

July 16, 2015

Identical twins, especially those raised apart, are the subject of much research because of the constant nature vs. nurture argument. An argument, which in many ways, is one of the leading causes of the great divide in our culture. Twenty-six years ago in Bogotá, Columbia, a hospital mixed up two sets of identical twins sending home two sets of fraternal twins. One set was raised in the country and the other in the city. Last week's [New York Times Sunday Magazine](#) tells the story of how this was discovered and what has happened since.

This is 12,000 words long, so except for an item on the Open Championship this weekend, it is all we have. In addition, the twins article does not lend itself to many pull quotes.

... identical twins have helped elucidate our most basic understanding of why, and how, we become who we are. By studying the overlap of traits in fraternal twins (who share, on average, 50 percent of their genes) and the overlap of those traits in identical twins (who share 100 percent of their genes), scientists have, for more than a century, been trying to tease out how much variation within a population can be attributed to heredity and how much to environment. "Twins have a special claim upon our attention," wrote Sir Francis Galton, a British scientist who in the late 19th century was the first to compare twins who looked very much alike with those who did not (although science had not yet distinguished between identical and fraternal pairs). "It is, that their history affords means of distinguishing between the effects of tendencies received at birth, and those that were imposed by the special circumstances of their after lives."

Galton, who was Darwin's cousin, is at least as well known for coining the term "eugenics" as he is for his innovative analysis of twins (having concluded, partly from his research, that healthy, intelligent people should be given incentives to breed more). His scientific successor, Hermann Werner Siemens, a German dermatologist, in the early 1920s conducted the first studies of twins that bear remarkable similarity to those still conducted today. But he also drew conclusions that for decades contaminated the strain of research he pioneered; he supported Hitler's arguments in favor of "racial hygiene." In seeking genetic origins for various traits they considered desirable or undesirable, these researchers seemed to be treading dangerously close to the pursuit of a master race.

Despite periods of controversy, twins studies proliferated. Over the last 50 years, some 17,000 traits have been studied, according to a meta-analysis led by Tinca Polderman, a Dutch researcher, and Beben Benyamin, an Australian, and published this year in the journal Nature Genetics. Researchers have claimed to divine a genetic influence in such varied traits as gun ownership, voting preferences, homosexuality, job satisfaction, coffee consumption, rule enforcement and insomnia. Virtually wherever researchers have looked, they have found that identical twins' test results are more similar than those of fraternal twins. The studies point to the influence of genes on almost every aspect of our being (a conclusion so sweeping that it indicates, to some scientists, only that the methodology must be fatally flawed). "Everything is heritable," says Eric Turkheimer, a behavioral geneticist at the University of Virginia. "The more genetically related a pair of people are, the more similar they are on any other outcome of interest" — whether it be personality, TV watching or political leaning. "But this can be true without there being some kind of specific mechanism that is driving it, some version of a Huntington's-disease gene. It is based on the complex combined effects of an unaccountable number of genes."

Arguably the most intriguing branch of twins research involves a small and unusual class of research subjects: identical twins who were reared apart. Thomas Bouchard Jr., a psychologist at the University of Minnesota, began studying them in 1979, when he first learned of Jim and Jim, two Ohio men reunited that year at age 39. They not only looked remarkably similar, but had also vacationed on the same Florida beach, married women with the same first name, divorced those women and married second wives who also shared the same name, smoked the same brand of cigarette and built miniature furniture for fun. Similar in personality as well as in vocal intonation, they seemed to have been wholly formed from conception, impervious to the effects of parenting, siblings or geography. Bouchard went on to research more than 80 identical-twin pairs reared apart, comparing them with identical twins reared together, fraternal twins reared together and fraternal twins reared apart. He found that in almost every instance, the identical twins, whether reared together or reared apart, were more similar to each other than their fraternal counterparts were for traits like personality and, more controversial, intelligence. One unexpected finding in his research suggested that the effect of a pair's shared environment — say, their parents — had little bearing on personality. Genes and unique experiences — a semester abroad, an important friend — were more influential. ...

Even non-golfers are interested in the drama surrounding this year's Open. [Brian Costa](#) writes that Jordan Spieth might have a good chance to complete the third win in the grand slam of golf because he misses putts better than anyone else.

For an exceptional golfer, Jordan Spieth is surprisingly unspectacular. He doesn't drive the ball especially far. He isn't uncommonly accurate off the tee. At 21 years old, he won the first two majors of the year with all the panache of a mailman making stops along his route.

But there is one small element of his game that is unsurpassed in professional golf. And it might be the biggest reason to believe he can win this week's British Open, a feat that would put him one major away from becoming the first golfer in modern history to complete a Grand Slam.

Nobody misses putts better than he does.

This is more of a compliment than it sounds. On average this year, when Spieth misses his first putt, the ball comes to rest just 23 inches from the hole. That is tied for the best mark on the PGA Tour.

From any distance on the green, Spieth can miss with a degree of precision that gives him the best odds of two-putting the hole. ...

NY Times Magazine

The Mixed Up Brothers of Bogata

After a hospital error, two pairs of Columbian identical twins were raised as two pairs of fraternal twins. This is the story of how they found one another - and what happened next.

by Susan Dominus

William Velasco

Wilber Velasco



Jorge Castro

William Velasco

Carlos Castro

Wilber Velasco

PART I

The Beginning

They were two pretty young women in search of pork ribs for a barbecue later that day, a Saturday in the summer of 2013. Janeth Páez suggested that they stop by a grocery store not far from where her friend Laura Vega Garzón lived in northern Bogotá. Janeth's boyfriend's cousin, William, a sweet young man with a thick country accent, worked behind the butcher counter there, expertly filleting beef and cutting pigs' feet that his customers liked to boil with beans. Janeth was sure he would give her and Laura a cut rate on the ribs.

As Laura walked into the grocery store, catching up with Janeth, she was surprised to spot someone she knew. Behind the butcher counter was a colleague from her job at Strycon, an engineering firm. She gave him a big wave. He hardly acknowledged her. “That’s Jorge!” she told Janeth. “He works in my office.” He was a well-liked 24-year-old who worked a few floors up from her, designing pipes for oil transport, so she was surprised to see him waiting on customers in the shop.

“Oh, no, that’s William,” Janeth said. William was a hard worker and rarely left that butcher counter, except to sleep. He definitely did not work at Strycon.

“No, it’s Jorge — I know him,” Laura said. But he was not smiling back at her, which was strange. A few minutes later, he came out from behind the counter to say a quick hello, embracing Janeth. Janeth introduced him to Laura as William.

Laura was baffled: Why was Jorge pretending to be someone else? Maybe, she thought, he was embarrassed to be seen moonlighting this way — the bloodied apron, the white cap. Janeth insisted she was mistaken, but Laura was not convinced. It was almost easier for her to believe that Jorge was playacting as someone else, rather than that there could be two people who looked so much alike. It was not just their similar coloring or the high cheekbones. It was their frame, the texture of their hair, the set of their mouth and dozens of other details that Laura could not have readily identified but that she knew all added up to a rare likeness.

The following Monday at Strycon, Laura told Jorge about her funny misunderstanding with his double at the butcher counter. Jorge laughed and told her that he did have a twin, named Carlos, but that they looked nothing like each other.

At that moment, Jorge had before him sufficient evidence to suggest that his life was not what he thought it was, that his family was not what he thought it was. But there is a saying that Carlos, a man of many sayings, sometimes applied to Jorge: “The blindest man is the one who does not want to see.”

The Photo, The Truth

A month later, Laura told Janeth that there was an opening in the drafting department at Strycon, and Janeth landed the job. Soon after, she saw Jorge for the first time and immediately understood Laura’s confusion at the butcher counter. The two men had the same soft brown eyes. Same bouncy, feet-splayed walk. Same bright, flashy smile. She didn’t feel as though she knew Jorge well enough to bring the resemblance up with him, but she did show William a photo of Jorge; William laughed and showed it around the butcher shop but chalked it up to coincidence.

After six months, Janeth left Strycon for another job, but even then, whenever she and her boyfriend ran into William, she wondered if she should have told Jorge about his double. That question tugged at her until finally, on Sept. 9, 2014, a slow day at her new job, Janeth texted Laura an image of William to show Jorge.

Laura went upstairs to piping to get Jorge’s reaction to the photo. Jorge, smiling, took a look at her phone. He swore. “That’s me!” he said. He stared at the image.

William was wearing a yellow Colombian soccer jersey, practically a national uniform on the day of big matches. Jorge often wore one just like it, which made it all the more apparent just how thoroughly the young man in the photo looked like him. A friend was walking by Jorge's desk, and Jorge flagged him down for a second opinion.

"Tell me what you think of this photo," he told his friend, handing him the phone.

You look fine, the friend said.

"Except it's not me," Jorge said. He could not stop staring at Laura's phone.

Jorge gave up on getting any work done. He sat down with Laura in the office kitchen so they could talk. Maybe his father, who was never more than an occasional visitor to their home, had another child he never mentioned. Jorge started flipping through more of William's Facebook images, now on his own phone. Uneasily, he noted one of William in a butcher's smock, looking just the way Jorge did on the rare days he had to wear a lab coat. He glanced at a picture of William holding a shot glass, a friend by his side.

Jorge moved to his desktop computer so he could see the images more closely. He clicked once more on the photo of William and the friend holding shot glasses. Now that the image was large, he could examine what he had failed, incredibly, to notice when he looked at the photo on his phone. He leaned in close, his nose practically touching the screen. The man's hair was slicked up like a rooster's crown, and the shirt was all wrong. But there was the full lower lip and thick brown hair that Jorge knew well. The buttons on the man's shirt were straining slightly at the hint of a potbelly, in a way that was intimately familiar. Jorge felt a rush of confusion, and then his stomach dropped. The friend sitting next to his double had a face that Jorge knew better than his own: It was the face of his fraternal twin brother, Carlos.

Jorge And Carlos

After work that day, Jorge walked as usual to the small university he attended at night, staring all the while at the images on his phone. After class, he took a bus home, where he planned to tell Carlos about the day's events.

Growing up, Carlos was the twin who aced the homework and Jorge the twin who copied it. Now they were each doing well; Carlos worked at an accounting firm during the day and was also completing a degree at night. The small but comfortable two-bedroom duplex they shared in a middle-class neighborhood was already a step up from their childhood home. Their mother, a housekeeper, raised them and their older sister, Diana, in one small room of a house in Bogotá that their grandmother owned. They never considered themselves deprived; they crammed a television and a refrigerator into that room, and the public schools in their neighborhood were good. But they had more now — Jorge could travel to soccer matches, Carlos could go clubbing — and it pained all three siblings that their mother, who died of stomach cancer four years earlier, had not lived long enough that they could give her a better life.

As he rode the bus home, Jorge tried to decide what, exactly, he would say to Carlos. He had already told Diana about the photos. "Just don't tease Carlos about it," she said.

At home, Jorge found his brother on the phone, as usual, with a woman. Jorge told him to hang up.

“Stop annoying me,” Carlos told him. This was their dynamic: Carlos bristling, and Jorge, pestering, joking and darting around him, never letting up. The angrier Carlos would get, the funnier it all was to Jorge.

Finally, Carlos finished his call. Jorge decided he would try to keep the mood light. He opened with a question: “What would you say if I told you I had an identical twin?” Carlos did not look amused.

Jorge tried again: “Do you believe in telenovelas?”

Carlos was losing patience. If Jorge had something to tell him, he should just come out with it. Jorge sat Carlos down in front of the laptop in his bedroom and started clicking on photos, showing him the one of William in the Colombia jersey and others at the butcher shop. Carlos laughed alongside him, giddy with the strangeness of the similarity. Then Jorge clicked on the photo of William alongside Carlos’s double, shot glasses in hand.

Unlike Jorge, whose first reaction to the photo was to lean in and stare, Carlos snapped back as if something had pushed him, hard, in the chest. “Who are they?” he asked. He was furious.



Jorge Castro and William Velasco

Jorge told him everything he learned from Janeth and Laura that day. The young men in the photo were raised on a remote farm in Santander, a mostly rural region to the north, whose locals were caricatured by other Colombians for their hot tempers and attachment to their guns. According to Facebook, they were born, as were Jorge and Carlos, in late December 1988.

Perhaps, Jorge said, there had been some kind of a mix-up at the hospital — a nurse who accidentally swapped one baby from one set of identical twins with a baby from another pair. He did not say what that would mean: that either he or Carlos was born to another mother. That they were probably not twins at all — not even biologically related. Nor did either of them acknowledge what both knew: If someone had been accidentally placed in their family, it was almost certainly Carlos.

That Carlos never looked like Jorge and Diana was obvious. His siblings shared their mother's more delicate frame, her high cheekbones, her eyes. Carlos was taller, solidly built, with a wider nose and a heavier brow. The contrast was not merely physical: Carlos had always felt like an outlier in his family, although he preferred to think of himself as independent. As a child, Carlos had no interest in joining the elaborate games of make-believe that his mother and siblings played, the funny voices they each put on, playacting for hours. Since their mother died, he checked in with Diana far less often than Jorge did. He was the only one in his family who cared about fashion, and God knows he was the only one who could dance. Carlos and Jorge had always assumed that Carlos took after their father, but they did not know him well enough to be sure.

Carlos's sense of distance, however, had not diminished his attachment to his mother. He had always adored her; she was strong if not exactly tough — when he and Jorge fought, she would hit them with a fluffy house slipper, which inevitably made them laugh, possibly her intended result. As meager as her resources had been, she made sure that each child could go to a good school and instilled in them the sense of a limitless future. Carlos credited her with all he had achieved so far.

Sitting beside Jorge in his bedroom, Carlos shut the laptop and fell silent. He headed into his room and closed the door. Jorge followed him, saying things that Carlos knew were meant to make him feel better — no matter what, even if one of us was exchanged, we're still brothers — but that made him feel only more isolated. "Look," he told Jorge, "let's just drop it." He told Jorge never to bother him with the subject again.

That night, Carlos barely slept. He couldn't make sense of any of it. How could his mother not have been the one to carry him — to create him? He had grieved for her once; now he grieved again, as if losing her a second time. He felt unmoored, powerless, alone.

Down the hall, Jorge slept like a child.

William and Wilber

The next day, soon after William opened the butcher shop, his cousin Brian — Janeth's boyfriend — arrived for his 12-hour shift. William, who had quickly been promoted to manager of the shop, was happy to hire Brian, a part-time student. He felt closer, in many ways, to Brian than he did to his fraternal twin brother, Wilber. Brian grew up in Bogotá, and when William first arrived in the capital in 2009, the two cousins spent long days baking and selling corn cakes on the street, in the rain, in the heat, passing the time making their customers and themselves laugh. William and Wilber could never spend that many hours together without getting on each other's nerves. When Wilber later worked for William at the butcher shop, it irked William that his

brother was always cleaning up when he should have been waiting on customers and that he resisted William's authority; Wilber was moody, William thought, and could never take a joke.

As Brian and William set up the shop, Brian explained that the previous evening, Janeth showed him photos that were very confusing, of young men who looked just like Wilber and William. William was amused, intrigued. He remembered that Janeth had shown him that photo of his double months back. But this coincidence sounded even stranger. He texted Janeth and asked to see the photos. As soon as the first one arrived, William let out a scream — “Ahiii!” — and then laughed.

Maybe, Janeth suggested to William by text, either he or his brother had been sick and was brought from Santander to a hospital in Bogotá. William got in touch with an aunt, who told him that, yes, he had been sent to a hospital in Bogotá right after he was born. He and Wilber were delivered at just 28 weeks, and William had digestive problems. The aunt said he was treated at the Materno Infantil in the city.



Carlos Castro

Wilber Velasco

He passed this along to Janeth, who said that she would try to find out from Jorge where he was born. If Jorge was delivered at the Materno Infantil, Janeth texted, it would be clear: There must have been a swap.

Until that moment, William, like Janeth, had been caught up in the fun and suspense of piecing together the information. But now a wave of anxiety swept over him. He had always looked different from his family and wanted different things — a life bigger than the farm. But he never considered the possibility that he might actually *be* different — that he might not be theirs. He looked around at the butcher shop; he could barely take in the oblivious customers, the hunks of bloodied flesh, his concerned cousin. He walked out of the store, heading upstairs to his third-floor apartment in the same building. From there, he compulsively texted Janeth to see if she had any information about the name of the hospital where Jorge was born.

A few minutes later, William stumbled back into the shop and showed Brian a text from Janeth. Jorge and Carlos were, in fact, delivered at Materno Infantil. “Confirmed,” William said. Then he sat on a bench in the back of the shop and broke into heaving sobs. Every thought tumbled into another equally painful one. He had been snatched from his rightful place. He was a missing person no one had known to miss. How would he tell his mother? She had six children, but he was the one who sent her money. He was the one who worried about her when she was sick and who tried, when he was young, to cheer her up if she was blue, smothering her with hugs and kisses and biting her gently on her ears to make her laugh. The news, he knew, would break her heart; it was already breaking his.

William had spoken to his mother harshly only once, a few years earlier. He had just finished serving in the military and had served well, winning, among 92 soldiers in his platoon, a top prize that guaranteed him a scholarship to petty-officer training, a leadership track that would provide him with an education and a significant jump in status. It turned out, however, that the military could not give him the scholarship after all; his parents had taken him out of school when he was 12, and he did not have the equivalent of a high-school diploma. “You should have let me go to school,” he yelled at his mother when he was home in Santander. The closest high school was a five-hour walk away, so the family would have needed money to house him, plus money for uniforms and entrance fees, while also incurring the cost of losing his labor on the farm. Even still, William felt that his mother should have found a way, been resourceful, fought with everything she had. He would have fought for it himself, but at 12, what could he have done?

As he wept on the bench, he was experiencing the first wash of feelings that he would be able to articulate only in time: his sense of his mother’s guilt and worry; the lost opportunity to grow up going to school in Bogotá, instead of working in the fields, hauling crops; his grief over how different he had always felt from the rest of his family, a family who loved him but nonetheless teased him for not quite fitting in. Brian, stunned, sitting beside him on the bench, did not know what to say. There was no ready language for a situation like this. After about 10 minutes, to Brian’s relief, William stopped crying and stood up. William knew how to work, so that is what he would do. They went back inside and started cleaning the counter, putting away utensils, waiting for their next customers.

Eventually, William texted Wilber, who was working at a different butcher shop that day, and told him he needed to come right away. When Wilber arrived later that afternoon, William said he had to show him something and clicked, on his phone, on a photo of Jorge and Carlos. Immediately, Wilber saw, with total clarity, what it took everyone else hours to grasp.

“So we were swapped,” Wilber said, shrugging, annoyed by the sense of momentousness William seemed to want to attach to the photo. “I don’t care who they are. You’re my brother, and you’ll be my brother until the day I die.”

Face To Face

Every so often, sometimes within hours of conception but usually several days later, the forces that bind newly dividing cells, holding them into one coherent mass, somehow give way. Instead of clinging together in a cluster that will form one person months later and eventually one self, those dividing cells split into two independent entities, each with its own furiously dividing cells. They are separate but the same, with every nucleus of every cell carrying identical DNA. Identical twins start their lives as fluke accidents, a wondrous result of a systemic glitch.

The formation of fraternal twins is far more mundane. Two separate sperm meet two different eggs, creating a litter of two. Fraternal twins are no more genetically alike than any other two siblings, their only trick one of simultaneity: They are conceived and born at roughly the same time.

The four young men in Bogotá had each been raised as a fraternal twin, an identity in and of itself. Now, they realized, they were each an identical twin, part of a matched pair. Even before the four brothers met, each was already, unknowingly, aligning himself with the sibling with whom he shared a womb. Carlos and Wilber were cautious, convinced that no one should pursue the matter any further — who knew what trouble these people could bring. William and Jorge, however, were open to the possibility of an encounter. Within hours of the revelation, Janeth had arranged for William and Jorge to meet in a public square at 9 that evening, soon after William closed up the butcher shop.

Wilber, initially averse to meeting the other brothers, felt increasingly curious as he looked at the pictures; he wanted to go, too. Around 3 p.m., William spoke to Jorge for the first time and asked if he could invite Wilber, along with Brian and Janeth. He was relieved when Jorge said yes. Both noticed that their voices did not sound alike. William’s was huskier, and of course there was the Santander accent. William also called Jorge “sir,” a formality typical of people from the countryside. Jorge thought he liked this person’s voice; he sounded not just nice, but good.

As the hour grew closer, William went quiet from nerves. He took off from work to get a haircut. He put on his best sweater, which is black with gray stripes. He strapped on his gun, which he wore as a matter of course ever since he served in the military. He paced.

Across town, Jorge was also feeling jittery. He had asked his brother to go with him, but Carlos had a date he was not willing to cancel. When Jorge ran into a friend from the university, he spontaneously asked him to join him for moral support.

At the appointed time, Jorge stood in the square, looking around. His palms were damp, and he could hardly breathe from the sensation of pressure he felt in his stomach. Within minutes, a group started walking toward him. There was William — with Jorge’s face, walking just as Jorge did, with that roll and the funny spread of his feet.

Brian filmed the encounter on his phone. With the sound turned off, the nervous chatter muted, the video captures Jorge and William engaging in what looks like some kind of a highly choreographed, ritualized pantomime. William stares at Jorge, as Jorge looks off to the side; then William turns his head away, as if intuitively giving Jorge the chance to stare at his face,

which he does, looking him up and down. The two stare directly at each other — there's a moment of eye contact that is shockingly intimate, and an exchange of smiles — and then they each look quickly away. As they keep stealing glimpses of each other, they look the way lovers might when they are on the brink of confessing, for the first time, to a mutual infatuation. Jorge pulls himself together, looks at William a bit more appraisingly; Jorge is chewing gum, and his jaw is working hard. He puts his hand on his cheek, pressing his own flesh: Yes, this is me. That person over there, that is him. William is quiet, shifting his weight so that he appears to be swaying from side to side. ("It was like staring through a mirror, and on the other side of the mirror, there's a parallel universe," Jorge would say later.)

It was easier, clearly, for Jorge to turn his gaze to Wilber, the double of Carlos. Jorge stares at Wilber and shakes his head. Wilber had seen the photos of Carlos, who wore glasses. "All I need are the glasses!" Wilber said. He let out a high-pitched giggle, and Jorge felt that pressure in his chest again: That was Carlos's laugh.

Having seen how much William looked like Jorge, Wilber was now eager to meet Carlos. Jorge called ahead to say they were coming, and the group piled into two taxis, heading over to Jorge and Carlos's apartment.

Around 10, Carlos heard the doorbell ring. He walked to the door and then stood there, paralyzed: He could barely bring himself to answer. He knew it was Jorge and those men from the photos. Those people were not just strangers; they were stranger than strangers, players in a story about his life over which he had little control.

"Open the door!" Jorge commanded. Carlos heard a giggle: It was his own, but it was not coming from him, or maybe it was.

"I don't want to," Carlos said. "I'm scared." The moments ticked by, then two, with Carlos laughing nervously on one side, Wilber laughing on the other. "Carlos, open it!" Jorge told him again. You cannot block the sun with one finger, their mother used to say.

Carlos opened the door, and the group filed in, like a procession from a dream. There was Jorge, and there was his double — it was Jorge in a strange sweater; Jorge, only quiet; Jorge without the cool confidence. There was some woman, and some other guy. And then there he was — Carlos was staring at himself, an altered version of himself, a funny photocopy, a joke, a nightmare.

Carlos looked at Wilber, his mirror image. They took a quick peek at each other — they both shouted "Ay!" and turned their backs, covering their eyes, each turning red. Wilber started speaking, but Carlos was having a hard time catching what he was saying. Instead of rolling his R's, Wilber spoke with hard D's. The speech impediment! Carlos had one as a child but overcame it with speech therapy.

All four started comparing notes, quizzing one another, finding out which essential qualities the identical twins shared. Who were the crybabies of the family? *Carlos and Wilber!* Who had sweet temperaments? *Jorge and William!* Who were more organized? *Carlos and Wilber!* Who were the girl-chasers? *Carlos and Wilber!* Who were the strongest? *Jorge and William!*

Even still, while Jorge was seeing sameness with every glance he stole at William, Carlos was seeking differences between him and his country double. "Look at our hands," Carlos said. "They're not the same." Wilber's were bigger, more swollen, marked with scars from countless quarrels with the knives of the butcher shop and the machetes he used in the fields growing up.

Carlos, by contrast, frequently got manicures; his nails, as is not uncommon among male professionals in Colombia, were covered in clear gloss.

William asked Jorge about Jorge's biological mother: How was she? Where was she? Watching William's face carefully, Jorge told him that their mother died of cancer four years before. He showed him a photo of her as a young woman: long hair clipped back, beautiful eyes set in a kind, serious face. Staring at the photo, William was struck with a new blow of grief; he did not speak for several minutes.

For most of the evening, the energy in the apartment was positive and giddy. The young men were enjoying themselves, reveling in the hilarious, specific similarities that were easier to spot than the differences. But for each of them, poised and waiting on the other side of the door was a profound feeling of loss: lost time with parents and siblings, lost opportunities, lost years, lost creation myths. Jorge seemed determined to make sure those feelings were kept at bay, at least for the time being. "All that has happened," he said to the group, "is that our families have gotten bigger." Someone called out: "Favorite soccer team?" All four shouted the name of a popular Colombian club team: "Atletico Nacional!"

Around midnight, the visitors left, promising to meet again soon. Jorge and Carlos stared at each other in the empty living room. Everything was the same; everything was different. "So what do we do?" Carlos asked. Jorge saw that Carlos had started to cry. Carlos walked over to Jorge to wrap him in a close hug. "I want to be *your* brother," he said.

PART 2

When Two Are Like One

Identical twins don't make obvious evolutionary sense; fraternal twins at least have the benefit of genetic diversity, improving the odds that at least one might survive whatever misfortune comes their way. And yet, in their utter inexplicability, identical twins have helped elucidate our most basic understanding of why, and how, we become who we are. By studying the overlap of traits in fraternal twins (who share, on average, 50 percent of their genes) and the overlap of those traits in identical twins (who share 100 percent of their genes), scientists have, for more than a century, been trying to tease out how much variation within a population can be attributed to heredity and how much to environment. "Twins have a special claim upon our attention," wrote Sir Francis Galton, a British scientist who in the late 19th century was the first to compare twins who looked very much alike with those who did not (although science had not yet distinguished between identical and fraternal pairs). "It is, that their history affords means of distinguishing between the effects of tendencies received at birth, and those that were imposed by the special circumstances of their after lives."

Galton, who was Darwin's cousin, is at least as well known for coining the term "eugenics" as he is for his innovative analysis of twins (having concluded, partly from his research, that healthy, intelligent people should be given incentives to breed more). His scientific successor, Hermann Werner Siemens, a German dermatologist, in the early 1920s conducted the first studies of twins that bear remarkable similarity to those still conducted today. But he also drew conclusions that for decades contaminated the strain of research he pioneered; he supported Hitler's arguments in favor of "racial hygiene." In seeking genetic origins for various traits they considered desirable or undesirable, these researchers seemed to be treading dangerously close to the pursuit of a master race.

Despite periods of controversy, twins studies proliferated. Over the last 50 years, some 17,000 traits have been studied, according to a meta-analysis led by Tinca Polderman, a Dutch researcher, and Beben Benyamin, an Australian, and published this year in the journal *Nature Genetics*. Researchers have claimed to divine a genetic influence in such varied traits as gun ownership, voting preferences, homosexuality, job satisfaction, coffee consumption, rule enforcement and insomnia. Virtually wherever researchers have looked, they have found that identical twins' test results are more similar than those of fraternal twins. The studies point to the influence of genes on almost every aspect of our being (a conclusion so sweeping that it indicates, to some scientists, only that the methodology must be fatally flawed). "Everything is heritable," says Eric Turkheimer, a behavioral geneticist at the University of Virginia. "The more genetically related a pair of people are, the more similar they are on any other outcome of interest" — whether it be personality, TV watching or political leaning. "But this can be true without there being some kind of specific mechanism that is driving it, some version of a Huntington's-disease gene. It is based on the complex combined effects of an unaccountable number of genes."

Arguably the most intriguing branch of twins research involves a small and unusual class of research subjects: identical twins who were reared apart. Thomas Bouchard Jr., a psychologist at the University of Minnesota, began studying them in 1979, when he first learned of Jim and Jim, two Ohio men reunited that year at age 39. They not only looked remarkably similar, but had also vacationed on the same Florida beach, married women with the same first name, divorced those women and married second wives who also shared the same name, smoked the same brand of cigarette and built miniature furniture for fun. Similar in personality as well as in vocal intonation, they seemed to have been wholly formed from conception, impervious to the effects of parenting, siblings or geography. Bouchard went on to research more than 80 identical-twin pairs reared apart, comparing them with identical twins reared together, fraternal twins reared together and fraternal twins reared apart. He found that in almost every instance, the identical twins, whether reared together or reared apart, were more similar to each other than their fraternal counterparts were for traits like personality and, more controversial, intelligence. One unexpected finding in his research suggested that the effect of a pair's shared environment — say, their parents — had little bearing on personality. Genes and unique experiences — a semester abroad, an important friend — were more influential.

As pure science, the study of twins reared apart has troubled some researchers. Those twins either self-select and step forward or become known to researchers through media reports — which are less inclined to cover identical twins who do not look remarkably alike, who did not marry and divorce women of the same name or choose the same obscure hobby. Identical twins who do not look remarkably alike, of course, are also less likely to be spotted and reunited in the first place. And few studies of twins, whether reared apart or reared together, have included twins from extremely different backgrounds.

"Every study will have its critics," says Nancy Segal, a professor at California State University, Fullerton, who worked with Bouchard from 1982 to 1991. "But studying twins reared apart separates genetic and environmental effects on behavior better than any research design I know."

Segal has been studying Chinese twins (fraternal and identical pairs reared together and reared apart) since 2003. In several books about twins, Segal has merged science with human-interest tales, walking readers through statistical evidence but also highlighting anecdotal details: the identical twins reared apart who each showed up for research wearing seven rings, or the reared-apart sisters who rubbed their noses the same way and called it "squidging."

Last October, Yesika Montoya, a Colombian psychologist who is now a social worker at Columbia University, saw on Facebook a video clip from a [Colombian newsmagazine program](#), Séptimo Día, which confirmed through DNA testing that the four young men were two sets of identical twins. She got in touch with Segal, whom she knew only by reputation. She then approached the young men, who agreed to be the subject of their research.

No matter how fascinating, the two sets of twins represent a sample of only two. But to Segal, the possibilities were dizzying, unique. In no other family she knew of were there so many kinds of twin pairings to analyze and compare: Jorge and Carlos, Jorge and William, Jorge and Wilber and so on. “It’s an experiment within an experiment,” she said, comparing it to one of those Russian dolls: Crack open one, and there would still be another, and another, and another.

The twins knew the research would require them to submit, over the course of a week in March, to several probing interviews, individually and in pairs, as well as hours holed up in a conference room filling out questionnaires. There would be questions about their homes, lives and education, as well as personality and intelligence tests. Segal told them that she was interested in writing a book about them (Montoya would later collaborate with her), and the young men were enthusiastic subjects.

William had only one condition for his participation: He insisted that Segal and Montoya visit the home in which he grew up in Santander. Without that, he thought, they could never really understand who he was. He did worry, however, that if he told Segal and Montoya how long it would take to get to Santander, they would never agree to go. So he dodged and evaded whenever the subject of travel time came up. It’s a four- or five-hour drive, William would say, and then add, almost as an afterthought, that when the road could get them no closer to their destination, they would get out and walk. For how long? A little while, William would say; it might be a little muddy. How muddy? Maybe, he would suggest, it would be easier if at that point Segal traveled by horse. Would she, by any chance, rather ride a horse? Segal, a woman in her early 60s who grew up in the Bronx, said no.

The Importance of Will

Around 9:30 a.m. on March 29, three cars pulled into La Paz, a dusty town whose few small streets offer sweeping views of the Andes. The group — Segal, Montoya, the two sets of twins, translators and assorted friends and family members — had already been on the road for six hours. They settled in for a traditional breakfast of bone broth and hot chocolate at a diner in town. Jorge and William sat next to each other along one side of a wooden table, while Carlos sat across the way. Wilber sat with Segal and Montoya. While everyone ate breakfast, Carlos took out his phone and called up a picture of him and Jorge. “I love my brother, even though I only show it when I’m drunk,” Carlos said. “See?” In the picture, Carlos was puckered up, giving Jorge a big kiss on the cheek.

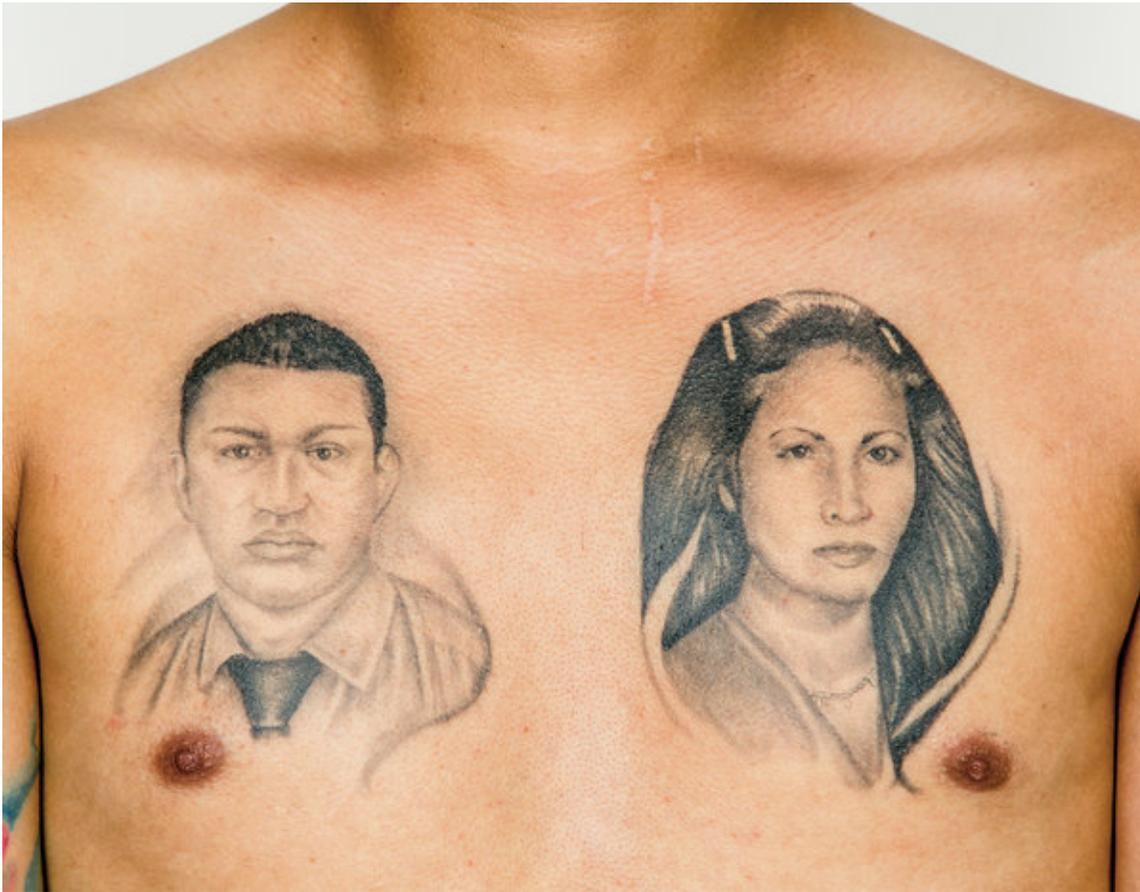
William watched Carlos, feeling annoyed. Wilber, he had often thought, was the same way: He took William entirely for granted, showing his love only on very rare occasions — when, for example, he thought one of them could die. They served in the same platoon in the military, and when they entered a particularly dangerous zone, Wilber would say to him, white-faced: “May God be with you, my brother. I love you.” William knew Wilber loved him; but both Jorge and William wished that the brothers they grew up with had been more supportive, more expressive — the way William and Jorge now were with each other. They often called each other right before they fell asleep, just to say good night.

The four young men all knew one another well by then. Over the past six months, they had gone on outings and shared meals, talked about women, family, money, values. Even weeks in, each had stared, still unnerved and amazed, into the eyes of his identical brother. They had measured, assessed and inspected. They stood back to back, comparing height (those raised in the city were taller than those from the country); Carlos had crushed Wilber in a food-eating contest, William had vanquished them all when they arm-wrestled. In the stands at a soccer match, Carlos watched, in fascination, as William's hand reached down his jeans to scratch his backside: Jorge did the same thing, Carlos told Wilber. Over dinner one night, Jorge noted that Carlos and Wilber both leaned in at the same odd angle toward their plates. Jorge felt comfortable gently correcting his identical twin's grammar; Carlos took seriously such brotherly responsibilities as instructing Wilber in how to approach an attractive Bogotá woman at a bar or how to down a shot of tequila. The twins from Santander were amazed that neither of their city counterparts had ever fired a gun, which they quickly remedied on a visit to the country.

Carlos did feel immediately at ease with his newfound twin, he had to admit. Wilber did not try to tell him what to do when he talked about his love life, the way Jorge did; he just listened and supported him. Yes, they understood each other: their manly pride around women, their furious response to their brothers' incessant teasing. But Carlos was also unnerved by Wilber's Carlosness. His twin's very existence refuted a concept dear to him: his sense of his own uniqueness. Having grown up so different from his other family members, he had come to pride himself on his individualism; now, as an identical twin, he was part of a rare subset of humans whose replicability was embarrassingly on display. Once, Wilber posted on Facebook a picture of himself back in Santander, bare-chested in a river, triumphantly holding two chickens he had just killed. With his hair wet and slicked down like Carlos's, the *campesino* in the picture looked too much like Carlos for his comfort. "Take that thing down," he told Wilber. "People will think it's me."

Far from believing that he had found his perfect other half, Carlos felt lonelier than ever. For all of Jorge's reassurances, he could feel Jorge drifting toward William. The two now wore the same sneakers, shaved their goatees the same way. On weekends, Jorge often went to William's butcher shop and got behind the counter, waiting on customers, so he could spend time with his twin. He sometimes slept at Wilber and William's tiny apartment, while Carlos slept at home. Sometimes Carlos told himself, with a strange twisted relief, that he was glad this had all happened after his mother died; the jealousy he would have felt had she embraced William as Jorge had would have been more than he could take.

Carlos knew that Jorge was attuned to his sadness, that he even wanted to help. But whenever they tried to talk about it, they fell into mutually irritating old patterns. Carlos felt as though Jorge dismissed his concerns; Jorge felt frustrated that nothing he said could assuage Carlos's sense of isolation. But Jorge tried. Six weeks or so after the reunion, Jorge asked Carlos for a photo of himself. That Saturday, Jorge went to a tattoo parlor. He already had a tattoo of his mother over his heart. Now he sat in a chair for four painful hours as his favorite practitioner needled his brother's image permanently into his flesh, just inches away from the image of his mother. He came home and lifted his shirt to show Carlos the work, his skin still bloody and swollen from the violence of the needle. It was, Carlos would later remark, with tears in his eyes, the best present anyone had ever given him. It brought him some measure of peace.



After learning of his identical twin, Jorge honored his fraternal twin, Carlos, by adding his portrait next to one of their mother.

At breakfast in La Paz, however, Carlos felt that Jorge was provoking him once again. Moments after Carlos pulled out that photo, Jorge turned to him and brought up a sensitive subject the two had already discussed in many late-night conversations: Who would Carlos have turned out to be had he been raised in Santander?

Come on, Carlos, Jorge said — look around. Do you really think that if you had been raised here you would have ended up an accountant or even a professional?

Carlos refused to concede Jorge's point. Who was to say he wouldn't have found a way to go to school, to get his degree, to be working in the very same firm where he had only just recently been promoted?

William said nothing, but his face took on a hard cast. Carlos had no idea, he thought, how far a strong will could or could not get you. William had that strong will, had tried to exert it in every way, desperate to get to that petty-officer training. First, he had moved to Bogotá to study for his high-school degree. He managed to pass the test, but his score was low — eight months of part-time cramming could not make up for all those years of lost schooling. He made it only onto a waiting list for the petty-officer training, but that did not deter him. He packed up, left Bogotá and took a long bus ride to the barracks where the leadership course was being offered. When William arrived at the barracks, a commanding officer recognized him. "Those who persevere succeed," the officer told him. The commanding officer managed to pull some strings on William's behalf, but as they were going through the paperwork, officials discovered that William had already been discharged and compensated by the military for a disease he contracted while serving. The compensation made him ineligible for re-enlistment. There were no more strings to

be pulled; he could never be a petty officer; it was over. He would have to go home. But hadn't the commanding officer told him that those who persevere succeed? For five days, William stayed past his welcome, hiding and mingling among the groups of soldiers. He hoped that things would sort themselves out, but more than that, he could not bring himself to leave: Leaving meant he had given up. On the sixth day, a sympathetic but fully armed officer accompanied him to the bus station and personally put him on a bus back to Bogotá.

William knew that Carlos was unfamiliar with that part of his history. Carlos probably did not know that William, as a 6-year-old, used to walk with his mother to this very town, La Paz, for five hours each way, just to buy groceries; they would spend the night at a kind woman's place in town and then walk home again, groceries on their backs. And Carlos could not know, could never really know, how many hours William had spent hacking sugar cane with a machete as a teenager, his skin crawling from the heat and the itchy scraps of stalk, carrying 50 pounds of cane at a time, mindless, painful, strenuous work. Carlos had spent those same years, William knew, flirting with girls at an excellent public high school, playing basketball with his friends, racking up points on some video game, the name of which William would not even know.

Carlos was wrong, William felt certain. Sometimes, a will was not enough. Had he grown up in Santander, Carlos would not be an accountant on the rise right now. And Carlos's insistence on that point felt, to William, like an insult to all he had endured — a life he had endured, no less, in Carlos's place.

When City Meets Country

After breakfast, the cars left La Paz, driving on serpentine, stone-strewn roads with lush palm fronds and ferns closing in overhead. With the heat of the sun now strong, one driver kept mopping his sweating face with a bandanna he borrowed from one of the relatives in the car, as if he was physically exhausted from the stress of maneuvering the vehicle over riverbeds and around ditches. Finally, around 11:30 a.m., the caravan stopped near a large gazebo in a grassy field. Everyone piled out of the vehicles. It was time to walk.

Segal had brought a bright purple rolling suitcase, which held materials she hoped to use that day for interviews and research with William and Wilber's family; their brother, Ancelmo, now lived in their childhood home, but their parents and other relatives would also be there to celebrate Ancelmo's birthday and see the twins. It became clear that the grassy path would not be suitable for luggage rolling, so William, who had carried far heavier loads on this journey before, easily slung the purple suitcase onto his shoulders.

The group started making its way along the path, which briefly lurched uphill. William was moving at high speed, despite the suitcase. He called out that as strong as he was, Jorge was every bit as strong, although it seemed unlikely that that could possibly be true. "But not Carlos," William said. "Carlos is not as strong." William took a few more steps, then turned around as if something had occurred to him. "Why shouldn't Carlos carry it?" he said. He backtracked until he reached Carlos, pushed the suitcase at him and then quickly headed off.

The path tracked across a grassy meadow and then started a long, steep descent. Within minutes, the path was made of mud — rich, claylike mud that was two feet deep in some patches. Carlos, who was always impeccably dressed, stepped carefully. But his Adidas basketball sneakers were quickly soaked with oozing earth.



William and Wilber's parents, Carmelo and Ana, at the home in Santander where they raised the boys.

Carlos was as uncomfortable emotionally as he was physically. He had visited Santander twice since the reunion — once for a birthday party for all four brothers in La Paz and once to visit his biological parents, José del Carmen Cañas (known as Carmelo) and Ana Delina Velasco, at the home where they now lived. But he felt ill at ease on both visits. He knew William thought he had behaved churlishly, resisting the friendly overtures of his extended family. But there were just too many people around — locals, cousins, every one of them, it had seemed, wanting a photograph or a hug or some other sign of a connection that he himself did not feel. How was he supposed to get to know his biological parents when there was always a crowd around? When he met Carmelo and Ana for the very first time at William and Wilber's apartment, a camera crew for a Colombian newsmagazine show had been with them in the room. As he embraced his biological parents, they were weeping profusely. He was moved when he felt Carmelo's arms around him — he had never really known his own father, who died not long after his mother did. But something about Ana's tears left him feeling detached, calm. He had had a mother, and a very good one at that. "Don't cry," he said to Ana, wiping her tears. "These are God's ways."

It was high noon in Santander. Carlos picked his way through the mud, which splattered and quickly baked hard onto his legs in the sun. Then Carlos — Carlos, who was so vain about his clothing, fussy about fit, who was always brushing at the cuff of his pants to rid it of some imaginary lint — let out a howl. His foot had sunk deep in the mud. Slowly, with the help of

someone from the area who was walking alongside him, he began to extricate it. There was a loud suctioning sound: Sludge coated his bare leg well past his knee.

More than an hour later, sweaty, exhausted, filthy, Carlos arrived with the group at William and Wilber's childhood home. It had no toilet, no drywall, no paint, just wooden sides and a wood-burning stove with a pipe jutting out of the roof. Carlos approached Carmelo with a smile: The two hugged warmly. But then there was silence; neither seemed to know what to say. William was standing close by, watching Carlos and his father. William looked pristine, except for a little mud on his boots. He wore a striped purple button-down shirt for the occasion; Carlos was dressed in a black baseball cap with a Batman symbol on it, a tank top and sunglasses. He had not even had a moment to catch his breath when William quickly batted his cap. "Take off your hat and sunglasses," William told Carlos. "Try to really be here."

Carlos watched Jorge, who was moving easily through the crowd, ingratiating himself with William and Wilber's family in a way that Carlos still could not. Carlos was still annoyed about the conversation they had at breakfast. Jorge seemed to want him to make some grand emotional statement about how lucky he had been in the swap, how much tougher his lot would have been had he, in fact, been raised in Santander. It was not as if he hadn't thought hard, lying awake many nights, about what his fate would have been had he been raised with this biological family. Two of William and Wilber's brothers had died very young, one in a gun accident and one in an ambush while serving in the military. He might not even be alive if he had grown up here. Maybe it was easy to be a good guy in Bogotá. Maybe if he had grown up in Santander, he would have joined the guerrillas, who were popular a decade earlier but also brutal. Far from believing in the inevitability of his professional success, he worried about whether his character, in that alternate life, would have withstood the forces around him.

But no, he was not going to say all of that at breakfast, in front of a bunch of people. That was not who he was.

PART 3

The Myth of Identical Twins

At the moment that a sperm penetrates an egg, that single-cell zygote is what is known as totipotent: It is pure potential. It has in it the makings of an eyebrow's curve, a heart's thick muscle, a neuron's electrochemical power; it has in it the finicky instructional manual that will direct the building of the body's every fiber and the regulation of those fibers. But that one cell splits into two, and instantly, lights begin to go out, potential dims. In order for that one cell to become a tiny bit of flesh in a heart, and not the hair of an eyebrow, one or more of its genetic signaling pathways must shut down. The result is differentiation, a steady process of elimination that allows complex biological universes to be built. Every time a group of cells divides, each one becomes more like one thing, less like another.

By the time that embryo is five or six days old, which is when a majority of fateful twin splits occur, some of those cells, by chance, go to one twin and some to the other. This means that the expression of some genes in one of those future twins is already, in subtle ways, likely to be different from the expression of genes in the other future twin, theorizes Harvey Kliman, the director of the reproductive and placental research unit at the Yale School of Medicine. From the moment that most identical twins separate, they may well have different epigenetics, a term that refers to the way genes are read and expressed, depending on environment. They are already

different products of their environment, the environment being whatever uterine conditions rendered them separate beings in the first place.

The casual observer is fascinated by how similar identical twins are, but some geneticists are more interested in identifying all the reasons they might differ, sometimes in significant ways. Why might one identical twin be gay or transgender and not the other? Why do identical twins, born with the same DNA, sometimes die of different diseases at different times in their lives? Their environments must be different, but which aspect of their environment is the one that took their biology in a different direction? Smoking, stress, obesity — those are some of the factors that researchers have been able to link to specific changes in the expression of specific genes. They expect, in time, to find hundreds, possibly thousands, of others.

The meta-analysis published this spring in *Nature Genetics*, which examined 50 years of studies of twins, arrived at a conclusion about the impact of heredity and environment on human beings' lives. On average, the researchers found, any particular trait or disease in an individual is about 50 percent influenced by environment and 50 percent influenced by genes. But that simple ratio does not capture our complicated systems of genetic circuitry, the way our genes steadily interact with the environment, switching on, switching off, depending on the stimulus, sometimes with lasting results that will continue on in our genome, passed to the next generation. How an individual's genes respond to that environment — how they are expressed — creates what scientists call an epigenetic profile.

Before she left for Bogotá, Segal contacted Jeffrey Craig, who studies epigenetics at Murdoch Childrens Research Institute in Australia, to ask if he would analyze the epigenetics of Carlos, Jorge, Wilber and William, using saliva swabs she would obtain while she was there.

Craig has analyzed the epigenetic profiles of 34 identical and fraternal twins at birth, collecting swabs from their inner cheeks. To Craig, it was noteworthy that in some cases — not many, but some — the epigenetic profile of one newborn twin was more similar to an unrelated baby than to the identical twin with whom that baby shared a womb. Structural differences in the womb could possibly account for it, Craig says — a thicker umbilical cord for one than the other (there are, in fact, two cords) or an awkward site of connection for the umbilical cord on the placenta. But he recognizes that there could be additional factors still in the realm of guesswork. Perhaps one twin is farther from the sound of the mother's heart, its reassuring steady beat, sending that child on a slightly different life course.

Segal and Craig were eager to see the epigenetic results for the Colombian twins. Whose epigenetic profile, they wondered, would look more alike? The biologically unrelated twins who shared an environment — Segal calls them virtual twins — or the ones whose DNA was the same?

A sample of four subjects could only raise questions, not answer them. But epigenetic testing on larger samples of twins reared apart could one day provide a valuable resource for epigenetic science, says Kelly Klump, who is the co-director of the Michigan State University Twin Registry. "You can't look at how the environment will change the function of the genome without holding constant the genome," she says. "Identical twins allow you to do that." Given how hard it is to find identical twins raised apart, twins researchers working in epigenetics have mostly been focusing on the identical twins who show difference. Tim Spector, a professor of genetic epidemiology at King's College London, is generating a huge global registry for identical twins in which only one twin has, for example, diabetes or autism.

Bouchard was influential in convincing his fellow researchers, as well as the public, that some significant part of who we are is influenced by DNA, which was hardly a given when he started his work. Spector and Craig, by contrast, are trying to identify how, exactly, we change in response to the environment. Their essential question is different: How can science identify genes that have been flicked on or off, with potentially harmful results, so they can be switched back the other way? Traditional twin studies were perceived to be seeking the immutable; epigenetic twin studies try to clarify what, in us, is subject to change — and more specifically, what mechanisms make that change happen.

Falling Into a Hole

A local politician had accompanied the group on the hike to Santander. Along the way, he tried to persuade the group to visit a nearby attraction: the second-biggest hole in Colombia, a cavernous pit 500 feet wide and 600 feet deep. Locals like to get on their bellies, inch their way up to its rim and peer down into the abyss.

The second-biggest hole became a recurring joke among the brothers, but for Yesika Montoya, the Colombian psychologist, it also became something of a metaphor for the young men's experience. She was trying to get them to identify their feelings about all they had gone through, partly by recalling the physical sensations that they felt at various stages. "It was vertigo," Jorge told her, as he described waiting for William the first time they met. "I felt a pressure. Like when you go on the roller coaster and you're falling."

Montoya imagined that feeling to be like "going down a hole and not being able to feel the bottom." She added: "It never stops. And just when you have put a foot here or there, you keep going down."

The process of spending time with Segal and Montoya and sharing their life histories necessarily changed the young men's experience of their reunion. Carlos seemed surprised at one point when Segal asked him to describe the ways in which he and Wilber differed. "Well, the thing is, we've always focused on what our similarities are," Carlos said. "We haven't actually talked about our differences." He seemed pleased, at last, to be given the opportunity.

At the time, Carlos pointed out that he liked older women, while Wilber liked younger ones. But the answer was, of course, far more complicated. Carlos was like Wilber in large, sweeping ways, and unlike him in infinite small ways: the expressions that darted across his and his face alone, the thoughts and worries that filled his mind. Carlos was, for better or for worse, more cynical than Wilber, more suave; Wilber was more joyful around small children, quicker to laugh out loud.

Jorge and William, too, have obvious differences. Jorge is a dreamer, a restless traveler, an optimist who believes that "if you give your best to the world, it will give its best back." William's face, more narrow, more gaunt, reflects a far warier outlook. "Nothing in life is easy," he remarked once, a sentiment that you could hardly imagine Jorge expressing.

Was every one of these differences learned? Did some reflect different epigenetics? Perhaps there might be some extra biological protection built in for Wilber and Jorge, who, unlike Carlos and William, had been raised in their biological mothers' arms. The mother who raised Carlos loved him, he knew. But he was also aware that a cousin had moved in with them when they were babies, expressly so that each child could be the beneficiary of the form of attachment parenting the hospital was encouraging at the time. Their mother wore Jorge in a sling; it was the cousin who wore Carlos.

In May, Carlos told Wilber that he wanted to visit his biological family, but without crowds of relatives or psychologists or camera crews. And Wilber passed that on to William. It was becoming easier for William to accept that Carlos's reserve on those excursions to Santander was not so much in reaction to his new family as it was in response to the public nature of the outings. On a weekend in June when Wilber unfortunately had to work, William, Jorge and Carlos took a bus to see Carmelo and Ana for a relaxed, private visit.

Carlos sat next to William on the bus on their way up and listened as William, who had become something of a local celebrity in Santander, talked about his plans to run for City Council in La Paz. Carlos did not think much of Colombian politicians, but he was impressed by William's ambition; he liked that William was taking a class to learn Microsoft Word. He had discovered, from the questions Segal and Montoya asked, that Wilber had no intention of returning to school. That disappointed him; he wanted to talk to Wilber about more than women. He wanted more for Wilber — wanted more *from* Wilber, but he was starting to think he might not get it.

Carlos knew Wilber wanted the two of them to spend more time together. But he also knew that Wilber, at some level, understood that Carlos was a solitary soul. Wilber, at any rate, had a life of his own and a new girlfriend, who had two young children whose photos he showed off, with admiration, to anyone who would look. The whole experience was less complicated for Wilber than for the other three brothers — simply because, as Wilber himself put it, he was not a very complicated person.

For Carlos, this fourth visit to Santander felt like a fresh start. The brothers arrived at Ana and Carmelo's home early in the morning, after traveling through the night, but Carlos was enjoying the beauty of the countryside too much to go straight to sleep. Instead, he bathed in a water tank. He listened to the birds; he was a willing audience to the family parrot, Roberto, who had a talent for singing *ranchera* songs. Then, while his brothers dozed, he wandered into the kitchen, where Ana, a tiny woman — he had her giggle, he was told, although he never heard it that way himself — was cleaning a sheep's head she would cook for dinner that night. He stood by the kitchen counter, keeping her company as she worked. He realized it was their first time alone.

They talked about her health, her aching joints, her back pain. "You know, you've worked so much your whole life," Carlos told her. "It's time for you to rest. Your children are so big already. Why do you work so hard for them?" The relationship with Ana felt more relaxed, but not necessarily closer. He told himself it would come in time. Jorge was always implying that there was something wrong with him for not feeling, instantly, that powerful, primal connection, that emotional force of biology and destiny, that William seemed to feel for the mother he never got to know. Carlos wondered whether he might have drawn closer to Ana had his own mother been alive to grant some kind of permission. But maybe it was simpler than that. Maybe he and William were just different that way.

Moving Forward

Before starting her research, Segal would not have been surprised if each young man tested similarly to his identical twin, despite their different environments. But her preliminary results, she said, show that on a number of traits, the identical twins were less alike than she initially anticipated. "I came away with a real respect for the effect of an extremely different environment," Segal said.

Perhaps the results merely indicate that people raised in deeply rural environments, with little education, take tests in a wholly different manner from those who attended a university. William, who managed a small business with competence, at times seemed overwhelmed by the test.

But Segal considered the young men's story a case history that might provoke further research, inspiring others to seek out more examples of twins reared apart with significantly different upbringings, whatever they were.

Over the course of the week that the young men spent on Segal's questionnaires, they looked back at the past that helped make them who they were. How many books did they have in their childhood homes? Did they ever smoke? Did they grow up in families in which people kept their feelings to themselves? For one week, they stepped out of time to look backward. But the moment Segal would leave, they would continue on their usual paths, speeding forward toward some unknown future, colliding with chance. They sometimes talked about all living together; as four, William liked to think, they were at their strongest. Like members of any family, they might drift and then regroup, or find themselves falling back on the deep comfort of their particular bonds. It is rare to grow up as a twin at all, part of a primal pair; now each young man had a second, rare pairing, a second chance at an unusual kind of closeness. What did that kind of entanglement — a double-doubling — mean for whom they would each become or what they might achieve?

To celebrate the end of a week's worth of research, Segal and Montoya decided to take the young men dancing one night at a popular Bogotá steak house with a big dance floor. Jorge and William took turns dancing with Segal; they smiled gamely and turned and twirled with only glancing attention to the rhythm. Carlos, in his element, showed Wilber a few steps; they danced in not-quite-synchrony, side by side, Carlos with sureness, Wilber staring down at his feet and concentrating. Occasionally he looked up, as if he was feeling it: He would get the hang of it soon enough, he knew. "Wilber has the goods," Montoya said, watching from the table. "He just needs the experience." When all the brothers stopped for more *aguardiente*, a sugar-cane based liqueur, and sat at the table, they took turns flirting with a young woman who had joined the party.

Here at the club, Carlos was assured, poised, smooth. As the evening wore on and he drank more *aguardiente*, his moves got bigger, more daring, until he was showing off a maneuver that he and a friend had made up one night, a pivot from the waist that had him leaning so far back that his spine was practically parallel with the floor, his knees bent and nearly buckling. Carlos called that move "the Matrix," after a similar backward dodge that the movie's star, Keanu Reeves, executes while evading bullets in a parallel universe. As he leaned all the way back, Carlos looked as if he might lose his balance altogether. Wilber, William and Jorge quickly surrounded him, still dancing, a mixture of emotions on their faces: amusement, irritation, concern. But Carlos was not falling. It only looked that way, and he managed to right himself.

The dancing went on as before. The four men seemed to bounce off one another in different pairs and groupings, splitting off in search of young women, returning to compare notes before heading out onto the floor again. They were one, they were two, they were four, merging, dividing and merging again as the music played, long into the evening.

WSJ

Jordan Spieth: The Master of Missing Putts

The winner of the Masters and U.S. Open is able to rack up low scores by expertly reading greens and leaving himself short second putts

by Brian Costa

St. Andrews, Scotland

For an exceptional golfer, Jordan Spieth is surprisingly unspectacular. He doesn't drive the ball especially far. He isn't uncommonly accurate off the tee. At 21 years old, he won the first two majors of the year with all the panache of a mailman making stops along his route.

But there is one small element of his game that is unsurpassed in professional golf. And it might be the biggest reason to believe he can win this week's British Open, a feat that would put him one major away from becoming the first golfer in modern history to complete a Grand Slam.

Nobody misses putts better than he does.

This is more of a compliment than it sounds. On average this year, when Spieth misses his first putt, the ball comes to rest just 23 inches from the hole. That is tied for the best mark on the PGA Tour.

From any distance on the green, Spieth can miss with a degree of precision that gives him the best odds of two-putting the hole.



Jordan Spieth misses an eagle putt on the 18th hole during the final round of the U.S. Open golf tournament at Chambers Bay.

The sequence highlighted a key aspect of Spieth's understated greatness: avoiding three-putts. He has three-putted only 1.82% of holes played this year. That is easily the best mark among top-10 players, and it goes a long way toward explaining why Spieth is tied for first on the PGA Tour in avoiding bogeys.

"I just think the par saves are huge," ESPN analyst Paul Azinger said. "It keeps your round going. It keeps your momentum going."

Near misses don't elicit fist pumps on the green, but at St. Andrews, they should. One of the most famous quirks of the Old Course, golf's ancestral home, is its massive double greens. Seven greens are shared by two holes each. The largest, shared by the 5th and 13th holes, measures 37,846 square feet. Two others are wider than the length of a football field.

As much as players would prefer to leave their approach shots close to the pin, weather conditions can make such precision elusive. As a result, the course rewards superior lag putting, the art of leaving a long first putt close enough to the hole to set up an easy two-putt.

"A good shot sometimes is going to be 40, 50, 60, 70 feet away, and you just can't get it close," Tiger Woods said. "The wind is blowing too hard. To be able to lag putt those putts stone-dead is very key."

To the naked eye, any long putt that stops within five feet of the hole sets up a very makeable second putt. But even within that short range, every degree of precision matters. From four feet out, the average PGA Tour player misses 15% of the time. From two feet out, players miss just 1% of the time.

Even for players who can sink a five-footer with ease, a slightly closer miss can be cause for relief. "Sometimes it's nice just to walk in, switch your mind off for a minute or two before you get to the next tee and just tap in," Justin Rose said. "Over the course of a tournament, if you're not putting yourself under that extra pressure, putt in, putt out, that could make a difference."

For Spieth, leaving himself a tap-in after a long putt begins with the belief that he won't need one. Relative to his competitors, his putting inside 20 feet is pedestrian, but from anywhere beyond that, he puts the ball in the hole nearly 14% of the time. Nobody else on tour is anywhere near as accurate from so far out.

"Jordan Spieth thinks he can make almost any putt," McCormick said. "There are some putts where he thinks he can two-putt, but on no occasion is he thinking, 'I'm content to just give this a strong run.'"

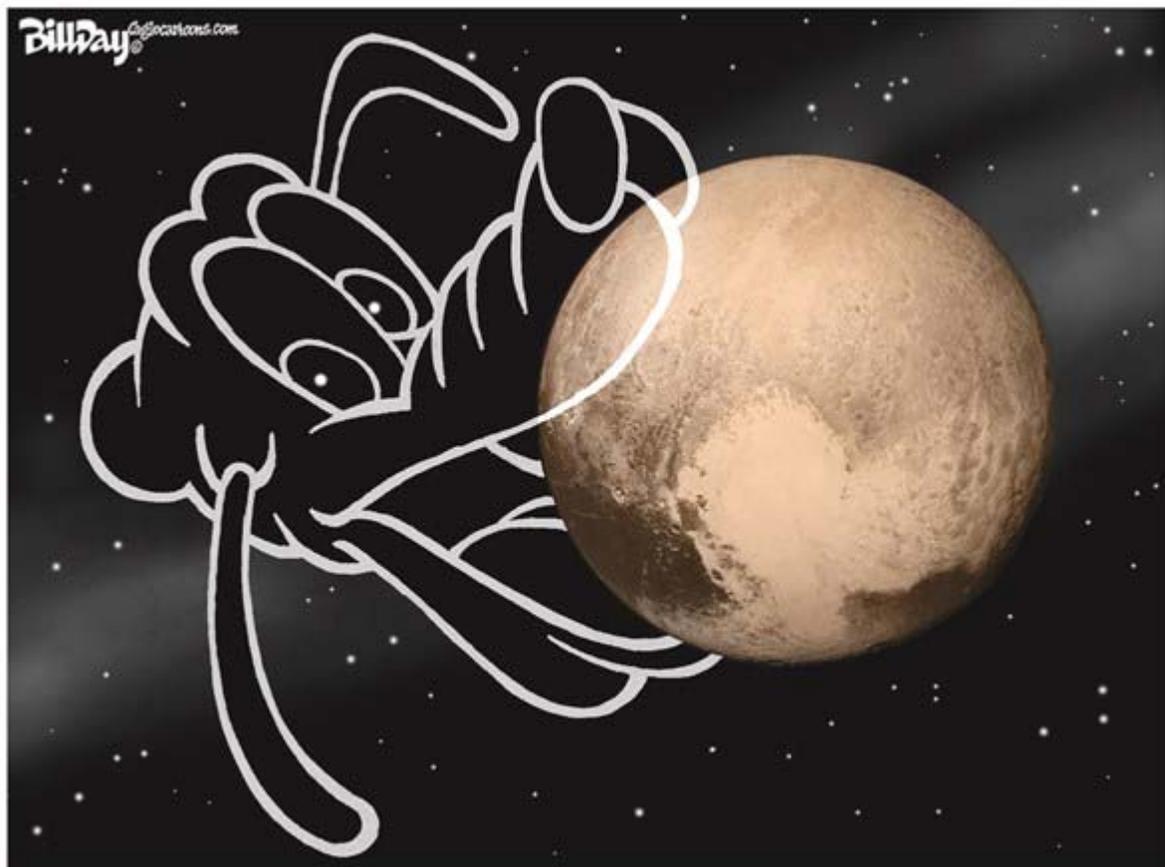
But given how rarely even Spieth sinks putts from long range, the long putts he misses may be even more valuable than the ones he makes. Both reflect one of Spieth's precocious abilities: assessing the slope and speed of greens.

McCormick, who works with elite golfers at various levels, has given Spieth tests that can quantify a player's green-reading aptitude and said Spieth scores "in the 99.9th percentile" of people he tests.

"I can't fool him," he said. "With some putts, I think I'm going to fool him, and it doesn't."

Spieth has also developed a touch on the greens honed through drills with McCormick that helps him stop the ball near the hole, even if it misses slightly to the left or right.

“Great putters are born and great putters are made,” Azinger said. “He’s probably a combination of the two.”





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