activities are those which can be repeated at high volume".

— Geoff Colvin

► 3 Feedback is continuously available

Deliberate feedback requires that a teacher, coach or mentor be available consistently to provide immediate feedback. As a general rule, feedback in sports is immediate and obvious. Seeing the results of what you're doing is no problem at all. In business, by contrast, it can sometimes be hard to obtain accurate feedback on how you're doing in various areas of the business. However you achieve it, deliberate practice requires that you find systematic ways to separate your opinions from your results so you can do the specific things which will generate good outcomes.

"Steve Kerr, former chief learning officer of Goldman Sachs and a highly respected researcher on leadership development, says that practicing without feedback is like bowling through a curtain than hangs down to knee level. You can work on technique all you like, but if you can't see the effects, two things will happen: You won't get any better, and you'll stop caring".

— Geoff Colvin

► 4 Highly demanding mentally

Deliberate practice involves focus and concentration. It is not simply a matter of trying to hit a few tennis balls over the net that most people tend to think of when it comes to practice. Rather, it is a matter of figuring out exactly which performance elements are unsatisfactory and then working intensively to improve those very elements.

Typically this type of practice will be so intense it cannot be sustained for long. Many top-level performers find four or five hours per day is the upper limit for deliberate practice with individual sessions being no more than an hour to ninety minutes long. This upper limit has been consistently observed in chess champions, world-class musicians and elite athletes alike.

► 5 Not much fun

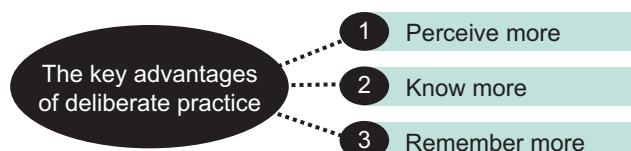
Generally speaking doing the things we know how to do well is enjoyable. Deliberate practice is the opposite. It is having the intensity and will to devote the majority of your time to seeking out the difficult and/or painful things you don't do well and then getting to work on improving in those areas. It also includes having others tell us exactly what's not right after each unsuccessful attempt so we can keep working at it until we get better. It's little wonder that deliberate practice is mentally exhausting.

"If it seems a bit depressing that the most important thing you can do to improve performance is no fun, take consolation in this fact: It must be so. If the activities that lead to greatness were easy and fun, then everyone would do them and they would not distinguish the best from the rest. The reality that deliberate practice is hard can even be seen as good news. It means that most people won't do it. So your willingness to do it will distinguish you all the more".

— Geoff Colvin

Keep in mind a few key points about deliberate practice:

- Deliberate practice in and of itself cannot fully explain world-class performance. Just because someone practices twice as much as another person does not automatically mean they will be twice as successful. Luck, personal circumstances, age and effort all play their part as well. High achievement is never as simple as we might think.
- The theory of deliberate practice does not rule out the fact some people might be genetically predisposed to excel in one field or another. It simply states no scientific evidence exists that genetics plays a role whereas evidence abounds that deliberate practice does play a key role.
- Deliberate practice allows us to reach a stage of technical competency in our chosen field that we can perform in a conscious and controlled manner. This does not mean we perform on autopilot without thinking about what we are doing. That's a stage of development which is slightly below world-class performance. Deliberate practice enables us to move beyond doing things on autopilot to a higher stage of awareness.
- How much a person puts into deliberate practice will have a large impact on how much they get out of it. World class performers put in an incredible amount of effort to get to where they are. Most people simply are not prepared to pay the price of greatness in any field.



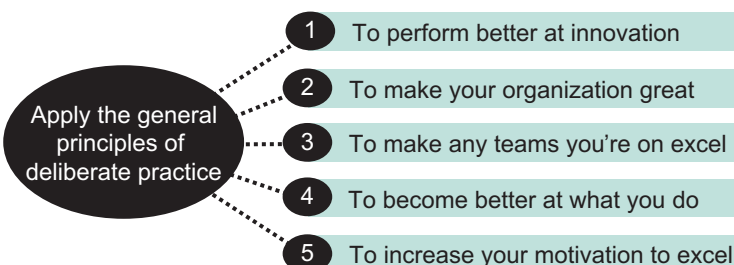
So how does deliberate practice work? In essence, there are three key advantages provided by deliberate practice:

1. *When you engage in deliberate practice, you perceive more* – you can pick up on the finer points which others gloss over without even realizing they are doing so. For example, average tennis players watch when a ball is being hit to try and anticipate where it will go. World-class tennis players look at their opponent's hips, shoulders and arms so they can foretell where the ball will go even before it is hit. The same kind of things happen in many different fields:
 - Top performers understand the significance of indicators that average performers don't even notice.
 - Top performers look further ahead and anticipate what will happen well in advance of average performers.
 - Top performers know more from seeing less because of their extensive, deliberate practice regime.
 - Top performers acquire the ability to make finer judgements and distinctions than do average performers.
2. *As a result of extended periods of deliberate practice, you'll know more about your area of specialization* – what works and what does not. People who engage in deliberate practice often study and analyze how previous high performers in their field have responded to specific circumstances and what kinds of choices produced what kinds of consequences. This acquired pool of domain knowledge is great because it allows them to get into action sooner. World-class performers have a deep pool of knowledge about their field and they organize that knowledge so it can be accessible and useful.
3. *The more you harness deliberate practice, the more you will remember* – you increase your ability to instantly take in and organize information. For example, when an average chess player looks at a board, he or she will struggle to note where each piece is positioned. When a world-class chess player looks at the board, he or she will be able to recall precisely where each piece is positioned and what is happening in the game. There is an acquired ability to absorb and recall more information because the mind has become conditioned to do so over an extended period of time.

Well-structured deliberate practice certainly enables top performers to perceive more, know more and remember more. These abilities are critical to superior performance. Furthermore, over time deliberate practice changes the way the mind works. New neural pathways get formed in just the same way as repeated physical exercise changes the size and composition of muscles. The bodies and brains of top performers develop differently because of repeated deliberate practice. As a result, they can perform at a higher level for sustained periods of time than can average performers. In short, top performers condition themselves to excel and generate all the resources they require to do so through the conditioning provided by deliberate practice. This is difficult to do and the path is extremely long and demanding but those few who pay the price end up being physically and mentally better equipped to excel. This is the ultimate advantage of deliberate practice.

Application	How to make deliberate practice work
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Evidence abounds deliberate practice is a genuine performance multiplier. It is not, however, a simple panacea for any and all problems. It simply takes too much work and effort to be considered a short cut to success. If you're smart, however, you can and should apply the general principles and practices of deliberate practice in several key areas:



Apply deliberate practice principles	1 To perform better at innovation
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Everyone today wants to be innovative. It's the only way to escape the commodization of business models, products and everything else which is happening all around the world of commerce. More and more, however, companies are starting to find innovation does not generally come in a "Eureka" moment flash of inspiration to an outsider. Instead, innovation today tends to come to those who have spent many years immersing themselves in their subject first. Or put another way, the most well prepared people to make creative breakthroughs are those who have engaged in extended periods of deliberate practice first. Deliberate practice is an excellent foundation for creative thinking.

Innovative thinking is always built on a foundation of solid domain knowledge which is acquired over long periods of preparation. The notion that sometimes an outsider can see things with fresh eyes because he or she has not been conditioned by years of study is a myth. Scientific evidence definitively shows knowledge is an innovation enabler. The more you know, the more you can innovate. The most successful innovators are always those who have devoted their working careers and immersed themselves in their chosen careers. Innovators aren't burdened by knowledge – they're nourished by it. And the only way that kind of knowledge can be acquired is through the deliberate practice process.

If you want your organization to become more innovative and creative:

- Tell everyone what's needed.
- Give them the opportunity to acquire some rigorous domain knowledge through deliberate practice.
- Provide them with the opportunity and freedom to try new things out in a failure-tolerant environment. Perhaps you can specify that everyone should be spending 10 to 20 percent of their time trying out new ideas on any project they personally consider to be compelling and interesting.
- Provide whatever kind of motivation works – money, the recognition of their peers, etc.

Apply deliberate practice principles

2 To make your organization great

The best organizations in the world are learning how to take advantage of the concept of deliberate practice. The general principles you should follow if you also aspire to make your own organization great:

1. *Understand that people need to stretch and grow* – so place them in positions which will force them to grow beyond their current capabilities and acquire new skills and competencies.
2. *Find effective ways to develop more leaders* – perhaps by giving them short-term work assignments outside their normal field of expertise. This does increase their workload but it also enhances the amount of personal growth and development they enjoy.
3. *Encourage people to be more active in their communities* – because this signals solid commitment to values like citizenship and integrity.
4. *Understand the role of coaching and mentoring programs* – which can be specifically designed to help people improve their existing skills and gain new ones. Great companies not only align people with mentors but also provide mechanisms whereby feedback can be given on a regular basis. Candor is a highly desirable element of an effective culture and open feedback contributes to candor directly.
5. *Identify promising performers early in their careers* – and set up individualized programs for each person. Fill the pipeline with future managerial talent.
6. *Have an appreciation for the fact people development works best in an atmosphere of inspiration rather than authority* – so work hard at creating an environment where people do the right thing because they want to rather than because they fear for their jobs. Delve deeply into the soul of your organization rather than relying on command-and-control.
7. *Invest resources into developing your people* – significant amounts of time, money and energy. Ideally, something around 50 percent of your CEO and other senior manager's time should be spent on people issues and on progressing the development of your top people. As others see this level of personal commitment from the CEO, they will get the message they should be doing the same for their direct reports.
8. *Make leadership development an integral part of your culture* – a way of life for your organization rather than something you do from time to time. Cultures grow over time so let the right ideas and principles take root and ultimately blossom.

"Today's best young employees, the ones on whom future success will depend, are demanding that employees help make them better performers. It seems that young people understood the new nature of today's economy before a lot of CEOs did, and they insist on employers who will keep developing them".

– Geoff Colvin

"The great majority of organizations don't apply these principles. In today's economy, that fact is more than just an opportunity. Applying the principles is becoming an imperative for all organizations that want to survive."

– Geoff Colvin

Apply deliberate practice principles

3 To make any teams you're on excel

Every enterprise wants to be filled with A-list performers, and rightly so, but in today's economy that isn't enough. To genuinely get ahead, you'll also need to learn how to form collaborative teams and make them work well.

The performance of a team is always more than a simple sum of the abilities of each individual member. To turn groups of great individuals into a successful team, there are some key deliberate practice principles which need to be applied:

1. *Work hard to develop your teams* – and not just the individuals on those teams. If you can make your teams perform well, you can achieve some very impressive performance levels as an organization.
2. *Be careful to fill each team with the right people* – a good mix of followers and leaders seems to work best. If everyone is trying to take charge all the time, chaos will reign when push comes to shove. Get the right people involved to begin with.
3. *Build trust inside the team* – get to the stage where each team member honestly believes the others are also pulling their weight and you can go places. The higher the level of trust, the less time gets wasted working against each other.
4. *Eliminate any competing personal or business agendas* – and you can unleash huge amounts of latent power. If everyone shares the same mental model of where you are, where you need to be and the best way to get there, you will avoid lots of wasted effort.
5. *Bring any unresolved conflicts to the surface* – and discuss them openly and candidly. This house cleaning can be a huge boost to any group's effectiveness. When everyone is united against a common enemy rather than engaged in a backstage arm wrestle for control, very impressive things can and will happen.
6. *Get everyone to face the real issues* – as opposed to wasting energy fiddling around with other stuff. If everyone in the group feels they can express their feelings without reservation, the group will do much better.

"We've all had the powerful feeling, when watching or contemplating an extraordinary performance, that in some deep way this person is simply not like us. Whether studying Buffett's investing performance or listening to a record of Pavarotti or watching Roger Federer hit a tennis ball, we cannot find a way to relate our own performance in their fields to what they do; we cannot imagine any conceivable path that would get us from here to there. That's why we always fall back on the same metaphors in describing such people. They're from another planet; they're superhuman; they're incredible. What we've seen is that in a sense our natural reaction is right – great performers really are fundamentally different. Their bodies and brains are actually different from ours in a profound way. In addition, their abilities to perceive, organize and remember information are far beyond anything that most of us possess. But we're wrong in thinking, as many do, that the exceptional nature of great performers is some kind of eternal mystery or preordained outcome. It is, rather, the result of a process, the general elements of which are clear. There is in fact a path leading from the state of our own abilities to that of the greats. The path is extremely long and demanding, and only a few will follow it to its end".

– Geoff Colvin

Apply deliberate practice principles

4 To become better at what you do

If the company you're working for doesn't understand the potential benefits of deliberate practice, you'll probably have to set up your own personal development program to get better at what you do. If you find yourself in that situation, there are some key things you can and should do:

1. *Know where you want to go* – and what all the intermediate steps are to get there. There will probably be no established curriculum for becoming a master of your field so talk to mentors, draw inspiration from your heroes and be prepared to map out your own career development plan.
2. *Start practicing your work tasks in a deliberate manner* – which may seem hard to do at first glance. Broadly speaking, there are three models to use here:
 - The music model – where a great performance is committed to paper, broken down into its components, each component is worked on individually and practiced before everything gets put back together again to come up with what is hopefully a superior presentation.
 - The chess model – where games between top-level players are analyzed, broken down into themes and later reapplied in different settings. Business schools are famous for using case studies to fill student's minds with what has worked in the past and may well work again in the future.
 - The sports model – where athletes build a stamina base through conditioning and then work on acquiring specific sets of skills. Conditioning from the business context might involve acquiring the appropriate cognitive or information processing skills. To that will be added business skills like the capacity to respond to fluid market conditions and unpredictable opponents, negotiating skills and so forth.

Very few people in business ever set out to deliberately practice their business skills. From time to time, they may try to rehearse a major speech or presentation but that is probably the extent of work related practice for most people. There are many more possibilities you can and should use.

3. *Find the practice opportunities which already exist in the work you now do* – which are probably more numerous than you realize. For most tasks, there will be more than one way of getting things done. Instead of sticking with what you've traditionally done, expand your business skills by doing them a different way which will make you better.
 - Set a goal to get better at some specific element of your work.
 - Plan out precisely how you will achieve your goal.
 - Observe what you're doing during the work day and keep asking yourself how things are going.
 - Keep asking yourself: What abilities are being applied here? Can I try out a different skill? Can I push myself?
 - Specifically evaluate your performance afterwards. Judge the outcomes and compare your performance to your personal best.
 - Identify the errors you made and decide what caused those errors.
 - Make plans on how to do better in the future.

4. *Deepen your knowledge* – increase your understanding of the domain in which you work day after day. Average performers do this in an ad hoc way but top-level performers are systematic and thorough. You need to set a goal to become an expert in your line of business and then:
 - Study the history of your business and industry.
 - Identify the experts in your field and follow them.
 - Read everything that has been published.
 - Interview people inside and outside your firm.
5. *Build a rich and detailed mental model of your domain* – how everything works and how all the various subsystems interact with each other. Great performers always do this because it allows them to pick up on subtle changes which will ultimately impact on performance. A rich mental model contributes to better performance in various ways:
 - A mental model is a good framework – around which you can be adding more domain knowledge in the future. It's a good way to organize and then recall what you know. Mental models also enhance learning because new pieces of information can be given context rather than being treated as an isolated piece of data.
 - A mental model acts as a good filter – it enables you to know what information is worth retaining and which pieces of information will be irrelevant. In practice, this is important because it frees up your mental resources to work on what's really important rather than what's loudest.
 - A mental model will enable you to project what will happen next – with a higher degree of accuracy. If you have a good mental model in place, you can anticipate and prepare to perform sooner than everyone else.

For these reasons, it's clear why top-level performers never stop refining and enhancing their mental models. They keep expanding their mental models through hands-on experience, deliberate practice activities, knowledge seeking and intense effort. It would be absolute folly to leave these kinds of things to chance.

"You can do a great deal as an individual to apply the principles of great performance in your own life and work. Applying these principles is always beneficial. No matter how many steps on the road to great performance you choose to take, you will be better off than if you hadn't taken them. There is no hurdle to clear before the advantages start accruing. This is pure opportunity".

– Geoff Colvin

"The most important effect of practice in great performers is that it takes them beyond – or more precisely, around – the limitations that most of us think of as critical. Specifically, it enables them to perceive more, to know more, and to remember more than most people. Eventually the effects go beyond even that. Many years of intensive deliberate practice actually change the body and the brain. There's a good reason why we see the world's great performers as being fundamentally different from us, as operating on a completely different plane. It's because they are and they do. But they didn't start out that way and the transformation didn't happen by itself".

– Geoff Colvin

"Not all organizations want to be great. That's the hard truth. For those that do – that really do – the principles of great performance show quite clearly what it takes to get there.

– Geoff Colvin

Apply deliberate practice principles

5 To increase your motivation to excel

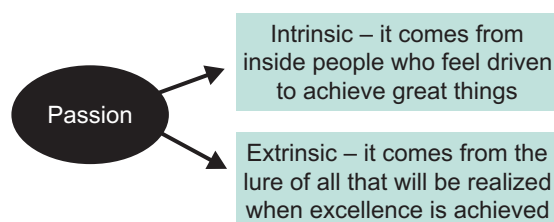
Reaching the highest level in many fields today is harder than it used to be. The average age of Nobel Prize winners, for example, has increased by six years during the last one-hundred-year period. Einstein won a Nobel Prize for work he did as a twenty-six year old physicist and yet today it's very rare for anyone to be awarded a Nobel Prize for work they do before reaching the age of thirty-five or even much older. Similarly, the age at which people win their first patent has also been increasing at a rate of six to seven years per century.

What all this points to is the fact it's taking longer and longer for people to understand all the accumulated knowledge now available before they are able to start making their own advances. Many more years of preparatory study and intensive preparation are required. There must also be a vibrant support network in place which can be accessed during this build-the-foundation phase. For anyone to aspire to become world-class at anything today, thousands of hours of focused, deliberate practice will be required. Those who start early on accumulating those hours have several advantages including:

- It's usually easier to learn things when young because you don't have to unlearn what you might already be doing wrong.
- It's harder to devote time and resources to the accumulation of deliberate practice when you have a family to support or a career to build.
- If you start earlier than your peers, you have a sizable advantage which they can never really catch up on.

There is no question deliberate practice is hard. Equally, there is no question it's so hard nobody can endure it without the benefit of passion. Why would anyone be prepared to go through the rigors of deliberate practice for a reward that is many years away and may not even eventuate?

There are two trains of thought on where this kind of passion can come from:



It has long been assumed that of the two options intrinsic motivation is the strongest because no external reward could ever make a person endure decades of deliberate practice. Research has supported this view quite comprehensively. It has been shown in numerous studies that high creative achievement and intrinsic motivation go hand in hand. Creative people are always focused more on the task ("How can I solve this problem?" or "How can I perform this better?") than they ever are on themselves ("What's in it for me?"). It is passion that drives creative achievers to labor in their field for decades.

Yet intrinsic rewards are not the whole story. There are times when the lure of extrinsic rewards also plays a key role. When

Nobel Prize winners Watson and Crick were struggling to figure out the structure of DNA, they worked almost nonstop because they knew other research teams were on the verge of making the breakthrough as well. When Alexander Graham Bell was working on the telephone, he was acutely aware others were doing the same. As it turned out, Bell beat Elisha Gray, one of his contemporaries, to the patent office by just hours so his instincts were quite correct.

Many companies do miserably at helping people increase their motivation levels. It's rare for people to be free to work on whichever projects they feel most passionate about. It's even rarer for companies to encourage employees to start and manage their own projects. It's also likely most staff evaluations will spend more time telling people what they're doing wrong rather than highlighting the indicator signs of future greatness in a field. It's hard to envisage or design a more thorough demotivation system than that which now exists in many enterprises.

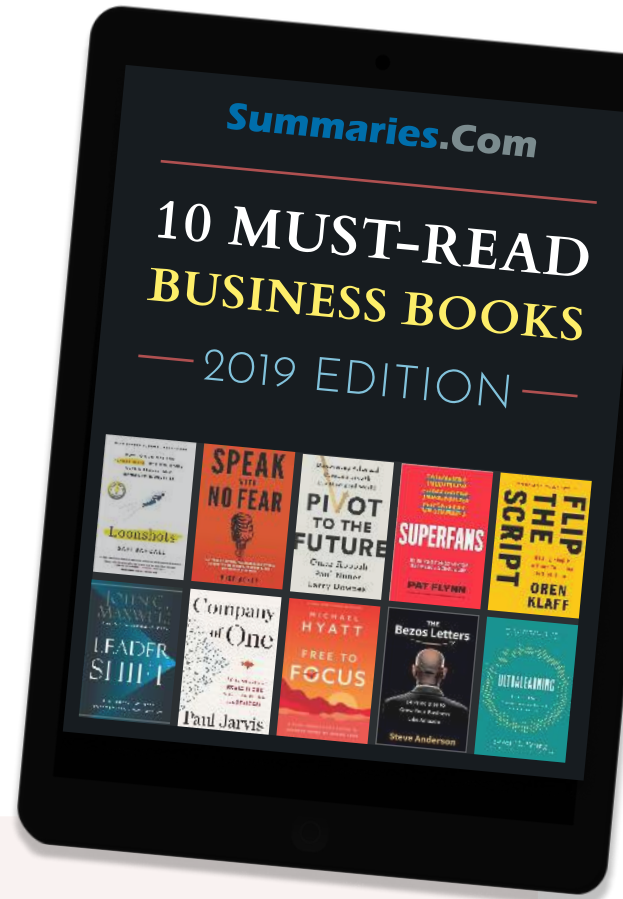
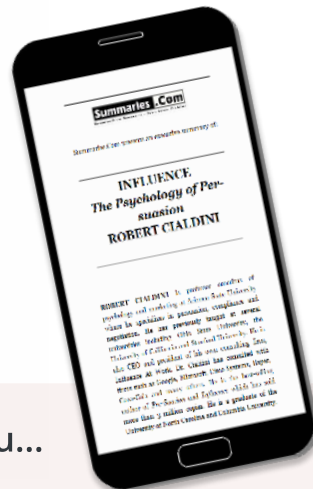
There is also what is termed a "multiplier effect" which comes into play. World-class achievers don't start out that way. Even someone with a high degree of motivation will fail at first more than he or she will ever succeed. The multiplier effect suggests that a small initial advantage in any field can spark a series of events that later generates far larger advantages. As someone starts to do better than his or her peers, they will get motivated to practice more, seek out coaches and mentors, analyze other performers and so forth. That small success will spark a virtuous cycle with progressively better results leading to an increase in motivation which in turn leads to a better environment which produces still more motivation and the cycle repeats again.

"What would cause you to do the enormous work necessary to be a top-performing CEO, Wall Street trader, jazz pianist, courtroom lawyer, or anything else? The answer really depends on your answer to two basic questions: What do you really want? And what do you really believe? What you want – really, deeply want – is fundamental because deliberate practice is a heavy investment. Becoming a great performer demands the largest investment you will ever make – many years of your life devoted utterly to your goal – and only someone who wants to reach that goal with extraordinary power can make it. What would you want so much that you'd commit yourself to the necessary hard work, endless work, giving up relationships and other interests, so that you might eventually get it? The second question is more profound. What do you really believe? Do you believe that if you do the work, properly designed, with intense focus for hours a day and years on end, your performance will grow dramatically better and eventually reach the highest levels? If you believe that, there's at least a chance you will do the work and achieve great performance. But if you believe that your performance is forever limited by your lack of a specific innate gift, or by a lack of general abilities at a level that you think must be necessary, then there's no chance at all that you will do the work. What you really believe about the source of great performance these becomes the foundation of all you will ever achieve. The evidence shows that by understanding how a few became great, anyone can become better. Above all, what the evidence shouts most loudly is that great performance is not reserved for a preordained few. It is available to you and to everyone".

– Geoff Colvin

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