Banging Their Heads Against a Brick Wa

A team of engineers struggle to revolutionize construction — with mixed results.

By JOSH TYRANGIEL

WE'RE TOLD THAT SCOTT PETERS has all the iconic Start-Up Guy traits. He's as obsessive an engineer as Elon Musk, as aggressive a salesman as Travis Kalanick and as exacting a visionary as — cue beam of golden light — Steve Jobs. What sets Peters apart is that you've never heard of him, perhaps because of the size of his dream. It's approximately 8 inches by 3.5 inches by 2.3 inches. Peters, you see, wants to disrupt bricks.

More precisely, he'd like to perfect and sell an automated bricklaying robot, but even this is misleadingly grand. His creation, SAM, for "semi-automated mason," requires several human masons to feed it bricks at one end and clean its large diaper pail of mortar excretions at the other. The original idea for SAM belongs to Peters's architect father-in-law, and so does the majority stake in their upstate New York company, Construction Robotics. What Peters owns are the nightmares from a decade invested in a machine that has no clear market and looks less like the future than a souped-up hot dog cart. "Forget about it," a construction veteran says after watching SAM belch, squeak and stall under pressure. "It's not going to work."

SAM
One Robot, a Dozen Engineers and the Race to Revolutionize the Way We Build
By Jonathan Waldman
288 pp. Avid Reader Press. $28.

When grand vision meets repeated humiliation we usually get tragedy or comedy. But "SAM" is not sad, or funny ha-ha. It is peculiar, though. In a prologue, Jonathan Waldman reveals that his father wrote a dictionary of robotics and that he had a youthful passion for the subject. With cinematic hauteur, Waldman then pans "400 miles north," to a boy growing up at roughly the same time who was also fascinated by robots. "This boy, though, was the descendant of some very inventive and courageous and stubborn men, and he had bricks in his blood." The shared passion, the heroic ancestry, a portentously unnamed boy, and that killer cliché to the skull, are not just misplaced flourishes. They're the beginning of some major tonal weirdness. Waldman seems determined to write an epic entrepreneurship tale — and it blinds him to the reality of poor SAM, while rendering Scott Peters nearly mute.

"SAM" covers 10 years in two parts. The first is largely set in a rundown facility just south of Rochester, N.Y., where a handful of ex-G.M. and Kodak engineers make halting progress on a prototype. The key metric is bricks per day, and initially the Construction Robotics team struggles to coax SAM to lay 108. Even the laziest human mason can do six times that. SAM's robot arm is a diva, but mortar is the bigger concern. The viscosity of "mud," as the trade calls it, changes all the time, and masons must rely on their instinct and experience to sling it effectively. SAM has neither. Infusing a robot with nuance is a challenge worthy of the engineers' skills, but Waldman can't resist invoking higher stakes. "A lot hung in the balance — not just for Scott but for America. Brickworks, having endured decades of decline, was disappearing. Who cared about bricks? Nobody. And everybody."

It's at this point that readers who count themselves in the "nobody" category should pause. Because Waldman isn't satisfied just enlarging SAM's importance. He wants to change how we feel about bricks. There's a scenic tour through brick history ("Bad brickwork, of course, is relative. In ancient Babylon . . ."), with stops along the way for century-old trade disputes ("If it was made of gypsum, it was for plasterers. If it was made of cement, it was for bricklayers") and some brick-based attempts at seduction that go about as well as you'd expect. "Plop a New Yorker in Kathmandu and the Nepalese bricks cast a spell over the foreigner, suggesting he's not so far from the Big Apple. Clay resonates." Thlunk.

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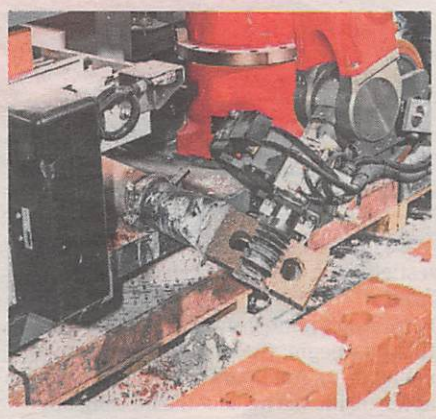
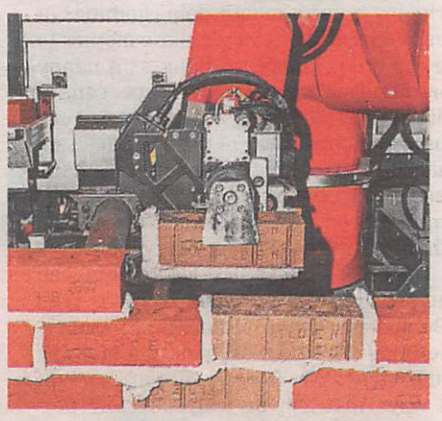
The relevant facts in these digressions point to a brick apocalypse that dates back as far as 1895. Only 4 cents of every construction dollar still goes to masonry, and the 150,000 remaining masons (average age 55) aren't eager to semi-automate themselves into obsolescence. These problems haunt Scott Peters when he takes his machine to market in "SAM"'s second half. Demand is limited, even as a rental, and the masons who don't try to sabotage their

The SAM 100 (Semi-Automated Mason) is a bricklaying robot used for onsite masonry construction.





Here it is in action outside the Las Vegas Convention Center during Concrete World in 2018.

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future robot overlord are at best uninterested in assisting much with its operating needs.

It doesn't help that SAM is kind of terrible. Inspired by Eric Ries's popular book "The Lean Startup," which advises software engineers to release a minimum viable product followed by rapid cycles of iteration, Peters thrusts SAM — an unmistakable hunk of hardware — into the harrowing chaos of live construction sites knowing it's likely to disappoint. Even Waldman calls this decision "somewhere between ridiculous and insane." What follows is numbing, if not surprising. SAM is plopped onto site after site and breaks down thanks to a combination of buggy software, spotty Wi-Fi, robot arm arthritis, rickety scaffolding and bad weather. Peters begs the client for mercy. Repeat.

The engineers gradually zap SAM's bugs and boost its bricks-per-day output well past the 1,000 mark, but the monotony of chapters devoted to each gig (Laramie: "From the start, the job had bad juju") exposes the book's most inexplicable flaw — the chasm between what Waldman reveals and what he withholds. He's long on engineering detail and indiscriminate heaps of Scott Peters's bio. A two-page section has sentences that begin "In fifth grade," "In sixth grade," "In seventh grade," "In ninth grade," and, for variation, "In 10th and 11th grade...." Three pages are devoted to one of Peters's swim coaches.

What's missing is Peters's voice. He's quoted once — for nine words — in Waldman's chapter-length dive into Peters's formative years. Occasionally Peters offers something bland like "We gotta fix this," but we almost never hear him discussing important strategic choices or his feelings about the miserable process of innovation. When the prose heads in a direction where a quote feels inescapable, Waldman often resorts to formulations such as "He wanted to say ... " or "though Scott didn't put it in these words ... " before zipping off on a lengthy authorial paraphrase. The scarcity of the protagonist's voice is so bizarre that it becomes a distraction. Did author and subject have an arrangement restricting quotes? Was Waldman not present for many of the events he recounts? Is Scott Peters ... a robot?

If Peters's absence is mystifying, the lack of key financial facts in a book about entrepreneurship is unforgivable. Only in an epilogue do we learn that SAM retails for $500,000, that Construction Robotics would need six sales a year to break even, and that six-figure checks from Peters's father-in-law are all that's keeping the company solvent. Then, as a throwaway, it's revealed that none of this matters. SAM has been supplanted by MULE, a "material unit life enhancer," and within months of its arrival Construction Robotics has moved an impressive 75 MULEs at $73,000 a pop. And what does a "material unit life enhancer" do? It lays blocks. □