<div align="center">**Outliers—The Story of Success.**

Malcolm Gladwell—2008.</div>

Part one: opportunity.

Chapter 1: the Matthew Effect.

- In outliers, I want to convince you that these kind of personal explanations of success don't work. People don't rise from nothing. We do owe something to percentage and patronage. The people who stand before the Kings may look like they did it all by themselves. But in fact they were 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.
- For some reason, there were an incredible number of January, February and March birthdates.
- It's simply that in Canada eligibility cutoff for age class hockey is January 1. A boy who turns 10 on January 2, then, to be playing along someone who doesn't turn 10 until the end of the year— and at that age, in pre-adolescence, a 12 month gap in age represents an enormous difference in physical 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 50 or 75 games a season instead of 20 games if you 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 13 or 14, with the benefits 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, from there into the big leagues.
- Barnsley argues that these kinds of skewed age differentiations 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 he separate the "talented" from the "untalented", 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.
- But these exact same biases show up in areas of much more consequence, like education. Parents of the child born at the end of the calendar year often think about holding a 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 will eventually go away. But it doesn't. Just like the hockey. The small initial advantage that they child born in the early part of the year has over the child born at the end of the year persists. It lacks children into patterns of achievement and underachievement, encouragement and this encouragement, that stretch on and on for years.
- Success is the result of what sociologists like to call "accumulative advantage."

Chapter 2: the 10,000 hour rule.

- Achievement is talent plus preparation. The problem with this view is that the closer psychologists look at the careers of the gifted, the smaller the role in innate talent seems to play and the bigger the role preparation seems to play.

- Everyone from all three groups started playing at roughly the same age, around five years old. In those first few years, everyone practice roughly the same amount, about two or three hours a week. But when the students were around the age of eight, we'll differences start to emerge. The students who would end up the best in the class began to practice more than everyone else: six hours a week by age 9, eight hours a week by age 12, Eckstein hours a week by age 14 and up and up, until by the age of 20 they were practicing—that is, purposefully and single-mindedly playing the instruments with the intent to get better—well over 30 hours a week.
- In fact, by the age of 20, the elite performers had each totaled 10,000 hours of practice. By contrast, the merely good students had totaled 8000 hours.
- The emerging picture from such studies is that 10,000 hours of practicing is required to achieve the level of mastery associated with being a world-class expert.
- It's roughly how long it takes to put in 10,000 hours of hard practice.
- The other interesting thing about that 10,000 hours, of course, is that 10,000 hours is an enormous amount of time. It's all but impossible to reach a number all by yourself by the time you're a young adult. You have to have parents who encourage and support you. You can be poor, because if you have to hold down a part-time job on the side to help make ends meet, there won't be enough time left in the day to practice enough. In fact, most people can reach that number only if they get into some kind of special program— like a hockey all-star squad— or if they get some kind of extraordinary opportunity that gives them a chance to put in those hours.
- He was interested in math and engineering. But when the programming bug hit him in his freshman year, he found himself—by the happiest of accidents—in one of the few places in the world where 17-year-old could program all he wanted.
- Lenin and McCartney first started playing together in 1957, seven years prior to landing in America. (Incidentally, the time that elapsed between their founding and there arguably greatest artistic achievement—Sgt. Pepper's Lonely Hearts Club Band—is 10 years.)
- John Lennon in an interview: "we got better and more confidence. We couldn't help it with all the experience playing all night long. It was handy them being foreign. We had to drive in harder, put our heart and soul into it, to get ourselves over. In Liverpool, we only ever done one hour sessions, and we just used to do our best numbers, the same ones, at everyone. In Hamburg, we had to play for eight hours, so he really had to find a new way of playing."
- All told, they had performed for 270 nights in just over a year and a half. By the time they had their first burst of success in 1964, in fact, they had performed live in estimated 1200 times. You know how extraordinary that is? Most bands today don't perform 1200 times in their entire careers. The Hamburg crucible is one of the things that set the Beatles apart.
- And what did virtually all of those opportunities have in common? They gave Bill Gates extra time to practice. The time Gates dropped out of Harvard after his sophomore year two tries hand at his own software company, he'd been programming practically nonstop for seven continuous years.
- But what truly distinguishes their histories is not their extraordinary talent but the extraordinary opportunities.
- Do you know what's interesting about that list (of the 75 richest people in human history)? Of the 75 names, an astonishing 14 are Americans born within nine years of one another in the mid-19th century. Think about that for a moment, historians start with the Cleopatra and the fires and comb through every year in human history ever since, looking in every corner of the world for evidence

of extraordinary wealth, and almost 20% of the names they end up with are from a single generation in a single country.

- Here is the list of those Americans and their birth years.
  - John D Rockefeller, 1839.
  - Andrew Carnegie 1835.
  - Frederick Weyerhaeuser 1834.
  - Jay Gould 1838.
  - Marshall Field 1834.
  - George F Aker 1840.
  - Hetty Green 1834.
  - James fair, 1831.
  - Henry Rogers 1840.
  - J.P. Morgan 1837.
  - Oliver Payne 1839.
  - George Pullman 1831.
  - Peter Brown Widener 1834.
  - Phillip D Armour 1832.
- What's going on here? The answer becomes obvious if you think about it. In the 1860s and the 1870s, the American economy went through perhaps the greatest transformation in its history. This was when the railroads are being built and when Wall Street emerged. It was when industrial manufacturing started in earnest. It was when all the rules by which the traditional economy had functioned were broken and we made. What this list says is that it really matters how old you were when the transformation happened.
- If you talk to veterans of Silicon Valley, they'll tell you that the most important date in the history of the personal computer revolution was January 1975.
- Ideally, you want to be 20 or 21, which is to say, born in 1954 or 1955. There is an easy way to test this theory. When was Bill Gates born? Bill Gates; October 28, 1955. That's the perfect birthday! Gates is a hockey player born on January 1. Gates's best friend at Lakeside was Paul Allen. He also hung out in the computer room with Gates and shared those long evenings at I S I and C – cubed. Alan went on to found Microsoft of Bill Gates. When was Paul Allen born? Paul Allen: January 21, 1953. The third richest man at Microsoft is the one who is been running the company on a day-to-day basis since 2000, one of the most respected executives in the software world, Steve Ballmer. His birth date, March 24, 1956.
- This paragraph from accidental millionaire, one of the many Steve Jobs biographies, gives us a sense of how extraordinary his childhood experiences were. "Jobs attended evening talks by HP scientists. The talks are about the latest advances in electronics and jobs, exercising a style that was his trademark of his personality, collared HP engineers and drew additional information from them. Once he even called Bill Hewitt, one of the company's founders, to request parts. Jobs not only received the parts he asked for, he managed to wrangle a summer job. Jobs worked on an assembly line to build computers and was so fascinated that he tried to design his own…"
- Another of the pioneers of the software revolution was Eric Schmidt. He ran Novell, one of Silicon Valley's most important software firms, and in 2001, he began the chief executive officer of Google. Birthdate, April 27, 1955.

Chapter 3: the trouble with geniuses, part one.

- The super IQ test was created by Ronald Hoeflin, who is himself someone with an unusually high IQ. Here's a sample question, from the verbal analogies. "She is to hand as the nest is to? If you want to know the answer, I'm afraid I've no idea.
- The boy must be intelligent, he reasoned, and sure enough, he was. He had an IQ above 140, which is near genius level.
- An IQ score of 100 is average, you probably need to be just above that mark to be able to handle college. To get into and succeed in reasonably competitive graduate programs, meanwhile you probably need an IQ of at least 115. In general, the higher your score, the more education you'll get, the more money you are likely to make and—believe it or not—the longer you'll live. But there's a catch. The relationship between success and IQ works only up to a point. Once someone has reached an IQ of somewhere around 120, having additional IQ points doesn't seem to translate into any measurable real-world advantage. It is amply proven that someone with an IQ of 170 is more likely to think well then someone whose IQ is 70.
- To be a Nobel Prize winner, apparently, you have to be smart enough to get into college at least as good as Notre Dame at the University of Illinois. That's it. This is a radical idea, isn't it? Suppose that your teenage daughter found out that she had been accepted to two universities—Harvard University and Georgetown University. Where would you want her to go? I'm guessing Harvard, because Harvard is a "better" school. It students score a good 10 to 15% higher on their entrance exams. But given what we are learning about intelligence, the idea that schools can be ranked, like runners in a race, makes no sense. Georgetown's students may not be as smart on an absolute scale as the students of Harvard. But they are all, clearly smart enough, and future Nobel Prize winners come from schools like Georgetown as well as schools from Harvard.
- To get a sense of how absurd the entrance selection process is at an Ivy League school has become, consider the following statistic. In 2008, 27,462 of the most highly qualified high school seniors in the world applied to Harvard University. Of the students, 2500 of them scored a perfect 800 on the SAT critical reading test and 3300 had a perfect score on the SAT math exam. More than 3300 were ranked first in their high school class. How many did Harvard accept? About 1600, which is to say they rejected 93 out of every 100 applicants. Is it really possible to say that one student is Harvard material and one is in, and both have identical—and perfect academic records? Of course not. Harvard is being dishonest. Schwartz is right. They should just have a lottery.
- Because Harvard is in selecting a students on the basis of how well they do on the "uses of a brick" test—and may be "uses of a break is a better predictor of Nobel Prize ability. It's also the second reason Michigan law school couldn't find a difference between its affirmative action graduates and the rest of its alumni.
- In a devastating critique, the sociologist Pitirim Sorokin once showed that if Terman had simply put together a randomly selected group of children from the same kinds of family backgrounds as the Termites—and dispensed with IQs altogether—he would have ended up with a group doing almost as many impressive things.

Chapter 4: the trouble with geniuses, part two.

- The particular skill that allows you to talk your way out of a murder rap, or convince her professor to move you from the morning to the afternoon section, is what the psychologist Robert Sternberg calls "practical intelligence."
- To Sternberg, practical intelligence includes things like knowing what to say to whom, knowing when to say it, and knowing how to say it for maximum effect. It is procedural: it is about knowing how to do something without necessarily knowing why you know it or being able to explain it. It's practical in nature: that is, it's not knowledge for its own sake. Its knowledge that helps you read situations correctly and get what you want. And, critically, it is a kind of intelligence that separate from the sort of analytical ability measured by IQ.
- The wealthier parents were heavily involved in their children's a time, shuttling them from one activity to the next, quizzing them about their teachers and coaches and teammates. One of the well-off children, followed played on a baseball team, two soccer teams, a swimming team, and the basketball team in the summer, as well as playing an orchestra and taking piano lessons.
- That type of intensive scheduling was almost entirely absent from the lives of the poor children. Play for them wasn't soccer practice twice a week. Those making up games outside with their siblings and other kids in the neighborhood. When a child did was considered by his or her parents as something separate from the adult world and not particularly consequential. One call from a working-class family—Katie Brindle— sang in the choir after school. But she signed up for it herself and walked to choir practice on her own.
    - "What Mrs. Brindle doesn't do that is routine for middle-class mothers is your daughter's interest in singing as a signal to look for other ways to help her develop that interest into a formal talent. Similarly Mrs. Brindle does not discuss Katie's interest in drama or express regret that she cannot afford to cultivate her daughter's talent. Instead she frames Katie's skill and interests as character traits—singing and acting are part of what makes Katie, Katie. She sees this shows her daughter puts on as cute and as a way for Katie to "get attention."
- The middle-class parents talk things through with their children, reasoning with them. They didn't just issue commands. They expected their children to talk back to them, to negotiate, to question adults in positions of authority. If the children were doing poorly at school, the wealthier parents challenged their teachers. They intervened on behalf of their kids. One child she follows just misses qualifying for the gifted program. Her mother arranges for her to be retested privately, petitions the school, and gets her daughter admitted. The poor parents, by contrast, are intimidated by authority. They react passively and stay in the background.
- She calls middle-class parenting style "concerted cultivation." It's an attempt to actively "foster and assess a child's talents, opinions and skills." Poor parents tended to follow, by contrast, a strategy of "accomplishment of natural growth." They see their responsibility to care for their children but to let them grow and develop on their own.
- But in practical terms, concerted cultivation has enormous advantages. The heavily scheduled middle-class child is exposed to a constantly shifting set of experiences. She learns teamwork and how to cope and highly structured settings. She's taught how to interact comfortably with adults, and to speak up when she needs to. In Lareau's words, the middle-class children learn a sense of entitlement.

- That word, of course has negative connotations these days. But she means it in the best sense of the term: "they acted as though they had a right to pursue their own individual preferences and to actively manage interactions in institutional settings."
- In one telling scene, Lareau describes a visit to the doctor by Alex Williams, a nine-year-old boy, and his mother Christina. The Williams are wealthy professionals. "Alex, you should be thinking of questions you might want to ask the doctor," Christina says in the car on the way to the doctor's office. "You can ask them anything you want. Don't be shy. You can ask anything." Alex thinks for a minute, then says, "I have some bumps under my arms from ideal drink." Christina: really? You mean from your new deodorant? Alex: yes. Christina: well, you should ask the doctor.
- Alex's mother, is teaching that she has the right to speak up—that even though he's going to be in the room with an older person and an authority figure, it's perfectly all right for him to assert himself.
- Alex Williams is black and Katie Brindle is white. It's a cultural advantage. Alex has those skills because over the course of his young life, his mother and father—in the manner of educated families—have painstakingly taught them to him, nudging and prodding and encouraging and showing him the rules of the game, right down to that little rehearsal in the car on the way to the doctor's office.
- In the end, only one thing mattered: family background.

Chapter 5: the three lessons of Joe Flom.

- Townsend Harris public school on Lexington Avenue in Manhattan.
- Where they come from matters. They are products of particular places and environments.
- Think of how similar this is to the stories of Bill Joy and Bill Gates. Both of them toiled away in relatively obscure field without any great hopes for worldly success. But then—boom!--The personal computer revolution happened, and they had their 10,000 hours in. They were ready. Flom had the same experience. For 20 years he perfected his craft at Skadden. Then the world changed and he was ready. He didn't triumph over adversity. Instead, what started out as adversity ended up being an opportunity. "It's not that those guys were smarter lawyers than anyone else, it's that they had the skill that they had been working on for years that was suddenly very valuable."
- Here's what the economics H. Scott Gordon once wrote about the particular benefit of being one of those people born in a small generation: "when he opens his eyes for the first time, it is a spacious hospital, well appointed to serve the wave that preceded him. The staff is generous with their time, since they have little to do while they ride out the brief period of calm until the next wave hits. When he comes to school age, the magnificent buildings are already there to receive him.
- Think about this story for a moment. The first lesson is that field men was willing to work hard, take responsibility for himself, and pay himself through school. But the second, perhaps more important lesson is that he happened to come along at a time in America when if you were willing to work hard, you could take responsibility for yourself and put yourself through school.
- But the fact in America even poor people could save all the dreary, time-consuming labor of making their own clothes simply by going into a store and walking out with what they needed.

There was a field to go into, afield to thrill to. Everywhere he went, he wrote down what people were wearing and what was for sale—menswear, women's wear, children's wear. He wanted to find a novel item, something that people would wear that was not being sold in the stores. For four more days he walked around the streets. On the evening of the final day as he walked toward home, he saw a half-dozen girls playing hopscotch. One of the girls was wearing a tiny embroidered apron over her dress, cut low in the front with a tie in the back, and it struck him, said only, that in his previous days of relentless inventorying of the close in the shops in the lower East side, he had never seen one of those aprons for sale. He came home and told Regina. She had an ancient sewing machine that they had bought upon their arrival in America. The next morning, he went to a dry goods store and bought 100 yards of white cloth.

- This was their field. And at the same time as the Borgenichts set up shop inside a tiny apartment, thousands of other Jewish immigrants were doing the same thing, but a nice sewing and dressmaking and tailoring skills to use, to the point where by 1900, control of the garment industry had passed almost entirely into the hands of the Eastern European newcomers. The Jews "bit deep into the welcoming land and worked like mad him at what they knew."
- Because there is complexity, autonomy, and the relationship between effort and reward and doing creative work, and that's worth more to most of us spend money. Work that fulfills those three criteria is meaningful.
- Bill Gates had the same feeling when he first sat down at the keyboard at Lakeside. And the Beatles didn't recoil in horror when they were told that they had to play eight hours a night, seven days a week. They jumped at the chance. Hard work is a prison sentence only if it does not have meaning. Once it does, it becomes the kind of thing that makes you grab your wife around the waist and dance a jig.
- The most important consequence of the miracle of the garment industry, though, was what happened to the children growing up in those homes where meaningful work was practiced. Imagine what it must have been like to watch the mediocre rise of Regina and Lewis through the eyes of one of their offspring. They learned the same lesson that little Alex Williams would learn nearly a century later—a lesson crucial to those who wanted to tackle the upper reaches of a profession like law or medicine: if you work hard enough and assert yourself, and use your mind and imagination, you can shape the world to your desires.
- What you learn in that world is that through your own powers of persuasion and initiative, you can take your kids to Carnegie Hall.

Part two: legacy.

Chapter 6: Harlan, Kentucky.

- He has to be willing to fight in response to even the slightest challenge to his reputation— and that's what a "culture of honor" means. It's a world where a man's reputation is at the center of his livelihood and his self-worth.
- Only in the culture of honor with it have occurred to the irascible gentleman that shooting someone was an appropriate response to a personal insult. And only in a culture of honor would it have occurred to a jury that murder—under those circumstances—was not a crime.
- That is a strange and powerful fact. It's just the beginning, though because upon closer examination, cultural legacies turn out to be even stranger and more powerful than that.

- The results were unequivocal. There were clear differences in how the young man responded to being called a bad name. For some, the insult change their behavior. For some it didn't. The deciding factor in how they reacted was and how emotionally secure they were, or whether they were intellectuals were jocks, or whether they were physically imposing or not. What mattered— and I think you can guess where this is headed— was where they were from.
- Cultural legacies are powerful forces. They have deep roots and long lives. They persist, generation after generation, virtually intact, even as the economic and social demographic conditions that spawned them have vanished, and they play such a role in directing attitudes and behavior that we cannot make sense of our world without them.
- The circumstances of your upbringing were all make a significant difference in how well you do in the world. The question for the second part of the outliers is whether the traditions and attitudes we inherit from our forebears can play the same role. Can we learn something about why people succeed and how to make people better at what they do by taking cultural legacies seriously? I think we can.

Chapter 7: the ethnic theory of plane crashes.

- Put that record in perspective, the loss rate for an airline like the American carrier United Airlines in the period 1988 to 1998 was .27 per million departures, which means that they lost a plane in an accident about once in every 4 million flights. The loss rate for Korean air, in the same period, was 4.79 per million departures— more than 17 times higher.
- Plane crashes are much more likely to be the result of an accumulation of minor difficulties and seemingly trivial malfunctions.
- The typical accident involves seven consecutive human errors.
- The kinds of errors that cause plane crashes are invariably errors of teamwork and communication. One pilot know something important and somehow doesn't tell the other pilot.
- In the black box recovered from the crash site, Capt. Cavides in the final hour of the flight, is heard to repeatedly ask for the directions from ATC to be transmitted into Spanish, as if he no longer had the energy to make use of his English. On nine occasions, he also asked for directions to be repeated.
- On the aborted landing, the planes ground proximity warning system went off no fewer than 15 times, telling the captain that he was bringing in the plane too low.
- But did the pilot raise the issue again, looking for clarification? No. Nor did they bring up the issue of fuel again for another 30 minutes.
- Think about what was required of Ratwatte. He had to be a good pilot. That much goes without saying: he had to have the technical skills to land heavy. The almost everything else he did that made that emergency landing as successful fell outside the strict definition of piloting skills.
- He had to weigh the risk of damaging his plane against the risk to the woman's life, MN, once that choice was made, and he had to think through the implications of where to land for the sick passenger in the back. He had to educate himself, quickly on the parameters of an airport where he had never seen before: could it handle one of the biggest jets in the sky, at 60 tons over its normal landing way? But most of all, he had to talk—to the passengers, to the doctors, to his copilot, to the second crew he woke up from their nap, to his superiors back home in Dubai. It is safe to say that in the 40 minutes a path between the passenger stroke and the landing, there were

no more than a handful of seconds of silence in the cockpit. Those required of him was that he communicate, and communicate not just in the sense of issuing commands but also in the sense of encouraging and calming, negotiating and sharing information in the clearest and most transparent manner possible.

- All planes, as they approach their destination, are by definition running out of fuel.
- The term used by linguistics to describe what Klotz was engaging in, in that moment is "mitigated speech," which refers to any attempt to downplay or sugarcoat the meaning of what is being said.
- Fisher found that captains overwhelmingly said they would issue a command in that situation: "turn 30° right." They were talking to a subordinate. They had no fear being blunt. The first officers, on the other hand, were talking to their bosses, and so they overwhelmingly chose the most mitigated alternative. They hinted. It's hard to read Fisher's study and not be just a little bit alarmed, because a hint is the hardest kind of request to decode and the easiest to refute.
- Mitigation explains one of the great anomalies of plane crashes. In commercial airlines, captains and first officers split the flying duties equally. But historically, crashes have been far more likely to happen when the captain is in the flying seat.
- Planes are safer when the least experience pilot is flying, because it means the second pilot isn't going to be afraid to speak up. Combating mitigation has become one of the great crusades in commercial aviation in the past 15 years.
- The country that scores highest on the individualism and of that scale is the United States. Not surprisingly, the US is also the only industrialized country in the world that does not provide its citizens with universal healthcare.
- Here are the top five uncertainty avoidance countries, according to Holfstead's database --that is, the country's most reliant on the rules and plans and most likely to stick to procedures at regardless of the circumstances:
  - Greece.
  - Portugal.
  - Guatemala.
  - Uruguay.
  - Belgian.
- Of all of Hofstede's dimensions, though, perhaps the most interesting is what he called "power distance Index." Power distance is concerned with attitudes towards hierarchy, specifically with how much a particular culture values and respects authority.
- Here are the top five PDI's by country. If you compare this list to the ranking of plane crashes by country, they match up very closely.
  - Brazil
  - South Korea
  - Morocco
  - Mexico
  - Philippines.
- So there they are, three classic preconditions of a plane crash, the same three that set the stage for Avianca zero 52: a minor technical malfunction, bad weather, and a tired pilot.

Chapter 8: rice paddies and math tests.

- "No one who can rise before dawn 365 days a year sales to make his family rich."
- The patty itself, meanwhile has to have a hard clay floor, otherwise the water will simply seep into the ground. But of course, rice seedlings can't be planted in hard clay, so on top of the clay, there has to be a sick soft layer of mud. And the clay pan, as it's called has to be carefully engineered so that it will drain properly and also keep the plants submerged at the optimum level. Rice has to be fertilized repeatedly, which is another art. Traditionally, farmers used night soil hydro-human manure—and the combination of burned compost, River mud, being cake, and Hamp—and they had to be careful, because too much fertilizer, or the right amount applied at the wrong time, could be as bad as too little. When the time came to plant, a Chinese farmer would have hundreds of different varieties of rice from which to choose, which one of which offered slightly different trade-offs, say, between yield and how quickly a group, or how well it did in times of drought, or how it fared in poor soil. A farmer might plant a dozen or more different varieties at one time, adjusting the mix from season to season in order to manage the risk of crop failure. He or she would plant the seed in specifically prepared seed bed. After few weeks, the seedlings would be transplanted into the field, and carefully spaced rows 6 inches apart, and then painstakingly nurtured. Weeding was done by hand, diligently and on easily, because the seedlings could easily be choked by other plant life. Sometimes each race shoot would be individually groomed with a bamboo call him to clear way insects. All the while, farmers had to check and recheck water levels and make sure the weather didn't get too hot in the summer sun. And when the rice ripened, farmers gathered all of their friends and relatives and, in one coordinated burst, harvested it as quickly as possible so they could get a second crop in before the winter dry season began. Breakfast in South China, at least for those who could afford it, was congee— white rice porridge with lettuce and bamboo shoots. Lunch was more congee. Dinner was rice with topics. Rice was what you sold at the market to buy other necessities of life. It was how wealth and the status were measured. It dictated almost every working moment of every day. Rice is life, says the anthropologist, who studied a traditional South Chinese village. "Without rice, you don't survive. If you want to be anyone in this part of China, you would have to have rice. It made the world go around."
- Take a look at the following list of numbers: 4, 8, 5, 3, 9, 7, 6. Read them out loud. I look away and spend 22nd memorizing the sequence before saying it out loud again. If you speak English, you have about a 50% chance of remembering that sequence perfectly. If you're Chinese though, you're almost certain to get it right every time. Why is that? Because as human beings we stored digits in a memory loop that runs for about two seconds. We most easily memorize whatever we can read or say within that two second span. And Chinese speakers get that list of numbers, right almost every time because, unlike English, the language allows them to fit all of those seven numbers in two seconds.
- The memory gap between English and Chinese apparently is entirely due to its differences in length.
- It turns out that there is also a big difference in how number naming systems in Western and Asian languages are constructed. In English, we say 14, 16, 17, 18 and 19, so one might expect that we would also say one team, to teen, three teen and five teen. But we don't. We use a different form: 11, 12, 13 and 15. Similarly, we have 40 and 60, which sound like the words they are related to—four and six. But we also say 50 and 30 and 20, which sort of sound like five, three, and two but not really. And, for that matter, for numbers above 20, we put in the decade

first and the unit number second--21, 22, whereas for the teens we do it the other way around, 14, 17, 18. The number system in English is highly irregular. Not so in China, Japan and Korea. They have a logical accounting system. 11 is 10 – 1. 12 is 10 – 2. 24 is 2 – 10s – 4.

- That difference means that Asian children learn much faster than American children. For your old Chinese children can count, on average, to 40. American children that age can count only 15, and most don't reach 40 until they are five. By the age of five, in other words, American children are usually already a year behind the Asian counterparts in most of the fundamental math skills.

- The regularity of their number system also means that Asian children can perform basic functions, such as addition far more easily. Ask an English-speaking seven-year-old to add 37+22 in their head, and she has to convert the words to numbers. Only then can she do the math: 2+7 is nine and 30 and 20 is 50, which makes 59. Ask an Asian child to add three 10s, 7 and two 10s, 2, and then the necessary equation is right there, embedded in the sentence. No number translation is necessary: it's five 10s, 9.

- Instead of being a rote learning thing, there is a pattern I can figure out. There is an expectation that I can do this. There is an expectation that it's sensible. For fractions, we say 3/5. The Chinese is literally three out of five parts, take three. That's telling you conceptually what a fraction is. It's differentiating the denominator and the numerator.

- The most striking fact about a rice paddy—which can never quite be grasped until you actually stand in the middle of one— is its size. It's tiny. The typical rice paddy is about as big as a hotel room. A typical Asian rice farm might be composed of two or three patties. A village in China of 1500 people might support itself entirely with 450 acres of land, which in the American Midwest would be the size of a typical family farm. At that scale, with families of five and six people living off a farm the size of two hotel rooms, agriculture changes dramatically.

- In any case, there certainly wasn't any extra land that could easily be converted into new fields. So rice farmers improve their yields by becoming smarter, by being better managers of their own time, and making better choices.

- Throughout history, not surprisingly, the people who grow rice have always worked harder than most any other kind of farmer.

- What redeemed the life of a rice farmer, however was the nature of that work. It was a lot like the garment work done by the Jewish immigrants to New York. It was meaningful. First of all, there's a clear relationship in rice farming between effort and reward. The harder you work a rice field, the more it yields. Second, it's complex work. The rice farm it isn't simply planting in the spring in the harvesting in the fall. He or she effectively runs a small business, juggling a family workforce, hedging uncertainty through seat selection, building and managing a sophisticated irrigation system and coordinating the complicated process of harvesting the first crop while simultaneously preparing the second crop. And, most of all, it's autonomous. Peasants of Europe worked essentially as low-paid slaves to a landlord, but China and Japan never develop that type of oppressive system.

- Virtually every success story we've seen in this book so far involves someone or some group working harder than their peers.

- Working really hard is what successful people do, and the genius of the culture formed in the rice paddies is that hard work gave those in the field away to find meaning in the midst of great uncertainty and poverty. The lesson has served Asians well in many endeavors but rarely so perfectly as the case of mathematics.

- Over the course of his career, Shownfield has videotaped countless students as they worked on math problems. But the René tape is one of his favorites because of how beautifully it illustrates what he considers to be the secret to learning mathematics. 22 minutes pass from the moment René begins playing with the computer program to the moment she says, "Aha. That means something now." That's a long time. This is eighth grade mathematics, five put the average eighth-grader in the same position as René, I'm guessing that after the first few attempts, they would have said, I don't get it. I need you to explain it. He once asked a group of high school students how long they would work on a homer question before they concluded that it was too hard for them to ever solve. The answers ranged from 30 seconds to five minutes, with the average answer to minutes.
- But René persisted. She experiments. She goes back over the same issues time and again. She thinks out loud. She keeps going and going. She simply won't give up. She knows on some vague level that there's something wrong with her theory about how to draw a vertical line, and she won't stop until she absolutely has it right.
- We sometimes think of being good at math as an innate ability. You either have it or you don't. But to Showfield, it's not so much ability as attitude. You master mathematics if you're willing to try. That's what he attempts to teach to his students.
- Success is a function of persistence and doggedness and the willingness to work hard for 22 minutes to make sense of something that most people would give up on after 30 seconds.
- Those students are willing to concentrate and sit long enough and focus on answering every single question in an endless questionnaire are the same countries whose students do the best job at solving math problems.
- Boe's point is that we could predict precisely the order in which every country would finish the math Olympics without asking a single math question. All we would have to do is give them the some task measuring how hard they are willing to work.

Chapter 9: Marita's Bargain.

- In the mid-1990s, and experimental public school called the K IPP Academy opened on the fourth floor of the Lou Gehrig junior high school in New York City.
- Summer vacation is a topic seldom mentioned in American educational debates. It is considered a permanent and in volatile feature of school life, like high school football or the senior prom. But take a look at the following set of elementary school test score results, and see if your faith in the value of a summer long holiday is a profoundly shaken. These are reading scores for the first five years of elementary school, broken down by social economical class—low, middle and high.
- In other words, he can figure out—at least in part—how much of the achievement gap is the result of things that happen during the school year, and how much of it has to do with what happens during summer vacation.
- Let's start with the school year gains. This table shows how many point students test scores rose from the time they started classes in September to the time they stopped in June. The total call he represents the cumulative classroom learning from all five years of elementary school.
- The school year in the United States is, on average, 180 days long. The South Korean school is nearly 220 days. The Japanese school year is 243 days.

- They start school at 7:25, they all do a course called thinking skills until 7:55. They do 90 minutes of English, 90 minutes of math every day, except in fifth grade, where they do two hours of math the day. An hour of science, an hour of social studies, an hour of music at least twice a week, and then you have an hour and 15 minutes of orchestra on top of that. Everyone does orchestra. The day goes from 7:25 until 5:00 PM. After that, there are homework clubs, the tension, sports teams. The kids here from 7:25 until 7:00 PM. If you take an average day, and you take out lunch and recess, I kids are spending 50-70% more time learning than the traditional public school.
- I find that the problem with math education is the sink or swim approach. Everything is rapid-fire, and the kid to get it first are the ones who are rewarded. So there comes to be a feeling that there are people who can do math and that there are people who are math people. I think the extended amount of time gives you the chance as a teacher to explain things, and more time for the kids to sit and digest everything that's going on, to review, to do things at much slower pace. It seems counterintuitive but we do things at a slower pace and as a result we get through a lot more.
- How could that be a bad bargain? Everything we have learned in outliers says that success follows a predictable course. It is not the brightest to succeed.
- Outliers are those who have been given opportunities—and who have had the strength and presence of mind to seize them.