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The Autism Advantage

By GARETH COOK

When Thorkil Sonne and his wife, Annette, learned that their 3-year-old son, Lars, had autism, they did what any parent who has faith in reason and research would do: They started reading. At first they were relieved that so much was written on the topic. “Then came sadness,” Annette says. Lars would have difficulty navigating the social world, they learned, and might never be completely independent. The bleak accounts of autistic adults who had to rely on their parents made them fear the future.

What they read, however, didn’t square with the Lars they came home to every day. He was a happy, curious boy, and as he grew, he amazed them with his quirky and astonishing abilities. If his parents threw out a date — Dec. 20, 1997, say — he could name, almost instantly, the day of the week (Saturday). And, far more usefully for his family, who live near Copenhagen, Lars knew the train schedules of all of Denmark’s major routes.

One day when Lars was 7, Thorkil Sonne was puttering around the house doing weekend chores while Lars sat on a wooden chair, hunched for hours over a sheet of paper, pencil in hand, sketching chubby rectangles and filling them with numerals in what seemed to represent a rough outline of Europe. The family had recently gone on a long car trip from Scotland to Germany, and Lars passed the time in the back seat studying a road atlas. Sonne walked over to a low shelf in the living room, pulled out the atlas and opened it up. The table of contents was presented as a map of the continent, with page numbers listed in boxes over the various countries (the fjords of Norway, Pages 34-35; Ireland, Pages 76-77). Thorkil returned to Lars’s side. He slid a finger along the atlas, moving from box to box, comparing the source with his son’s copy. Every number matched. Lars had reproduced the entire spread, from memory, without an error. “I was stunned, absolutely,” Sonne told me.

To his father, Lars seemed less defined by deficits than by his unusual skills. And those skills, like intense focus and careful execution, were exactly the ones that Sonne, who was the technical director at a spinoff of TDC, Denmark’s largest telecommunications company, often looked for in his own employees. Sonne did not consider himself an entrepreneurial type, but watching Lars — and hearing similar stories from parents he met volunteering with an autism organization — he slowly conceived a business plan: many companies struggle to find workers who can perform specific, often tedious tasks, like data entry or software

testing; some autistic people would be exceptionally good at those tasks. So in 2003, Sonne quit his job, mortgaged the family's home, took a two-day accounting course and started a company called *Specialisterne*, Danish for "the specialists," on the theory that, given the right environment, an autistic adult could not just hold down a job but also be the best person for it.

For nearly a decade, the company has been modest in size — it employs 35 high-functioning autistic workers who are hired out as consultants, as they are called, to 19 companies in Denmark — but it has grand ambitions. In Europe, Sonne is a minor celebrity who has met with Danish and Belgian royalty, and at the World Economic Forum meeting in Tianjin in September, he was named one of 26 winners of a global social entrepreneurship award. *Specialisterne* has inspired start-ups and has five of its own, around the world. In the next few months, Sonne plans to move with his family to the United States, where the number of autistic adults — roughly 50,000 turn 18 every year — as well as a large technology sector suggests a good market for expansion.

"He has made me think about this differently, that these individuals can be a part of our business and our plans," says Ernie Dianastasis, a managing director of CAI, an information-technology company that has agreed to work with *Specialisterne* to find jobs for autistic software testers in the United States.

For previously unemployable people — one recent study found that more than half of Americans with an autism diagnosis do not attend college or find jobs within two years of graduating from high school — Sonne's idea holds out the possibility of self-sufficiency. He has received countless letters of thanks and encouragement from the families of autistic people. One woman in Hawaii wrote Sonne asking if she could move her family to Denmark so that her unemployed autistic son could join the *Specialisterne* team.

I first met Sonne, who is 52, in Delaware at a small conference he organized for parents and government officials who want to help him set up American operations over the coming year. He stood before them, sipping a cup of Dunkin' Donuts coffee, speaking enthusiastically of his "dandelion model": when dandelions pop up in a lawn, we call them weeds, he said, but the spring greens can also make a tasty salad. A similar thing can be said of autistic people — that apparent weaknesses (bluntness and obsessiveness, say) can also be marketable strengths (directness, attention to detail). "Every one of us has the power to decide," he said to the audience, "do we see a weed, or do we see an herb?"

It's an appealing metaphor, though perhaps a tougher sell in the United States, where you rarely see dandelion salad. It is also, of course, a little too simple. Over eight years of

evaluating autistic adults, Sonne has discovered that only a small minority have the abilities Specialisterne is looking for and are able to navigate the unpredictable world of work well enough to keep a job. “We want to be a role model to inspire,” Sonne told me later, “but we can only hire the ones that we believe can fill a valuable role in a consultancy like ours.” In other words, he’s not running a charity. It is Sonne’s ultimate goal to change how “neurotypicals” see people with autism, and the best way to do that, he has decided, is to prove their value in the marketplace.

TDC, Thorkil Sonne’s former employer, is Specialisterne’s oldest customer. When I visited its headquarters in Copenhagen in June, it was obvious why the company finds it useful to engage autistic consultants. Whenever cellphone makers introduce a new product, there are countless opportunities for glitches. The only way TDC can be sure of catching them is to load the software onto a phone and punch the phone keys over and over again, following a lengthy script of at least 200 instructions. The work is tedious, the information age equivalent of the assembly line, but also important and beyond the capacity of most people to perform well. “You will get bored, and then you will take shortcuts, and then it is worthless,” explained Johnni Jensen, a system technician at TDC.

Steen Iversen, a Specialsterne consultant in bluejeans and a bright red polo shirt, showed me how he tackles the task. Iversen, who is 52 and has worked at TDC for four years, laid out several phones on a desk that also held his computer, two bananas, an apple and lines of lime green Post-it notes. He picked up a phone in one hand and demonstrated his technique, his thumb landing on the buttons in quick succession. But his real advantage is mental: he is exhaustive and relentless. When a script called for sending a “long text message,” Iversen keyed in every character the phone was capable of; it crashed. Another time, he found a flaw that could have disabled a phone’s emergency dialing capability, a problem all previous testers had missed. I asked Iversen how he feels at moments like that, and he gently pumped both fists in the air with a shy smile. “I feel victorious,” he said.

Over the years, Jensen has developed strategies for interacting with Iversen and the two other consultants he oversees. Trying to rush them inevitably backfires, he told me. “Sometimes I have to bite my tongue.” Jensen feels protective of the consultants and tries to shield them from the usual stresses of office work, but he is emphatic that the arrangement has endured not because he pities them but because their work is excellent. When Iversen finds a bug, he can recall similar ones from years past, saving Jensen the time and frustration of researching the problem’s history. And, Jensen says, the consultants are far more devoted to accuracy than neurotypical workers. Iversen has punched mobile-phone keys day after day, and not once has he cut a corner or even made a careless mistake.

Christian Andersen, another Specialisterne consultant, works at Lundbeck, a large pharmaceutical company. He compares records of patients who have experienced reactions to Lundbeck's drugs, making sure the paper records match the digital ones. Errors can creep in when the reports are entered into the company's database, and tiny mistakes could mean that potential health hazards would go undetected. So Andersen searches for anomalies, computer entry against written report, over and over, hour after hour, day after day.

Before Andersen arrived, his boss, Janne Kampmann, had a hard time finding employees who could do the job well. Most people's minds wander as they go back and forth between documents, their eyes skimming the typos lurking there. Andersen, however, worked without interruption the morning I visited, attentive and silent until he lifted his head and, pointing to a sheet of paper, said to Kampmann, "Why do we have a 57 instead of 30 milligrams?" Kampmann told me Andersen is one of the best quality-control people she's ever seen.

For years, scientists underestimated the intelligence of autistic people, an error now being rectified. A team of Canadian scientists published a paper in 2007 showing that measures of intelligence vary wildly, depending on what test is used. When the researchers used the Wechsler scale, the historical standard in autism research, a third of children tested fell in the range of intellectual disability, and none had high intelligence, consistent with conventional wisdom. Yet on the Raven's Progressive Matrices, another respected I.Q. test, which does not rely on language ability, a majority of the same children scored at or above the middle range — and a third exhibited high intelligence. Other scientists have demonstrated that the autistic mind is superior at noticing details, distinguishing among sounds and mentally rotating complex three-dimensional structures. In 2009, scientists at King's College London concluded that about a third of autistic males have "some form of outstanding ability."

This emerging understanding of autism may change attitudes toward autistic workers. But intelligence, even superior intelligence, isn't enough to get or keep a job. Modern office culture — with its unwritten rules of behavior, its fluid and socially demanding work spaces — can be hostile territory for autistic people, who do better in predictable environments and who tend to be clumsy at shaping their priorities around other people's requirements.

Most Specialisterne consultants work in the offices of the companies that use their services, but some need to operate out of Specialisterne's more forgiving work space. Even those capable of working on site sometimes get into trouble. In one case, the company was contacted by a medical-technology company, which needed help testing new prescription-tracking software. This seemed a marvelous bit of luck, says Rune Oblom, Specialisterne's

business manager, because there was a consultant on staff interested in illnesses. Everything was going fine until a medical team arrived to try out the software, and the consultant spent the entire morning recounting to them, in detail, the medical treatments that he, his mother and the rest of his family received over the years. Another consultant was assigned to finish the software-testing job. “I told him that the doctors were not very happy and felt he was a disturbing factor,” Oblom says. “But he couldn’t see it.”

The consultant has since been moved to another company, where he has done well at his professional tasks but still misses social cues. In Denmark, there is a tradition of bringing cake to the office on Fridays, and Oblom recently learned from the on-site supervisor that the consultant happily eats cake but has never volunteered to bring one himself. Then there was the time he tasted a co-worker’s cake and pronounced it terrible. Oblom told me that he plans to tell the consultant that he has to bring in cake now and then — and he will do it, Oblom predicts, without understanding the reason — but he’s not going to encourage the consultant to be more polite. The concept of socially mandated dishonesty would mystify him, Oblom said, so the other employees will just have to deal with it.

Specialisterne tries to anticipate, or at least mitigate, conflicts by assigning every consultant to a neurotypical coach. The coach checks in with the consultants regularly, monitoring their emotional well-being and helping them navigate the social landscape of the office. Henrik Thomsen, a jolly man who runs Specialisterne in Denmark while Sonne works on international expansion, told me about one consultant who is fascinated by train schedules. Severe storms can disrupt the trains around Copenhagen, and if the consultant’s train was delayed, he would start the day with a tour of his colleagues at the Specialisterne office, telling each how the commute played out, station by station. Sometimes another consultant would get annoyed and tell him to “cut the crap,” Thomsen says, “and then the real fun would begin.” So now Thomsen listens to the radio as he drives in, taking mental note of potential delays. When Thomsen arrives at work, he invites the consultant into his office first thing, listens to the day’s commuting story and then asks him to please get to work.

Specialisterne’s headquarters occupy part of a three-story complex in a Copenhagen suburb. Sonne showed me around the building: in addition to the consulting business, there is a nonprofit focused on spreading the Specialisterne business model, and a small school for people on the autism spectrum in their late teens and early 20s. In the largest room, boxes of Legos are stacked against one wall, and a pair of long, waist-high tables for Lego activities occupy the center, under a string of halogen lights.

When Sonne started the company, one of his biggest challenges was determining who would be able to thrive as a tech consultant in an office environment. A traditional interview was

clearly not going to do the trick, and he had to think of other ways to identify marketable strengths in people who have difficulty communicating.

Lars had always enjoyed Legos, and talking to other parents, Sonne heard stories about how the toy bricks brought out remarkable, hidden abilities. “For many parents,” Sonne told me, “this was one of the few moments when they could be proud of their children.” So he decided to ask potential employees to follow the assembly directions included in the Lego Mindstorms kits and watch them build the robots.

This turned out to be so revealing that assessing job skills in the autistic population has itself become part of Specialisterne’s business, with local government sending about 50 people a year to the company for five-month evaluations. (Specialisterne considers some for consulting jobs; others might end up doing clerical work, mowing lawns or other tasks for municipalities.) The Specialisterne evaluators place the candidates in groups for part of the time to see how well they work in teams, in addition to assessing the skills (reasoning, following directions, attending to details) that are naturally on display in a Mindstorms session. The assignments also reveal how a person handles trouble. More than once a candidate has become derailed because a Lego piece does not match the shade of gray depicted in the manual. Yet it is also not uncommon for a candidate to notice a struggling partner, stop and patiently explain how to get back on track.

The Specialisterne school uses Legos, too. Frank Paulsen, a red-haired man with a thin beard who is the school’s principal, told me about a session he once led in which he handed out small Lego boxes to a group of young men and asked them to build something that showed their lives. When the bricks had been snapped together, Paulsen asked each boy to say a few words. One boy didn’t want to talk, saying his construction was “nothing.” When Paulsen gathered his belongings to leave, however, the boy, his teacher by his side, seemed to want to stay. Paulsen tried to draw him out but failed. So Paulsen excused himself and stood up.

The boy grabbed Paulsen’s arm. “Actually,” he said, “I think I built my own life.”

Paulsen eased back into his seat.

“This is me,” the boy said, pointing to a skeleton penned in by a square structure with high walls. A gray chain hung from the back wall, and a drooping black net formed the roof. To the side, outside the wall, two figures — a man with a red baseball cap and a woman raising a clear goblet to her lips — stood by a translucent blue sphere filled with little gold coins. That, the boy continued, represented “normal life.” In front of the skeleton were low walls between a pair of tan pillars, and a woman with a brown pony tail looked in, brandishing a yellow hairbrush. “That is my mom, and she is the only one who is allowed in the walls.”

The boy's teacher was listening, astonished: In the years she'd known him, she told Paulsen later, she had never heard him discuss his inner life. Paulsen talked to the boy, now animated, for a quarter of an hour about the walls, and Paulsen suggested that perhaps the barriers could be removed. "I can't take down the walls," the boy concluded, "because there is so much danger outside of them."

In June, Sonne announced the opening of a United States headquarters in Wilmington, Del. The state's governor, Jack Markell, was there, as was a representative from CAI, the company that is Specialisterne's first real partner in the United States. The company says it plans to begin recruiting and training autistic software testers in Delaware next month, and if all goes well, it will expand the program to other states. Specialisterne is also talking with Microsoft about setting up a pilot program in Fargo, N.D., where it has a large software-development operation.

Tyler Cowen, an economist at George Mason University (and a regular contributor to The Times), published a much-discussed paper last year that addressed the ways that autistic workers are being drawn into the modern economy. The autistic worker, Cowen wrote, has an unusually wide variation in his or her skills, with higher highs and lower lows. Yet today, he argued, it is increasingly a worker's *greatest* skill, not his average skill level, that matters. As capitalism has grown more adept at disaggregating tasks, workers can focus on what they do best, and managers are challenged to make room for brilliant, if difficult, outliers. This march toward greater specialization, combined with the pressing need for expertise in science, technology, engineering and mathematics, so-called STEM workers, suggests that the prospects for autistic workers will be on the rise in the coming decades. If the market can forgive people's weaknesses, then they will rise to the level of their natural gifts.

"Specialization is partly about making good use of the skills of people who have one type of skill in abundance but not necessarily others," says Daron Acemoglu, an economist at M.I.T. and co-author of "Why Nations Fail." In other words, there is good money to be made doing the work that others do not have the skills for or are simply not interested in.

As Sonne tries to build up his business in the United States, though, he faces practical challenges. For one thing, in Denmark, the government helps cover some of the additional expense of managing autistic workers, and it pays Specialisterne so it can give its employees full-time salaries even though they only work part time. Specialisterne pays its consultants in Denmark between \$22 and \$39 an hour, a rate negotiated with unions, and in Delaware it plans to start with salaries between \$20 and \$30 an hour. And while two Delaware charitable foundations have pledged \$800,000 to Specialisterne, Sonne estimates that it will take \$1.36 million, and three years, for the business to become self-sustaining.

Another challenge involves expectations. A new stereotype of autistic people as brainiacs, endowed with quirky superminds, is just as misguided as the old assumption that autistic people are mentally disabled, Sonne says. Autistic people, like everyone else, have diverse abilities and interests, and Specialisterne can't employ all of them. Most people Specialisterne evaluates in Denmark don't have the right qualities to be a consultant — they are too troubled, too reluctant to work in an office or simply lack the particular skills Specialisterne requires. The company hires only about one in six of the men and women it assesses.

April Schnell, who is organizing a Specialisterne effort in the Midwest and has an autistic son, told me that she traveled to Copenhagen for a conference organized by the company for their volunteers from around the world. One day, she and the others were given the Mindstorms challenges used to assess candidates. As she struggled to solve one of the more difficult ones, she realized that her son, Tim, who is 15, would find the work uninteresting and probably too difficult: Specialisterne is not likely to be the answer for him. "I was just very aware, there is a gap here," she said. "My heart was a little sad."

One Friday evening, Sonne drove me to his house southwest of Copenhagen, navigating through whipping rain and the last clots of rush-hour traffic. Lars was waiting at the door to welcome us. Now 16, Lars evokes a Tolkien elf — thin and blond with exceptionally pale skin. He was outgoing from the start, eager to give me a tour of the house, yet he only glanced at my face.

Lars has the sweet demeanor of a much younger boy. Several times he affectionately rubbed his father's head, the hair a short thin fur, calling the bald spot "Mr. Moon." He gushed about trains, and at dinner Annette gently told him that we might not want to hear too much more about international conventions on track signals. I played Lars in a round of speed chess in the living room. There was never much doubt about the outcome, but at one point he issued an earnest warning: "Take care to not weaken your king's position unnecessarily." It was too late. After we put the pieces away, I complimented him on his final moves — an elegant and lethal attack with rooks, a bishop and a knight — and he did a balletic twirl, arms out. I joked with his family about how crushed I felt in defeat, and Lars walked over and put a consoling hand on my shoulder. Perhaps, I suggested to Lars, I would be allowed a rematch? "No," he said simply.

When I asked Lars what he thought about his father's company, he said he has played with the Mindstorms robots but does not see himself working there. "I want to be a train driver," Lars announced. "It is the country's most beautiful job. You get to control a lot of horsepower. Who wouldn't want to do that?"

At the outset, it was Thorkil's aim to persuade Danish tech companies to hire his autistic employees. Now he wants all kinds of companies, all over the world, to learn from what Specialisterne is doing. He figures that if he is successful, then maybe a national railway will consider hiring a candidate as seemingly unlikely as his son, as long as he has the right skills.

Certainly he has seen how transformative getting the right job can be for the autistic workers themselves. Before coming to Specialisterne, Iversen, who works at TDC, had not had a job for 12 years and spent the days sleeping and nights surfing the Internet. Niels Kjaer once worked as a physicist, receiving his diagnosis only after becoming clinically depressed when he didn't get an academic job. When he came to Specialisterne, where he works on improving technology that grades eggs as they pass by on a conveyor belt, he was on sick leave from a job driving a cab.

Christian Andersen, who works at Lundbeck, the pharmaceutical company, was bullied and beaten for years as a schoolboy. He received his diagnosis at age 15 only because, fearing he might be suicidal, he checked himself into a hospital. After high school — inspired by a Hemingwayesque teacher who regaled his students with tales of outdoor exploits — Andersen tried a vocational school for landscaping. But he was overwhelmed by the requirement that he learn to drive. He tried another tech school but flailed, became depressed and had a breakdown in 2005. Andersen was living at home without prospects, playing video games. He couldn't even land a job at a grocery store. Later that year, his parents encouraged him to apply to Specialisterne.

I joined Andersen one morning on his commute to Lundbeck's headquarters across town. Riding on a yellow city bus, we talked about video games. He still loves Halo; Diablo 3 he finds frustrating. "You turn a corner and then — splat! — you are dead." As we drew closer to the office, our conversation drifted to his job. He spoke with surprising insight about the psychological importance of work. "I have grown very much as a person," Andersen told me. "I have become more confident and self-assured." The job allowed him to move out of his parents' house and into an apartment. After a while, Andersen informed me, he "started using body language." It's not something anyone taught him. He just watched people, he said, and "monkey see, monkey do."

When he started at Lundbeck, he was constantly anxious because he dreaded making an error. Now the stress grips him far less often and is readily dispelled with a phone call to a coach at Specialisterne. He admits to being proud, having come so far. He was touched to be invited recently to join his department for some after-work bowling. But he doesn't spend a lot of time thinking about these aspects of his employment anymore. "Of course it feels

good,” Andersen said, “but there is such a thing as ‘here we go again.’ ” It’s only a job, after all.

*Gareth Cook is a Pulitzer Prize winner, a columnist for *The Boston Globe* and editor of “Best American Infographics” (fall 2013).*

Editor: Vera Titunik