

The Mystery

*Great performance is more valuable than ever—
but where does it really come from?*

It is mid-1978, and we are inside the giant Procter & Gamble headquarters in Cincinnati, looking into a cubicle shared by a pair of twenty-two-year-old men, fresh out of college. Their assignment is to help sell Duncan Hines brownie mix, but they spend a lot of their time just re-writing memos according to strict company rules. They are clearly smart: one has just graduated from Harvard, the other from Dartmouth. But that doesn't distinguish them from a slew of other new hires at P&G. What does distinguish them from many of the young go-getters the company takes on each year is that neither man is particularly filled with ambition. Neither has any kind of career plan or any specific career goals. Every afternoon they play waste-bin basketball with wadded-up memos. One of them later recalls, "We were voted the two guys probably least likely to succeed."

These two young men are of interest to us now for only one reason: They are Jeffrey Immelt and Steven Ballmer, who before age fifty would become CEOs of the world's two most valuable corporations, General Electric and Microsoft. Contrary to what any reasonable person would have expected when they were new recruits, they reached the absolute apex of corporate achievement. The obvious question is how.

Was it talent? If so, it was a strange kind of talent that hadn't revealed itself in the first twenty-two years of their lives. Was it brains? These

two were sharp but had shown no evidence of being sharper than thousands of their classmates or colleagues. Was it mountains of hard work? Certainly not up to that point.

And yet something carried them to the heights of the business world. Which leads to perhaps the most puzzling question, one that applies not just to Immelt and Ballmer but also to everyone in our lives and to ourselves: If that certain something turns out not to be any of the the things we usually think of, then what is it?

Look around you.

Look at your friends, your relatives, your coworkers, the people you meet when you shop or go to a party. How do they spend their days? Most of them work. They all do many other things as well, playing sports, performing music, pursuing hobbies, doing public service. Now ask yourself honestly: How well do they do what they do?

The most likely answer is that they do it fine. They do it well enough to keep doing it. At work they don't get fired and probably get promoted a number of times. They play sports or pursue their other interests well enough to enjoy them. But the odds are that few if any of the people around you are truly great at what they do—awesomely, amazingly, world-class excellent.

Why—exactly why—aren't they? Why don't they manage businesses like Jack Welch or Andy Grove, or play golf like Tiger Woods, or play the violin like Itzhak Perlman? After all, most of them are good, conscientious people, and they probably work diligently. Some of them have been at it for a very long time—twenty, thirty, forty years. Why isn't that enough to make them great performers? It clearly isn't. The hard truth is that virtually none of them has achieved greatness or come even close, and only a tiny few ever will.

This is a mystery so commonplace that we scarcely notice it, yet it's critically important to the success or failure of our organizations, the causes we believe in, and our own lives. In some cases we can give plau-

sible explanations, saying that we're less than terrific at hobbies and games because we don't take them all that seriously. But what about our work? We prepare for it through years of education and devote most of our waking hours to it. Most of us would be embarrassed to add up the total hours we've spent on our jobs and then compare that number with the hours we've given to other priorities that we claim are more important, like our families; the figures would show that work is our real priority. Yet after all those hours and all those years, most people are just okay at what they do.

In fact the reality is more puzzling than that. Extensive research in a wide range of fields shows that many people not only fail to become outstandingly good at what they do, no matter how many years they spend doing it, they frequently don't even get any better than they were when they started. Auditors with years of experience were no better at detecting corporate fraud—a fairly important skill for an auditor—than were freshly trained rookies. When it comes to judging personality disorders, which is one of the things we count on clinical psychologists to do, length of clinical experience told nothing about skill—"the correlations," concluded some of the leading researchers, "are roughly zero." Surgeons were no better at predicting hospital stays after surgery than residents were. In field after field, when it came to centrally important skills—stockbrokers recommending stocks, parole officers predicting recidivism, college admissions officials judging applicants—people with lots of experience were no better at their jobs than those with very little experience.

The most recent studies of business managers confirm these results. Researchers from the INSEAD business school in France and the U.S. Naval Postgraduate School call the phenomenon "the experience trap." Their key finding: While companies typically value experienced managers, rigorous study shows that, on average, "managers with experience did not produce high-caliber outcomes."

Bizarre as this seems, in at least a few fields it gets one degree

odder. Occasionally people actually get worse with experience. More experienced doctors reliably score lower on tests of medical knowledge than do less experienced doctors; general physicians also become less skilled over time at diagnosing heart sounds and X-rays. Auditors become less skilled at certain types of evaluations.

What is especially troubling about these findings is the way they deepen, rather than solve, the mystery of great performance. When asked to explain why a few people are so excellent at what they do, most of us have two answers, and the first one is hard work. People get extremely good at something because they work hard at it. We tell our kids that if they just work hard, they'll be fine. It turns out that this is exactly right. They'll be fine, just like all those other people who work at something for most of their lives and get along perfectly acceptably but never become particularly good at it. The research confirms that merely putting in the years isn't much help to someone who wants to be a great performer.

So our instinctive first answer to the question of exceptional performance does not hold up.

Our second answer is the opposite of the first, but that doesn't stop us from believing it fervently. It goes back at least twenty-six hundred years, to the time of Homer:

Call in the inspired bard

Demodocus. God has given the man the gift of song.

That's from the *Odyssey*, one of many references in it and the *Iliad* to the god-given gifts of various characters. We've changed our views on a lot of important matters since then—how the planets move, where diseases come from—but we have not changed our views on what makes some people extraordinarily good at what they do. We still think what Homer thought: that the awesomely great, apparently super-

human performers around us came into this world with a gift for doing exactly what they ended up doing—in the case of Demodocus, composing and singing. We use the same words that the ancient Greeks used, simply translated. We still say, as Homer did, that great performers are inspired, meaning that their greatness was breathed into them by gods or muses. We still say they have a gift, which is to say their greatness was given to them, for reasons no one can explain, by someone or something apart from themselves.

We believe further that such people had the great good fortune to discover their gift, usually early in life. While this explanation of great performance obviously contradicts the just-work-hard explanation, it's much more deeply rooted and in some ways is more satisfying. It explains why great performers seem to do effortlessly certain things that most of us can't imagine doing at all, whether it's forming a strategy for a multibillion-dollar company or playing the Tchaikovsky Violin Concerto or hitting a golf ball 330 yards. The natural-gift explanation also explains why extraordinary performers are so rare; god-given talents are presumably not handed out willy-nilly.

This explanation has the additional advantage of helping most of us come to somewhat melancholy terms with our own performance. A god-given gift is a one-in-a-million thing. You have it or you don't. If you don't—and of course most of us don't—then it follows that you should just forget now about ever coming close to greatness.

Thus it's clear why most of us don't dwell on the mystery of great performance. We don't think it's a mystery. We've got a couple of explanations in our head, and if it ever occurs to us that the first one is clearly wrong, well, the second one is what we really believe anyway. And the nicest thing about the second explanation is that it takes the matter of great performance out of our hands. If we were really a natural at anything, we'd know it by now. Since we're not, we can worry about other things.

The trouble with this explanation—except it isn't trouble, it's excellent news—is that it's wrong. Great performance is in our hands far more than most of us ever suspected.

New Findings on Great Performance

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. It's just that most of the findings haven't made their way into people's heads. 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. Conducted by scientists around the world, who have looked into top-level performance in a wide array of fields, including management, chess, swimming, surgery, jet piloting, violin playing, sales, novel writing, and many others, these hundreds of research studies have converged on some major conclusions that directly contradict most of what we all think we know about great performance. Specifically:

- 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. Some researchers now argue that specifically targeted innate abilities are simply fiction. That is, you are not a natural-born clarinet virtuoso or car salesman or bond trader or brain surgeon—because no one is. Not all researchers are prepared to accept that view, but the talent advocates have a surprisingly difficult time demonstrating that even those natural gifts they believe they can substantiate are particularly important in attaining great performance.

- Going beyond the question of specific innate gifts, even the general abilities that we typically believe characterize the greats are not what

we think. In many realms—chess, music, business, medicine—we assume that the outstanding performers must possess staggering intelligence or gigantic memories. Some do, but many do not. For example, some people have become international chess masters though they possess below-average IQs. So whatever it is that makes these people special, it doesn't depend on superhuman general abilities. On that score, a great many of them are amazingly average.

- The factor that seems to explain the most about great performance is something the researchers call deliberate practice. Exactly what that is and isn't turns out to be extremely important. It definitely isn't what most of us do on the job every day, which begins to explain the great mystery of the workplace—why we're surrounded by so many people who have worked hard for decades but have never approached greatness. Deliberate practice is also not what most of us do when we think we're practicing golf or the oboe or any of our other interests. Deliberate practice is hard. It hurts. But it works. More of it equals better performance. Tons of it equals great performance.

While there's a lot to be said about deliberate practice, a few initial observations are key:

- Deliberate practice is a large concept, and to say that it explains everything would be simplistic and reductive. Critical questions immediately present themselves: What exactly needs to be practiced? Precisely how? Which specific skills or other assets must be acquired? The research has revealed answers that generalize quite well across a wide range of fields. It certainly seems daunting to seek a common explanation for greatness in ballet and medical diagnosis, or insurance sales and baseball, but a few key factors do seem to account for top performance in those realms and many more.

- Most organizations are terrible at applying the principles of great performance. Many companies seem arranged almost perfectly to prevent people from taking advantage of these principles for themselves

or for the teams in which they work. That situation presents a great opportunity for companies that understand the principles and apply them widely.

- One of the most important questions about greatness surrounds the difficulty of deliberate practice. The chief constraint is mental, regardless of the field—even in sports, where we might think the physical demands are the hardest. Across realms, the required concentration is so intense that it's exhausting. If deliberate practice is so hard—if in most cases it's "not inherently enjoyable," as some of the top researchers say—then why do some people put themselves through it day after day for decades, while most do not? Where does the necessary passion come from? That turns out to be quite a deep question. But answers are turning up.

The new understanding of great performance is especially powerful because it seems widely generalizable. Researchers continue to test it in an increasingly broad range of fields, and it keeps holding up. So the opportunity to apply it in all types of domains seems irresistible, and indeed doing so looks increasingly like an urgent task.

You might say that this new understanding has come along just in the nick of time, because the need for it in every field is greater than ever. The reasons are many. Most apparent is the trend of rapidly rising standards in virtually every domain. To overstate only slightly, people everywhere are doing and making pretty much everything better. We see examples wherever we turn, starting in our own households. You're well aware that computers offer more power for fewer dollars every year, but the same phenomenon is happening across industries. How long did your parents' car last? Maybe 50,000 miles? If you put 200,000 miles on your new Toyota, no one will think anything of it. It's a similar story with the car's tires. A Whirlpool washer (or any other major brand) has more functions, uses less water, requires less electricity, and costs far less in inflation-adjusted dollars than it did five years ago. In

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every industry worldwide, businesses have to perform at the highest standard, and then get continually better, just to be competitive. Great performance is becoming more valuable.

The trend is the same in virtually every field of individual human performance. Consider sports, which not only are interesting in themselves but also, as we shall see, have much to teach us about great performance in business and other realms—and not in the old-fashioned winning-is-the-only-thing sense. We all know that sports records keep getting broken, but we generally don't appreciate just how dramatic the progress has been, or the reasons for it. For example, the Olympic records of a hundred years ago—representing the best performance of any human being on the planet—today in many cases equal ho-hum performance by high schoolers. The winner of the men's 200-meter race in the 1908 Olympics ran it in 22.6 seconds; today's high school record is faster by more than 2 seconds, a huge margin. Today's best high school time in the marathon beats the 1908 Olympic gold medalist by more than twenty minutes. And if you're thinking it's because kids today are bigger, that's not it. Recent research by Dr. Niels H. Secher of the University of Copenhagen and others shows that size is no advantage in running, since each stride requires you to lift yourself up. "The smaller you are, the better you are," he says.

In any case, events in which size and power are irrelevant show the same pattern of constantly rising standards. In diving, for example, the double somersault was almost prohibited as recently as the 1924 Olympics because it was considered too dangerous. Today, it's boring.

This matters because of why it's happening: Contemporary athletes are superior not because they're somehow different but because they train themselves more effectively. That's an important concept for us to remember.

Standards in intellectual disciplines are rising at least as fast as in sports. Roger Bacon, the great English scholar and teacher of the thirteenth century, wrote that a person would need thirty to forty years of

study to master mathematics as then understood. Today the math he was talking about—calculus hadn't been invented—is taught routinely to millions of high school students. No one thinks anything of it, but consider what this means. The intellectual content of the material is the same, and people's brains aren't any different; seven hundred and some years isn't nearly enough time for a broad upgrade in human brainpower. Instead, just as in sports, the standard of what we do with what we've got has simply risen tremendously.

When Tchaikovsky finished writing his Violin Concerto in 1878, he asked the famous violinist Leopold Auer to give the premier performance. Auer studied the score and said no—he thought the work was unplayable. Today every young violinist graduating from Juilliard can play it. The music is the same, the violins are the same, and human beings haven't changed. But people have learned how to perform much, much better.

New research shows that the trend is continuing, even in realms where the standard already seems impressively high. For example, a cleverly designed study of world championship games in chess found recently that the game is being played at a far higher level today than it was in the nineteenth century, when the world championship was first contested. Using powerful chess software, the researchers found that former champions made many more tactical errors than today's players do. In fact, champions of yore would about match today's players just below the master level, not even approaching the grand master or champion levels. The researchers concluded, "these results imply dramatic improvements at the highest level of intellectual achievement in the game of chess over the last two centuries." Again, the game hasn't changed, and not enough time has passed for human brains to have changed. What has changed is that people are doing much more with what they've got.

In business it's overwhelmingly clear that standards of performance

will continue to rise more relentlessly than they have in the past, thus increasing the value of great performance. The most important reason is that infotech has given customers unprecedented power, and with that power they're demanding more. We all understand this because we've all bought stuff online. As buyers, we receive more information than we could ever see before. We know what the car dealer paid for the car. We know what prescription drugs cost in Canada. We know that a college textbook costing \$135 in the campus bookstore can be ordered for \$70 from England. And what we know and save as consumers is nothing compared with what corporate buyers know about their suppliers, and the cost savings it has suddenly become possible to squeeze out of them. As the strategy consultant Gary Hamel likes to say, if customer ignorance is a profit center for you, you're in trouble.

The Challenge We All Face

It isn't just companies that have to keep kicking up their performance more than they ever did before. It's each of us individually. The pressure on us to keep getting better is greater than it used to be because of a historic change in the economy.

To understand what's going on, we need to take a step back. How many offers of credit cards do you get in the mail every day? Do your kids get them? How about your pet? (It has happened.) Maybe you also receive unsolicited checks with your name and address printed in the corner, and a letter urging you to write out those checks to pay some bills. It's happening because the world's financial institutions are awash in money. They literally have more than they know what to do with, and they're saying: Take some, please!

Those financial institutions aren't alone. Companies of all kinds have far more money than they need. The cash held by U.S. companies is hitting all-time records. Companies are using some of this money to

buy back their own stock at record rates. When a company does this, it's saying to its investors: We don't have any good ideas for what to do with this, so here—maybe you do.

These are all manifestations of a much larger phenomenon. For roughly five hundred years—from the explosion of commerce and wealth that accompanied the Renaissance until the late twentieth century—the scarce resource in business was financial capital. If you had it, you had the means to create more wealth, and if you didn't, you didn't. That world is now gone. Today, in a change that is historically quite sudden, financial capital is abundant. The scarce resource is no longer money. It's human ability.

Such assertions run the danger of sounding like up-with-people fluff, so it's important to demonstrate that they're true. Fortunately, the evidence is easy to spot. It has become possible in recent years to create staggering amounts of shareholder wealth with business models that use very little financial capital but tons of human capital. For example, Microsoft has used about \$30 billion of financial capital from all sources over its corporate lifetime, and it has created about \$221 billion of shareholder wealth. By contrast, Procter & Gamble, one of the best managed and most admired companies in the world, has used far more capital than Microsoft, about \$83 billion, yet has created much less shareholder wealth—about \$126 billion.

Even more dramatically, Google has used only about \$5 billion of capital but has created about \$124 billion of shareholder wealth. Contrast that with, say, PepsiCo, another superbly managed company built on a business model from an earlier age; using much more financial capital than Google, about \$34 billion, it has created much less shareholder wealth, about \$73 billion.

Microsoft and Google understand perfectly well that their success is built on human capital. Both companies are famous for the scorching intelligence of the people they hire and for the brutally rigorous tests they impose on job applicants. Bill Gates has said that if you took the

twenty smartest people out of Microsoft it would be an insignificant company, and if you ask around the company what its core competency is, they don't say anything about software. They say it's hiring. They know what the scarce resource is.

What makes this phenomenon so significant is that it applies to all companies, not just infotech wonders. Consider the most extreme case of a company that would appear to rely almost entirely on financial capital, Exxon Mobil. It's the largest company in the world, and its business is arguably the world's most capital-intensive. In recent years it has been investing about \$20 billion a year in its business, the largest capital investment program of any company in the world. But it has been giving even more—\$33 billion in 2006—back to the shareholders through dividends and stock buybacks, the largest-ever example of “Here—maybe you can do something with this.” I asked the CEO, Rex Tillerson, why he followed that policy. After all, Exxon earns tremendous returns on the money it invests, far better than any of its major competitors. So why not build shareholder wealth by investing more than \$20 billion a year? The constraint, he says, isn't money, it's people: “You don't just walk out on the street and hire an Exxon Mobil engineer or geoscientist or researcher.” He could fund more projects, but he doesn't have enough qualified people to manage them.

For virtually every company, the scarce resource today is human ability. That's why companies are under unprecedented pressure to make sure that every employee is as highly developed as possible—and as we shall see, no one knows what the limits of development are.

At the same time, a separate historic trend is putting individuals under unprecedented pressure to develop their own abilities more highly than was ever necessary before, quite apart from anything their employers may or may not do to develop them. That trend is the advent of the first large-scale global labor market. We've had global product markets for centuries and global capital markets for almost as long. But labor markets were different. For most of human history, most work

has been place-based. Often it was tied to the location of customers; farriers had to be where the horses were, bakers where the buyers were, bankers where the depositors and borrowers were. Other work was tied to the location of the natural resources on which it relied. Miners had to be where the coal was, fishermen where the fish were. Detroit became the car capital because it was the best spot at which to bring together, via rail and Great Lakes shipping, the coal, steel, rubber, and other components of a car, and from which to distribute to the nation.

Offshoring happened for decades, but for most of that time it wasn't a national obsession because it didn't happen much; before the info age, coordinating production in a foreign country was slow and cumbersome. Thus the great majority of workers competed for jobs mostly with other workers in their area, and when they competed more broadly, it was mostly with workers in other parts of the country.

But today, many millions of workers in developed economies compete for jobs with other workers around the world. The reason is that a large and growing proportion of all work is information-based and doesn't involve moving or processing anything physical at all. We're all familiar with some of the results: workers in other countries answering our customer service calls, reading our X-rays, writing our software. Other developments may be more surprising. More than a million American tax returns are prepared in India each year. A major accounting firm audited a client company in London by flying in a team of accountants from India, putting them up in a hotel for three weeks, and flying them back; it was much cheaper than using British accountants.

It's all happening because the costs of computing power and telecommunications are in free fall. Processing information and moving it around costs practically nothing. For those same reasons, offshoring of manufacturing jobs is also exploding. Coordinating global supply chains has become so fast and precise that it's now worthwhile to take

advantage of cheaper labor that happens to be halfway around the world.

The result is that a fast-growing number of workers everywhere have to be just as good—and just as good a value—as the very best workers in their field anywhere on earth. It's true that a few jobs can probably escape this brutal competition, but not as many as we're tempted to think. You might suppose, for example, that dentists will always have to be where their patients are. Not so. Many consumers in Britain, where dentistry is a much-criticized part of the National Health Service, are taking low-fare flights to Poland to get their dental work done by well-trained dentists who charge bargain prices.

If you think your job isn't exportable, you may be right—but think about it hard before you relax.

“World class” is a term that gets thrown around too easily. For most of history, few people had to worry about what world class was. But now that's changing. In a global, information-based, interconnected economy, businesses and individuals are increasingly going up against the world's best. The costs of being less than truly world class are growing, as are the rewards of being genuinely great.

Understanding where extraordinary performance comes from would be valuable at any time. Now it's crucial.

It must also be said that the value of better understanding great performance is more than just economic. Not that there's anything wrong with prosperity; most people want to be better off, and helping them keep their jobs, fund their retirements, and pay for their kids' educations—by helping them become better performers—can prevent a lot of human suffering. But there's more to life than work, and there's more to be good at than your job.

Being good at whatever we want to do—playing the violin, running a race, painting a picture, leading a group of people—is among the

deepest sources of fulfillment we will ever know. Most of what we want to do is hard. That's life. Encountering problems, discouragement, and disappointment is inevitable. So any knowledge about what makes us better at the things we want to do—real knowledge, not myth or conjecture—can be used not just to make us richer but also to make us happier.

Researchers have uncovered and refined a great deal of such knowledge over the past thirty years, and it holds tremendous promise for making us better at undertakings of every kind. This knowledge has not been widely dispersed or well understood, which makes the opportunity of applying it all the greater. Many of the findings are surprising; in fact, though they're ultimately full of promise and even inspiration, many people resist them at first.

The nineteenth-century humorist Josh Billings famously said, "It ain't so much the things we don't know that get us into trouble. It's the things we know that just ain't so." The first step in understanding the new findings on great performance is using them to help us identify what we know for sure that just ain't so.

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