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Man
with
a
PLAN

When New York City offered big money to fix its failing subway, winning solutions came from industry Goliaths.

And one David.

By Sara Rimer
Photograph by Alex Flynn

When he arrived at the launch of the Genius Transit Challenge, Craig Avedisian felt like David in a midtown Manhattan ballroom full of Goliaths. The contest, with total prize money of $3 million, was open to anyone with ideas for improving New York City's antiquated, maddeningly slow, miserably overcrowded, chronically underfunded, debt-ridden subway system. Outsiders were welcome. No idea was too crazy.

CEOs of transportation companies had jetted in from Paris, London, Zurich, Hong Kong, and Tokyo. They talked in their own lingo about dwell times and forced block signaling. The ballroom's preferred seating rows filled up with teams from multibillion-dollar transportation titans Bombardier (66,000 employees), Bechtel (50,000), and Beijing-based CRRC (183,000), merely the world's largest supplier of rail transit equipment.

Then there was Avedisian (1).

A commercial litigator with a lifelong passion for mass transit, 54-year-old Avedisian (LAW'93) had been riding the city's subways for 22 years. He'd taken the Second Avenue line from his Upper East Side apartment that day in late June 2017, armed with ideas for increasing passenger capacity by adding cars and more efficiently opening and closing subway doors. "I was excited when I walked in," Avedisian remembers. "I was intimidated when I walked out."

Eight months and two rounds of judging later, the Metropolitan Transportation Authority (MTA), which runs the subways and sponsored the contest, announced that out of 438 submissions by contestants from 23 countries, Bechtel and CRRC were among the eight winners in three categories.

To his astonishment, so was Avedisian.

He had tied with CRRC and CSinTRANS, an international provider of transit technology solutions, in the subway car innovation category; each had won $330,000 in prize money. He had beaten out Bombardier, with its 70-plus years of global transportation breakthroughs.

Avedisian was one of only two individual winners and the only one with no ties to industry. (MTA announcements, in a slight understatement, dubbed him a "transit enthusiast.")

Contest entries had to include steps for testing and implementing, in a matter of years—not decades, the typical timetable of earlier modernization schemes. Avedisian's 30-page, single-spaced entry was festooned with footnotes and detailed plans for solutions ranging from reconfiguring subway yards (to accommodate the longer trains) to educating commuters about how to use his color-coded system of cars and platforms. He had meticulously calculated the cost, from the low end, at $11,762,186,250, to the high, including options, at $17,039,186,250.

It's a bargain, says Avedisian. To understand the concept of a bargain here, it might help to know that the recently completed first phase of the new Second Avenue line cost $2.5 billion *per mile*. "The Most Expensive Mile of Subway Track on Earth," the *New York Times* called it. "This will increase capacity 36 to 65 percent, depending on the subway line," Avedisian says. And it could be completed in a decade or so, with the first line up and running in just four years.

The corporate winners issued press releases gloating about their honors. Avedisian, who brought his wife, two children, ages 11 and 14, and his mother-in-law to the victory ceremony at City Hall, sent an email to his relatives. No press release needed: with critics carping about the corporate insider winners and dismissing the contest as a PR stunt dreamed up by New York Governor Andrew Cuomo, who oversees the MTA and was among those being blamed for the subway's woes, coverage in the *New York Times*, the *Daily News*, National Public Radio, and others featured Avedisian.

A headline in the *Times* declared, "He Answered a Call for Geniuses, and the MTA Says He Might Be One."

Not so fast. Some of the subway's six million daily riders took to Transit Twitter and other online forums to knock down his plan. "This is the dumbest idea I've ever heard," one of them posted in response to an MTA YouTube video of Avedisian summarizing his idea.

"They haven't read the full proposal," says Avedisian. The document, he

A Transit Buff Is Born

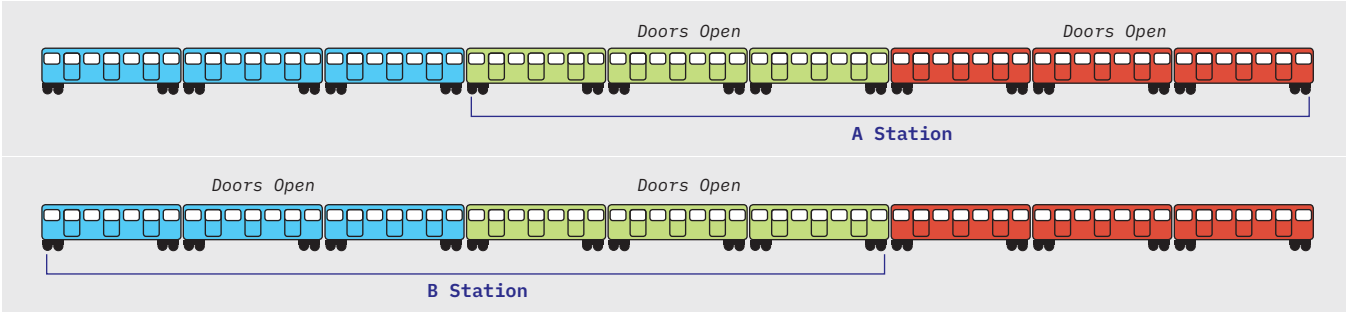
Craig Avedisian (LAW'93) was in kindergarten when his parents gave him an HO model train set for Christmas. The Sante Fe passenger line had cars that would light up, with passengers in the windows, he recalls. Even now, he takes three days before each Christmas to rig up 90 feet of Lionel track, a birthday gift from his wife 15 years ago, around the family's 13-by-23-foot living room.

PLANES AND BICYCLES
Avedisian earned a private pilot's certificate at 17 and a commercial pilot's certificate two years later. He graduated in three years from Florida Institute of Technology with a degree in air commerce and flight technology—and then rode his bike 2,000 miles across Europe.

TRANSPORTATION, CITY PLANNING, AND LAW
He decided there wasn't enough actual piloting involved in commercial flying, and he found work in California, as a manager at a courier business, a dock supervisor at a trucking company, and an urban planning consultant in San Francisco. Then came BU School of Law and work as a lawyer at the National Transportation Safety Board in Washington, D.C.

In 1995, he moved to New York and joined a small law firm (he also sold his car, a Volkswagen Jetta, and took his first ride on the subway). He opened a solo practice in Manhattan in 2002. *SR*

Craig Avedisian (LAW'93), a commercial litigator, has a lifelong passion for mass transit. His idea for improving New York City's MTA grew out of years of riding the subway and studying its problems.



concedes, makes for dense reading. But the plan itself "is very simple, very scalable."

It hinges on a system of opening and closing car doors to allow passenger loading and unloading, called selective door opening, or SDO. As Avedisian points out, the London Underground already uses SDO successfully. In the video, he explains how it would work in New York: a 10-car train, for instance, would be lengthened to 14 cars. But New York's subway platforms are built to accommodate shorter trains—and it would cost a fortune to lengthen the platforms. So, when a 14-car SDO train stops at an "A" station, doors on just the first 10 cars open to unload and load passengers. At the next station (a "B" station), the doors of the last 10 cars open. And so on. Doors on middle cars—known as unlimited cars—open at every stop.

Got it?

Riders can travel "from any station to any station just as they do now," Avedisian explains, as long as they board a car whose doors open at their destination. Cars and platforms will be color-coded red for A stations, blue for B stations, and green for unlimited cars. "There will be user-friendly signs all over the place," he says.

SDO technology ensures that the correct doors open and close. It works in London, he says. And it'll work even better once the MTA carries through on its plan to add open-gangway cars.

Open gangways—allowing riders to walk between cars—could be a key to SDO's eventual success, says Samuel Schwartz, a New York City transportation expert so well known he's earned the nickname Gridlock Sam.

Schwartz finds Avedisian's idea appealing. He also credits the troubled MTA with using the contest to tap into the field's historic appeal to tinkerers and dreamers. "Transportation attracts loads and loads of wannabes," he says. "In particular, transit and trains have attracted the imaginations of millions of people."

For example, any New York history buff knows the famous story of one of those tinkerers, Alfred Ely Beach, and the fan-propelled pneumatic subway he built in secret in the late 1860s.

Avedisian predicts his SDO plan would help the subways to run faster and carry more people—by reducing overcrowding and making it easier to get on and off. "There is simply no other known idea that can increase capacity this dramatically, this fast, this economically, in such a targeted way, and with so little disruption," his proposal says.

His idea grew out of years of riding the subway (and before that, as a School of Law student, Boston's aging Green Line) and studying its problems in his spare time. "I worked on this at home, at the office, on vacation," he says. "I've thought about it all over the place."

His wife, Carla Van de Walle, a lawyer with a master's degree in urban planning, backs that up. "He'd get up in the middle of the night to look at Google aerial maps of different storage yards in the outer boroughs," she says.

Now, his proposal to improve the system stands a chance of becoming a reality. Engineers will pore over what an MTA spokesman called Avedisian's "very interesting idea" with a hope of deciding by January whether it can be implemented. MTA officials say his and others' ideas have jump-started innovative thinking within the agency.

Avedisian, meanwhile, has started dreaming about a second career—in public transportation. "In 23 years of practicing law, I've helped maybe 200 people," he says. "If this one project is implemented, I'll help millions of people. There's nothing more meaningful than that."

How It Works

Avedisian says his idea increases passenger capacity and more efficiently opens and closes doors. The plan hinges on a system called selective door opening (SDO). A 10-car train, for example, would be lengthened to 14 cars. But New York's subway platforms are built for shorter trains. So, when a 14-car SDO train stops at an "A" station (top), doors on the first 10 cars open. At the next station—a "B" station (bottom)—the doors of the last 10 cars open. Doors on the middle cars open at every stop. The plan, Avedisian says, "is very simple, very scalable."

ONLINE: *Watch a video of Craig Avedisian explaining his idea to improve New York's subway at bu.edu/bostonia.*