

# HACKING

# THE

How **SO-IL** is rewriting NYC's architectural source code to reframe multi-family housing around the human experience

# SYSTEM

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**+** By this point in the digital age, we're accustomed to blaming "the algorithm" for the eerily prescient ads served on social media, or the embarrassing movies that streaming services automatically queue up based on our past viewing history.

Brooklyn architecture firm SO-IL has a different bone to pick with big data. In the eyes of founders Florian Idenburg and Jing Liu, opaque number-crunching also dictates what type of housing gets built, as spreadsheet-obsessed banks and overly regulated planning departments favour safe investments that result in a loop of bland, boxy sameness. Over the past few years, SO-IL has been pushing back against this paint-by-numbers design while inventing more creative (yet nevertheless lucrative) solutions. In the process, it is imagining a different form of urban domesticity — one ruled less by traditional economic formulas and more by moments of genuine connection.



PHOTOS BY ANNA BAUER (PORTRAIT);  
IWAN BAAN, COURTESY OF SO-IL (450 WARREN)



At 450 WARREN, a five-storey condo building in Brooklyn, SO-IL skipped the dark, double-loaded corridor you'd typically find in multi-unit housing in favour of winding concrete bridges that look out to a central courtyard through wire-mesh netting.



**IN** NEW YORK CITY, ALL ROADS LEAD TO WALL STREET. “When we started a studio here, we committed to being in a place where markets build everything,” says Florian Idenburg, who co-founded SO-IL alongside his life partner, Jing Liu, in 2008 after the two met while working at SANAA in Tokyo. Sure enough, SO-IL’s best-known NYC project to date, the Amant arts campus in Brooklyn, exists at the perfect intersection of creativity and cash: The cluster of galleries and studio spaces was funded by Lonti Ebers, a wealthy arts patron.

Unfortunately, convincing the real estate market to finance that same level of architectural finesse is no easy sell. “Housing is kind of the cornerstone of any good architecture practice, because it’s really the foundation of our built environment,” says Liu. “So, from the beginning, we tried to do multi-family housing. But we learned from our colleagues and peers in New York that it is impossible.” The challenge, Idenburg explains, lies in a simple fact: “Developers like Excel sheets, not plans.” Add building codes and zoning restrictions into the mix and you end up with very limited outcomes. “There is this super-tight algorithm that governs everything that people do in New York City,” says Liu. “It’s no wonder that no architects do housing.”

Yet somehow, SO-IL has pulled it off, gradually reimagining select corners of Brooklyn with new ideas about life in the city. In 2022, the studio completed 450 Warren, an 18-unit condo building in Boerum Hill. Three follow-up projects are underway: 144 Vanderbilt Avenue, 9 Chapel Street and 450 Union Street — all (like 450 Warren) built by the boutique

developer Tankhouse. “We try to prove that even within the realities of the market, it might be possible to push back against some of the mechanistic forces that go on to shape the way we live,” says Idenburg.

In that spirit, it might be easiest to define 450 Warren by contrasting it with its neighbours. “There are two types of housing in Brooklyn: brownstones and towers,” Idenburg continues. SO – IL and Tankhouse envisioned a hybrid: A multi-unit infill that would move circulation from internal hallways to the building exterior, giving each unit a pseudo-front stoop. In place of balcony railings, this circulation is enclosed by mesh netting. Unlike in other modern residential developments, there is no physical doorman, and there are no luxury amenities, like dog spas. And, rather than a flat, boxy shell, the building is a series of vertical, masonry-clad volumes pushed and pulled into a tiered arrangement.

Look at it through a banker’s lens, and you might even see a row of spreadsheet columns. That’s a coincidence — but there’s some truth to the comparison, too. As Idenburg and Liu explain, if you want to bend the algorithm to your will, you need to understand the underlying source code. That way, you can plug in radical ideas while still getting the system to return the desired financial value. In other words, even non-formulaic architecture has its own formula.

Here is SO – IL’s:



A1 =SUM(2012+2016)

## BUILD ON YOUR PAST SUCCESS

**+** **SO – IL’S ENTRY POINT** into the NYC housing market was a 2012 proposal for a building on East 27th Street dubbed tiNY, which would have packed 96 identical micro-units (each measuring 22 square metres) into a 17-storey tower. Idenburg and Liu designed it as part of a New York Department of Housing Preservation and Development competition held during the Bloomberg administration, and they admit that its salient concept — solving affordability by making housing even smaller — was controversial.

Building on ideas initially explored in SO – IL’s 2010 concept for a housing development in Greece, the proposal also served as a preview of things to come, particularly in the way that it addressed the threshold between indoor and outdoor space. “Lately, the more privatized interior has been pushing out in its incessant desire to grow, and absorbing all this formerly communal space,” Liu says. “This also manifests in how building envelopes get designed: They become just this thin line between the city and inside.” SO – IL’s response, articulated in tiNY and in the projects that have followed it, has been to reintroduce a sense of depth, and to do away with dark inner hallways in favour of open circulation that feels more akin to a typical residential street. Units in tiNY would have sat in the building’s core, sandwiched between balconies on one end and a single open circulation corridor on the other.

The project caught the attention of Mexico’s Imuvi Development, a municipal agency that approached SO – IL in 2016 with an assignment. In León, about a five-hour drive northwest of Mexico City, urban sprawl has meant that utility and transportation networks must be expanded ever outward. Now, Imuvi is exploring alternative models for bringing people back to the core through affordable housing. All this to say, while the context of León bore little resemblance to tiNY’s site in New York,

the overall goal was the same: compelling, affordable density.

In Las Americas Social Housing, which SO – IL completed in 2021, the single-loaded corridor is again the main organizing element. The six-storey, 56-unit building is essentially a figure eight with two interior courtyards to allow for cross breezes and foster a sense of community. “We looked at ancient megaliths like the Beltany stone circle in Ireland, and how those circular structures became a place for gatherings,” says Liu. “There is something sacred about a courtyard — enveloping living around empty space that’s undefined and that no one can claim for themselves.” Viewed through a financial lens, the design still maximized the plot’s buildable footprint and kept construction costs low. Local workers built the facade from 17-kilogram pleated concrete blocks laid into staggered fins, avoiding the need for off-site fabrication and expensive construction equipment like cranes, all while keeping the project’s expenditure within León’s labour market.

A 2012 proposal, tiNY arranged units between balconies (at the front) and an open corridor (at the back) to allow for cross-ventilation.





**B2** =CONCAT(SEB+SAM)

**PARTNER WITH THE RIGHT DEVELOPER**

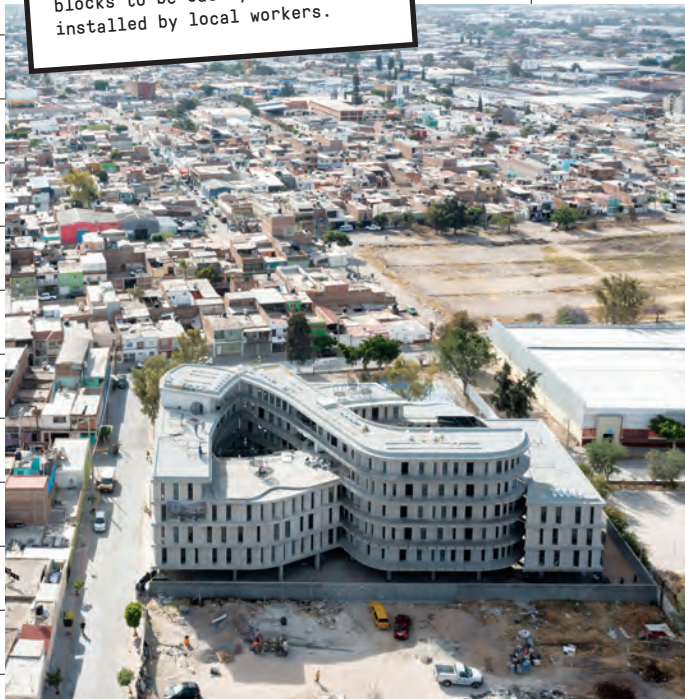
**+** **ONE ASPECT OF WORKING** in Mexico that SO-IL found particularly refreshing was the number of trained architects employed in development and at the city level. “To really innovate, experiment and deliver something different, you need architectural thinking at every scale,” says Liu. “Otherwise, it becomes about convincing someone who has no clue how this works to value it.”

Back in Brooklyn, they’ve found this same discernment in Tankhouse. The development company is run by two partners who both come by their understanding of design honestly: Sebastian Mendez, an architect who formerly worked at Foster + Partners, and Sam Alison-Mayne, the son of Morphosis founder Thom Mayne. Idenburg and Liu connected with the duo through previous employees and the quartet immediately clicked.

Now, when SO-IL proposes an outside-the-box idea — like the pink facade at 144 Vanderbilt — Mendez and Alison-Mayne don’t skip a beat. “They appreciate the value of architecture,” says Idenburg. “Most brokers will say that the market won’t absorb something, but their models only know what they already know,” Liu continues. “We owe it to be investigative — what are the varieties? There are tight constraints, but there is still looseness, too.”

Mendez and Alison-Mayne also have a personal investment in Fort Greene and Gowanus, the neighborhoods in which they are building. Both SO-IL and Tankhouse’s partners live within a short walk of the developments that they have partnered on (Mendez actually lives in one of 450 Warren’s units), giving them deeper insight into the areas — and holding them accountable for anything they introduce there. For instance, while Idenburg says it’s too early to say who will occupy the commercial units at 144 Vanderbilt, he promises that Tankhouse isn’t leasing them to a bank. “It’s much more important to get the right person than to make an extra buck,” he says.

In Léon, Mexico, LAS AMERICAS arranged 56 units in a figure eight formation around two open courtyards, again allowing for cross-ventilation while also encouraging more social interaction between residents. SO-IL designed the pleated concrete facade’s 17-kilogram blocks to be easily carried and installed by local workers.



**C3** =IF(GFP>MIN, “FIT”)

**RETHINK HOW SPACE GETS ALLOCATED**

**+** **TANKHOUSE AND SO-IL’S GREATEST ACHIEVEMENT** has been finding ways to move beyond the default interpretation of zoning bylaws, which limit how much of a lot can be used for actual built space. “The requirements in New York City dictate that about 30 to 40 per cent — depending on what district you’re building in — remains open space,” says Liu. In New York City projects, this typically results in a forgotten zone at the back of a building. But in SO-IL’s rethink at 450 Warren and its successors (which follow the same logic as Las Americas Social Housing in Léon, Mexico), the “unbuilt” portion instead becomes a series of outdoor hubs surrounded by open circulation — in the case of 450 Warren, a central courtyard and two communal side yards. “The sellable, buildable square footage is already maximized,” explains Liu. “It’s not like we’re taking away from that square footage to make exterior corridors. But they add value back to the development by becoming an important space for the community.” In another clever use of outdoor space, a small vestibule area in front of each unit creates room for strollers, umbrellas, benches or shoes.

At least in theory, this should work — and there are no shortage of precedents around the world to prove it. But put into practice in New York, the idea broke the algorithm. Financial institutions evaluating potential investments seek to minimize gross floor area (the amount of area they have to build) and maximize net floor area (the amount of area they can sell). Sure enough, when Alison-Mayne came back from the bank, he had bad news: Tankhouse’s loan application was denied. “The

software said the ratios were off — the project had too much exterior facade for the floor area. Based on the way that projects are financed in NYC, it couldn't exist," explains Idenburg. With the bank unwilling to budge, Mendez instead sourced cash from his personal network, hoping to develop a proven track record that can win the bank over when it comes to future projects. "There are qualities that we think people value. But now we need to prove it within the market," Idenburg says. Sure enough, 450 Warren sold out and turned a profit.

At times, SO-IL's inventive approach has also befuddled building inspectors. "We read the code very, very carefully," says Idenburg. "We know where there's room for interpretation." The safety netting that encloses the sinuous exterior walkways in 450 Warren is a case in point. "We were able to forgo handrails just by using this airy netting. The design made it past somebody's desk, but when the inspector came and we walked him through it, he was flabbergasted. He said, 'In some ways, I hate it, but I have to approve it.'" On the other hand, the project has been raised up as a positive example, too. "Some of the units are actually being used in tests by New York City Housing Authority to measure how much energy is required to ventilate them in the summer," Idenburg says. Because each unit has at least two (and as many as four) orientations, they allow for more comfortable airflow; similarly, their high thermal mass helps to keep them relatively cool in the summer.

D4 =SUBSTITUTE("DOG-SPA", "COURTYARD")

## ESTABLISH FRESH PRIORITIES

+ **SO-IL BALANCES THE MORE EXPENSIVE ASPECTS** of its designs with two main cost-saving strategies. The first is to approach amenities from a different point of view. "There's a tower around the corner from our building that has a dog spa and a bike repair shop," says Idenburg. "Another one has an Uber drop-off so that you never actually have to leave the building — almost like you're on a cruise ship. But it's better if that life happens in the streets — at the bike shop or dog spa around the corner that is part of a larger community." To Idenburg, a sense of connection is the best amenity he can offer. "What's exciting to us is that you suddenly become aware of everybody else in your building, and you realize that maybe someone upstairs has kids the same age as yours," he says. Along with its communal courtyards, 144 Vanderbilt makes room for a fitness centre, children's playroom and co-working lounge.

SO-IL's second savvy economic move is to work with rookie contractors. "The reality is that the projects go to the lowest bidder," Idenburg says. "It means that we have to do a lot of work during construction, but it's the only way that we can build. Our metal guy ran a pizza shop during the day. That's the nice thing about Brooklyn. That's part of the hustle."

E5 CMD-1>FILL

## EMBRACE COLOUR

+ **THE CASCADING FORM** and fluted pink concrete facade of 144 Vanderbilt (which is on track to be completed early this year) are further evidence of SO-IL's ability to balance creative and practical considerations. The building's shape is a direct response to zoning restrictions, which allow for eight storeys on the Myrtle Avenue side but only four on Vanderbilt Avenue — yet its stacked, twisting massing also helps distinguish it from other housing developments that skew more conventionally boxy. "It's replacing an older gas station, so we were thinking about how the building should express itself as a sculpture," says Liu. Adding pigment to precast cladding became a way to amplify its landmark status. "But we also wanted to have something that is not foreign," Idenburg adds. Pink, which echoes the red brick of nearby buildings, became the perfect hue. "Red is also easier to achieve," Idenburg continues, "compared to blue or green — which need an incredible amount of dye."



Made from fluted precast concrete, 144 VANDERBILT brings a pink landmark to Brooklyn's Fort Greene. Units are again configured around open, single-loaded corridors.



Along with working on additional housing developments for Tankhouse, SO-IL's team is busy designing projects for Williams College and Detroit's Library Street Collective.

Tankhouse, there's not a single repeating unit, which means you have to draw three times as much, and we need to be on site more to get the quality right," says Liu. "We feel like if you have a variety of different unit types, it produces a much more diverse, maybe complex community," Idenburg adds. "If we made a double-loaded corridor in a box, we'd be done." Liu echoes the sentiment. "We know how to make a profitable business that is careless — but what does that do to us? As architects, we chose this profession to make the world better," she says. She points to an art museum project for Williams College in Williamstown, Massachusetts, as a dream scenario. "Every project should be like that one, because they truly value architecture," adds Idenburg. "But it's not about making a profit. The university realizes that it is important for them to build a building that lasts for a hundred years, so there's a true investment in space."

Ultimately, while Idenburg and Liu may call New York home, they recognize that the city's ultra-high cost of living is part of the problem. The projects they have built with Tankhouse so far have sold at market rate; units at 144 Vanderbilt start at \$1.95 million. (The team does have an affordable housing project forthcoming in Gowanus.) What does it mean for SO-IL's vision of a diverse, dynamic neighbourhood if most of its employees can't afford to live there? Perhaps Detroit poses a better opportunity. SO-IL is currently working with Anthony and JJ Curis of Library Street Collective on a master plan for an arts campus at the Stanton Yards marina. "It's a place where young people can start families, because they can actually afford a house. And there's a lot of creativity and space. It's really the opposite of New York, in that you can test new models," says Idenburg. "Anthony Curis has asked us, 'Why don't you have an office here?' It would allow us to do work for other places from Detroit. It's only an hour flight."

The Stanton Yards site was also the subject of their studio at the University of Toronto this past fall; as the Daniels Faculty's 2024-2025 Frank Gehry International Visiting Chairs, the architects taught a class dubbed "Big Little Village" that tasked students with envisioning a co-op community where ownership is renewed on a 12-year cycle. The class description reads: "We imagine such a community will inherit and be indebted to a post-capital site, transforming it slowly over time without the infusion of external capital. It will care about its neighbours as much as itself, as by lifting everyone else around you, you also lift yourself." In conversation, Idenburg contrasts that line of thinking with Wall Street's prevailing financial logic. "From a market point of view, seven years is the cycle for a building: You want to get your money out in seven years, and after that, the building has no value anymore on paper. But what is the potential of a brick in that place — how much life does it have? It's about shifting the conversation from just making new investments green to extending the lifespan of materials."

In development, you can never escape the numbers — yet designing around the numbers alone ignores more important considerations. SO-IL's process may be driven by hard data (indeed, its new book, *In Depth: Urban Domesticities Today*, includes several pages of spreadsheets), but this is more of a practical adaptation than a true creative strategy. "Everyone tells us, 'That's a nice idea, but you have to prove it with the numbers.' We're very keen on making sure that we have all the data so that people can see how it makes sense: the unit count, the construction cost, the floor area ratio, the density. The algorithm is still guiding everything when someone starts thinking about a project," says Idenburg. But to him and Liu, all these numbers must still add up to a happy life. "We need to think about what human desire is: We want to connect with each other. We want to leave traces of ourselves, and we want to create memories. So how do we make that happen, spatially and materially?" asks Liu. Time to fire up Excel. **AZ**

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**OF COURSE, NOT EVERY PROBLEM** has a tidy solution. Idenburg and Liu learned that the hard way back in November 2022, when they posted two job openings (for a designer with two to five years of experience and a project architect with five to eight) on Instagram. The pay specified for the positions was US\$55,000 and US\$65,000, respectively — amounts that commenters found to be outrageously low. In the eyes of architecture meme accounts that advocate for healthier studio culture, SO-IL's management became public enemy number one.

In response, Idenburg and Liu brought in an outside team of financial consultants and recalibrated their payment structure, removing the profit-sharing that they had originally extended to associates (which they say would have bolstered the salaries advertised in their original post) in favour of higher base salaries. "None of our staff left. We raised the benefits in the office quite a bit, and we had a very long set of discussions," Liu says. Yet they admit they will probably never be able to compete with the pay offered by larger, more corporate firms. "I think the gist of that conversation was that we need to make more profit," says Liu. "But as a smaller firm, you're inevitably doing smaller-scale projects that bigger firms didn't want because they're not profitable. So how do you break out of that? Our staff tell us that people choose to work here because of the level of integrity and dignity we get from it. How do you balance that with the reality of living in New York City?"

An increase in commercial residential work could be seen as a strategy — but it isn't that simple. "Even in the buildings we make with