Above/Between:

Urban Housing in a City of Voids

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Abstract

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The contemporary megacity is shaped by transportation infrastructure and characterized by continuous outward expansion, a pattern of development that has left behind spatial voids within more central urban areas. New architectural forms that adapt to these voids by rethinking the potential of residual urban space can be a catalyst for density as an alternative to replacing older buildings or continuing to expand the urban fringe. Using Los Angeles as a testing ground, this thesis proposes new housing typologies to program underused spaces and accommodate future increases in population. This thesis proposes a series of interventions throughout the city while keeping the existing urban fabric intact. The designs proposed take the form of dense infill housing units, addressing the issues of increased population, decreased land availability, and planning for the reduction of automobile usage in an increasingly multimodal future.

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preface

Having lived in Los Angeles for the first two decades of my life, it was the only place I ever knew intimately. Although I was always interested in the city as an idea, I never really considered Los Angeles to be one because its form was so contrary to the indelible urbanity of other places. For me, the city was always elsewhere—San Francisco, New York, Tokyo. Places that were cities because they could not be mistaken for anything else.

Contrary to the largely true stereotype of the car-obsessed metropolis, I walked and used public transportation much of the time while living in Los Angeles, finding the urbanity in this vast agglomeration of freeways and houses. This first arose out of necessity, and later because I realized the power of choice in shaping the places we call home. I was also able to see a side of Los Angeles that I otherwise might not have. While it was certainly an inconvenience to be carless in a city with more vehicles than people, it ultimately inculcated a desire to improve this spatial imbalance, thus setting the course for an exploration of built space beginning at the scale of the city.

I never found Los Angeles to be especially interesting until I left it and realized what a peculiar place it truly is. In the few years of living elsewhere and only periodically visiting Southern California, the changes each time around have been astounding—both for the better and for the worse. New skyscrapers punctuate an expanding downtown. Traffic continues to worsen. Wildfires erupt during increasingly balmy winter months. Nondescript neighborhoods suddenly become popular enclaves with skyrocketing rents. Homeless encampments take over more and more sidewalks on the outskirts of the city's growing core. It is in this multifarious context that this thesis is situated. The underlying goal is to keep all of these gears in motion as they are, undisturbed, with interventions that address the potential of the space above and between the everyday monuments of an evolving city.

I realize now that the organism that is Los Angeles has always been a "city" with or without my acknowledgement, but what continues to make it so unique is precisely this lack of immediate categorization. With a newfound appreciation for this place, calling it just a "city" is almost diminutive. More than that, it is home.

fig. 01 Palm tree, Venice, 2017 (cover).
fig. 02 Elizabeth Iannone, I-110 & I-105 Freeway Interchange, Los Angeles (abstract).
fig. 03 Sean Lipowski, View from Koreatown, Los Angeles, 2009 (prologue).
fig. 04 City of Voids. Includes work by David Hockney, Vincent Lamoroux (photograph by Jeroen Verrecht), Ed Ruscha, and Kerry Tribe (photograph by Gerard Smulevich) (above).

one

welcome to los angeles

But then I often think, you know, why did I go to California all that time ago in the first place? At the time, I always said I'd gone because it was sexy, it was sunny. But Los Angeles is also the most spacey city in the world. You feel the most space.[01]

—David Hockney

Los Angeles is a city of voids. Shaped by the infrastructure and patterns of development that have enabled its outward growth, the vastness of the city is expressed in the spaces within it that remain unfilled. This perceptual emptiness has become part of its image, informing a collective understanding of the city as a sprawling, low-density mega-region. These voids within the existing urban fabric remain largely unexplored as sites for accommodating future growth. This thesis argues that the architecture of

fig. 05 Dennis Hopper, *Double Standard,* 1961 (detail).

fig. 06 Bryan Allo, Downtown Los Angeles in context.

density in such a metropolis must be understood as mediating between the expansive scale of city and the contraction of scale in the individual buildings that comprise it.

While all cities necessarily have automobile infrastructure in place, the extent to which it has crafted the image of Los Angeles is remarkable. If Tokyo is typified by its transit lines, Copenhagen by its bicycle network, and Venice by its canals, then Los Angeles is a place for cars. There is certainly a litany of renowned architecture in the city, yet the most pronounced typology of urban form in Los Angeles may be its transportation network—a complex web of freeways, streets, and parking lots linked together through the ebb and flow of traffic. As the city has grown over time, it has moved outward, further expanding the urban fringe and leaving vast, empty spaces within its boundaries. Given that Los Angeles' dominant mode of transportation is motorized and private, distance is less crucial than time in moving from place to place. Commutes with time measured in hours rather than minutes are not uncommon. As the city is not often traversed on foot, residual spaces are further overlooked. Zooming by at sixty miles per hour or even at the crawl of rush hour traffic, little thought is given to these plots of land. Space in the modern city is frequently taken for granted as a byproduct of contemporary life.

Los Angeles is both renowned and derided for its expansive, low-slung form, yet this outward growth has begun to reach its limits. As frequently as the city's legendary traffic is bemoaned, the openness of the metropolis is exalted. While the urban fringe could theoretically continue to expand into undeveloped desert to the north and east, the efficacy of existing infrastructure in handling a further onslaught of exurban commuters is of increasing concern (fig. 09). Instead, this thesis proposes to evaluate the potential of residual urban spaces, repurposing voids in the city as land for housing. As the city continues to grow, this thesis suggests ways in which density and saturation can increase in existing neighborhoods without removing any of the city's building stock or radically changing the contemporary Angeleno's way of life.

This thesis proposes new, more efficient housing forms and the use of unconventional sites. By accommodating a new typology of buildings with smaller building footprints and taller forms, vacant or underutilized spaces would be grounds for the next layer of growth in a city largely defined by its dispersed form. The following research and design exploration explores ways in which cities can become more dense by using existing spatial voids while maintaining the structures and qualities that make them unique. Not every city needs to be New York or Tokyo, but taking elements from ultra-dense cities such as these and incorporating them into the radically different context of a city like Los Angeles is part of the basis for this thesis exploration.

Essential to this investigation is an understanding of the idiosyncratic form and current state of Los Angeles, a city at a turning point between maintaining its inherent qualities while also undergoing a huge population influx expected to last through the next several decades. Using Los Angeles as an urban testing ground, this thesis proposes a series of interventions which can be duplicated throughout the region while keeping the existing urban fabric intact. The designs proposed take the form of infill housing units, addressing the issues of population increase and decreased housing stock and land in Los Angeles.

two

framework

In Los Angeles you get the sense sometimes that there's a mysterious patrol at night: when the streets are empty and everyone's asleep, they go erasing the past.[02]

—Carlos Ruiz Zafón

Los Angeles challenges the prototypical definition of the city. As seen from above, the organizing grid of the metropolis extends infinitely in every direction, its only true boundary the ocean to the west. Navigating the city by car, this sense of infinity is expressed through the windshield, with the quality and amount of space between buildings most apparent when viewed from the ground. Architects Luciano Basauri and Francesca Insulza assert that "the most striking aspect of LA's sprawl is the large amount of space within the underlying grid structure that seems unfilled—the blind facades and empty parking lots waiting suggestively to be used."[03] (fig. 07) Although infrastructural space defined by the automobile is

fig. 07 Vincent Lamoroux, *Projection,* 2015 (installation view).

typical in cities developed with driving as a primary mode of transportation, Los Angeles takes this form to its extreme. Here, these voids form "an urban typology within the city; they are part of the image of LA."[04] Like all voids, these are inherently impermanent, suggesting that they may someday be filled or reconfigured.

For a city the size of Los Angeles that continues to grow both in population and size, the value of these voids is becoming increasingly apparent. Commercially, this value is expressed as a dollar amount, with developers eager to demolish older, less expensive homes in desirable areas and replace them with multiple, smaller homes sold at higher prices. Culturally, the voids contribute to the uniquely identifiable image of the city—what artist David Hockney calls "the most spacey city in the world."[05] As distinguished from other cities with similar populations, much of Los Angeles lacks the more typical hallmarks of urbanity: "if the city lacks an architectural skyline—not a single downtown skyscraper has managed to burn itself into the collective subconscious—its rows of palm trees substitute."[06] (fig. 08) Outside of a few anomalously dense neighborhoods and corridors, the perceptual image of Los Angeles is informed most by open expanses punctuated by tall palm trees and with lawns, freeways, and parking lots defining much of the landscape—all elements which suggest a spacious, open city with typically suburban qualities.

The relationship between transportation and the urban context contributes to shaping the way Los Angeles is perceived. In a city scaled to the automobile, the prominence of unbuilt space devoted to transportation is treated as an indispensable commodity. Architectural critic and historian Reyner Banham identifies the freeway system, which defines some of the largest, most visible perceptual voids within the city, as "a single comprehensible place, a coherent state of mind, a complete way of life, the fourth ecology of the Angeleno."[07] (fig. 02)

While the freeways are indispensable in connecting the city, other voids are similarly important in defining the shape and form of the Los Angeles experience. Basauri and Insulza write that because of the many leftover spaces that undermine the rigor of the city's plan, "the city is perceived not as a grid, but as a series of strips. And along these strips, the generic condition of the void becomes apparent."[08] Like the ribbons of freeways that unrelentingly meander through and above the city's neighborhoods,

fig. 08 VideoBlocks, Los Angeles skyline.

fig. 09 Los Angeles Metropolitan Statistical Area Population. US Census (1890-2010) + Global Cities Insitute (2025-2100). Satellite view of a portion of Greater Los Angeles (NASA).

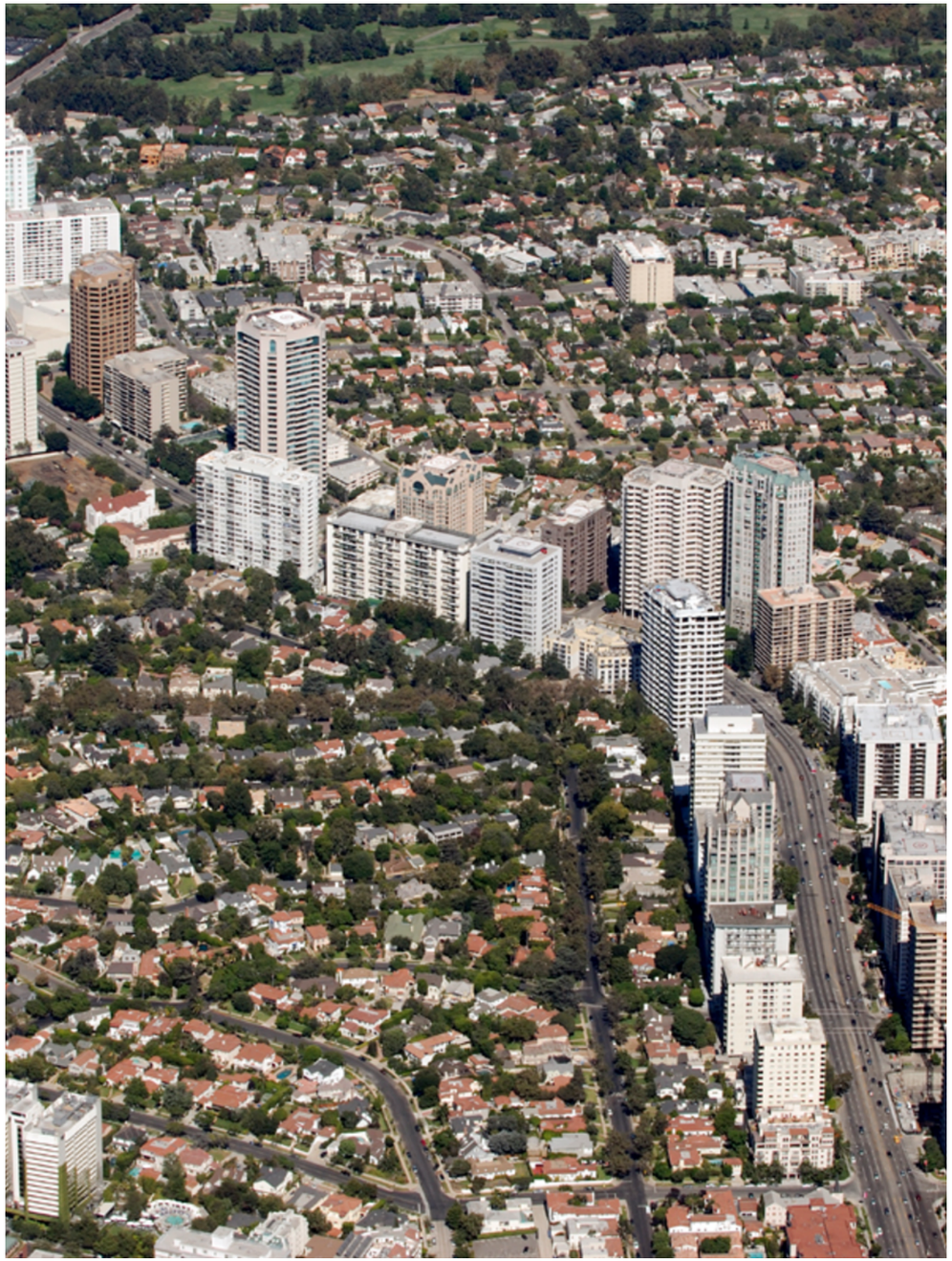

fig. 10 Jason Arnold, Wilshire Boulevard, 2007.

the city, too, is perceived as a horizontal series of strips. The character of voids at ground level, as experienced while driving or walking along the city's streets, is prominent enough to undermine the understanding of the city as a simple grid. Despite its rigorous overall form, the resulting experiential quality of occupying and moving through space in Los Angeles is non-urban in character.

Unlike Manhattan where the visibly dense grid is consistently reinforced by buildings, the high density of Los Angeles is concealed by the fact that the city is so homogeneous in form. Although New York City has a denser center and is often seen as the antithesis to west coast sprawl, Los Angeles as a region has a higher overall density when the entire metropolis is taken into account.[09] In *Sprawl: A Compact History,* architectural historian Robert Bruegmann observes that "from the air, virtually the entire Los Angeles basin appears as a dense carpet of buildings, with most houses packed together on lots that are considerably smaller than their counterparts in eastern cities."[10] Banham writes that even the city's downtown is almost inconsequential in the grand scheme of the city, functioning as one of innumerable nodes in the city rather than as a true center.[11] (fig. 06)

The main areas of high density in the city proper—and even many of its primary cultural institutions—are instead arranged along primary vehicular strips with dense corridors bounding thoroughfares like Wilshire Boulevard, which Banham argues functions as a "prototype linear downtown."[12] (fig. 10) Rather than being perceived as part of a larger grid, the experience of driving along this denser thoroughfare is defined by the strip condition and thus is considered separate from the rest of the urban fabric. As Basauri and Insulza note, voids are apparent along these strips especially when experienced from an automobile, with speed influencing the perception of the street border and the condition of void space.[13] Moving at the speed limit, the void is perceived as a continuous element. In heavy traffic or at the rate of a pedestrian, these voids are magnified by the time taken to bypass them and are recognizable as discrete elements rather than as a continuous sense of unbuilt void space.[14]

Rather than a single city in the traditional sense, Los Angeles is instead an massive conurbation that now spans over a hundred miles across five counties. Although each neighborhood within each of these municipalities is experienced independently, the region is continuously urbanized (fig. 09). Multiple nodes and corridors of commercial activity define the region. This dispersal of the city has

fig. 11 Michael Light, from *Los Angeles 2016,* 2016.

resulted in a particular form of urbanism which defies easy categorization. Although the region may continue to expand into still undeveloped desert to the north and east, the lack of infrastructure needed to link these outlying areas presents a challenge.[15]

representing the voids

It was a soft, warm summer July night, and the absurd pleasure of floating over the largest agglomeration of twinkling human triumph and calamity ever witnessed took over.[16]

—Michael Light

As depicted by visual artists primarily throughout the twentieth century, the character of Los Angeles is perhaps best expressed through this expansive, void sense of space. The paintings of David Hockney, for instance, express the horizontality of Southern California architecture and its relationship to its context. Hockney's 1967 painting "A Bigger Splash," depicting a single house and its surrounding landscape, communicates the extent to which architecture in the contemporary urban landscape of Los Angeles acts as little more than a folly mediating water, ground, and sky. (fig. 16) In Banham's reading of the depiction of the Angeleno house in media, he asserts that "Los Angeles cradles and embodies the most potent current version of the great bourgeois vision of the good life in a tamed countryside."[17] In this vein, the composition of Hockney's painting adeptly represents the scale of architecture within a majority of Southern California's built landscape.

Dennis Hopper's "Double Standard" similarly captures the contemporary experience of the Los Angeles boulevard, replete with billboards, gas stations, and cars defining the urban landscape.[18] (fig. 05) The photograph depicts the type of generic void discussed at length by Basauri and Insulza[19]—a type of space that has become an iconic visual characteristic. The use of photography to capture this vacant space is particularly effective in the serial depiction of the Los Angeles street in Ed Ruscha's "Pacific Coast

Highway" (fig. 12) and "Every Building on the Sunset Strip."[20] (fig. 13) Ruscha's photographs depict not only the buildings along these corridors, but also the prominent voids between them. Although the city is expansive, the diminutive scale of the architecture allows for sky, space, and road to fill one's field of vision, with buildings typically taking up a proportionately small amount of space. As land is becoming more scarce and Los Angeles seeks to find ways to accommodate growth, the potential of this space—both in plan and, perhaps more significantly, in perspective—has become more salient.

The city has grown significantly since Ruscha's work was produced, yet there still remains this spatial quality. Michael Light's more recent series *Los Angeles 2016* captures views of the metropolis from above at night, conveying the extent to which urban space and the natural topography of the city have formed an indelible relationship.[21] (fig. 11) The images serve as pared-down abstractions of light and dark, conveying in a visual sense the complex relationship between built form and void space.

filling the voids

Suddenly we realize that we are in an urban environment after all, and we are going to have to deal with our neighbors. Densification will have a different effect in Los Angeles, perhaps more psychological than anything.[22]

—Geoff Manaugh

Situated on the edge of the continent, Los Angeles is in some ways the apotheosis of the American Dream.[23] Defined by the geographic limit of westward expansion, the urban form of the region aptly reflects the ethos of individualism and self-sufficiency. As urban planner Sam Hall Kaplan argues, "the sustaining dream of most Southern Californians is to not live in, or even near, a city."[24] This denial of traditional urban form and embrace of an independent pattern of land use and transportation has contributed to the predominant image of the city as a spacious, low-density form of urban sprawl. The city is defined by this lack of conventional planning and the proliferation of what Banham calls the "non-

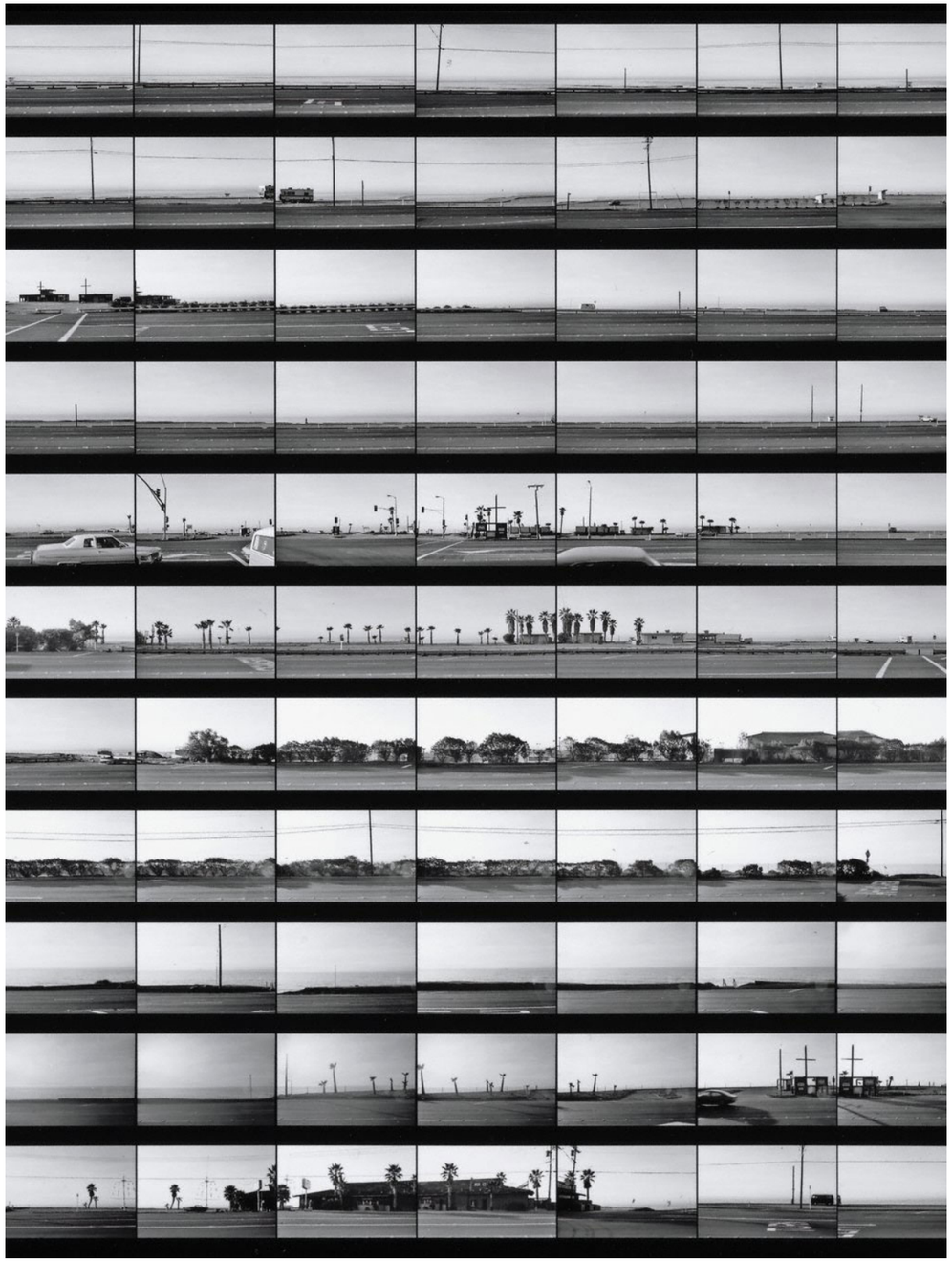

fig. 12 Ed Ruscha, *Pacific Coast Highway,* 1974 (detail).

fig. 13 Ed Ruscha, *Every Building on the Sunset Strip,* 1971 (detail).

plan"[25] which contributes to the qualities of Los Angeles as a city of voids. At the same time, the issue of accommodating future growth has become increasingly pressing, calling for a new model of growth.

Like the proliferation of billboards on the city's streets, the void is one of the most frequently criticized spatial aspects of Los Angeles. Yet, Banham's defense of the proliferation of billboards in the city could be used to advocate for these voids as well: "to deprive the city of them would be like depriving San Gimignano of its towers or the City of London of its Wren steeples."[26] Accordingly, this thesis does not seek to fill every available parking space and vacant lot with buildings. Rather, the aim is to make use of these void spaces selectively to relate to the urban context at a variety of scales. The voids created by low-slung development are the most visible monuments to Los Angeles' precipitous outward expansion. Rather than attempting to redefine Los Angeles, the goal of this proposal is to make use of the potential of the open spaces throughout the city while also preserving as much of the city's character as possible by maintaining all existing building stock.

Los Angeles-based architect Michael Maltzan writes that "now the bounding perimeter of the city has been hit, [the] perceptual, psychological, and physical limits of what it means to be in Los Angeles have arrived."[27] Yet, the boundary of the mega-region continues to expand in exurban desert developments. The city itself, bounded by water on one side and loosely bounded by mountain terrain on other sides, must find ways to accommodate an influx of population growth over the next several decades. Along with the logistical problems of housing millions more in a city running out of space on which to build, a change in the way Angelenos live is becoming more essential.

How can this new layer of growth be integrated into the existing urban fabric? To what extent can the unique spatial character of the city be expressed in an architecture of density? Urban historian and theorist Kazys Varnelis argues that part of the solution may be to continue intensifying development along corridors that are already dense, leaving a majority of the urban fabric intact. He notes that "increasing the population density within the city is the only logical response to sprawl. Wilshire Boulevard—a direct link between the beach and downtown and possessing a history of its own as a cultural and commercial corridor—is already a dense linear city, making it the ideal location for more density and growth."[28] The case for increasing density along this thoroughfare is particularly strong given that the city's subway system is currently constructing an extension to the route beneath Wilshire Boulevard, expected to be completed by 2035.[29] For the most part, the buildings along this heavily urban corridor have been office, commercial, and cultural, but more recently, residential buildings have

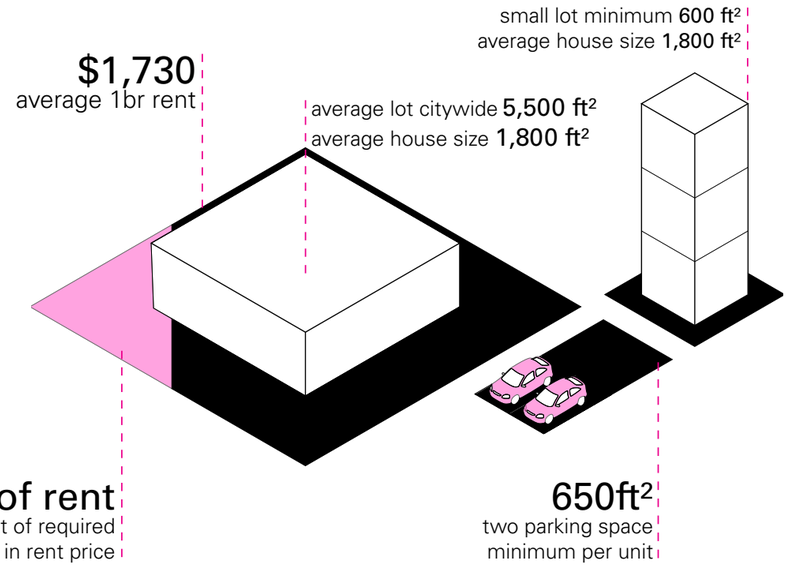

fig. 14 Development potential under traditional lot planning versus small lot subdivision ordinance.

begun to frame its edges. While the character of the boulevard varies tremendously over its sixteen-mile stretch, the single-story buildings and parking lots that line portions of Wilshire feel increasingly out of scale amid more recent development.

This growth is only one example of how civic officials in Los Angeles proper have been actively encouraging higher-density development within its boundaries. These interventions are intended along heavily trafficked corridors like Wilshire as well as in established single-family neighborhoods. In 2005, the city passed a small-lot ordinance allowing developers to break up lots zoned for multi-family into small single-family plots, reducing the minimum width of a lot to 16 feet.[30] The minimum suggested size of a lot was drastically cut from 5,000 square feet to just 600, allowing for nearly nine single-family homes to be built within the same area. The ordinance also reduced the 20-foot minimum setback for these lots which typically take the form of a front lawn of typical single-family houses, and amended parking rules to allow for the two required parking spots per unit to be accommodated on a separate lot.[31] Yet, the amount of space required for the two parking spots for each unit—650 square feet—now exceeds the minimum amount of land for living. (fig. 14) Rather than making use of existing land for housing, this encourages the razing of existing buildings and only relocates parking elsewhere rather than addressing the underlying issues of managing the city's growth. While this thesis does not attempt to address the issue of affordable housing per se, it does propose separating these requirements from the units themselves, allowing for the costs of parking to be paid by those using them, and deincentivizing car ownership, particularly in neighborhoods with strong transit connections. From an urbanistic standpoint, the required inclusion of parking in all developments built in Los Angeles means that a city with an current excess of parking only becomes more overparked as density increases.

Small lot development is largely driven by real estate interests and is incredibly lucrative for developers, with each new individual house selling for an amount comparable to an older house on a larger lot. This has encouraged the demolition of older single-family homes in residential areas in order to be replaced by skinnier, more densely packed small-lot houses.[32] While this method does effectively create more units and the higher densities advocated by this thesis, it puts at risk the existing character of neighborhoods. As an alternative to this increasingly common scenario, the use of existing lots would

allow for new development to be interwoven into the existing fabric of the city. This would, of course, require reducing or doing away with minimum parking requirements in order to make use of smaller leftover sites.

adaptations of density

Methods for investigating this new form of urban development for Los Angeles include looking at the patterns of growth and understanding of space in ultra-dense cities like Tokyo. On the surface, the two cities appear as though they could not be more different: the expansiveness of Los Angeles is the antithesis to the density of Tokyo. Yet, their urbanized area is comparable. Using existing space more judiciously is becoming increasingly important as the level of the growth in Los Angeles increases. The sense of compact space in Tokyo is characterized by both high density and saturation. In *Tokyo Totem: A Guide to Tokyo,* Christiaan Fruneaux and Edwin Gardner write that "in an urban context [saturation] would refer to the maximum amount of buildings one could fit into a certain area of land. Or, in other words: what is the smallest plot you can still build a house on?"[33] This question is increasingly relevant even outside of Tokyo, particularly in light of legislation like the small lot subdivision ordinance in Los Angeles.

The question of lot size also poses a possible solution to increasing housing stock while avoiding the demolition of existing buildings. Increasing land prices in Tokyo have already established the practice of subdividing plots into minuscule sizes, resulting in an organically fragmented urban framework.[34] The lot sizes of typical buildings in Tokyo is similar in size to the nascent typology of small-lot housing in Los Angeles, a city in which the predominant housing typology depends on a significant buffer of exterior open space. (fig. 16) The relationship of exterior to interior space creates an apt comparison between the two cities' use of urban space, and allows for the possibility of adapting dense urban sensibilities within Los Angeles.

A primary difference underlying Japanese and American attitudes toward property is

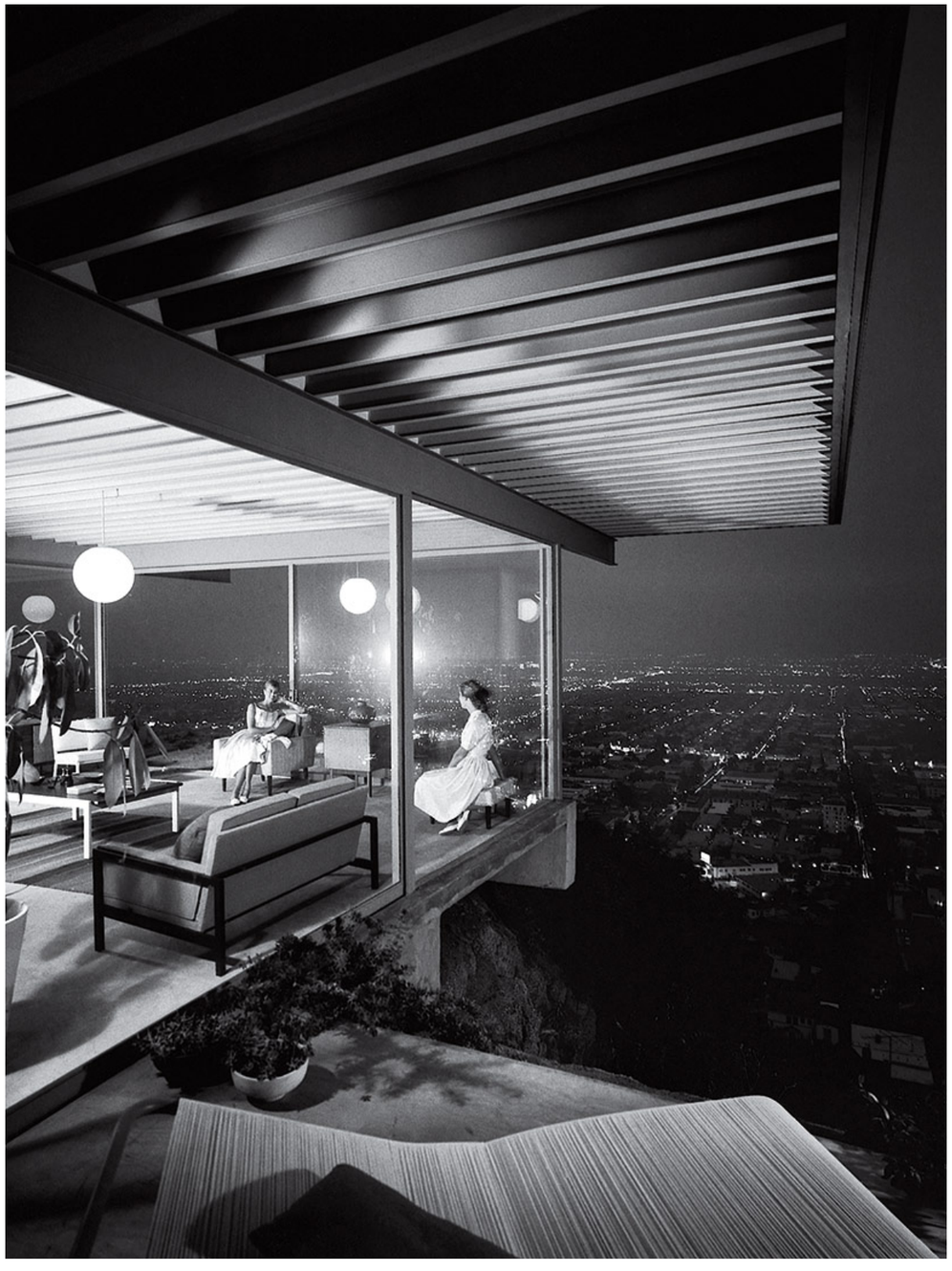

fig. 15 Pierre Koenig, Stahl House, Los Angeles, 1959. Photograph by Julius Shulman.

fig. 16 David Hockney, *A Bigger Splash,* 1967.

underscored by their views on the impermanence of buildings. The average lifespan of a residential building in Tokyo, for instance, is 26 years, enabling more audacious architectural experimentation and a high degree of specificity toward the people dwelling in a particular house.[35] In the United States, where the average age of a dwelling is 36 years, buildings are not typically seen with the same degree of impermanence, and housing tends to be less specific to the occupants. Given Japan's tax structure, the concept of the 'fixer-upper' is less prevalent than new construction, as building from scratch tends to be cheaper than repairing an older dwelling.[36] As proposals for housing in Los Angeles, the designs proposed in this project strive toward forms which are efficient spatially but also allow for some level of adaptation for a range of residents as new ones move in later in the building's lifespan.

Just as in urban Japan, architectural theorist Geoff Manaugh asserts that the increased densification of Los Angeles has brought about a psychological change in the residents of the city. As the city becomes denser the resulting loss of its void space will have an impact on the way individuals perceive it.[37] Although Los Angeles is quantitatively the densest urban region in the country, it is often perceived to be one of the least dense. As urban researcher Vicky Cheng argues, the perception of density in relation between the individual and their environment is often more important than actual density.[38] This may explain why, in a city like Los Angeles, any perceptible increase in visual density is subject to strong backlash from residents. The city has long been known for its sprawling urban form, one defined by the individual single-family house. Architect Sylvia Lavin writes that "particularly in the United States and more particularly in Southern California, the single-family house is a machine which is leaving tracks of tremendous consequence" and its prevalence "attests to the persistent quest for individualized and isolated interiority."[39] (fig. 15) It is this quest for individuality that has created the particular fragmented urbanism of the city, and which highlights the importance of adapting higher-density urban growth in a form specific to Los Angeles, rather than directly importing the strategies used in other cities.

case studies

The analysis of case studies for this thesis investigation begins with the ubiquitous single family house on an individual lot. A goal of this thesis, however, is to adapt this archetype and suggest how it may change in the city's future. Only one of the precedents analyzed for this thesis project is located in Los Angeles, and it is unique within the city as it is a local adaptation of a Japanese urban building type. The density of Japanese cities like Tokyo in contrast with the horizontality of the Southern California conurbation represent two extremes of urban form. Yet, as cities like Los Angeles continue to increase in population, adapting architectural solutions from denser cities is a potential solution for continual growth in increasingly limited space. The precedents discussed below represent two very different scales of architecture—the single-family home and the residential tower—but each represents quite radical positions toward the use of urban space.

atelier bow wow, tower machiya, tokyo, 2010

Tower Machiya is a four-story house in Tokyo, only slightly wider than a single car garage. (fig. 17) Surrounded by buildings on three sides, much of the daylight in the house comes from the front facade as well as lightwells in the roof. Due to its compact size, spaces within the house are arranged in a continuous sequence, with the staircase weaving directly through the levels without any additional circulation space. A highly visible part of the building, the staircase is also used to shape and express the adjacent spaces, while the structure is expressed along the edges of the house to keep as much of the interior space open. The progression through the building ends on the top level with a tea room acting as the most important social space within the home. The spare use of materials—white steel and light-colored wood—adds to the feeling of spaciousness in the house and allows for light to reflect off of its interior surfaces. Despite the lack of space in the narrow house, which measures only 15 feet across, each

fig. 17 Atelier Bow Wow, Tower Machiya, Tokyo, 2010.
fig. 18 Anonymous Architects, Eels Nest, Los Angeles, 2012.

fig. 19 OMA, Nexus World Housing, Fukuoka, 1991.

floor has a balcony measuring roughly 1.5 feet, allowing for plants to become part of the facade between the steel outer structure of the house and the front wall. Tower Machiya is notable as a contemporary vertical adaptation of a traditionally horizontal building form.

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anonymous architects, eels nest, los angeles, 2012

Situated on a fifteen-foot-wide lot, this compact live-work house in Los Angeles takes its name from the narrow lots common in Japan's cities.[40] (fig. 18) The lot measures 780 square feet, while the the total area of the house is 960 square feet. Located on residential street in the Echo Park neighborhood, the house is arranged over three stories, the addition of the top story permitted through a zoning exemption.[41] Unlike many of Tokyo's narrow houses, Eels Nest does not have buildings immediately surrounding it (Fig. 13). Nevertheless, its two side walls are solid in anticipation of future development, so its primary sources of natural light are from its front and rear façades. The ground level of the house includes only a single-car garage and a staircase up to the main house. Inside, the staircase is comprised of floating treads between the main levels of the house, allowing the space to serve as a lightwell. Extending only a story higher than surrounding homes, the stacked vertical form allows for a panorama view not typically available in low-rise housing. The shift in perspective from the typical ground level lawn to elevated garden is a positive aspect that vertical housing can bring to Los Angeles residents at a more widespread scale as vertical dwellings become more common throughout the region.

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oma, nexus world housing, fukuoka, 1991

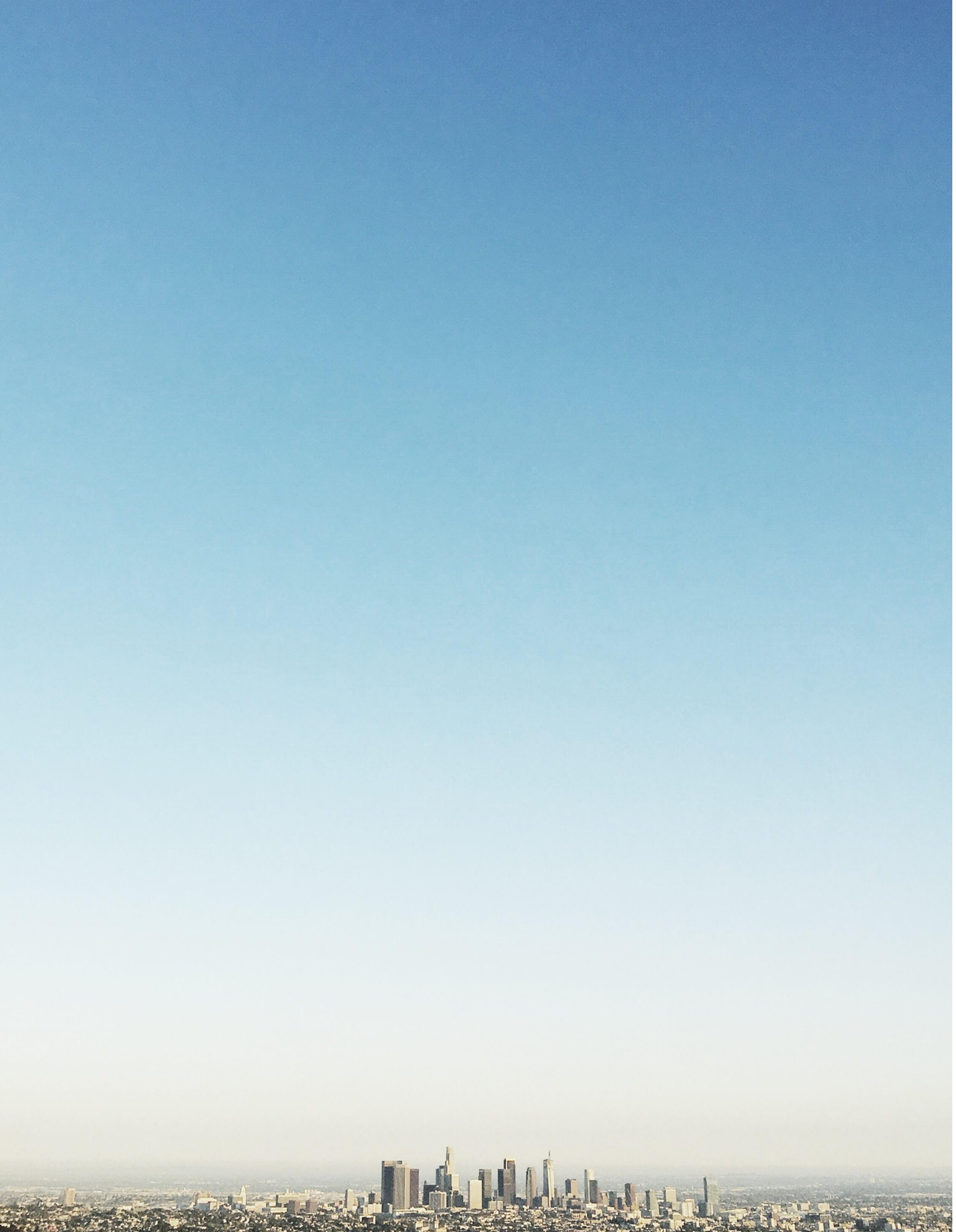
This Japanese housing project is conceived as twenty-four individual houses, located immediately next to each other and separated by party walls. (fig. 19) Each unit is three stories high, with a central private courtyard that provides the entire unit with daylight.[42] The outdoor space for each unit, despite being located adjacent to other units, is completely private. The interior of each unit flows out seamlessly

into this exterior space. The building is an experiment in providing privacy amid density. "Each house offers a variety of spatial conditions and tectonic contrasts: enclosed vs. exploding, intimate vs. open, public vs. private, high vs. low, dark vs. light, concrete vs. abstract."[43]

herzog & de meuron, beirut terraces, beirut, 2016

Located along the same latitude as Los Angeles—34°N—Beirut Terraces in Lebanon is notable for providing an indoor-outdoor lifestyle within a tower typology. (fig. 20) The building has 132 units across 26 floors, and each unit has direct access to large outdoor terraces.[44] The use of glass walls around the units emphasizes this relationship between indoor and outdoor. Although each floor plate varies in dimension and shape, the structural grid is consistent and expressed across the shifting floor plates on the exterior.[45] The scale of Beirut Terraces would be noticeably out of context within much of the Los Angeles cityscape. However, the way the building responds to its particular climate and to the needs of its residents is applicable as adapted to the context of Southern California.

fig. 20 Herzog & de Meuron, Beirut Terraces, 2016.



three
city of voids

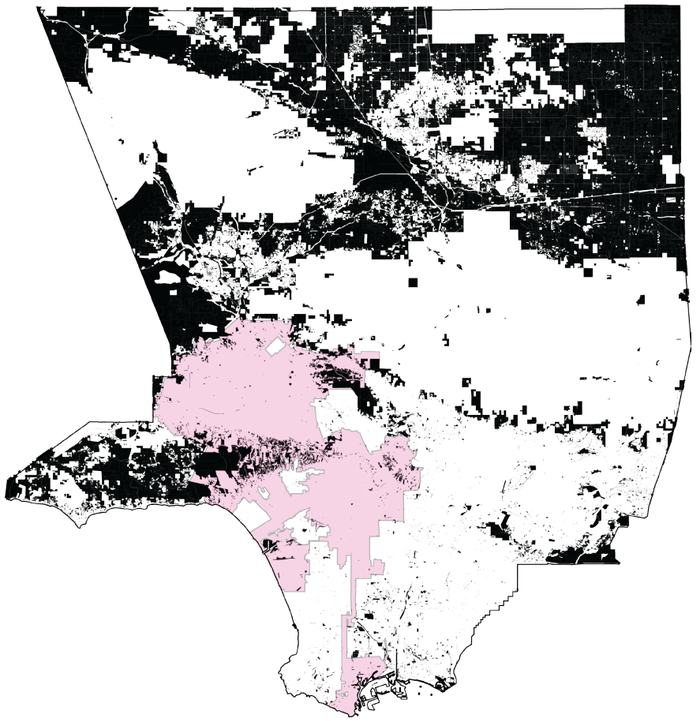
What is the new identity for a city whose entire life has been marked by its ability and desire to endlessly expand?[46]

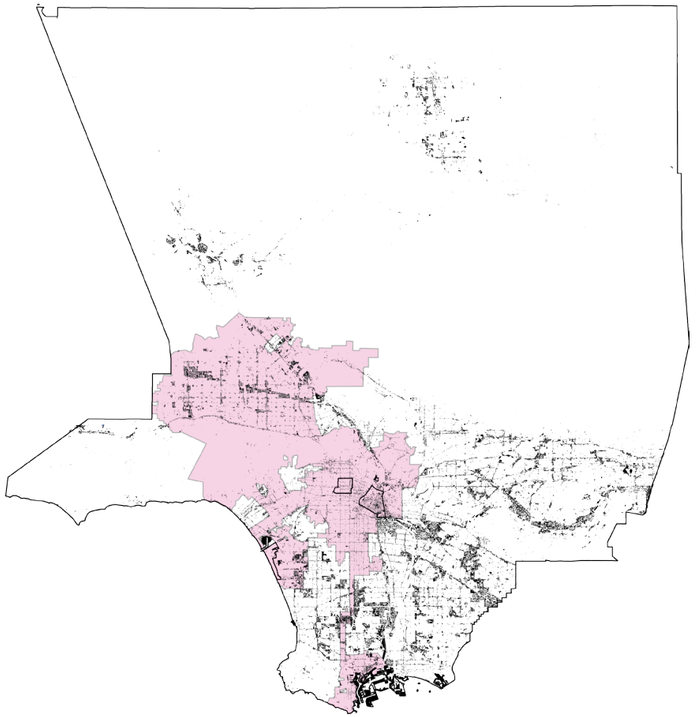
—Michael Maltzan

While arguing for the use of the voids in LA, this thesis also seeks to maintain this quality of space that makes the city unique. These two goals may seem contradictory; however the intensifying growth of the city means changes in its character are inevitable. This study takes the position that role of architecture lies in finding a way to mediate between the two directions of densifications – in the horizontal and the vertical dimensions. Central to this intention is taking advantage of the potential of underused spatial voids in the city by transforming them into usable inhabitable spaces.

The initial site for this thesis is quite broad—the entire city of Los Angeles itself. so the first step

fig. 21 View from Griffith Observatory, Los Angeles, 2016.





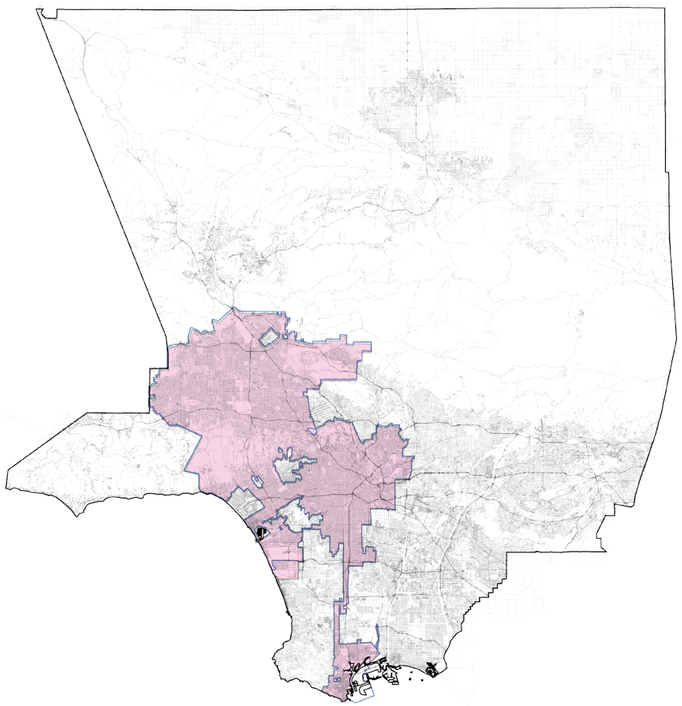


fig. 22 Vacant lots, parking lots, and roads in Los Angeles county. City of Los Angeles highlighted.

in analysis required narrowing the field down to a particular neighborhood. In terms of neighborhood selection, nearly any part of the city could have been chosen for closer analysis, as a variety of void space conditions exist throughout the somewhat homogeneously organized city. (fig. 24) The objective was to identify not one site, but rather several site types throughout Los Angeles, so that these designs could then be adapted as appropriate . The site types identified in this thesis are concentrated along the transportation infrastructure that strongly informs the experience of Los Angeles. These bands of development offer a more flexible and varied context for interspersed housing, particularly as compared to introducing a new building form into a single family residential neighborhood. Placing residential buildings in these areas presents the additional challenge of insulating the private residence from its surroundings. Historically in horizontal cities like Los Angeles, this has been done through zoning, situating housing away from all other uses. Yet, as Lavin asserts, "even if physically and psychically removed from other human beings and their shelters, the interiority of a private retreat inevitably reaches a point where it confronts the public realm."[47] In a typical Los Angeles neighborhood, the side, front, and backyards at the ground level act as buffers surrounding and protecting the privacy of the house's residents. In a more vertical arrangement, this thesis explores how buildings can maintain this individual sense of privacy.

site types

In defining the void as it exists in Los Angeles, three primary functional categories emerged: the vacant lot, the parking lot, and the road network itself. (fig. 22) All are defined by their relationship with their immediate surroundings, predominantly the street from which the expanse of the city is typically experienced. (fig. 23) The proposed architectural interventions thus respond directly to the surrounding context of each site. Each site typology results in a particular building type, replicable throughout the city, county, and perhaps beyond. For the purposes of this design project, height and zoning limits are not primary factors in the design. Instead, the buildings are intended to stand out as markers of a new

fig. 23 Infrastructural void typologies.

housing typology and a new layer of growth. This thesis assumes a future Los Angeles in which the city's transit network, under current development, and parking minimums have been lifted.

The goal of this thesis is not necessarily to maximize quantitative housing density, but rather to make more efficient use of land and thereby potentially increase the perception of density in a growing metropolis. Given that the expanse of Los Angeles bears a relatively homogenous distribution, this thesis proposal similarly calls for the dispersal of new housing forms throughout the city in existing lots. This is in contrast with more traditional urban form which concentrates new growth along particular nodes and corridors. In this thesis proposal, growth would be dispersed throughout virtually all parts of the region where space allows.

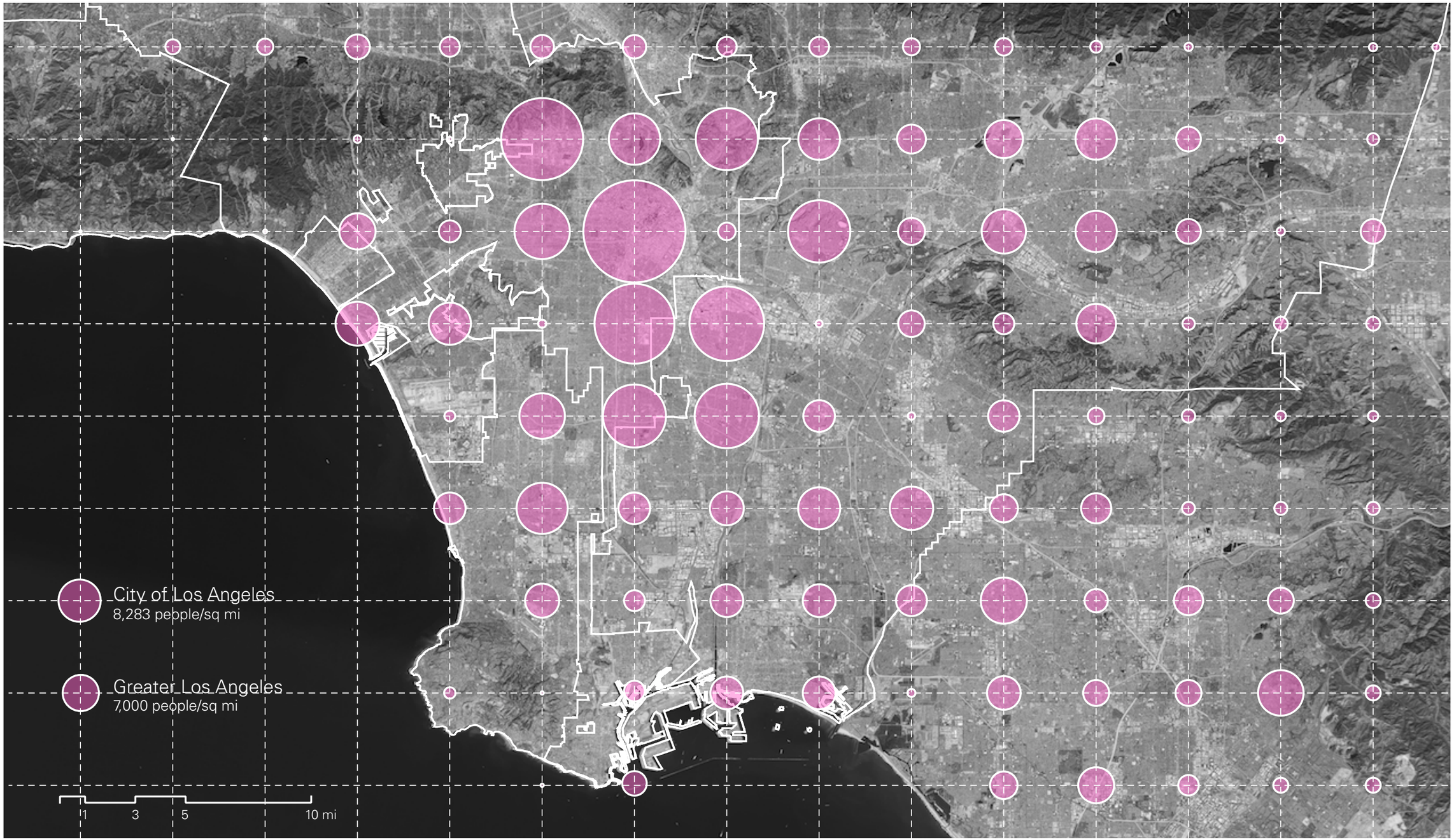


fig. 24 Density sampling, Greater Los Angeles.

four
typologies

While the city may become hyper-vertical like Manhattan, how can the transformation of Los Angeles occur on its own terms?[49]

—Kazys Varnelis

The void is a generic spatial quality. Given the dispersed character of Los Angeles, the three sites studied in the design exploration are separated by nearly twenty miles. (fig. 26) The interventions take three distinct neighborhoods and analyze their urban form, identifying voids with potential for incorporating dense forms of housing. The three selected for analysis are Venice, Koreatown, and Downtown, chosen for their diversity of density and form, representative of other areas in the city. (fig. 27) Although each typology is transferable to similar voids in other areas, for simplicity of comparison each is specific to each neighborhood in this analysis. The intent of these designs as typologies lends each specific site adaptability, so that each will not necessarily have the same layout, materials, or character.

fig. 25 Concept design of unit interior.

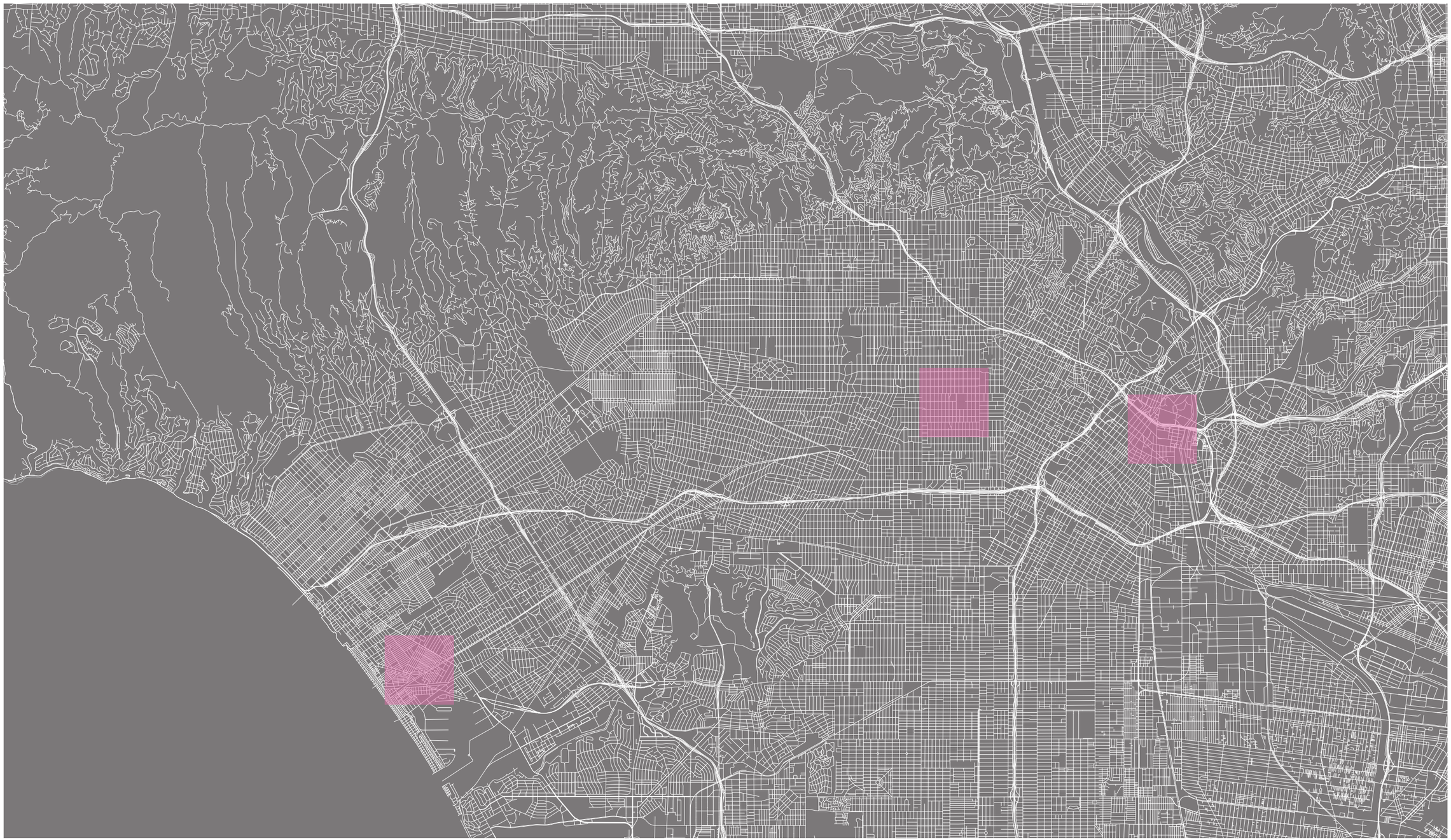
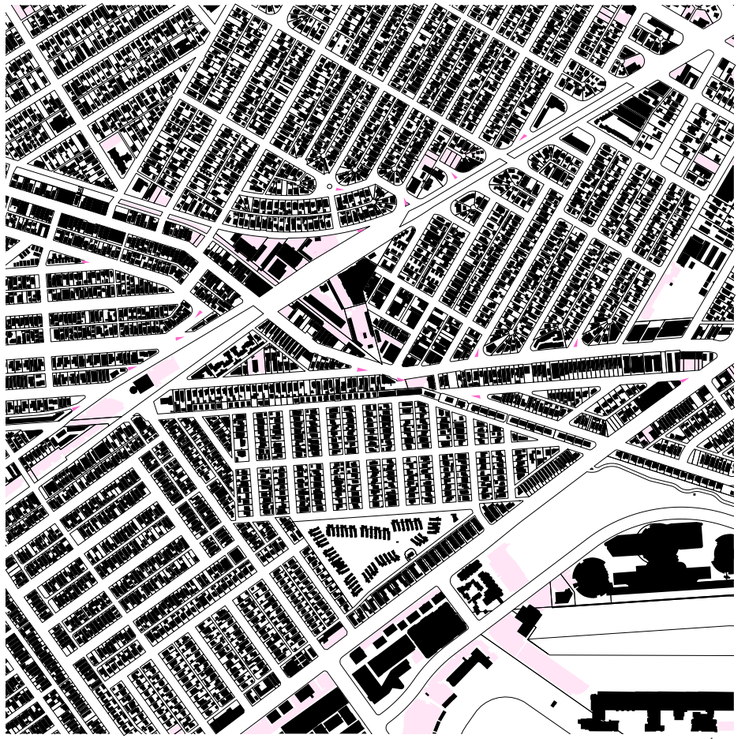
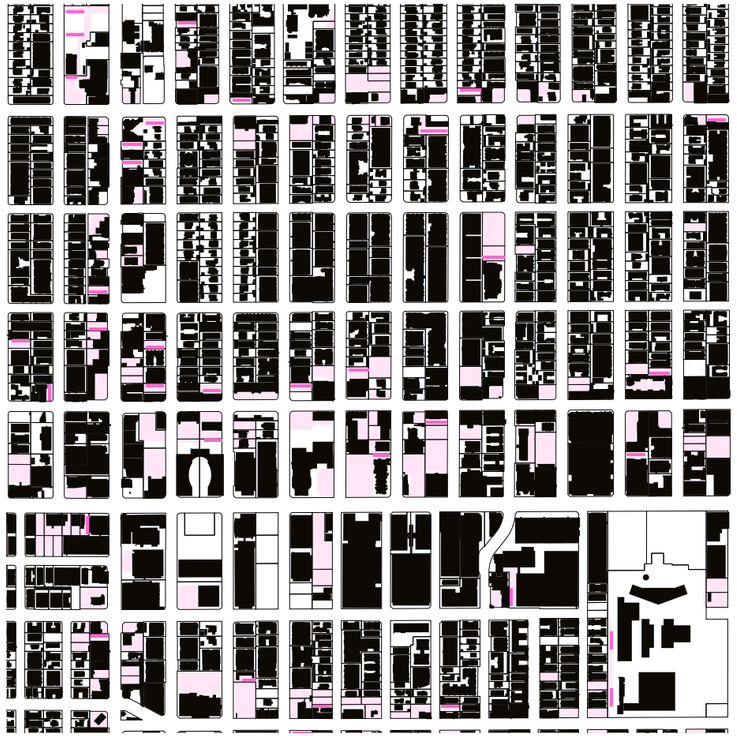


fig. 26 Study neighborhoods, from west to east: Venice, Koreatown, and Downtown.



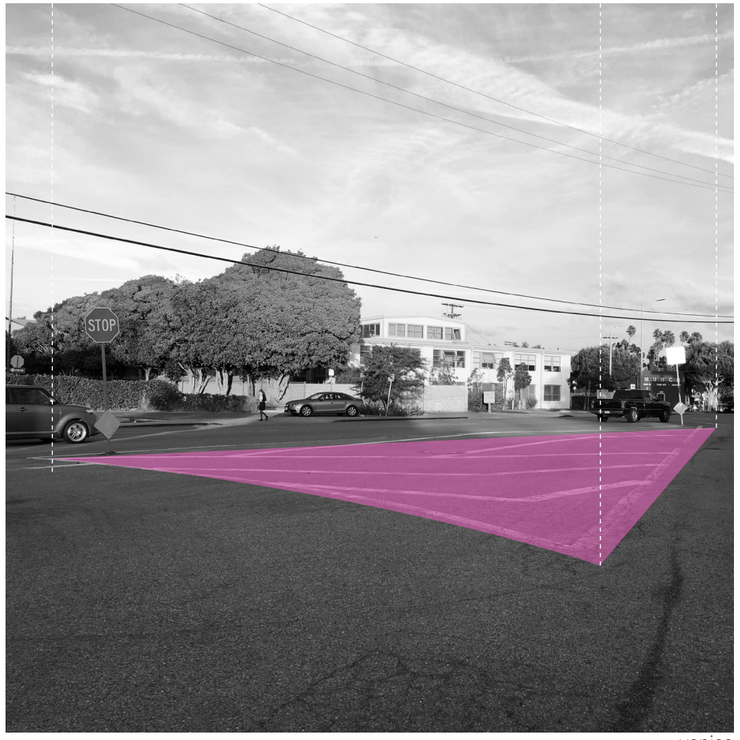
venice



koreatown

downtown

fig. 27 Study neighborhoods with voids and sites, one square mile each.

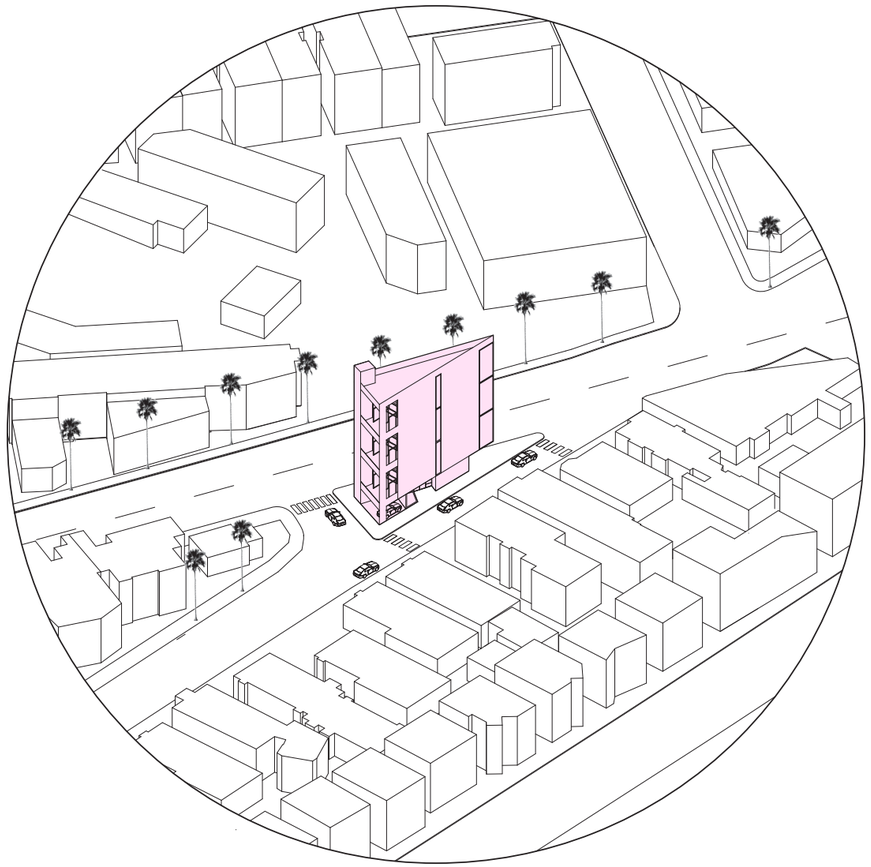


venice

koreatown

downtown

fig. 28 Three void sites.



venice

void: the road

Founded as a beachside resort town, Venice is walkable compared with much of the city. Four of its most well-known strips are dominated by pedestrians: the beachside boardwalk, retail corridor Abbot Kinney, the eponymous canal streets, and pedestrian-only walk streets. These set it apart in some ways from the city, but like the rest of Los Angeles, the car is still dominant. Across the county, millions of miles are driven daily on roads that take up a combined 140 square miles.[50] Specifically within Venice, there has been a rapid influx in housing prices that has made longtime residents subject to displacement. The neighborhood has undergone drastic gentrification to become one of the most desirable areas in the city.[51] As of 2016, Venice had the highest median rents in the city, with a two-bedroom apartment costing $5,200 per month on average.[52] This increase has come as the result of several forces in recent years. Tech companies Google and Snap Inc. have opened offices in the neighborhood, leasing much of the available space since 2011.[53] The sharing economy has also had a major impact on available housing stock, with the highest concentration of Airbnb units in the city found in Venice.[54]

The urban layout of Venice, situated along the western edge of the city, responds to multiple street grids, resulting in a complex network of roads crisscrossing to form a fragmented, triangular neighborhood. (fig. 27) The grain of the neighborhood is small, yet the dominance of the car remains apparent in the width and character of the streets themselves. (fig. 30) Within these roads, there exists the potential for building forms with minimal building footprints, added unobtrusively without altering transportation flow. Focusing specifically on places where two conflicting street grids come together and the resulting residual spaces within the intersection, the buildings proposed are islands in the road on their own blocks. (fig. 29) Inspired in part by the character of dense, small-footprint housing in more saturated cities like Tokyo, these interventions adapted for Los Angeles are distinct in that rather than

fig. 29 Building typology overview, Venice.

being squeezed in between buildings, they stand out visually as markers of density.

The particular site chosen as a test for this typology is located within the intersection of Abbot Kinney Boulevard and Washington Way. It is currently defined by a series of painted lines marking the separation between the two roads leaving a triangular void that measuring 2200 square feet (fig. 28). Rather than extrude the full volume of the lot to maximize square footage, the building gains some relief from its context through the addition of sidewalks along each face of the building, further reducing the footprint to just 680 square feet. While this is only slightly larger than the minimum lot size defined by the city, the lot is a reinterpretation of a non-site rather than the typical redistribution of the lot. As the street currently lacks any defined ways of crossing, the addition of a building not only adds to the amount of housing in the neighborhood, but strongly contributes to defining the streetscape.

The site lies at the nexus of a busy commercial and light industrial corridor and a typically dense residential street. At seven stories, the height of the building is intentionally taller than its surroundings, allowing it to act as a marker of place in an otherwise undefined urban landscape relatively homogenous in form. (fig. 32) Ultimately, the height of the building is less important than the dimensions and placement of the space in plan—a one- or two-story building that more precisely "fits" into its context might address the void just as well, however for the purposes of this exploration the element of height beyond that allowed is a reflection of future density and its relationship to the growing city.

At the ground level, an entry is carved out of the center, allowing for parking on one side and storage on the other. (fig. 31) Although parking within the assumptions of this thesis is not critical, its inclusion highlights the scale of the lot on the ground plan. The sharp corner of the building is chamfered at ground level, with the edge overhanging above.

Programmatically, the building's section shows its seven levels divided between three two-story loft units, with a ground floor storage and entry and an accessible rooftop. (fig. 35) Making each unit multi-story enables the activation of the challenging acute corner on the building's eastern end. Internally, this space is the stair landing for each unit's vertical circulation. (fig. 34) Circulation within the building is minimized to a single compact bar which includes an elevator, stairwell, and hallway.

Within each unit, building opens up entirely to a generous west-facing patio, blurring the boundary between inside and outside when desired. Given the compact site, this glazed wall lets in a substantial amount of light to the entire unit, while also being shaded by the patio of the unit above. The other faces of the building are more opaque, with only narrow apertures. As the north side of the building is alongside a busy arterial, Abbot Kinney Boulevard, the building is somewhat shielded from noise by placing the building circulation along this side. The building's sharpest point is also made up of windows, lessening the severity of the architectural expression and allowing for a cross-breeze. (fig. 33)

Given the untapped value of these tiny scraps of land, it is easy to imagine how much potential lies spaces such as these. While these sorts of sites are limited to neighborhoods with a particular shift in grids, the impact of questioning the amount of land devoted to transportation infrastructure is perhaps of even greater importance. How much more usable public space or how much housing could be accommodated if parts of the street began to be taken over by other uses?

fig. 30 Venice site along Abbot Kinney Boulevard.

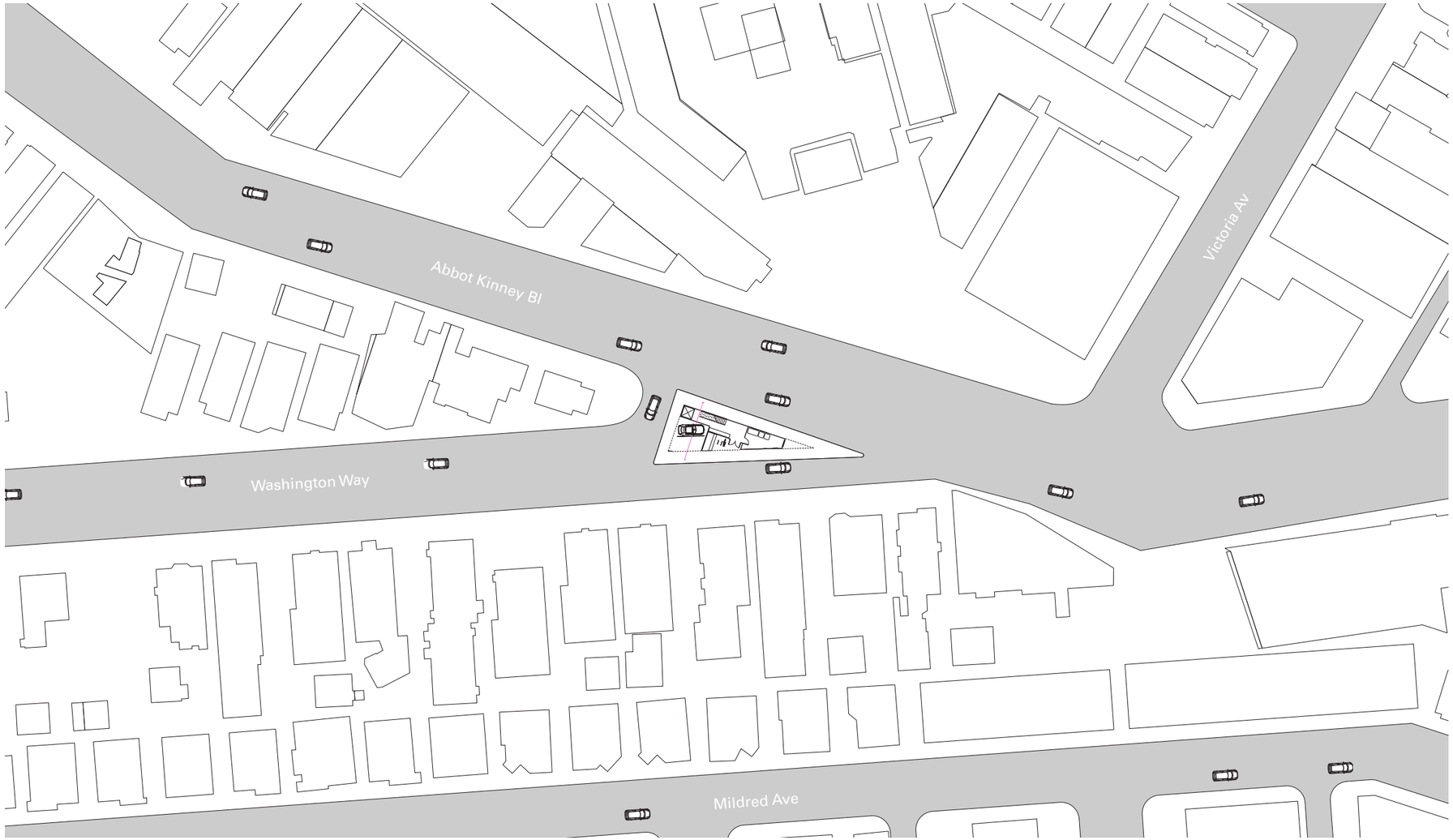


fig. 31 Site plan, Venice.

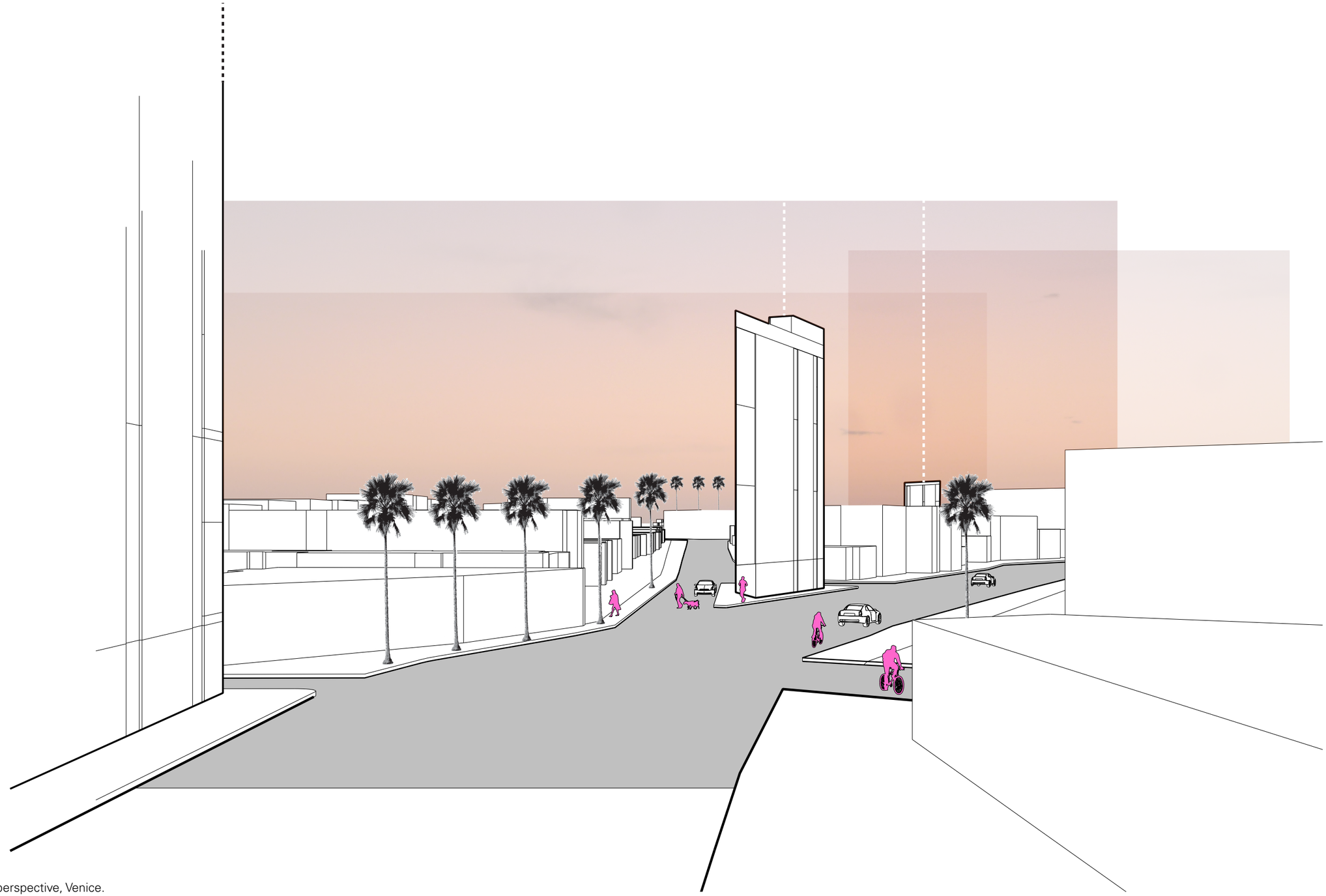


fig. 32 Exterior perspective, Venice.

fig. 33 Interior perspective, Venice.

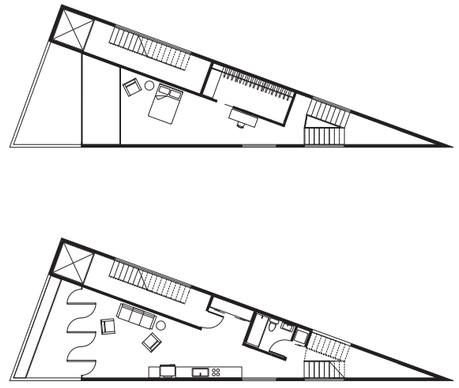
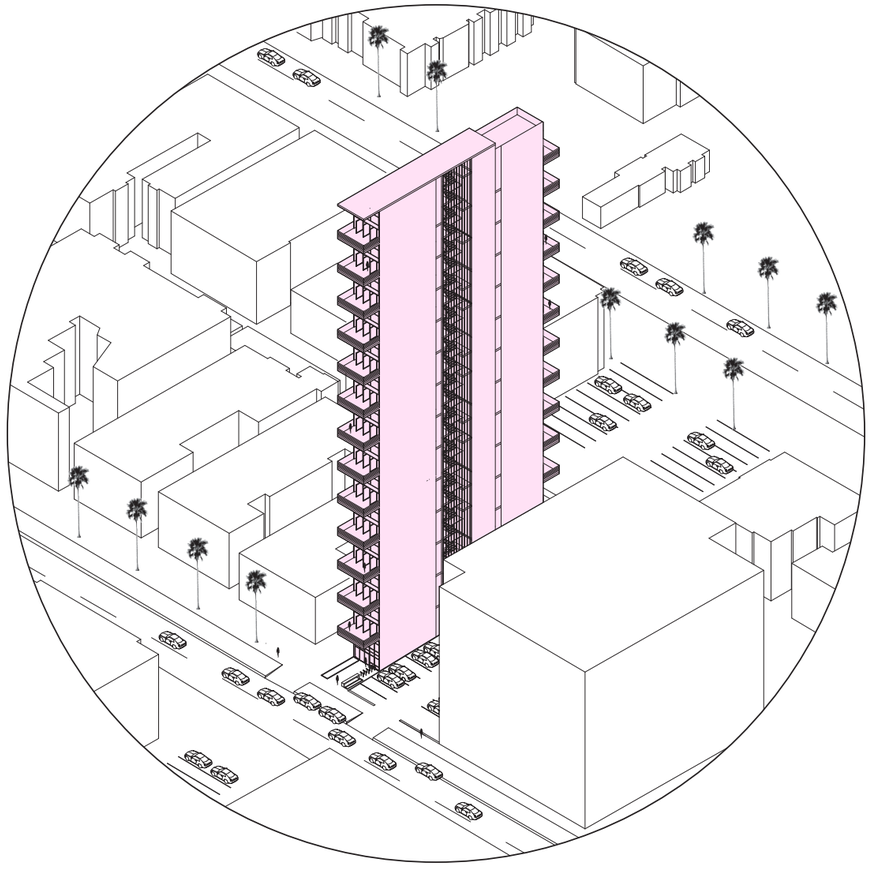


fig. 34 Typical plans, Venice.

fig. 35 Section, Venice.



koreatown

void: the parking lot

With 42,611 people per square mile—over four times the city's average—Koreatown is the densest neighborhood in Los Angeles.[55] The neighborhood is atypical in terms of the city's overall urban form. Unlike vast expanses of Southern California, much of the density in the neighborhood is accommodated by multi-unit apartment buildings rather than single-family homes. Visually, the area conveys this density, with tall buildings framing Wilshire Boulevard as it cuts through the neighborhood. By some accounts, this thoroughfare is the most conventionally urban portion of the city.[56] With an average building height of 80 feet, dwarfing the average of 18 feet citywide,[57] the peculiarity of this strip is visible from vantage points across the expanse of the city. Experientially, the neighborhood is abuzz at all hours, with a high concentration of restaurants, entertainment venues, and other commercial uses.

Yet, despite all these singularities, the neighborhood is conventional in at least one regard with its treatment of parking. Despite being well-served by transit—with 100% coverage in the neighborhood—and sited along the city's only subterranean transit line, parking minimums along the strip which includes Koreatown are in line with the rest of the city. Each housing unit requires two parking spots on average,[58] the same as any further outlying portion of the city. While much of this is located underground or in podiums in places like Koreatown, a substantial portion is in surface lots. This is the paradox of density and urban form: the denser the area, the more density of parking is required, keeping even the urban core of Los Angeles from feeling built out.

While many cities have some parking minimums in place, the amount required by Los Angeles is more in line with that of American edge cities.[59] If the city is to continue to grow in population while also encouraging alternative transportation as its rail networks expand, there should be an associated reduction in parking minimums across the city in order to encourage their use. The expectation of easily

fig. 36 Building typology overview, Koreatown.

finding convenient free parking has already diminished in many of urban neighborhoods, which has led to the success of ride sharing services. The possibility of transportation automation in the future suggests that less space will be needed for parking. The city is currently considering the impact of technology on existing transportation infrastructure and requirements.[60]

For the sites identified in Koreatown, the voids selected are focused on surface parking lots, and more specifically on individual strips of parking. (fig. 27) This thesis makes the case that the character of the city should be maintained insofar as possible while still allowing for growth. This character will always include significant automobile infrastructure. Rather than replacing most or all parking with infill units, then, the buildings added are specific points of urban acupuncture, leaving most of the parking intact. This proposal extrudes the full volume of the selected void as tall towers to display the potential of each remaining row of parking.

The design proposal for Koreatown, in addressing the issues of excess parking and adding additional density to an already-dense neighborhood, is to replace single strips of parking within surface lots with narrow, tall buildings. (fig. 36) While there are plenty of parking lots that potentially could allow development, the interventions in this thesis proposal are focused on narrower lots, leaving larger ones for other kinds of development or remaining as parking as necessary. The site plan highlights the proliferation of parking on the block which is typical for the area. (fig. 38)

The specific site is a single strip of parking in a private lot on South Harvard Boulevard between West Sixth and Fifth Streets. (fig. 28) The site leaves the adjacent strip of parking and the rest of the lot intact, emphasizing the narrowness of the site. It measures 18' wide, exactly the length of a typical parking space.

The narrow towers proposed add a visual point of reference for this new layer of density. (fig. 39) The neighborhood currently has a broad mix of building forms, ranging from boxy office towers to smaller apartment buildings. The introduction of a new, narrow typology stands in stark formal contrast with both of these. Like in the road typology, the height of the building is less important than its width. Rather, the overall form of the typology highlights the maximum potential of the site's modest dimensions.

Given the compression of the site, the ground level is relatively sparse and adaptable to other buildings with similar contexts. (fig. 38) It includes a small covered entry with a lobby and storage. The main purpose of this level is as an access point to the center of the building, where vertical circulation in the form of an unconditioned stairwell and elevators carved into one of the unit stacks provide access to the tower. The building is conceptualized as a series of stacked houses. Each unit is two stories and a shift in the center of the building allows for each level to have access to only one unit. (fig. 41) On the first level of each unit, a combined living room and kitchen space opens up entirely to an outdoor area by way of doors that swivel to one side, opening up to panoramic views of the horizontal city that are otherwise inaccessible. In the distance, other similar buildings of the same typology on former parking strips are visible. (fig. 40) As space in the city becomes increasingly scarce and valuable, towers piercing the sky become commonplace buildings: another ordinary part of the complex urban fabric.

fig. 37 Koreatown site along South Harvard Boulevard.

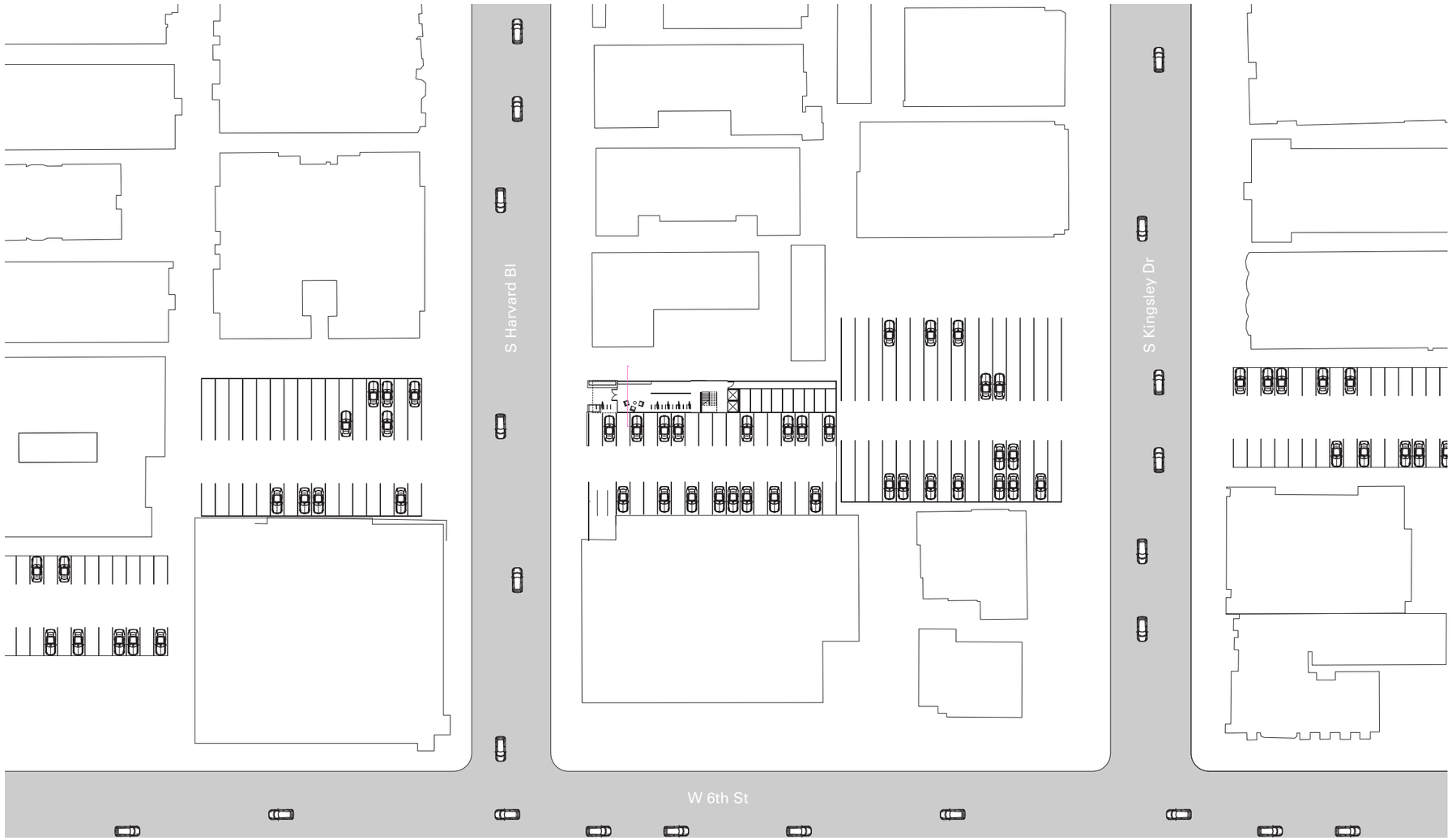


fig. 38 Site plan, Koreatown.

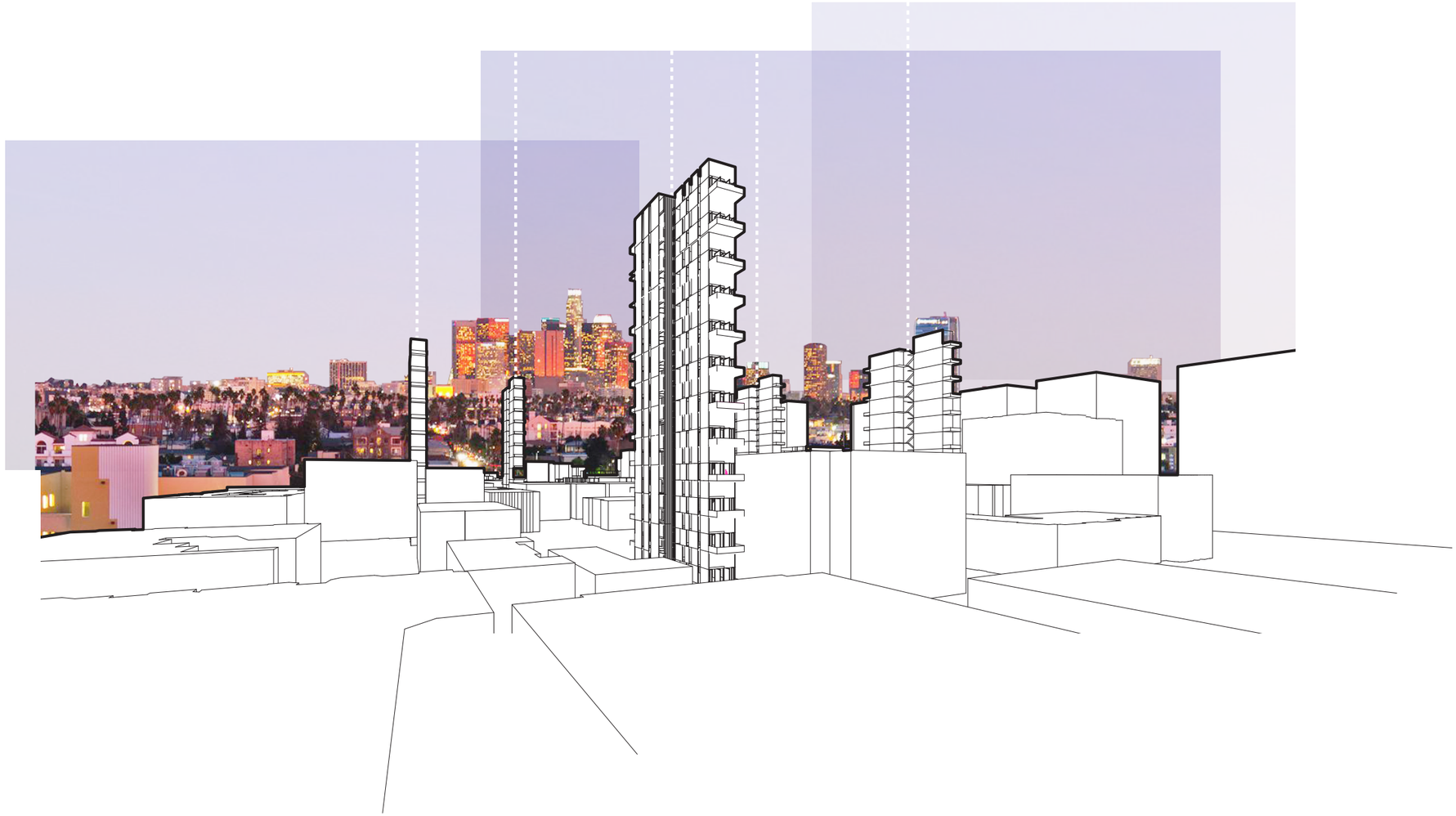


fig. 39 Exterior perspective, Koreatown.

fig. 40 Interior perspective, Koreatown.

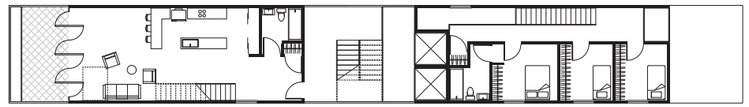


fig. 41 Typical plans, Koreatown.

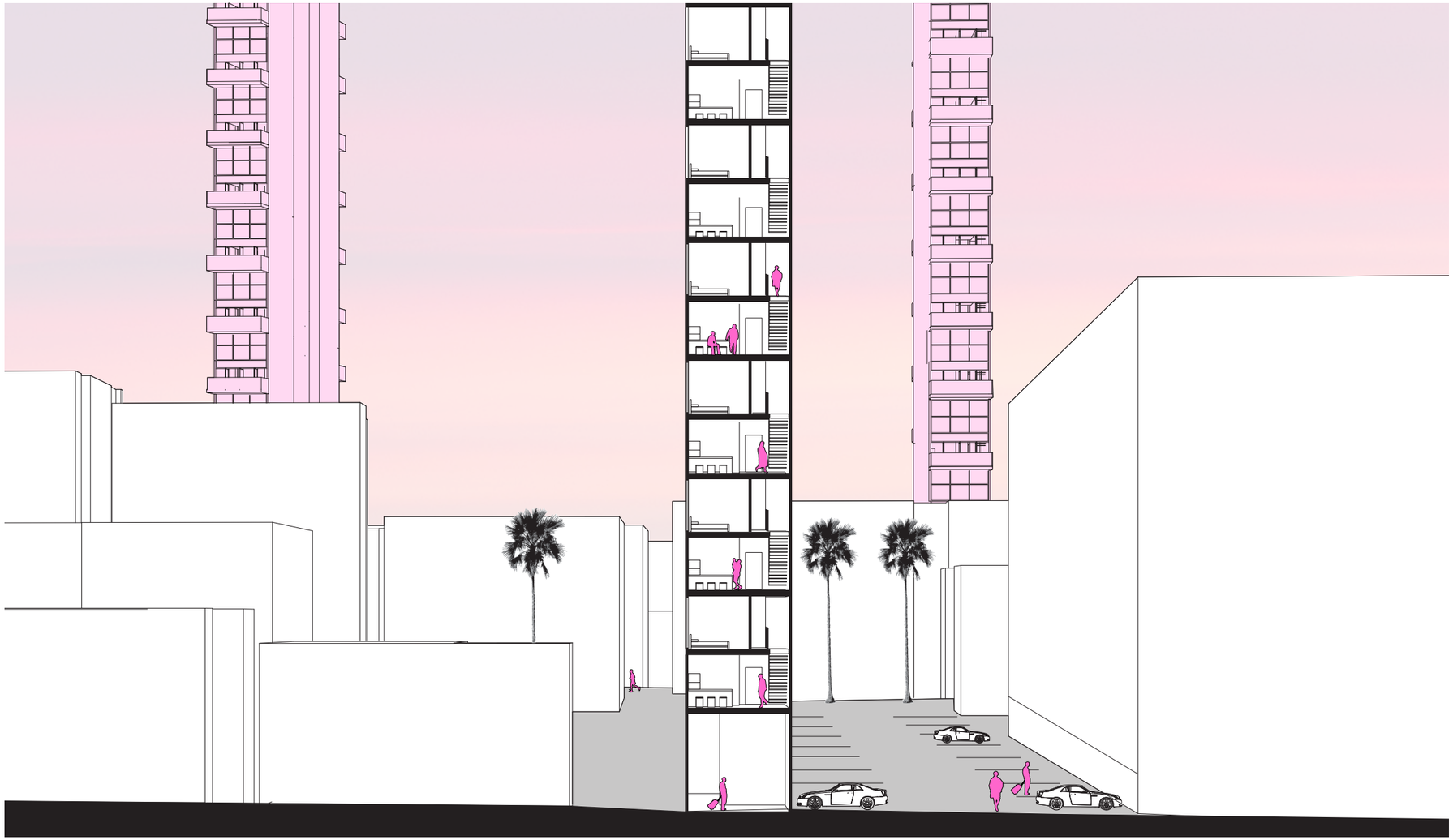
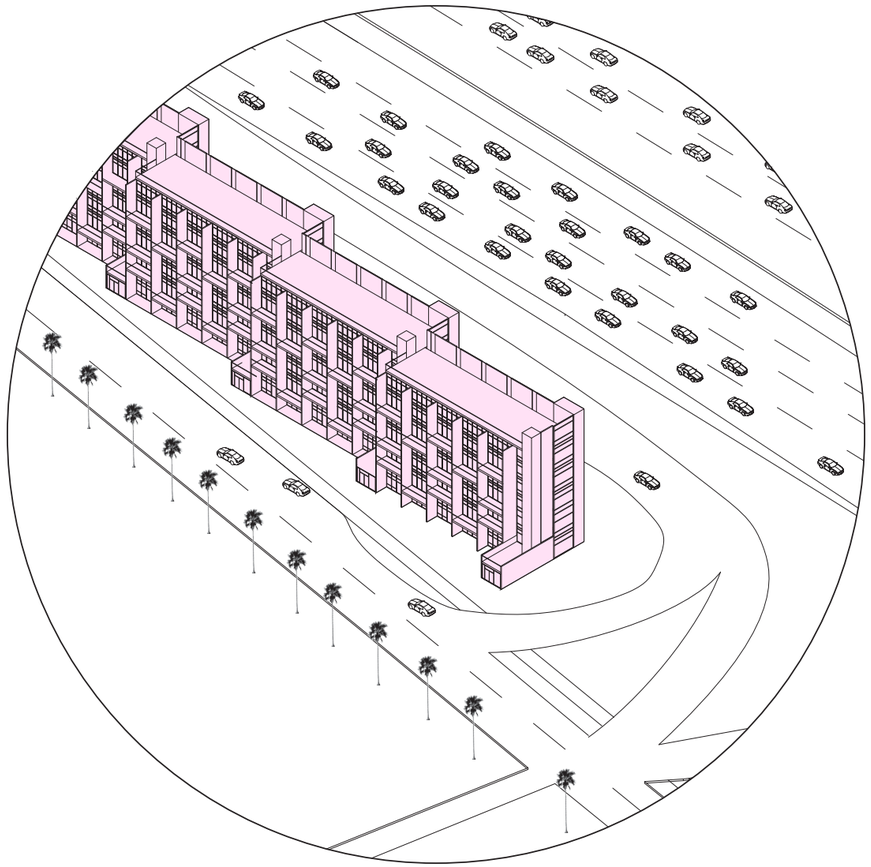


fig. 42 Section, Koreatown (detail).



downtown

void: the vacant lot

Perhaps more than any other built form, the freeway stands as a monument of Los Angeles. Serving both as a connector and separator of neighborhoods, the massiveness of highway infrastructure crisscrossing the urban core is a reminder of the city's expansiveness. Banham asserts that "the fact that these parking lots, freeways, drive-ins, and other facilities have not wrecked the city-form is due chiefly to the fact that Los Angeles has no urban form at all in the commonly accepted sense.[61] Abutting nearly all 527 miles of highway in Los Angeles[62] are vacant lots that serve as transitional spaces between the freeway and the street. For this design exploration, the focus in on these leftover infrastructural pieces of land.

Although Los Angeles has a downtown, it is atypical in the sense that its density is actually quite low, at just over half of the city's overall average.[63] Given the city's scale, it also represents a miniscule portion of the overall population and physical size rather than a true center: "its relationship to the other parts of the metropolis never carried the sense of moral and municipal hegemony that normally exists between a central city and its satellite suburbs."[64] Despite this, it still functions as a significant job center: the neighborhood's daytime population increases from approximately 30,000 residents to over 200,000[65] office workers present from 9 to 5. Just as the neighborhood of Koreatown is typified by residential parking minimums, these requirements apply to offices as well,[66] which in Downtown heavily skew the availability of parking upward.

For the purposes of this design exploration, the site avoids the physically denser urban core of the neighborhood typically considered to be the extent of the neighborhood, focusing instead on the more industrial area immediately east of the Downtown core (fig. 27). The area is highway-dominated and characterized by large parking and vacant lots. The site lies north of an expansive warehouse area that

fig. 43 Building typology overview, Downtown.

has become increasingly occupied by artists and commercial spaces known as the Arts District.

The site in particular is irregularly shaped and bounded on the north by a US-101 offramp and on the south by Commercial Street, with variable dimensions and measuring roughly 100 feet by 650 feet. (fig. 45) The scale of the site is expansive. The highway itself is slightly sunken relative to the location of the site, creating the experience of an urban canyon looking across to the other side. Across the highway lies Union Station, the city's central train depot. To the immediate northwest of the site, a rail overpass separates the site from a steeper embankment down to the highway level. (fig. 44) Given the extreme conditions of the site, particularly to the north, the building itself forms a wall to the highway on one side, with units opening up onto the street. The design is conceived as a horizontal module of five units and a circulation core, repeating as allowed by the dimensions of the site. In this case, five modules are allowed by the site dimensions. Repeating the dimensions set by the parking lot typology, each structural bay within the module for each unit measures 18' wide.

On both sides of the building, the architecture creates a set linear rhythm as one moves along either the highway or the street. (fig. 46) The lower level of the highway reduces noise for the site, as does turning the building away from this side. As in the previous two typologies, the first level of each unit opens up completely to the exterior. (fig. 48) Defined by the rigor of the structure, fin walls defining each bay form the external spaces of the units. These delineate the units and provide privacy from adjacent neighbors. (fig. 47) At the ground level, live-work units mediate between the industrial and commercial context, lifting the residential units off the ground plane and forming an extended pedestrian corridor of shops and studio spaces along the street.

While the road and parking lot typologies are defined by a vertical rigor extruded from an impossibly small, narrow site, the vacant lots abutting the highway in this typology are long and amorphous. Taking this into consideration, the sizes of the units vary within each bay, creating a rhythm along the façade as one zooms past on the street side. Expressing the nascent verticality of the rest of the city, the units range from single-story studios to larger two- and three-story units, some with additional ground floor work spaces. Unlike the previous two typologies in which the site directly dictates the shape and form of the building, this typology is less fixed. It instead asks for a closer look at these throwaway, transitional spaces. How can these impossible sites, dominated by massive infrastructure, become sites for home? On another level, this site, the harshest of the three explored within these typologies, serves to strengthen the previous two. Is there a need to house people on such inhospitable sites when there is so much remnant void space elsewhere?

Taken together, the three buildings in Venice, Koreatown, and Downtown are singular adaptations of a citywide proposal for a the city's future, offering adaptable, repeatable typologies for increasing density in leftover spaces, in these discrete neighborhoods and beyond. (fig. 50) Each is intended as a module to be sited selectively where the void exists.

fig. 44 Downtown site along Commercial Street.

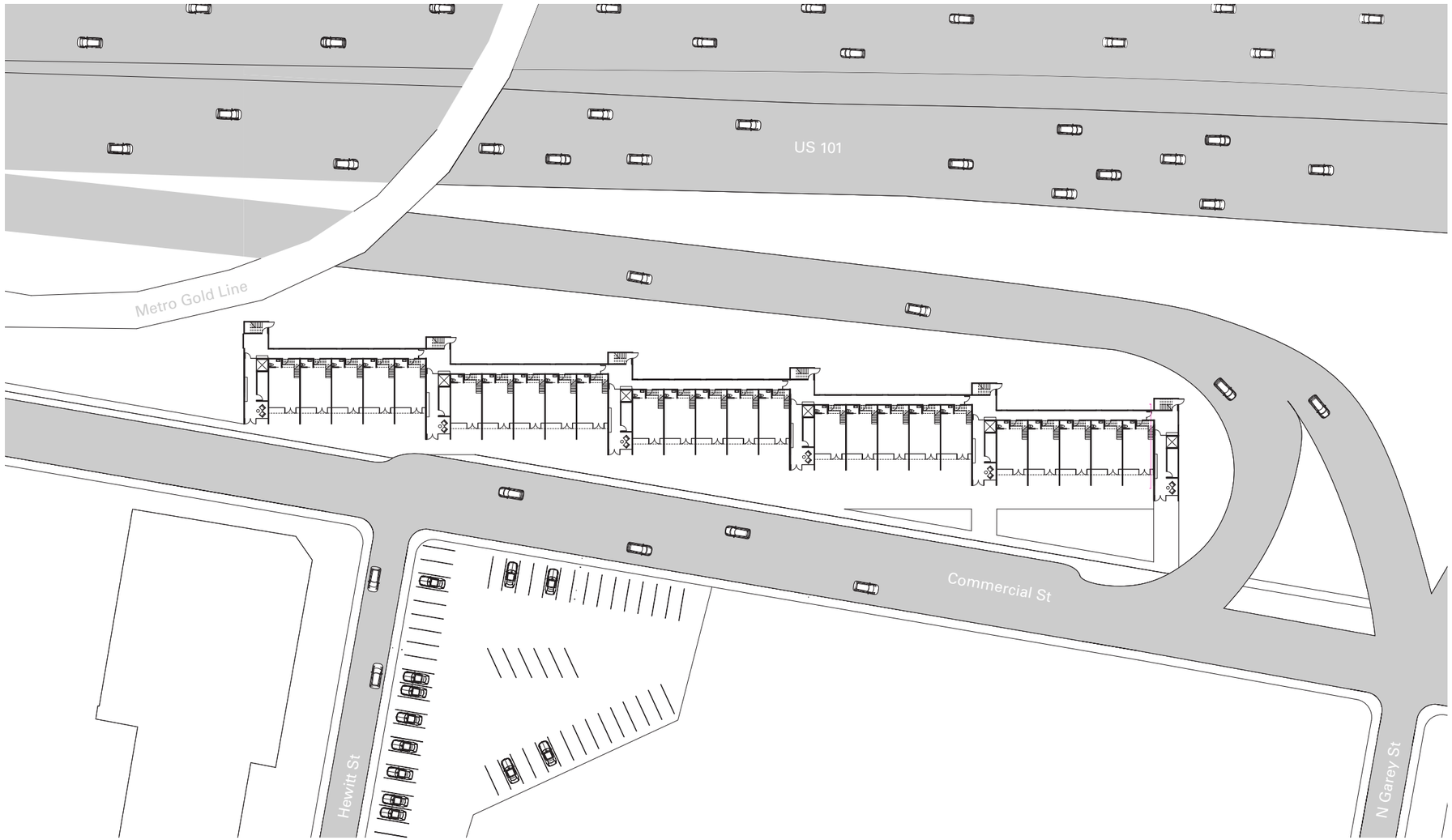


fig. 45 Site plan, Downtown.

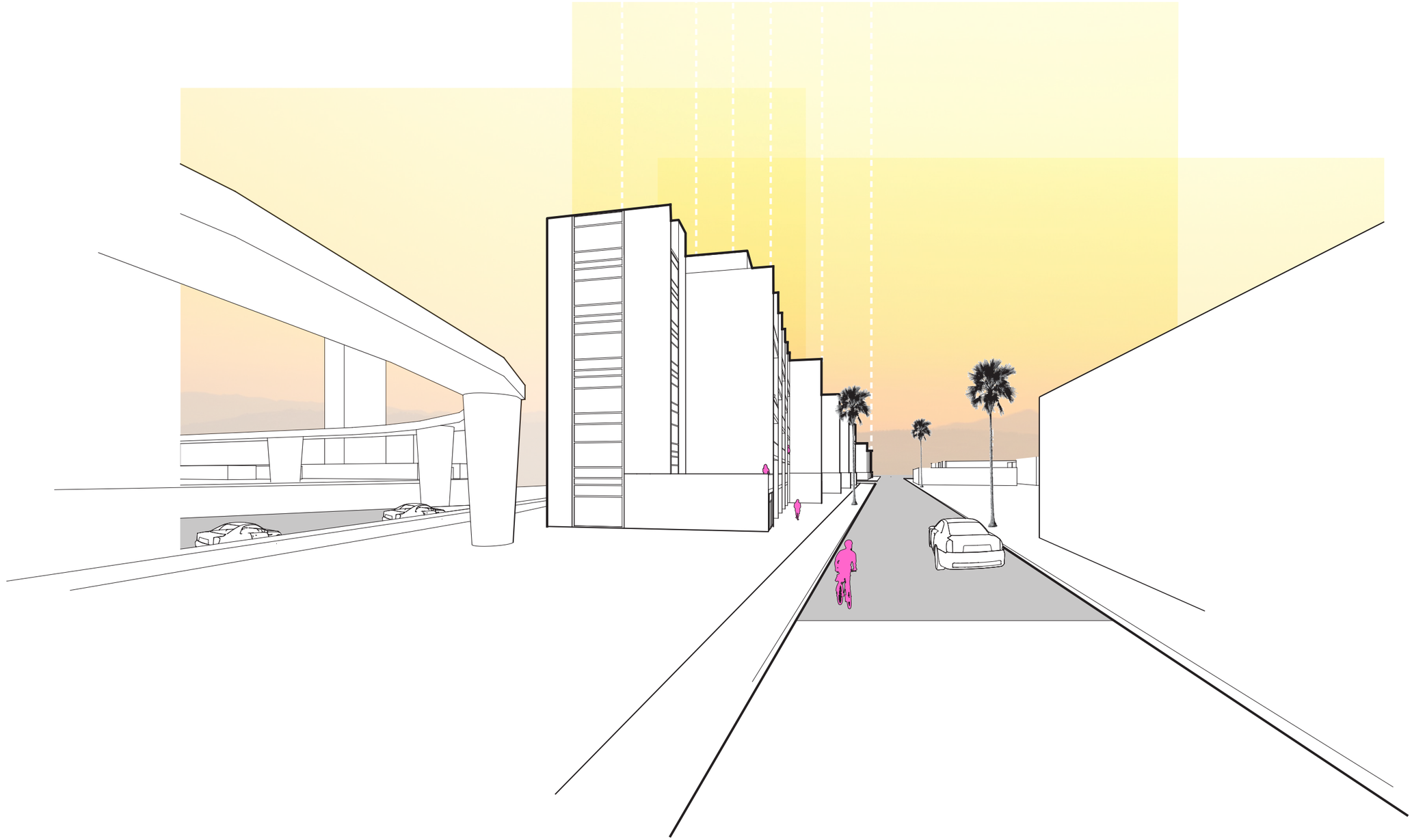


fig. 46 Exterior perspective, Downtown.

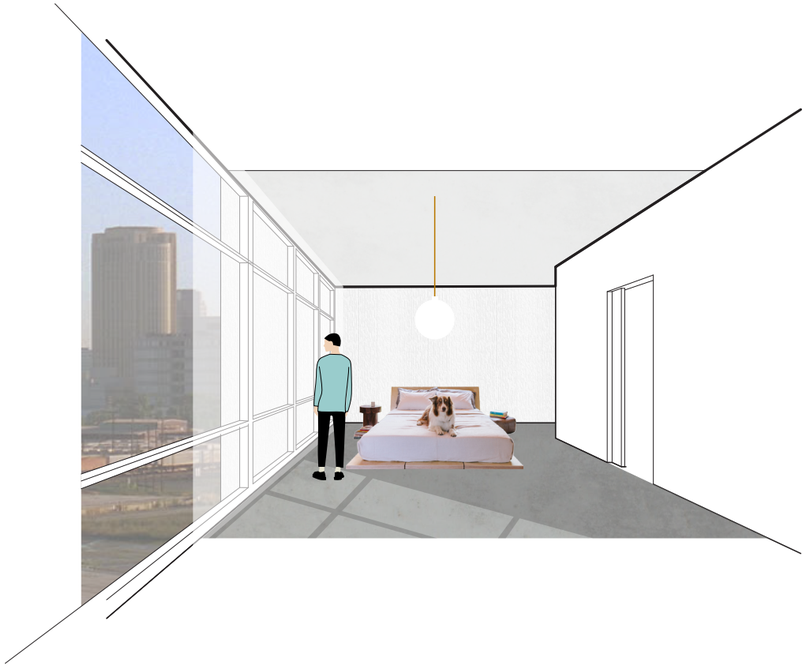


fig. 47 Interior perspective, Downtown.

fig. 48 Typical plans, Downtown (detail).

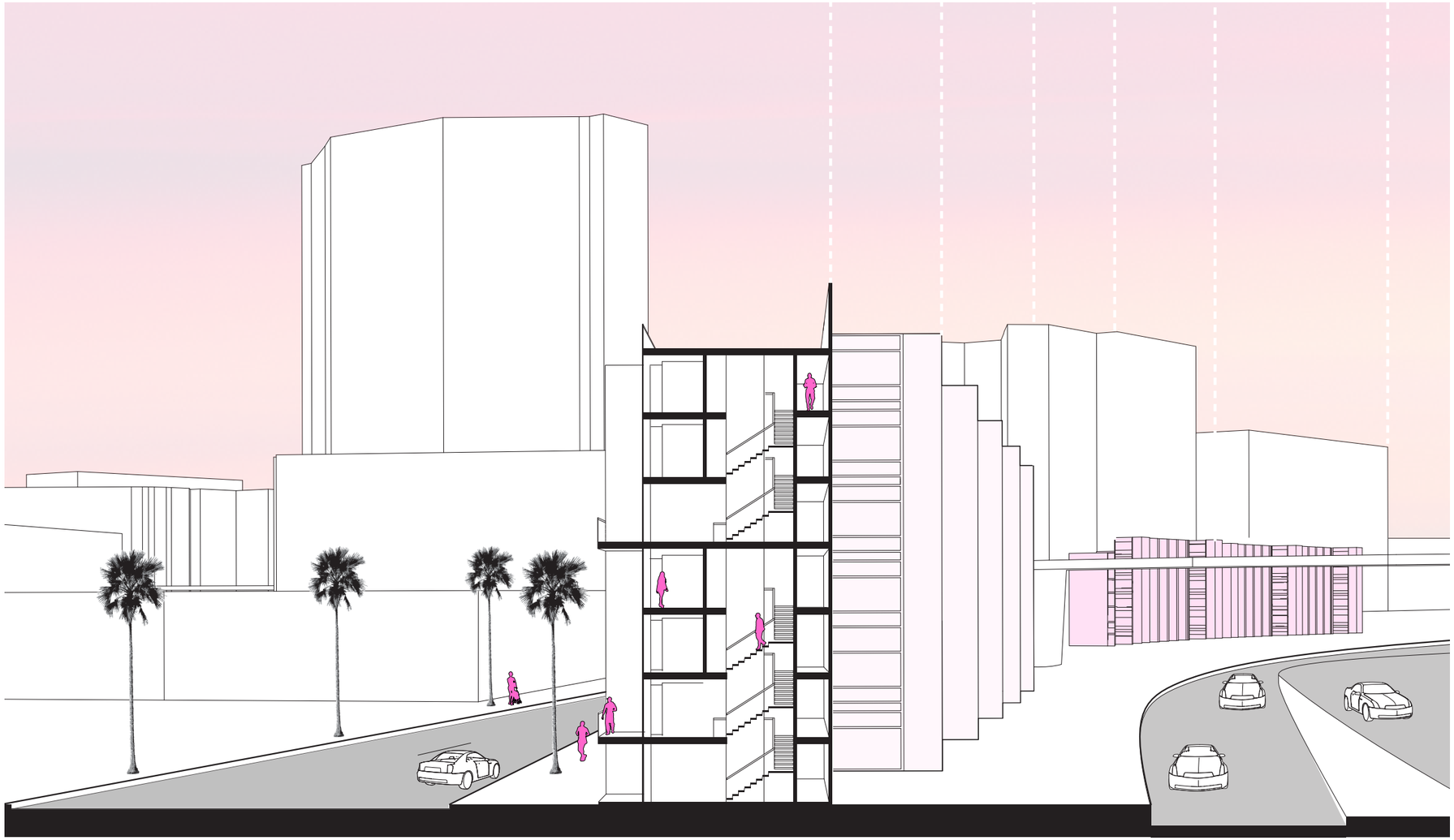


fig. 49 Section, Downtown.

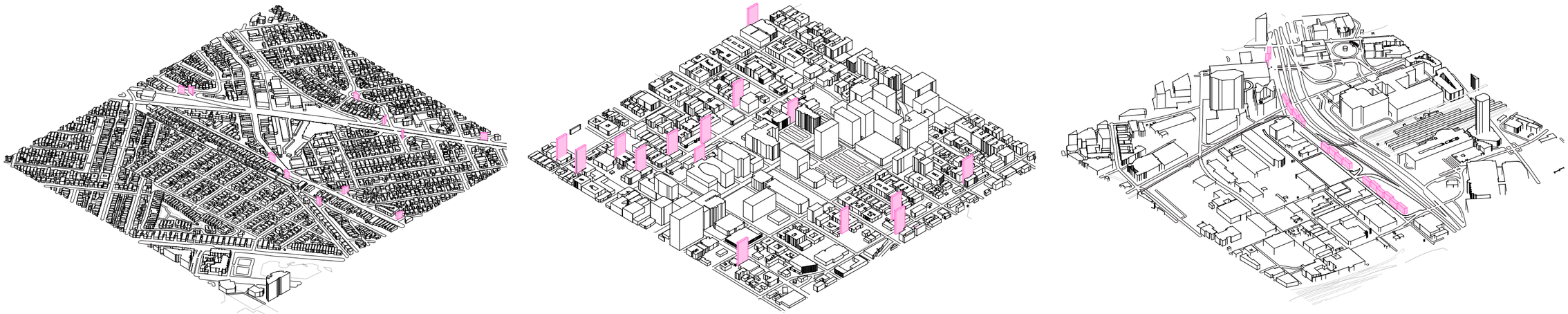
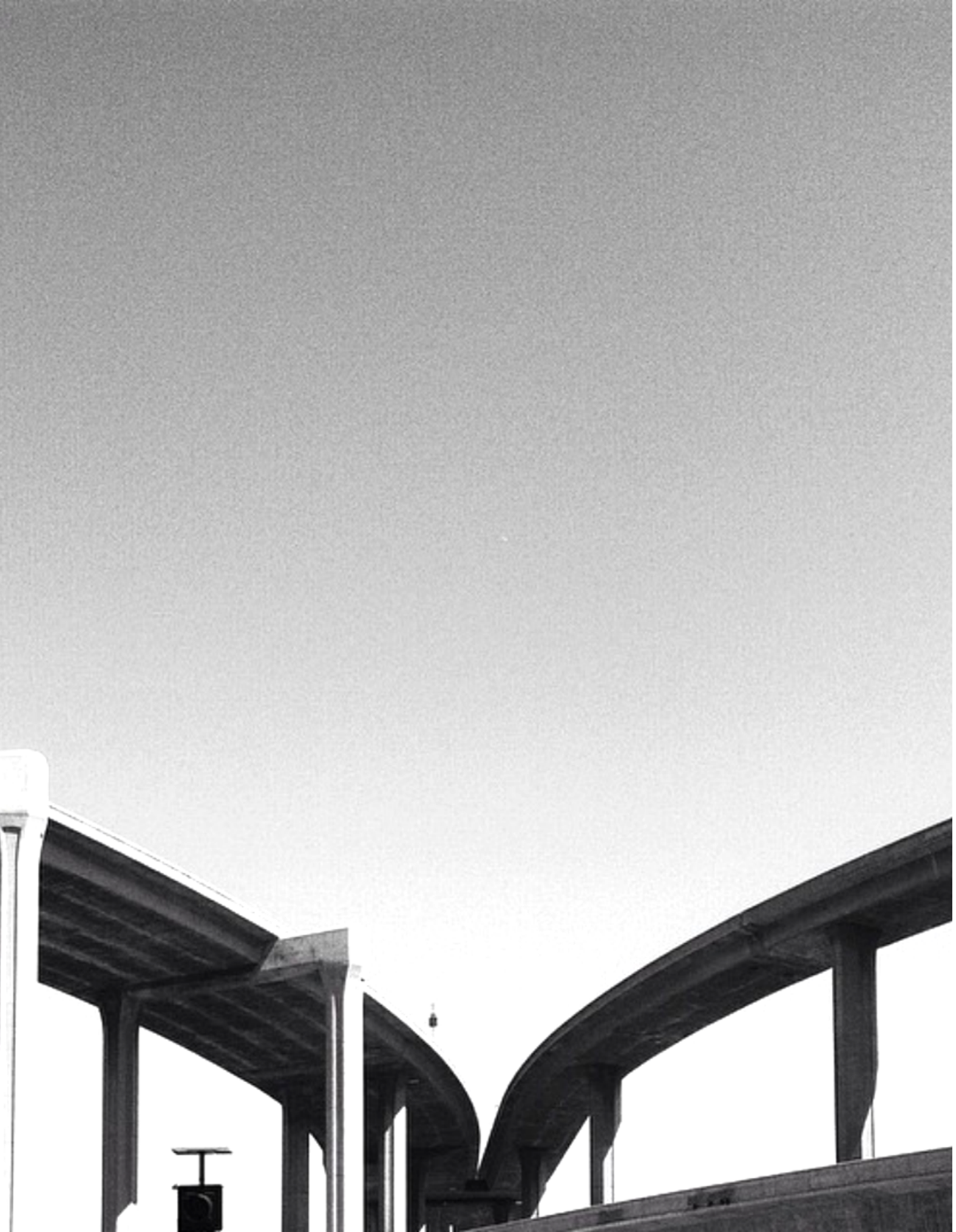


fig. 50 Series of typology interventions in Venice, Koreatown, and Downtown.



five
conclusion

What is the new identity for a city whose entire life has been marked by its ability and desire to endlessly expand?[67]

—Michael Maltzan

The next level of urbanization of Los Angeles depends, in large part, on a change in the ethos of the city. At the municipal level, these changes are already occurring. Small lot housing is increasingly encouraged; the city's rail lines are rapidly expanding; a new wave of development is revitalizing neighborhoods throughout the city, in many cases replacing older buildings. While these are all signs of any vibrant, growing city, this thesis responds to the context of Los Angeles in a more localized way, exploring how architecture can respond with new typologies that add to and respond specifically to their context without replacing it. How can denser typologies be incorporated within the urban fabric in a way

fig. 51 I-105/I-110 Interchange, Los Angeles, 2014.

that respects and even amplifies the unique spatial character of the city?

The framework for this thesis largely focused on the qualitative aspects of space in the contemporary megacity. Quantitatively, the fact that the Los Angeles area is the densest in the country,[68] but is not perceived as such, is one of the experiential aspects of density that allows it to often go unnoticed. Yet, cities like Los Angeles are strongly influenced by residents who oppose new construction, attesting to the fact that increased levels of density deviating from what is considered 'normal' is not widely favored. This thesis proposes that architecture can play a role in making density acceptable and perhaps even desirable by hiding it in plain sight along major corridors and on overlooked vacant lots that would otherwise have little positive impact on the overall experience of the city.

The enormous scale of Los Angeles is both a challenge and an opportunity. As architect Michael Maltzan observes, "threatening to render any individual gesture meaningless in the overall scheme of things, the scale of LA can overwhelm us into inaction and apathy."[69] The interventions proposed in this thesis, even if replicated throughout the city, would likely do little to undermine the popular image of Los Angeles as a city of voids, built for and around the car. Precisely for these reasons—the immensity of the city and the relatively small scale of the interventions—the city can act as an incubator for urban experimentation, accommodating growth while also maintaining the status quo. With so much space that is still unfilled, Los Angeles has the potential to be a testing ground for all kinds of urban growth, just as it has been a vibrant testing ground for idiosyncratic architectural expression. Looking into the future as the city continues to expand its transit network and ride sharing and automation become increasingly prevalent, the possibility of valuable urban space becoming available for other uses—housing or parks, for instance—becomes stronger.

Although the framework for this thesis suggests a radical shift in the way people live in the city, it is beyond the purview of an architectural thesis to completely reshape an entire population's way of life. The scope of this thesis is ultimately far more internalized, representing a fundamental rethinking of space in what artist David Hockney believed is "the most spacey city in the world."[70] The proposed housing projects represent just one solution to the growth predicted for the city's future, but each individual home with its own internalized space has an immense collective impact on the way the city is perceived. The intent is to respect the condition of voids within Los Angeles, and to acknowledge that growth will continue. This quality of space aptly defined by Hockney is arguably what makes the city unique, setting it apart from the more compact, walkable cities more typically revered by designers of the built environment. While improving mobility and increasing the efficiency of the city can be a valid approach in the design of the traditional centric city, the growth of Los Angeles calls for a more organic, flexible approach.

Although this thesis focused foremost on one particular city, the underlying goal of this thesis is a fundamental rethinking of urban space in general and calls for a greater appreciation of its significance. Keeping as much existing context as possible while rediscovering, reinterpreting, and reimagining forgotten and unused spaces is the ultimate goal of this exploration.

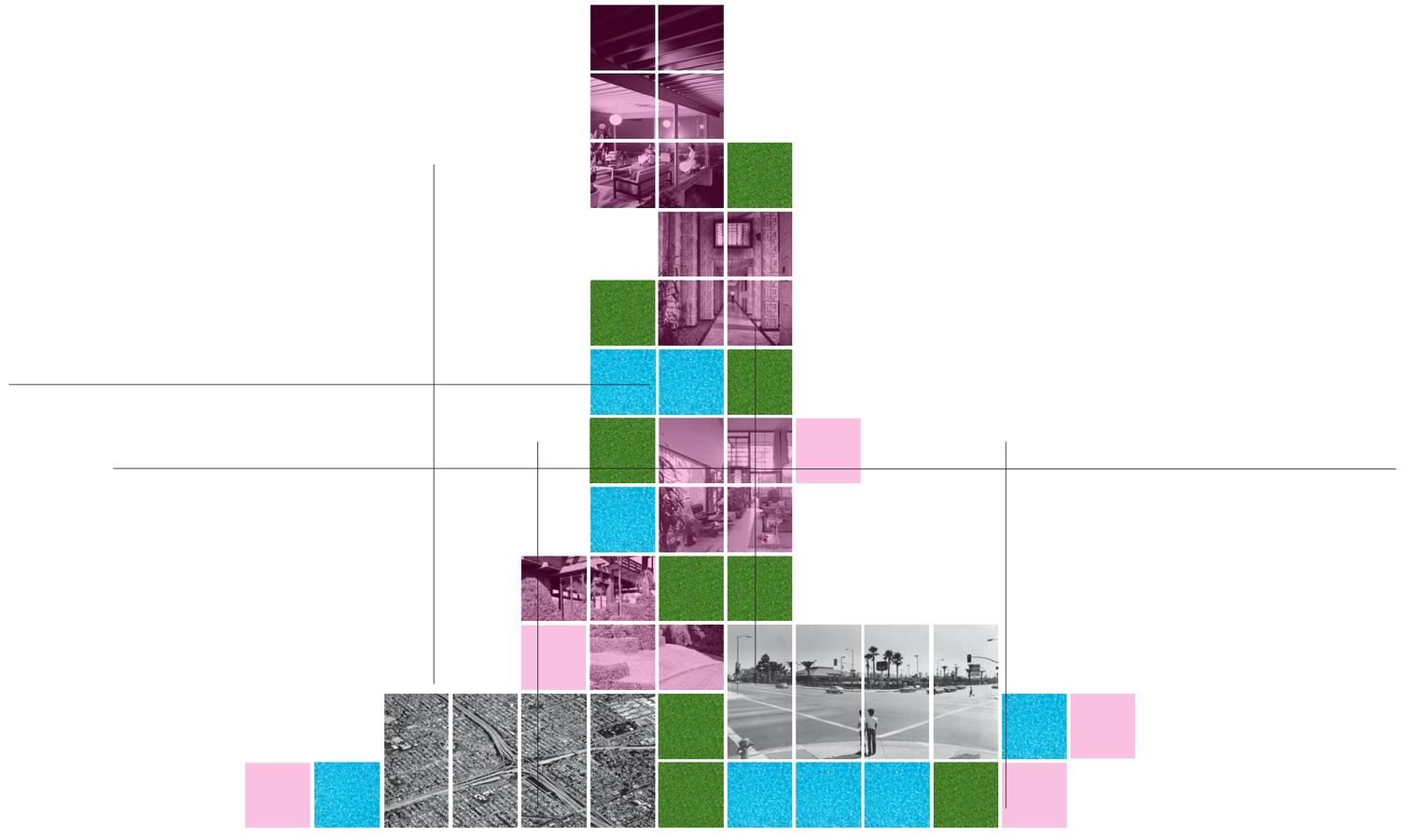


fig. 52 Infrastructure, Home, and the Void.

etc.

figures

All images by author unless otherwise noted.

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endnotes

one welcome to los angeles

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