

readers about more than a hundred years ago, waged between “the planners of safes and vaults, and the safe, vault and bank robbers.”

What I didn't yet know was that the next step in architectural defense—something that could resist not just battering rams but C-4 explosives—had already been designed, and that I would find it in a warehouse in rural New Jersey. But if these, not the delicate instruments of locksmith, are the true tools of breaking and entering—the torches, saws, rams, and air bags with which anyone can bash or burst into almost any building in the world—then I would clearly need to flip the story once again.

I had already moved from recreational lock-pickers to ATF rapid-entry teams, but I would now have to turn to the people specifically designing architecture to resist the most aggressive attacks. Because if someone is developing new hydraulic doorjamb spreaders, then someone else is building a defensive structure specifically with those tools in mind.

Panic Room

A little more than an hour's drive south of Manhattan, amid a rolling landscape of state parks and golf courses in the woods of coastal New Jersey, Vietnam vet and former New Jersey State cop Karl Alizade owns a small warehouse. Pulling into the parking lot of Alizade's firm, you can't miss the broken safe placed out beside the driveway, its door wide-open, sitting there exposed to the weather

like a peculiar kind of lawn sculpture. It's as effective a reminder as any that, to a burglar, safes are often just decorative, offering little more than an illusion of security.

Aside from the safe, it is not easy to guess what happens inside this warehouse set back among the pine trees. But here Alizade runs what architects would call a design-build studio; his is a busy workshop dedicated to conceiving and assembling some of the world's most impenetrable architectural designs. Yet Alizade doesn't think of himself as a designer, let alone an architect. He actually seemed somewhat taken aback when I explained that I was interested in his work from an architectural point of view. Rather, Alizade works in the niche world of the design of safe rooms—more popularly known as *panic rooms*.

Alizade greeted me at the front door in jeans and a half-zip black fleece sweater. He is built more like a linebacker than a businessman. He is stout, broad-shouldered, and has large hands; he gestured with them often as he spoke, twisting and turning them as if solving an invisible Rubik's Cube in order to explain how his products were made. Despite his chosen field of security design and his physical resemblance to someone more likely to be leading tours through the Alaskan outback, he is jovial, prone to quick jokes and laughter.

After graduating with an engineering degree from Auburn University, and following a stint in Vietnam, Alizade joined the New Jersey State police force. During his time as a cop, he was struck by the raw, destructive power burglary had on victims' lives, making it second only to rape, in his view, in terms of its long-term emotional

impact. This is supported by much of the sociological literature: that intense feelings of betrayal and paranoia can be expected to follow any burglary, after which even the smallest detail from earlier interactions with neighbors can lead to a debilitating suspicion that perhaps they were behind the burglary. Maybe your neighbor made a now deeply suspicious comment when you mentioned you'd be going out of town for a week, or, in retrospect, a curious observation that you always seemed to be at the grocery store the same time every day—which was exactly when your home was broken into. This can lead to an often paralyzing fear of leaving the house or trusting any of your old friends.

Burglary is a horribly invasive crime, Alizade emphasized, offending the very idea of personal space and dignity. The feelings of embarrassment and violation it can cause are so powerful, he added, that he decided to commit himself to finding a way to help end the crime altogether, dedicating the latter half of his professional career to the design of defensive architecture, devising new and ever-better ways to thwart burglars. Working as a police officer had taught him firsthand that locks don't work. They slow criminals down, sure—but they don't really *stop* anyone. Maybe your lock means that a burglar will need a few more minutes to get inside—but they'll still get inside. If you really want to keep people out of a space altogether—if you want to end the humiliation of burglary—then you need something far stronger than a dead bolt. You need an absolute physical barrier.

After leaving the police force, Alizade began working in the field of safe- and vault-room design. This took him overseas for an intense period of research and apprenticeship, first to London in the late 1970s. There he worked in the safe factories of both Chubb and John Tann, and he studied vaults in the London Docklands—at the time, a brutally rough and industrial part of London—where importers and exporters stored their goods. These were exotic and strong vaults, Alizade explained, sounding almost wistful, and they taught him far more than he could have learned if he had stayed home in the United States, where all the safe factories were still working only with plate steel. Even better, Alizade was beginning to meet—and have dockside drinks with—some of the very people who were targeting those safes and vaults. Everyone there knew he was a former cop, he said, “but I told them I didn’t care what happened in England; I cared about keeping stuff safe in America. They thought that was funny.” He spent many long nights outdrinking English and European burglars alike, learning their tricks of the trade.

After a few more years in the U.K., Alizade left London to work in safe factories in the Netherlands, South Africa, and even Australia, getting a global perspective on the technicalities of vault design, from advanced metallurgy to the thermal properties of concrete. But things were beginning to change: many of the big foundries and factories he had been so enthusiastic about studying were now starting to shut down, their land sold out from beneath them and handed over to developers. The silver

lining? As those factories began to close, a new space in the global market was opening up. Alizade saw an opportunity.

Before returning to the United States, and because of his unusually extensive international expertise, Alizade became a trusted fraud investigator for the international insurance giant Lloyd's of London; this means that, even today, he will regularly be sent out around the world to inspect burglary insurance claims firsthand, analyzing popped locks, broken safes, and even tunnel jobs to verify that they have not been faked. Several times Alizade and I were only barely able to squeeze in a brief phone call before another of his trips to a new site in the UAE or Brazil, two growth markets he spoke about with genuine interest. Customers in Rio, because of the 2014 World Cup and the 2016 Olympics, had begun investing heavily in private fortifications for everything from suburban homes to police infrastructure, and the UAE was attracting in ever-increasing numbers wealth, tourists, and the criminals who prey on them.

These twin interests—physical security and extensive global travel—were fittingly summarized by his office décor. We were sitting in a cozy, wood-veneer room, its windowsills and shelves lined with the spent cases of large-caliber bullets, and a world map on the back wall was dotted with colored pins marking the countries where Alizade had so far traveled or done business. There were a lot of pins.

Since making his way back to the suburbs of New Jersey and founding CitySafe, Alizade has been on a tear

of design innovation in architectural security. He has developed new, high-strength concrete recipes, mixing bauxite and metal wire into his concrete to form an intensely abrasive, harder-than-rock conglomerate that can resist .50-caliber sniper rounds and wreck almost any drill head applied to it. He has accumulated an extensive physical collection of destroyed safes, including entire sections of walls removed from crime scenes around New York, in order to study how the burglars broke in.

Early in his career, for example, Alizade had noticed that gold burglaries in Jackson Heights, Queens, were on the rise; the increasingly Indian population of the neighborhood places an unusually high cultural value on gold and had been keeping more and more of the precious metal locked up behind flimsy storefronts, relying on fallible architecture and imperfect safes. Many of those compromised safes and sections of walls completely sliced through by criminals were now here in Alizade's warehouse, forming a kind of criminal cross section of Jackson Heights relocated to the forested hinterlands of New Jersey.

Seeing these architectural sections and broken safes in one place is a bit like walking into a private museum. Alizade's collection rather strikingly resembled an avant-garde architectural display reminiscent of the work of American artist Gordon Matta-Clark. Today, Matta-Clark is known primarily for having cut whole sections out of existing buildings—even chainsawing an entire suburban house in two—then displaying the results in a New York gallery. This was not the first time the field of burglary and burglary prevention would bring to mind the work of

Matta-Clark: the physical results of slicing through buildings, whether it's performed as part of a bank heist or as part of an art installation, are often indistinguishable.

Most important, Alizade designs and fabricates a line of trademarked safe rooms he calls MODUL-X. He had realized during his cop days, he explained, that few people had in those years thought to strengthen anything but the front door of a house or nothing more than a bank's teller window. People seemed to take it for granted that buildings would be used properly—not sidestepped, punctured, or otherwise worked around. You might have the strongest front door in the world, but if I can hammer my way through your wall in two minutes, what good does a dead bolt do? People were looking at architecture all wrong, he saw, acting as if criminals respect a building or treat it like a precious object.

Once he realized how easy it was for burglars simply to burst down through ceilings, or to slice their way through the drywall of a check-cashing facility to steal thousands of dollars, it also became clear how naïve the existing approach to architectural security had been. Something had to be done, and that meant rethinking where, through the eyes of burglars, the entrance to a building really was. Because it wasn't the front door. It was a hole of their own making: a new entrance sliced through the unprotected surfaces that held our vulnerable world of doors in place. Burglars refuse to take that world on its own terms. They can go around it, through it, under it, making every crime a kind of tunnel job, worming their way through architecture while the rest of us just stand there, hypnotized.

They've developed their own tools for this, as well, Alizade saw, not bothering with skeleton keys or lockpicks but misusing or redesigning architecture itself. Burglars are the M. C. Eschers of the built environment, approaching every wall and ceiling as a door-to-be, a connection waiting to happen, then making their vision real with the help of burning bars and Sawzalls.

The next obvious step would be to fortify those walls and ceilings—but why stop there? Why just reinforce—that is, be held hostage by—the mistakes of the original architect? Why not insert *an entirely new room*—a strongbox, a bullet-resistant command center complete with bottled water and emergency phone lines at the ready? Assemble this new space inside an existing home or business, and voilà—say goodbye to the brute-force thuggery of takeover robberies and late-night home invasions, and say hello to a place of refuge away from the risk of harm. It would be a literal safe room.

Before I visited Alizade, I spent a long time looking through a handful of patents he has filed for the modular defensive structures his firm now constructs. Those patents are for high-security safes slotted together piece by piece, or panel by panel, assembled almost like three-dimensional puzzles or magic boxes. What's so brilliant about Alizade's subsequent work is that he has effectively blown these safes up to the scale of small buildings, simply by adding more—and more, and more—panels until something the size of a jewelry safe has the dimensions of a functional living room. Because of the modular nature of their construction, these rooms have no realistic upper limit on their size.

Finally, install all this inside someone's house—near the master bedroom, for example, behind a fake wall, or maybe next door to the home office—and you have a panic room. Even better, if you move to a new house, you can unbolt the whole thing from inside, pack up the panels, and take it with you.

Two main strategies are at work in Alizade's MODUL-X line. The modular assembly of the walls themselves—what one of his patents refers to as “a plurality of interconnected panels”—means that they can be bolted together without gaps along tight seams. Additionally, each panel joins up with the others along unusual right-angled edges. Think of a square of chocolate popped into a grid, where each square has a double right angle, like a small staircase, cut along its edges. Those doubled angles mean that you cannot slip any burglary tools through the cracks between the panels—not to mention any orthoscopic cameras for spying inside. Finally, the walls are not only designed to resist simple burglary tools; they can also only be assembled or disassembled, bolted or unbolted, from the inside. Even if intruders have days and days of uninterrupted time, they cannot take the room apart without first gaining entrance.

The spatial premise of David Fincher's 2002 film, *Panic Room*, plays on this promise of true invulnerability. *Panic Room* depicts a burglary gone wrong, as three men break into a brownstone on Manhattan's Upper East Side—only to find that a mother and her daughter have locked themselves into the home's eponymous panic room.

The problem? “What we want,” the burglars write on a piece of paper, shown to the mother and daughter by way of a surveillance camera, “is in that room.”

The conundrum here is obvious: What kind of heist is possible when the room you're targeting is impossible to enter? Ironically, this reveals what is perhaps any panic room's fundamental flaw: the people who turn to it for protection have effectively entombed themselves there, locked into a space of inescapable claustrophobia. Refusing to believe in the panic room's impenetrability, however, two of the film's burglars begin discussing various ways to get in—despite the fact that, as we learn in an early plot twist, the leader of their crew was responsible for the room's design and installation. “I spent the last twelve years of my life building these rooms specifically to keep out people like us,” the man mutters at one point, shaking his head. “It's all so ironic and amusing,” another burglar trills—but *how do we get in?* The designer laughs at him. “We can't. You can't get into a panic room. That's the whole point. We have to get *her* to come out.”

Achieving this kind of stopping power brings us to Alizade's other signature approach: brute strength. The concrete he uses is remarkable. CitySafe has settled on a slow-curing, proprietary mixture. It resists sledgehammers and drills and is also impenetrable by .50-caliber, high-velocity sniper rounds, rocket-propelled grenades, and, incredibly, C-4 shape charges. This means that even professional demolition teams and small insurgent armies would have trouble getting inside a MODUL-X safe room.

Further, because the concrete mix includes a matrix of metal fibers, the panels will dissipate—that is, neutralize—the directional heat of a thermic lance.

It doesn't seem entirely out of the question to suggest that these rooms, built to resist even the explosives used to demolish high-rise buildings, old casinos, and obsolete sports stadiums, could well be the last architectural structures standing after the collapse of civilization. Among the ruins of human culture, alongside the Pyramids, Stonehenge, and the Great Wall of China, Karl Alizade's safe rooms, surrounded by wastelands of collapsed towers and twisted rebar, would still be intact, their doors still locked from within, impenetrable to future archaeologists and grave robbers, with skeletons of the wealthy sealed in silence, enthroned among their gold and jewels. It's as if Alizade was so concerned about eliminating the threat of burglary from the world that he inadvertently designed an architecture that would outlast humanity altogether.

Of course, his safe rooms are not *truly* impenetrable, and Alizade was clear about this (without sharing any tips for how to defeat their defenses). He emphasized, instead, that impenetrability is the wrong way to think about personal safety: you're not trying to build a pharaonic tomb that will survive to the end of the world. You're trying to buy time. "Any safe can be penetrated," he pointed out, and that applies equally well to any safe room. If the owner of a safe dies and no one else has the key, or if someone locked inside a safe room is for any reason incapacitated and can no longer open the door, you need at least some way to get in. "But that's not the Holy Grail of

safe design," he said. "It's *time*—time and the fact that you're making them bring lots of different tools to the scene. That's the Holy Grail. Difficulty. The longer you keep them on that site, the more nervous they get." And the more nervous your attackers get, the more likely they are to lose their nerve, make rookie mistakes, or just run out of time and be caught.

We left the main office and walked back into the attached workshop to see one of Alizade's contraptions standing in the center of the warehouse. The unrelentingly gray, bunker-like box consisted of several dozen two-foot-square panels bolted together like a cubist armadillo. It was pieces attached to pieces attached to pieces. If ever a structure seemed to have been designed using *Minecraft*, this was it. Alizade was clearly happy with his product, as well as delighted by the visible scars left on its side from unsuccessful attacks by prospective clients. He even urged me to pick up a sledgehammer—several were lying about—and try it out myself, to drive home how pointless such an attack would be. It was like kicking a mountain.

These rooms don't only resist all of the major tools used by rapid-entry teams, from sledgehammers and Halligans to burning bars. One of the most interesting things Alizade explained to me was how he tests his products (videos of these tests can be found on his website). Emphasizing the strange asymmetry of global weapons availability, Alizade ships his panels off to be field-tested on a Russian military air base against weaponry, including AK-47s and rocket launchers, designed in the former Soviet Union. This is because, he says, these are the weapons

the bad guys have: Cold War munitions have flooded the global marketplace through official and unofficial arms deals, finding their way into the hands of criminal gangs, child armies, and terrorist insurgents.

As Alizade reasons, in addition to standard house-breaking tools and U.S.-made munitions, his products must stand up against these weapons in particular. The MODUL-X system is certified for use by the Department of State and the Bureau of Diplomatic Security, he reminded me, and it has been used to protect not only wealthy businesspeople temporarily posted overseas but U.S. ambassadorial staff stationed in foreign, often highly volatile, countries. If loosely defined groups of terrorists, thieves, gangsters, seasoned criminals, drug-fueled warlords, religious extremists, political separatists, and other stateless movers and shakers of the global black economy are going to use off-market, hand-me-down Soviet military gear against a target, then that target needs to be built to withstand that constellation of weaponry.

This is one of the clearest examples of the *Spy vs. Spy* mentality animating many of the innovations in both protecting and violating private space. To physically build into the architectural productions of his firm resistance to the specific damage profiles of old Soviet machine guns and sniper rifles is to make explicit the arms race between one side and the other, between those who design for security and those who design to defeat it. Architecture, in this context, is just another word for this tug-of-war.

I asked Alizade about his clientele, and he was necessarily cagey. Giving away any recognizable details

about who had had a safe room installed would defeat half the purpose of owning one, and it could indicate to a determined observer that something inside must be worth stealing. Alizade did say that several CEOs of pharmaceutical companies had had his rooms installed inside their homes (one of the peculiarities of New Jersey is that its well-forested roads often lead from pharmaceutical giant to pharmaceutical giant).

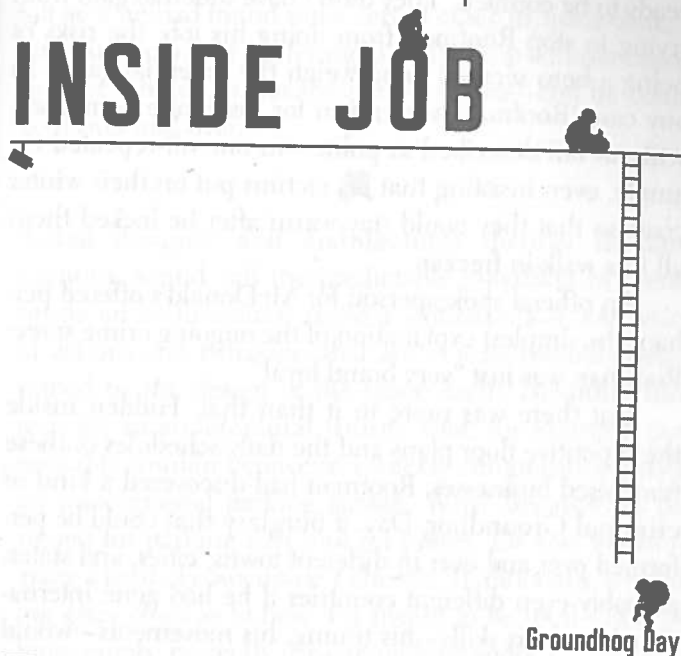
But, once again, the business landscape is starting to change. Alizade explained that he was restructuring CitySafe, looking for investors, and preparing for a potential move west to Nevada, where the security market was expanding. He also admitted that he had been growing a bit bored with domestic security over the past few years. He wanted to continue working with the State Department and the Department of Defense, and to expand the business accordingly. The home fortifications and safe rooms offered by his competitors made him laugh, they were so easy to defeat. He seemed restless.

As Alizade walked me through his model panic room, pointing out every detail, I was reminded of something Jerry Toner, the Cambridge classicist, had told me. During our wide-ranging conversation about crimes and burglaries in the ancient world, Toner had pointed out that the House of Menander in the destroyed city of Pompeii had apparently featured a kind of safe room: a private underground vault that nonetheless offered no protection from the eruption of nearby Mt. Vesuvius. The home's owner, Quintus Poppeus, had constructed an elaborate villa for himself, the size of an entire city block, complete

with a fortresslike safe room belowground. This subterranean chamber appears to have been designed for carefully controlled access, its walls thickened and seemingly impenetrable against any bandits trying to undermine or tunnel through them.

This architectural feature, Toner suggested, indicated that the walls of the private home and the legal cobweb surrounding it, even in the ancient world, would not have been enough to keep intruders at bay—indeed, that human civilizations of all known eras have produced their own Karl Alizades, we might say, people whose interest in the built environment lies in strengthening it and redesigning it to help keep the rest of us safe against intrusion, theft, and humiliation.

INSIDE JOB



Groundhog Day

Before they knew his name, they called him Roofman. He would cut holes in the roofs of chain stores and fast-food restaurants—usually a McDonald's—then drop down through the ceiling to rob the startled employees. Sometimes he'd come in through the back wall, slipping in through a hole of his own making, only to pop out in the kitchen or storeroom; but it was mostly the roof and so the name quickly stuck.

The employees he held up were usually teenagers paid minimum wage working the morning shift or wearily closing up shop for the night, getting the day's take