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THE TIMES



OUTLIERS

The STORY *of* SUCCESS

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Outliers
by
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INTRODUCTION

The Roseto Mystery

“THESE PEOPLE WERE DYING
OF OLD AGE. THAT’S IT.”

out·li·er \-,lī(-ə)r\ *noun*

1: something that is situated away from or classed differently from a main or related body

2: a statistical observation that is markedly different in value from the others of the sample

1.

Roseto Valfortore lies one hundred miles southeast of Rome in the Apennine foothills of the Italian province of Foggia. In the style of medieval villages, the town is organized around a large central square. Facing the square is the Palazzo Marchesale, the palace of the Saggese family, once the great landowner of those parts. An archway to one side leads to a church, the Madonna del Carmine—Our Lady of Mount Carmine. Narrow stone steps run up the hillside, flanked by closely clustered two-story stone houses with red-tile roofs.

For centuries, the *paesani* of Roseto worked in the marble quarries in the surrounding hills, or cultivated the fields in the terraced valley below, walking four and five miles down the mountain in the morning and then making the long journey back up the hill at night. Life was hard. The townsfolk were barely literate and desperately poor and without much hope for economic betterment until word reached Roseto at the end of the nineteenth century of the land of opportunity across the ocean.

In January of 1882, a group of eleven Rosetans—ten men and one boy—set sail for New York. They spent their first night in America sleeping on the floor of a tavern on Mulberry Street, in Manhattan's Little Italy. Then they ventured west, eventually finding jobs in a slate quarry ninety miles west of the city near the town of Bangor, Pennsylvania. The following year, fifteen Rosetans left Italy for America, and several members of that group ended up in Bangor as well, joining their compatriots in the slate quarry. Those immigrants, in turn, sent word back to Roseto about the promise of the New World, and soon one group of Rosetans after another packed their bags and headed for Pennsylvania, until the initial stream of immigrants became a flood. In 1894 alone, some twelve hundred Rosetans applied for passports to America, leaving entire streets of their old village abandoned.

The Rosetans began buying land on a rocky hillside connected to Bangor by a steep, rutted wagon path. They built closely clustered two-story stone houses with slate roofs on narrow streets running up and down the hillside. They built a church and called it Our Lady of Mount Carmel and named the main street, on which it stood, Gari-

baldi Avenue, after the great hero of Italian unification. In the beginning, they called their town New Italy. But they soon changed it to Roseto, which seemed only appropriate given that almost all of them had come from the same village in Italy.

In 1896, a dynamic young priest by the name of Father Pasquale de Nisco took over at Our Lady of Mount Carmel. De Nisco set up spiritual societies and organized festivals. He encouraged the townsfolk to clear the land and plant onions, beans, potatoes, melons, and fruit trees in the long backyards behind their houses. He gave out seeds and bulbs. The town came to life. The Rosetans began raising pigs in their backyards and growing grapes for homemade wine. Schools, a park, a convent, and a cemetery were built. Small shops and bakeries and restaurants and bars opened along Garibaldi Avenue. More than a dozen factories sprang up making blouses for the garment trade. Neighboring Bangor was largely Welsh and English, and the next town over was overwhelmingly German, which meant—given the fractious relationships between the English and Germans and Italians in those years—that Roseto stayed strictly for Rosetans. If you had wandered up and down the streets of Roseto in Pennsylvania in the first few decades after 1900, you would have heard only Italian, and not just any Italian but the precise southern Foggian dialect spoken back in the Italian Roseto. Roseto, Pennsylvania, was its own tiny, self-sufficient world—all but unknown by the society around it—and it might well have remained so but for a man named Stewart Wolf.

Wolf was a physician. He studied digestion and the

stomach and taught in the medical school at the University of Oklahoma. He spent his summers on a farm in Pennsylvania, not far from Roseto—although that, of course, didn't mean much, since Roseto was so much in its own world that it was possible to live in the next town and never know much about it. "One of the times when we were up there for the summer—this would have been in the late nineteen fifties—I was invited to give a talk at the local medical society," Wolf said years later in an interview. "After the talk was over, one of the local doctors invited me to have a beer. And while we were having a drink, he said, 'You know, I've been practicing for seventeen years. I get patients from all over, and I rarely find anyone from Roseto under the age of sixty-five with heart disease.'"

Wolf was taken aback. This was the 1950s, years before the advent of cholesterol-lowering drugs and aggressive measures to prevent heart disease. Heart attacks were an epidemic in the United States. They were the leading cause of death in men under the age of sixty-five. It was impossible to be a doctor, common sense said, and not see heart disease.

Wolf decided to investigate. He enlisted the support of some of his students and colleagues from Oklahoma. They gathered together the death certificates from residents of the town, going back as many years as they could. They analyzed physicians' records. They took medical histories and constructed family genealogies. "We got busy," Wolf said. "We decided to do a preliminary study. We started in nineteen sixty-one. The mayor said, 'All my

sisters are going to help you.’ He had four sisters. He said, ‘You can have the town council room.’ I said, ‘Where are you going to have council meetings?’ He said, ‘Well, we’ll postpone them for a while.’ The ladies would bring us lunch. We had little booths where we could take blood, do EKGs. We were there for four weeks. Then I talked with the authorities. They gave us the school for the summer. We invited the entire population of Roseto to be tested.”

The results were astonishing. In Roseto, virtually no one under fifty-five had died of a heart attack or showed any signs of heart disease. For men over sixty-five, the death rate from heart disease in Roseto was roughly half that of the United States as a whole. The death rate from all causes in Roseto, in fact, was 30 to 35 percent lower than expected.

Wolf brought in a friend of his, a sociologist from Oklahoma named John Bruhn, to help him. “I hired medical students and sociology grad students as interviewers, and in Roseto we went house to house and talked to every person aged twenty-one and over,” Bruhn remembers. This happened more than fifty years ago, but Bruhn still had a sense of amazement in his voice as he described what they found. “There was no suicide, no alcoholism, no drug addiction, and very little crime. They didn’t have anyone on welfare. Then we looked at peptic ulcers. They didn’t have any of those either. These people were dying of old age. That’s it.”

Wolf’s profession had a name for a place like Roseto—a place that lay outside everyday experience, where the normal rules did not apply. Roseto was an *outlier*.

2.

Wolf's first thought was that the Rosetans must have held on to some dietary practices from the Old World that left them healthier than other Americans. But he quickly realized that wasn't true. The Rosetans were cooking with lard instead of with the much healthier olive oil they had used back in Italy. Pizza in Italy was a thin crust with salt, oil, and perhaps some tomatoes, anchovies, or onions. Pizza in Pennsylvania was bread dough plus sausage, pepperoni, salami, ham, and sometimes eggs. Sweets such as biscotti and *taralli* used to be reserved for Christmas and Easter; in Roseto they were eaten year-round. When Wolf had dieticians analyze the typical Rosetan's eating habits, they found that a whopping 41 percent of their calories came from fat. Nor was this a town where people got up at dawn to do yoga and run a brisk six miles. The Pennsylvanian Rosetans smoked heavily and many were struggling with obesity.

If diet and exercise didn't explain the findings, then what about genetics? The Rosetans were a close-knit group from the same region of Italy, and Wolf's next thought was to wonder whether they were of a particularly hardy stock that protected them from disease. So he tracked down relatives of the Rosetans who were living in other parts of the United States to see if they shared the same remarkable good health as their cousins in Pennsylvania. They didn't.

He then looked at the region where the Rosetans lived. Was it possible that there was something about living in the foothills of eastern Pennsylvania that was good for their health? The two closest towns to Roseto were Bangor,

which was just down the hill, and Nazareth, a few miles away. These were both about the same size as Roseto, and both were populated with the same kind of hardworking European immigrants. Wolf combed through both towns' medical records. For men over sixty-five, the death rates from heart disease in Nazareth and Bangor were three times that of Roseto. Another dead end.

What Wolf began to realize was that the secret of Roseto wasn't diet or exercise or genes or location. *It had to be Roseto itself.* As Bruhn and Wolf walked around the town, they figured out why. They looked at how the Rosetans visited one another, stopping to chat in Italian on the street, say, or cooking for one another in their backyards. They learned about the extended family clans that underlay the town's social structure. They saw how many homes had three generations living under one roof, and how much respect grandparents commanded. They went to mass at Our Lady of Mount Carmel and saw the unifying and calming effect of the church. They counted twenty-two separate civic organizations in a town of just under two thousand people. They picked up on the particular egalitarian ethos of the community, which discouraged the wealthy from flaunting their success and helped the unsuccessful obscure their failures.

In transplanting the *paesani* culture of southern Italy to the hills of eastern Pennsylvania, the Rosetans had created a powerful, protective social structure capable of insulating them from the pressures of the modern world. The Rosetans were healthy because of where they were *from*, because of the world they had created for themselves in their tiny little town in the hills.

“I remember going to Roseto for the first time, and you’d see three-generational family meals, all the bakeries, the people walking up and down the street, sitting on their porches talking to each other, the blouse mills where the women worked during the day, while the men worked in the slate quarries,” Bruhn said. “It was magical.”

When Bruhn and Wolf first presented their findings to the medical community, you can imagine the kind of skepticism they faced. They went to conferences where their peers were presenting long rows of data arrayed in complex charts and referring to this kind of gene or that kind of physiological process, and they themselves were talking instead about the mysterious and magical benefits of people stopping to talk to one another on the street and of having three generations under one roof. Living a long life, the conventional wisdom at the time said, depended to a great extent on who we were—that is, our genes. It depended on the decisions we made—on what we chose to eat, and how much we chose to exercise, and how effectively we were treated by the medical system. No one was used to thinking about health in terms of *community*.

Wolf and Bruhn had to convince the medical establishment to think about health and heart attacks in an entirely new way: they had to get them to realize that they wouldn’t be able to understand why someone was healthy if all they did was think about an individual’s personal choices or actions in isolation. They had to look *beyond* the individual. They had to understand the culture he or she was a part of, and who their friends and families were, and what town their families came from. They had to

appreciate the idea that the values of the world we inhabit and the people we surround ourselves with have a profound effect on who we are.

In *Outliers*, I want to do for our understanding of success what Stewart Wolf did for our understanding of health.

PART ONE

OPPORTUNITY

The Matthew Effect

“FOR UNTO EVERYONE THAT HATH SHALL
BE GIVEN, AND HE SHALL HAVE ABUNDANCE.
BUT FROM HIM THAT HATH NOT SHALL BE
TAKEN AWAY EVEN THAT WHICH HE HATH.”

— MATTHEW 25:29

1.

One warm, spring day in May of 2007, the Medicine Hat Tigers and the Vancouver Giants met for the Memorial Cup hockey championships in Vancouver, British Columbia. The Tigers and the Giants were the two finest teams in the Canadian Hockey League, which in turn is the finest junior hockey league in the world. These were the future stars of the sport—seventeen-, eighteen-, and nineteen-year-olds who had been skating and shooting pucks since they were barely more than toddlers.

The game was broadcast on Canadian national television. Up and down the streets of downtown Vancouver, Memorial Cup banners hung from the lampposts. The arena was packed. A long red carpet was rolled out on the ice, and the announcer introduced the game’s dignitaries. First came the premier of British Columbia, Gordon Campbell. Then, amid tumultuous applause, out walked

Gordie Howe, one of the legends of the game. “Ladies and gentlemen,” the announcer boomed. “Mr. Hockey!”

For the next sixty minutes, the two teams played spirited, aggressive hockey. Vancouver scored first, early in the second period, on a rebound by Mario Bliznak. Late in the second period, it was Medicine Hat’s turn, as the team’s scoring leader, Darren Helm, fired a quick shot past Vancouver’s goalie, Tyson Sexsmith. Vancouver answered in the third period, scoring the game’s deciding goal, and then, when Medicine Hat pulled its goalie in desperation, Vancouver scored a third time.

In the aftermath of the game, the players and their families and sports reporters from across the country crammed into the winning team’s locker room. The air was filled with cigar smoke and the smell of champagne and sweat-soaked hockey gear. On the wall was a hand-painted banner: “Embrace the Struggle.” In the center of the room the Giants’ coach, Don Hay, stood misty-eyed. “I’m just so proud of these guys,” he said. “Just look around the locker room. There isn’t one guy who didn’t buy in wholeheartedly.”

Canadian hockey is a meritocracy. Thousands of Canadian boys begin to play the sport at the “novice” level, before they are even in kindergarten. From that point on, there are leagues for every age class, and at each of those levels, the players are sifted and sorted and evaluated, with the most talented separated out and groomed for the next level. By the time players reach their midteens, the very best of the best have been channeled into an elite league known as Major Junior A, which is the top of the pyramid. And if your Major Junior A team plays for the

Memorial Cup, that means you are at the very top of the top of the pyramid.

This is the way most sports pick their future stars. It's the way soccer is organized in Europe and South America, and it's the way Olympic athletes are chosen. For that matter, it is not all that different from the way the world of classical music picks its future virtuosos, or the way the world of ballet picks its future ballerinas, or the way our elite educational system picks its future scientists and intellectuals.

You can't buy your way into Major Junior A hockey. It doesn't matter who your father or mother is, or who your grandfather was, or what business your family is in. Nor does it matter if you live in the most remote corner of the most northerly province in Canada. If you have ability, the vast network of hockey scouts and talent spotters will find you, and if you are willing to work to develop that ability, the system will reward you. Success in hockey is based on *individual merit*—and both of those words are important. Players are judged on their own performance, not on anyone else's, and on the basis of their ability, not on some other arbitrary fact.

Or are they?

2.

This is a book about outliers, about men and women who do things that are out of the ordinary. Over the course of the chapters ahead, I'm going to introduce you to one kind of outlier after another: to geniuses, business tycoons, rock stars, and software programmers. We're going to uncover

the secrets of a remarkable lawyer, look at what separates the very best pilots from pilots who have crashed planes, and try to figure out why Asians are so good at math. And in examining the lives of the remarkable among us—the skilled, the talented, and the driven—I will argue that there is something profoundly wrong with the way we make sense of success.

What is the question we always ask about the successful? We want to know what they're *like*—what kind of personalities they have, or how intelligent they are, or what kind of lifestyles they have, or what special talents they might have been born with. And we assume that it is those personal qualities that explain how that individual reached the top.

In the autobiographies published every year by the billionaire/entrepreneur/rock star/celebrity, the story line is always the same: our hero is born in modest circumstances and by virtue of his own grit and talent fights his way to greatness. In the Bible, Joseph is cast out by his brothers and sold into slavery and then rises to become the pharaoh's right-hand man on the strength of his own brilliance and insight. In the famous nineteenth-century novels of Horatio Alger, young boys born into poverty rise to riches through a combination of pluck and initiative. "I think overall it's a disadvantage," Jeb Bush once said of what it meant for his business career that he was the son of an American president and the brother of an American president and the grandson of a wealthy Wall Street banker and US senator. When he ran for governor of Florida, he repeatedly referred to himself as a "self-made man," and it is a measure of how deeply we associate success with the efforts of the individual that few batted an eye at that description.

“Lift up your heads,” Robert Winthrop told the crowd many years ago at the unveiling of a statue of that great hero of American independence Benjamin Franklin, “and look at the image of a man who rose from nothing, who owed nothing to parentage or patronage, who enjoyed no advantages of early education which are not open—a hundredfold open—to yourselves, who performed the most menial services in the businesses in which his early life was employed, but who lived to stand before Kings, and died to leave a name which the world will never forget.”

In *Outliers*, I want to convince you that these kinds of personal explanations of success don't work. People don't rise from nothing. We do owe something to parentage and patronage. The people who stand before kings may look like they did it all by themselves. But in fact they are invariably the beneficiaries of hidden advantages and extraordinary opportunities and cultural legacies that allow them to learn and work hard and make sense of the world in ways others cannot. It makes a difference where and when we grew up. The culture we belong to and the legacies passed down by our forebears shape the patterns of our achievement in ways we cannot begin to imagine. It's not enough to ask what successful people are like, in other words. It is only by asking where they are *from* that we can unravel the logic behind who succeeds and who doesn't.

Biologists often talk about the “ecology” of an organism: the tallest oak in the forest is the tallest not just because it grew from the hardiest acorn; it is the tallest also because no other trees blocked its sunlight, the soil around it was deep and rich, no rabbit chewed through its bark as a sapling, and no lumberjack cut it down before it

matured. We all know that successful people come from hardy seeds. But do we know enough about the sunlight that warmed them, the soil in which they put down the roots, and the rabbits and lumberjacks they were lucky enough to avoid? This is not a book about tall trees. It's a book about forests—and hockey is a good place to start because the explanation for who gets to the top of the hockey world is a lot more interesting and complicated than it looks. In fact, it's downright peculiar.

3.

Here is the player roster of the 2007 Medicine Hat Tigers. Take a close look and see if you can spot anything strange about it.

No.	Name	Pos.	L/R	Height	Weight	Birth Date	Hometown
9	Brennan Bosch	C	R	5'8"	173	Feb. 14, 1988	Martensville, SK
11	Scott Wasden	C	R	6'1"	188	Jan. 4, 1988	Westbank, BC
12	Colton Grant	LW	L	5'9"	177	Mar. 20, 1989	Standard, AB
14	Darren Helm	LW	L	6'	182	Jan. 21, 1987	St. Andrews, MB
15	Derek Dorsett	RW	L	5'11"	178	Dec. 20, 1986	Kindersley, SK
16	Daine Todd	C	R	5'10"	173	Jan. 10, 1987	Red Deer, AB
17	Tyler Swystun	RW	R	5'11"	185	Jan. 15, 1988	Cochrane, AB
19	Matt Lowry	C	R	6'	186	Mar. 2, 1988	Neepawa, MB
20	Kevin Undershute	LW	L	6'	178	Apr. 12, 1987	Medicine Hat, AB
21	Jerrid Sauer	RW	R	5'10"	196	Sep. 12, 1987	Medicine Hat, AB

No.	Name	Pos.	L/R	Height	Weight	Birth Date	Hometown
22	Tyler Ennis	C	L	5'9"	160	Oct. 6, 1989	Edmonton, AB
23	Jordan Hickmott	C	R	6'	183	Apr. 11, 1990	Mission, BC
25	Jakub Rumpel	RW	R	5'8"	166	Jan. 27, 1987	Hrnciarovce, SLO
28	Bretton Cameron	C	R	5'11"	168	Jan. 26, 1989	Didsbury, AB
36	Chris Stevens	LW	L	5'10"	197	Aug. 20, 1986	Dawson Creek, BC
3	Gord Baldwin	D	L	6'5"	205	Mar. 1, 1987	Winnipeg, MB
4	David Schlemko	D	L	6'1"	195	May 7, 1987	Edmonton, AB
5	Trever Glass	D	L	6'	190	Jan. 22, 1988	Cochrane, AB
10	Kris Russell	D	L	5'10"	177	May 2, 1987	Caroline, AB
18	Michael Sauer	D	R	6'3"	205	Aug. 7, 1987	Sartell, MN
24	Mark Isherwood	D	R	6'	183	Jan. 31, 1989	Abbotsford, BC
27	Shayne Brown	D	L	6'1"	198	Feb. 20, 1989	Stony Plain, AB
29	Jordan Bendfeld	D	R	6'3"	230	Feb. 9, 1988	Leduc, AB
31	Ryan Holfeld	G	L	5'11"	166	Jun. 29, 1989	LeRoy, SK
33	Matt Keetley	G	R	6'2"	189	Apr. 27, 1986	Medicine Hat, AB

Do you see it? Don't feel bad if you don't, because for many years in the hockey world no one did. It wasn't until the mid-1980s, in fact, that a Canadian psychologist named Roger Barnsley first drew attention to the phenomenon of relative age.

Barnsley was at a Lethbridge Broncos hockey game in

southern Alberta, a team that played in the same Major Junior A league as the Vancouver Giants and the Medicine Hat Tigers. He was there with his wife, Paula, and their two boys, and his wife was reading the program, when she ran across a roster list just like the one above that you just looked at.

“Roger,” she said, “do you know when these young men were born?”

Barnsley said yes. “They’re all between sixteen and twenty, so they’d be born in the late sixties.”

“No, no,” Paula went on. “What *month*.”

“I thought she was crazy,” Barnsley remembers. “But I looked through it, and what she was saying just jumped out at me. For some reason, there were an incredible number of January, February, and March birth dates.”

Barnsley went home that night and looked up the birth dates of as many professional hockey players as he could find. He saw the same pattern. Barnsley, his wife, and a colleague, A. H. Thompson, then gathered statistics on every player in the Ontario Junior Hockey League. The story was the same. More players were born in January than in any other month, and by an overwhelming margin. The second most frequent birth month? February. The third? March. Barnsley found that there were nearly five and a half times as many Ontario Junior Hockey League players born in January as were born in November. He looked at the all-star teams of eleven-year-olds and thirteen-year-olds—the young players selected for elite traveling squads. Same story. He looked at the composition of the National Hockey League. Same story. The more he looked, the more Barnsley came to believe that what he was seeing was not a chance occurrence but an iron law of Canadian hockey:

in *any* elite group of hockey players—the very best of the best—40 percent of the players will have been born between January and March, 30 percent between April and June, 20 percent between July and September, and 10 percent between October and December.

“In all my years in psychology, I have never run into an effect this large,” Barnsley says. “You don’t even need to do any statistical analysis. You just look at it.”

Look back at the Medicine Hat roster. Do you see it now? Seventeen out of the twenty-five players on the team were born in January, February, March, or April.

Here is the play-by-play for the first two goals in the Memorial Cup final, only this time I’ve substituted the players’ birthdays for their names. It no longer sounds like the championship of Canadian junior hockey. It now sounds like a strange sporting ritual for teenage boys born under the astrological signs Capricorn, Aquarius, and Pisces.

March 11 starts around one side of the Tigers’ net, leaving the puck for his teammate January 4, who passes it to January 22, who flips it back to March 12, who shoots point-blank at the Tigers’ goalie, April 27. April 27 blocks the shot, but it’s rebounded by Vancouver’s March 6. He shoots! Medicine Hat defensemen February 9 and February 14 dive to block the puck while January 10 looks on helplessly. March 6 scores!

Let’s go to the second period now.

Medicine Hat’s turn. The Tigers’ scoring leader, January 21, charges down the right side of the ice. He stops and

circles, eluding the Vancouver defenseman February 15. January 21 then deftly passes the puck to his teammate December 20—wow! what’s he doing out there?!—who shrugs off the onrushing defender May 17 and slides a cross-crease pass back to January 21. He shoots! Vancouver defenseman March 12 dives, trying to block the shot. Vancouver’s goalie, March 19, lunges helplessly. January 21 scores! He raises his hands in triumph. His teammate May 2 jumps on his back with joy.

4.

The explanation for this is quite simple. It has nothing to do with astrology, nor is there anything magical about the first three months of the year. It’s simply that in Canada the eligibility cutoff for age-class hockey is January 1. A boy who turns ten on January 2, then, could be playing alongside someone who doesn’t turn ten until the end of the year—and at that age, in preadolescence, a twelve-month gap in age represents an enormous difference in physical maturity.

This being Canada, the most hockey-crazed country on earth, coaches start to select players for the traveling “rep” squad—the all-star teams—at the age of nine or ten, and of course they are more likely to view as talented the bigger and more coordinated players, who have had the benefit of critical extra months of maturity.

And what happens when a player gets chosen for a rep squad? He gets better coaching, and his teammates are better, and he plays fifty or seventy-five games a season instead of twenty games a season like those left

behind in the “house” league, and he practices twice as much as, or even three times more than, he would have otherwise. In the beginning, his advantage isn’t so much that he is inherently better but only that he is a little older. But by the age of thirteen or fourteen, with the benefit of better coaching and all that extra practice under his belt, he really *is* better, so he’s the one more likely to make it to the Major Junior A league, and from there into the big leagues.*

Barnsley argues that these kinds of skewed age distributions exist whenever three things happen: selection, streaming, and differentiated experience. If you make a decision about who is good and who is not good at an early age; if you separate the “talented” from the “untalented”; and if you provide the “talented” with a superior experience, then you’re going to end up giving a huge advantage to that small group of people born closest to the cutoff date.

In the United States, football and basketball don’t select, stream, and differentiate quite as dramatically. As

* The way Canadians select hockey players is a beautiful example of what the sociologist Robert Merton famously called a “self-fulfilling prophecy”—a situation where “a false definition, in the beginning... evokes a new behavior which makes the original false conception come true.” Canadians start with a false definition of who the best nine- and ten-year-old hockey players are. They’re just picking the oldest every year. But the way they treat those “all-stars” ends up making their original false judgment look correct. As Merton puts it: “This specious validity of the self-fulfilling prophecy perpetuates a reign of error. For the prophet will cite the actual course of events as proof that he was right from the very beginning.”

a result, a child can be a bit behind physically in those sports and still play as much as his or her more mature peers.* But baseball does. The cutoff date for almost all nonschool baseball leagues in the United States is July 31, with the result that more major league players are born in August than in any other month. (The numbers are striking: in 2005, among Americans playing major league baseball 505 were born in August versus 313 born in July.)

European soccer, similarly, is organized like hockey and baseball—and the birth-date distributions in that sport are heavily skewed as well. In England, the eligibility date is September 1, and in the football association's premier league at one point in the 1990s, there were 288 players born between September and November and only 136 players born between June and August. In international soccer, the cutoff date used to be August 1, and in one recent junior world championship tournament, 135 players were born in the three months after August 1, and just 22 were born in May, June, and July. Today the cutoff date for international junior soccer is January 1. Take a look at the roster of the 2007 Czechoslovakian National Junior soccer team, which made the Junior World Cup finals.

Here we go again:

* A physically immature basketball player in an American city can probably play as many hours of basketball in a given year as a relatively older child because there are so many basketball courts and so many people willing to play. It's not like ice hockey, where you need a rink. Basketball is saved by its accessibility and ubiquity.

No.	Player	Birth Date	Position
1	Marcel Gecov	Jan. 1, 1988	MF
2	Ludek Frydrych	Jan. 3, 1987	GK
3	Petr Janda	Jan. 5, 1987	MF
4	Jakub Dohnalek	Jan. 12, 1988	DF
5	Jakub Mares	Jan. 26, 1987	MF
6	Michal Held	Jan. 27, 1987	DF
7	Marek Strestik	Feb. 1, 1987	FW
8	Jiri Valenta	Feb. 14, 1988	MF
9	Jan Simunek	Feb. 20, 1987	DF
10	Tomas Oklestek	Feb. 21, 1987	MF
11	Lubos Kalouda	Feb. 21, 1987	MF
12	Radek Petr	Feb. 24, 1987	GK
13	Ondrej Mazuch	Mar. 15, 1989	DF
14	Ondrej Kudela	Mar. 26, 1987	MF
15	Marek Suchy	Mar. 29, 1988	DF
16	Martin Fenin	Apr. 16, 1987	FW
17	Tomas Pekhart	May 26, 1989	FW
18	Lukas Kuban	Jun. 22, 1987	DF
19	Tomas Cihlar	Jun. 24, 1987	DF
20	Tomas Frystak	Aug. 18, 1987	GK
21	Tomas Micola	Sep. 26, 1988	MF

At the national team tryouts, the Czech soccer coaches might as well have told everyone born after midsummer that they should pack their bags and go home.

Hockey and soccer are just games, of course, involving a select few. But these exact same biases also show up in

areas of much more consequence, like education. Parents with a child born at the end of the calendar year often think about holding their child back before the start of kindergarten: it's hard for a five-year-old to keep up with a child born many months earlier. But most parents, one suspects, think that whatever disadvantage a younger child faces in kindergarten eventually goes away. *But it doesn't.* It's just like hockey. The small initial advantage that the child born in the early part of the year has over the child born at the end of the year persists. It locks children into patterns of achievement and underachievement, encouragement and discouragement, that stretch on and on for years.

Recently, two economists—Kelly Bedard and Elizabeth Dhuey—looked at the relationship between scores on what is called the Trends in International Mathematics and Science Study, or TIMSS (math and science tests given every four years to children in many countries around the world), and month of birth. They found that among fourth graders, the oldest children scored somewhere between four and twelve percentile points better than the youngest children. That, as Dhuey explains, is a “huge effect.” It means that if you take two intellectually equivalent fourth graders with birthdays at opposite ends of the cutoff date, the older student could score in the eightieth percentile, while the younger one could score in the sixty-eighth percentile. That's the difference between qualifying for a gifted program and not.

“It's just like sports,” Dhuey said. “We do ability grouping early on in childhood. We have advanced reading groups and advanced math groups. So, early on, if we look at

young kids, in kindergarten and first grade, the teachers are confusing maturity with ability. And they put the older kids in the advanced stream, where they learn better skills; and the next year, because they are in the higher groups, they do even better; and the next year, the same things happens, and they do even better again. The only country we don't see this going on is Denmark. They have a national policy where they have no ability grouping until the age of ten." Denmark waits to make selection decisions until maturity differences by age have evened out.

Dhuey and Bedard subsequently did the same analysis, only this time looking at college. What did they find? At four-year colleges in the United States—the highest stream of postsecondary education—students belonging to the relatively youngest group in their class are underrepresented by about 11.6 percent. That initial difference in maturity doesn't go away with time. It persists. And for thousands of students, that initial disadvantage is the difference between going to college—and having a real shot at the middle class—and not.*

"I mean, it's ridiculous," Dhuey says. "It's outlandish that our arbitrary choice of cutoff dates is causing

* Even more social phenomena can be linked to relative age. Barnsley and two colleagues, for instance, once found that students who attempt suicide are also more likely to be born in the second half of the school year. Their explanation is that poorer school performance can lead to depression. The connection between relative age and suicide, however, isn't nearly as pronounced as the correlation between birth date and athletic success.

these long-lasting effects, and no one seems to care about them.”

5.

Think for a moment about what the story of hockey and early birthdays says about success.

It tells us that our notion that it is the best and the brightest who effortlessly rise to the top is much too simplistic. Yes, the hockey players who make it to the professional level are more talented than you or me. But they also got a big head start, an opportunity that they neither deserved nor earned. And that opportunity played a critical role in their success.

The sociologist Robert Merton famously called this phenomenon the “Matthew Effect” after the New Testament verse in the Gospel of Matthew: “For unto everyone that hath shall be given, and he shall have abundance. But from him that hath not shall be taken away even that which he hath.” It is those who are successful, in other words, who are most likely to be given the kinds of special opportunities that lead to further success. It’s the rich who get the biggest tax breaks. It’s the best students who get the best teaching and most attention. And it’s the biggest nine- and ten-year-olds who get the most coaching and practice. Success is the result of what sociologists like to call “accumulative advantage.” The professional hockey player starts out a little bit better than his peers. And that little difference leads to an opportunity that makes that difference a bit bigger, and that edge in turn leads

to another opportunity, which makes the initially small difference bigger still—and on and on until the hockey player is a genuine outlier. But he didn't start out an outlier. He started out just a little bit better.

The second implication of the hockey example is that the systems we set up to determine who gets ahead aren't particularly efficient. We think that starting all-star leagues and gifted programs as early as possible is the best way of ensuring that no talent slips through the cracks. But take a look again at that roster for the Czech Republic soccer team. There are no players born in July, October, November, or December, and only one each in August and September. Those born in the last half of the year have all been discouraged, or overlooked, or pushed out of the sport. *The talent of essentially half of the Czech athletic population has been squandered.*

So what do you do if you're an athletic young Czech with the misfortune to have been born in the last part of the year? You *can't* play soccer. The deck is stacked against you. So maybe you could play the other sport that Czechs are obsessed with—hockey. But wait. (I think you know what's coming.) Here's the roster of the 2007 Czech junior hockey team that finished fifth at the world championships.

No.	Player	Birth Date	Position
1	David Kveton	Jan. 3, 1988	Forward
2	Jiri Suchy	Jan. 3, 1988	Defense
3	Michael Kolarz	Jan. 12, 1987	Defense
4	Jakub Vojta	Feb. 8, 1987	Defense

No.	Player	Birth Date	Position
5	Jakub Kindl	Feb. 10, 1987	Defense
6	Michael Frolik	Feb. 17, 1989	Forward
7	Martin Hanzal	Feb. 20, 1987	Forward
8	Tomas Svoboda	Feb. 24, 1987	Forward
9	Jakub Cerny	Mar. 5, 1987	Forward
10	Tomas Kudelka	Mar. 10, 1987	Defense
11	Jaroslav Barton	Mar. 26, 1987	Defense
12	H. O. Pozivil	Apr. 22, 1987	Defense
13	Daniel Rakos	May 25, 1987	Forward
14	David Kuchejda	Jun. 12, 1987	Forward
15	Vladimir Sobotka	Jul. 2, 1987	Forward
16	Jakub Kovar	Jul. 19, 1988	Goalie
17	Lukas Vantuch	Jul. 20, 1987	Forward
18	Jakub Voracek	Aug. 15, 1989	Forward
19	Tomas Pospisil	Aug. 25, 1987	Forward
20	Ondrej Pavelec	Aug. 31, 1987	Goalie
21	Tomas Kana	Nov. 29, 1987	Forward
22	Michal Repik	Dec. 31, 1988	Forward

Those born in the last quarter of the year might as well give up on hockey too.

Do you see the consequences of the way we have chosen to think about success? Because we so profoundly personalize success, we miss opportunities to lift others onto the top rung. We make rules that frustrate achievement. We prematurely write off people as failures. We are too much in awe of those who succeed and far too

dismissive of those who fail. And, most of all, we become much too passive. We overlook just how large a role we all play—and by “we” I mean society—in determining who makes it and who doesn’t.

If we chose to, we could acknowledge that cutoff dates matter. We could set up two or even three hockey leagues, divided up by month of birth. Let the players develop on separate tracks and then pick all-star teams. If all the Czech and Canadian athletes born at the end of the year had a fair chance, then the Czech and the Canadian national teams suddenly would have twice as many athletes to choose from.

Schools could do the same thing. Elementary and middle schools could put the January through April-born students in one class, the May through August in another class, and those born in September through December in the third class. They could let students learn with and compete against other students of the same maturity level. It would be a little bit more complicated administratively. But it wouldn’t necessarily cost that much more money, and it would level the playing field for those who—through no fault of their own—have been dealt a big disadvantage by the educational system. We could easily take control of the machinery of achievement, in other words—not just in sports but, as we will see, in other more consequential areas as well. But we don’t. And why? Because we cling to the idea that success is a simple function of individual merit and that the world in which we all grow up and the rules we choose to write as a society don’t matter at all.

6.

Before the Memorial Cup final, Gord Wasden—the father of one of the Medicine Hat Tigers—stood by the side of the ice, talking about his son Scott. He was wearing a Medicine Hat baseball cap and a black Medicine Hat T-shirt. “When he was four and five years old,” Wasden remembered, “his little brother was in a walker, and he would shove a hockey stick in his hand and they would play hockey on the floor in the kitchen, morning till night. Scott *always* had a passion for it. He played rep hockey throughout his minor-league hockey career. He always made the Triple A teams. As a first-year peewee or a first-year bantam, he always played on the [top] rep team.” Wasden was clearly nervous: his son was about to play in the biggest game of his life. “He’s had to work very hard for whatever he’s got. I’m very proud of him.”

Those were the ingredients of success at the highest level: passion, talent, and hard work. But there was another element. When did Wasden first get the sense that his son was something special? “You know, he was always a bigger kid for his age. He was strong, and he had a knack for scoring goals at an early age. And he was always kind of a standout for his age, a captain of his team....”

Bigger kid for his age? Of course he was. Scott Wasden was born on January 4, within three days of the absolute perfect birthday for an elite hockey player. He was one of the lucky ones. If the eligibility date for Canadian hockey were later in the year, he might have been watching the Memorial Cup championship from the stands instead of playing on the ice.