





**NORDISK ARKITEKTURFORSKNING**

Nordic Journal of Architectural Research

**2-2014**

**THEME ISSUE  
DENSIFICATION AS A PLANNING STRATEGY**

## Nordic Journal of Architectural Research

ISSN: 1893-5281

### *Theme Editors:*

Madeleine Granvik, Madeleine.Granvik@slu.se

Swedish University of Agricultural Sciences, Department of Urban and Rural Development, Unit of Landscape architecture, Sweden.

Per G. Berg, per.berg@slu.se

Swedish University of Agricultural Sciences, Department of Urban and Rural Development, Unit of Landscape architecture, Sweden.

### *Chief Editors:*

Claus Bech-Danielsen, cbd@sbi.aau.dk

Danish Building Research Institute, Aalborg University, Denmark.

Madeleine Granvik, Madeleine.Granvik@slu.se

Swedish University of Agricultural Sciences, Department of Urban and Rural Development, Unit of Landscape architecture, Sweden.

Anni Vartola, anni.vartola@gmail.com

Architecture Information Centre Finland, Finland.

For more information on the editorial board for the journal and board for the association, see <http://arkitekturforskning.net/na/pages/view/Editors>

### *Submitted manuscripts*

Manuscripts are to be sent to Madeleine Granvik (Madeleine.Granvik@slu.se), Claus Bech-Danielsen (cbd@sbi.aau.dk) and Anni Vartola (anni.vartola@gmail.com) as a text file in Word, using Times New Roman font. Submitted papers should not exceed 8 000 words exclusive abstract, references and figures. The recommended length of contributions is 5 000–8 000 words. Deviations from this must be agreed with the editors in chief. See Author's Guideline for further information.

### *Subscription*

Students/graduate students

Prize: 250 SEK, 205 DKK, 225 NOK, 27.5 Euro

Individuals (teachers, researchers, employees, professionals)

Prize: 350 SEK, 290 DKK, 320 NOK, 38.5 Euro

Institutions (libraries, companies, universities)

Prize: 3 500 SEK, 2900, DKK, 3200 NOK, 385 Euro

Students and individual subscribers must inform about their e-mail address in order to get access to the journal. After payment, send the e-mail address to Trond Haug, trond.haug@sintef.no

Institutional subscribers must inform about their IP-address/IP-range in order to get access to the journal. After payment, send the IP-address/IP-range to Trond Haug, trond.haug@sintef.no

### *Payment*

Sweden, pay to: postgirokonto 419 03 25-3

Denmark, pay to: Danske Bank 1-678-0995

Finland, pay to: Sampo Bank 800013-70633795

Norway, pay to: Den Norske Bank 7877.08.13769

Outside the Nordic countries pay in SEK to SWIFT-address:

PGS ISESS Account no: 4190325-3, Postgirot Bank Sweden, SE 105 06 Stockholm

Published by SINTEF Academic Press

P O Box 124 Blindern, NO-0314 Oslo, Norway

## CONTENTS

DENSIFICATION AS A PLANNING STRATEGY – EDITORS’ NOTES .....	5
MADELEINE GRANVIK, PER G. BERG, ANNI VARTOLA AND CLAUS BECH-DANIELSEN	
INNOVATIONS IN MEASURING DENSITY: FROM AREA AND LOCATION DENSITY TO ACCESSIBLE AND PERCEIVED DENSITY .....	11
META BERGHAUSER PONT AND LARS MARCUS	
UNPACKING DENSITY: EXPLOITING URBAN DESIGN VARIABLES IN CARBON REDUCTION STRATEGIES .....	31
MICHAEL MEHAFFY, TIGRAN HAAS AND ANDY VAN DEN DOBBELSTEEN	
DENSIFYING THE SUBURBAN METROPOLIS: ARCHITECTURE AS AN INSTRUMENT FOR URBAN PLANNING .....	57
PER-JOHAN DAHL	
ON THE FEASIBILITY AND EFFECTIVENESS OF URBAN DENSIFICATION IN NORWAY .....	83
FABIO HERNANDEZ-PALACIO	
KULTURARV SOM RESSURS I EN FORTETTINGSSTRATEGI .....	113
ELIN BØRRUD	
GREEN SPACE IN COMPACT CITIES: THE BENEFITS AND VALUES OF URBAN ECOSYSTEM SERVICES IN PLANNING .....	139
MÄRIT JANSSON	
URBAN GREENING STRATEGIES FOR COMPACT AREAS – CASE STUDY OF MALMÖ, SWEDEN .....	161
TIM DELSHAMMAR	
GREEN PERCEPTION FOR WELL-BEING IN DENSE URBAN AREAS – A TOOL FOR SOCIOECONOMIC INTEGRATION .....	179
ERIK SKÄRBÄCK, JONAS BJÖRK, JONATHAN STOLTZ, KRISTIN RYDELL-ANDERSSON AND PATRIK GRAHN	



---

## **DENSIFYING THE SUBURBAN METROPOLIS: ARCHITECTURE AS AN INSTRUMENT FOR URBAN PLANNING**

**PER-JOHAN DAHL**

---

### **Abstract**

This paper elucidates a disciplinary context for an emergent building type dubbed Accessory Dwelling Unit, or ADU. Today, ADU developments add density to metropolitan Los Angeles by undermining the low-density principles of single-family residential zoning. Surfacing within the jurisdiction formally known as the City of Los Angeles, the ADU supplements city planning in the transformation of suburbia. This paper takes three photographic works as lenses through which to trace the role of architecture in the making of L.A. By analyzing the shifting growth patterns that have shaped metropolitan Los Angeles since World War II, the paper frames the suburban backyard as a catalyst of new densities in the City of Los Angeles. The argument put forward in this paper states that the ADU needs to be formalized in order to achieve substantial impact. Taking three built examples of ADU architecture as the subject matter for case study analysis, the paper explicates the significance of backyard architecture and articulates a disciplinary context for ADU architecture. Architecture is too often disconnected from the paroxysmal forces of urbanization. With this paper, some interconnections are proposed.

Keywords:  
single-family residential zoning,  
Los Angeles, suburbia, accessory  
dwelling unit, ADU, Daly Genik  
Architects, Morphosis, Frank D.  
Israel, building type

## Introduction

«Every socio-historical field produces a building type that singularly expresses the multiple forces that combine to produce the field itself.»

Sylvia Lavin

«While conventional planners are almost certainly right in asserting that without planning Los Angeles might destroy itself, the fact remains that conventional planning wisdom certainly would destroy the city as we know it.»

Reyner Banham

The distribution of densities within the context of contemporary city planning is primarily choreographed through the land use segregation principle commonly known as zoning. Modernized in the 1870s by the Prussian planner Reinhard Baumeister, and exported to the USA at the turn of the nineteenth century to address issues of public health crisis, zoning took root in Europe and America at the turn of the nineteenth century to tame what Carol Willis calls «*the exacerbated problems of the ... laissez-faire city*» (Rossi, 1982; Willis, 1986, p. 50). Fueled on the one hand by real estate interests, and on the other hand by visions of social reform, zoning became the primary planning tool used to regulate the form and use of land and building, which separated functions by law and thus made integration illegal (Bassett, 1932). The segregation of land uses directed by zoning was celebrated by Le Corbusier's *Functional City*, and by CIAM's *Athens Charter of 1933* (Mumford, 2000, p. 79). A core principle of Modernist city planning was to divide architectural activity into four major areas. As a result, dwelling, recreation, work, and transportation were differentiated as distinct fields of architecture and, as Ignasi de Solà-Morales explains, «*assigned mutually exclusive urban zones*» (de Solà-Morales, 1997, p. 43). Following the CIAM discourse on urbanism, zoning defined the city through specified categories of land use, which created a rigid construct that interlocked the relationship between urban form and content.

Among the multiple categories of land use, single-family residential zoning evolved into the most restrictive.<sup>1</sup> Drafted to allow only one dwelling per lot, single-family residential zoning has been, and still is, utilized by local planning administration in Europe and the U.S. to manage the development of low and spread-out urban landscapes. Indeed, from Helsinki and Copenhagen in northern Europe to Atlanta in the American South, and beyond, the suburban extent emanating from single-family residential zoning has provided the spatial reference for conventional planning praxis when stamping out endless areas of dispersed and mono-functional city districts (EEA, 2006, p. 13). The effects catalyzed by such procedure are certainly well known in contemporary discourse, particularly in discussions on sprawl. The social, cultural, and environmental delinquencies often interrelated with the city building

1 Richard F. Babcock supports the argument that single-family residential zoning is the most restrictive by showing that the origins of zoning were cumulative (Babcock, 1966, p. 127).

model formally known as sprawl are, to some degree, the result of widespread implementation of sparse urban space through the premises of single-family residential zoning.

Contemplating this procedure, planning has certainly not been made passive. A lively debate on how to alter the escalating adoption of single-family residential zoning started as early as the 1960s, within the disciplines of urbanism and urban design. Elaborated on by numerous scholars – from Jane Jacobs (1961) to Richard F. Babcock (1966) and Jonathan Barnett (1982) – and, later, in various books – from Charles M. Haar and Jerold S. Kayden's *Zoning and the American Dream* (1989) to Tridib Banerjee and Anastasia Loukaitou-Sideris's *Companion to Urban Design* (2011) – the problems directly or indirectly generated by single-family residential zoning have been thoroughly debated and massaged. Still, conventional planning praxis remains indifferent to disciplinary critique. Caught between New Urbanism's zoning reforms and the reactionary aptitudes of NIMBY groups and other profit-driven stakeholders, contemporary city planning seems rather unable to alter the restrictive approach to city building continually proclaimed through single-family residential zoning (Sorkin, 2006; Davis, 1990).

If conventional planning praxis has failed to challenge single-family residential zoning, perhaps a different discipline needs to be mobilized. Just as architecture once needed engineering to embrace the innovations introduced by industrialized economies, planning may need a vital companion capable of stipulating new concepts on how to overcome entrenched bureaucracies.<sup>2</sup> Urban planning, as practice and discipline, is contextualized in Ildefons Cerdà's scientific approach to city building, thus intersections with architecture are not without ramification. Operating on mere universal premises, for example, urban planning differs from architecture, whose methods are more specific. On the other hand, disparate disciplinary backgrounds may be useful when coalescing to explore paths beyond common routines and criteria. As we will see, such procedure is today surfacing in the City of Los Angeles, where architecture supplements planning in the transformation of suburbia. By reconceptualizing land use through the implementation of a new building type commonly referred to as Accessory Dwelling Unit, or ADU, architecture adds density to the suburban metropolis by undermining the premises of single-family residential zoning.

2 Read about engineering and architecture during the industrialized period in Sigfried Giedion's *Space, time and architecture: The growth of a new tradition* (Giedion, 1967, pp. 211–218).

## Research question and method

This paper takes the ADU building type as object of study to postulate a critique on the principles of single-family residential zoning, which sustain the low and spread-out urban landscapes of Los Angeles. As conventional planning praxis makes use of single-family residential zoning to obstruct ADU development, this paper argues that ADU architecture be-



comes an instrument for urban planning in the City of Los Angeles. However, because the ADU lacks a disciplinary context, seeking allies among the multiple forces that direct urban change becomes a challenge. Without a disciplinary context, ADU architecture's status in interdisciplinary reviews is weakened, both in implementation and evaluation. The objective of this paper, therefore, is to use the metropolitan expansion of L.A. as the intellectual framework to elucidate a disciplinary context for ADU architecture.

While implementation and evaluation of ADUs comprise an architectural exercise, its urban dimensions cannot be neglected. The ADU denotes a critique on conventional planning praxis, thus its relationship to urbanism must be explicated. The research question for this paper is therefore: Which historical and theoretical stipulations coincide to formulate the potential for ADU architecture in the City of Los Angeles? Even as the ADU develops from the single-family house, it challenges the premise of single-family residential zoning. Thus, the historical precedent of suburban extent, which remains vigorous in Los Angeles, provides a viable context for analysis. The sub-question for this paper is therefore: What spatial transformations can ADU architecture catalyze in Los Angeles' single-family residential districts?

The two research methods used for this paper are urban analysis and case study research. The urban analysis method provides a platform for research on the historical and theoretical background of ADU architecture. The case study research method provides a procedure for in-depth analysis of selected ADUs.

Data collection for urban analysis includes literary research, archival research, and direct observation. Data collection for case study research includes literary research, archival research, interviews, drawing analysis, and direct observation. Three photos were detected to structure data collection for urban analysis, and three architectural projects were detected to structure data collection for case study research. The three photos are William Garnett's *Finished Housing, Lakewood, California* (1950), Julius Shulman's *Case Study House No.22: iconic girls* (1960), and Andreas Gursky's *Los Angeles* (1998). The three architectural projects are Morphosis' *2-4-6-8 House* (1978), Frank D. Israel's *Baldwin Residence* (1992), and Daly Genik *Architects' Palms Residence* (2009). The photos were selected for their iconography, which reflects a specific period in L.A. during which the relationship between rapid metropolitan expansion and architecture catalyzed social, cultural, and economic conditions with significant impact on urban change. The architectural projects were selected due to location and documentation, where limited geographical distribution correlated with access to various data sources and literature to frame a viable context for in-depth analysis.

## Theoretical and contextual analysis

### Three photos for urban analysis

Los Angeles has, for a long time, been considered the role model of suburbia. Its low and decentralized form is often used to illustrate the characteristics of sprawl. Robert Fishman traces the explosive growth of L.A. to discover that, when the city became a great metropolis, «*the history of suburbia reached its climax*» (Fishman, 1987, p. 155). Fishman's scholarship on Los Angeles covers the era between the two World Wars to focus on the altered transportation patterns that fueled the making of metropolitan L.A. From the late nineteenth-century and into the 1910s, he says, the world's largest mass transit system was created in Los Angeles to open the region for development. «*When in the 1920s that system appeared to threaten the viability of the single family house, it was ruthlessly sacrificed and a massive automobile system put in its place*» (Fishman, 1987, p. 157). This shift in transportation patterns turned Los Angeles into a real estate machine that for decades cranked out mile after mile of single-family residential districts. Molded into homogenous urban form, these districts were promptly filled up with low-rise, low-density housing.

Following Fishman's scholarship on the interim years, Dana Cuff analyzes the exceptional growth that Los Angeles experienced during the years of World War II. She tells us that «*[e]mployment increased dramatically, and the gross national product more than doubled between 1940 and 1945*», which spurred a population increase of almost 56% during the ten-year span of 1940 to 1950 (Cuff, 2000, p. 34). It was during this period that L.A. cemented the mode of metropolitan organization that Fishman is concerned with. Nourished by Federal Housing Administration loan guarantees, empty plots of land were rapidly converted into neighborhoods of streets and single-family houses. Prefabricated construction methods were utilized to minimize labor costs. The simplified houses abided by single-family residential zoning and shaped a field of generic homes ready to be populated by middle-class families. The construction of this suburban landscape was captured by William Garnett when he photographed the building of Lakewood in 1950 (figure 1). The uncanny quietness – the peacefulness – of Garnett's photo suggests an ideal living environment that is perfectly planned and well-protected from surrounding nuisances, these being different functions, cultures, or social configurations. The reiteration of Fordist manufacturing principles, which so obviously had been transferred from the car industry to the housing industry, implies a state of infinite repetition that forms what Gilles Deleuze and Félix Guattari (1983) would call a *machinic* territory.<sup>3</sup> Replacing city planning, the housing industry controls the pace of urban change in 1950s L.A. Merging the technical and the social, the single-family residential district that unfolds beneath Garnett's airplane codifies suburban architecture. Deprived of singular expression, archi-

3 The term *machinic* is used with reference to Gilles Deleuze and Félix Guattari's scholarship on the machine. By using the term *machinic*, I deliberately connect with Mohsen Mostafavi's use of the same term when, contextualizing landscape urbanism, he observes that the development of modern urbanism is characterized by a shift «*from an image-based planning to an operative method*» (Mostafavi, 2003, p. 8).

ecture in the making of suburbia distributed «specialized functions and [facilitated] human control» (Deleuze and Guattari, 1983, p.141).<sup>4</sup>



When Julius Shulman photographed Pierre Koenig's Case Study 22 ten years after Garnett immortalized Lakewood's tract houses, Los Angeles had sprawled and formed an immense construct characterized by instant fields of single-family homes (figure 2). The *machinic* had moved from the housing industry to urbanism, and architecture entered the scene with the purpose of rethinking the lay of the land in a city swiftly filling with endless rows of low-rise construction. Koenig's house, which occupied a sliver of soil, became one of the most spectacular examples of how new building technology can draw from site specific premises, and thus convert space into architecture. Turning waste into profit, it encapsulated the power of architecture to intensify land use and thus engage in the complex procedures of urban change. Shulman's photo is the perfect representation for this transition. Like the reflections in the windows that blur the division between architecture and space, and even draw from the shape of the moon to challenge the differentiation between inside and outside, the photo obliterates the distinction between authentic and imagined, and suggests a new context for the

**Figure 1**  
William A. Garnett, *Finished Housing, Lakewood, California, 1950*.  
Gelatin silver print, 18.7 x 24 cm.  
The J. Paul Getty Museum, Los Angeles.  
© Estate of William A. Garnett.

4 The term *machinic* derives from Gilles Deleuze and Félix Guattari's scholarship on the machine. They argue that «[t]he same machine can be both technical and social...». Their scholarship on the machine is useful when theorizing the complex intersections of scientific management, Fordist economies, and social controls that fueled the construction of suburbia. See Deleuze and Guattari (1983).



suburban lifestyle. Pointing to city building alternatives beyond what Reyner Banham (1971) dubbed the plains of Id, it reintroduces formal expression as a factual representation of social life. Indeed, with Shulman's photo, architecture in L.A. had become something tangible, able to fill in the forgotten gaps of the aggressive consumption of land and other natural resources that characterized the metropolitan expansion of 1960.

Figure 2

Pierre Koenig and Julius Shulman, Case Study House No. 22 (Los Angeles, Calif.): iconic girls, 1960.

Gelatin silver. © J. Paul Getty Trust. Used with permission. Julius Shulman Photography Archive, Research Library at the Getty Research Institute (2004.R.10)



When Andreas Gursky shot Los Angeles in 1998, the transformation was complete (figure 3). The housing industry had finally been replaced by urbanism, and Los Angeles had sprawled to form a vast metropolitan region that covered five counties, occupied an area of more than 30,000 square miles, and was home to a population of almost 17 million.<sup>5</sup> The growth patterns that have formed this fascinating landscape certainly recall the underlying principles of Cerdà's theory of urbanization which, published in 1867, used the grid to support endless city expansion. Taking off with the economic upswing of post-World War II America, the resultant explosive growth that Gursky so poetically describes with his photo was fueled by residential construction. The result was a suburban metropolis characterized by auto-dependency, decentralized city governance, and endless rows of single-family homes.

- 5 The Los Angeles metropolitan region is also called the Greater Los Angeles Area. The Greater Los Angeles Area comprises the five counties: Los Angeles County, Orange County, San Bernardino County, Riverside County, and Ventura County. The United States Census 2000 population for the Greater Los Angeles Area is 16,373,645. The United States Census 2010 population for the Greater Los Angeles Area is 17,877,006. Land area in square miles, 2010, was 33,955. One square mile equals 2.59 square kilometers.



Architecture has vanished from Gursky's photo to search for new grounds of existence in a city that, at the turn of the century, had been forced to halt expansion due to the lack of natural resources. In the report «Sprawl Hits the Wall: Confronting the Realities of Metropolitan Los Angeles», published three years after Gursky snapped his photo, the USC based research center Southern California Studies Center argues that L.A.'s sprawl has been forced to reinvent itself due to the exhaustion of natural resources and the lack of developable land. The research center states:

*Today, sprawl has hit the wall in metropolitan Los Angeles. Almost all the natural locations for urban development have been consumed, and most of the remaining areas are constrained by government policy. And at the same time, many of the other resources that have helped*

**Figure 3**  
Andreas Gursky, Los Angeles, 1998.  
© 2012 Andreas Gursky / Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn.



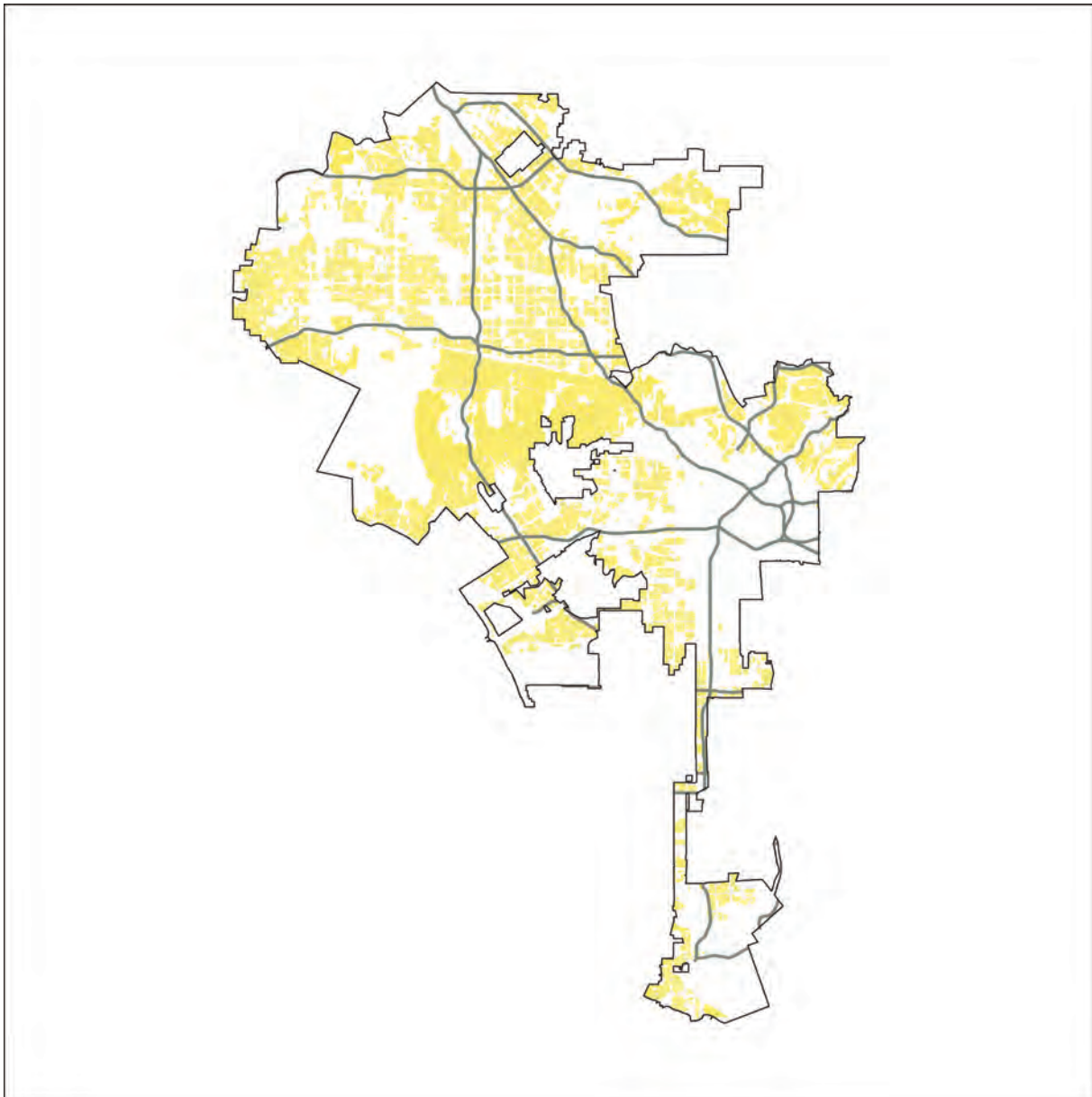
*fuel sprawl in the past—for example, low-cost water supplies and efficient water delivery systems—appear to be exhausted as well (Southern California Studies Center, 2001, p. 2).*

Southern California Studies Center continues to describe the progressive population growth of Los Angeles' metropolitan region, and signals the expected increase of six million people over a twenty year period. With no more developable land, the research center says, it is time for L.A. to start «*making conscious choices about how land, water, and transportation infrastructure are deployed, so that future growth reinforces existing communities in positive ways and improves our regional patterns rather than destroys them*» (Southern California Studies Center, 2001, p. 4). The research center concludes: «*All these trends mean that metropolitan Los Angeles must accommodate a continually growing population in the decades ahead, but with less water than is now available, and with little room for outward expansion*» (Southern California Studies Center, 2001, p. 2).

### The underutilized backyard

The reconceptualization of urban growth that the Southern California Studies Center is concerned with requires, among other things, new approaches to land use. Indeed, if the population of Los Angeles will continue to grow, and no more land is available for residential development, then methods have to be invented to accommodate the already urbanized land for housing construction. The vast land stock that today constitutes the metropolitan region has, during the twentieth-century, successively been subdivided and classified for different uses – among them for single-family residential use. Used to regulate land use as early as 1904, the number of properties in metropolitan Los Angeles zoned for single-family residential use has gradually increased.<sup>6</sup> By June 2010, this consisted of 457,610 lots in the jurisdiction formally known as the City of Los Angeles alone (figure 4). With restricted lot coverages, these almost half a million lots signify a universal typology of land-use arrangement. Shaped by single-family residential zoning, they are all composed of a one-story residential building and a vacant territory, which through cultivation has been appropriated into a yard. With the building located at the front of the lot, and towards the street, the yard is molded into a backyard and privatized through exclusion. Generally comprised by more than half of the lot area and, simultaneously, free of any programmatic requirements, the conception of the backyard is sustained through the low-density parameters implicit in single-family residential zoning. Its existence retains the utopian vision of social reform, which in the early twentieth-century codified access to light and air through city planning regulations. In contemporary context, altered lifestyles and shifting demographics have all too often rendered the suburban backyard underutilized.

6 The concept of single-family residential zoning was introduced to Los Angeles in 1904. In 1908, single-family residential zoning became planning praxis when the City passed the Residence District Ordinance (Cuff and Dahl, 2010, p. 26).



When considering the potential land stock emanating from the aggregate of underutilized backyards, an urban dimension for architectural intervention unfolds. A vast area of developable land obviously persists within the City of Los Angeles, capable of accommodating the reconceptualization of urban growth called for by the Southern California Studies Center. The development of this land is currently hampered by city planning regulation. If single-family residential zoning was dismantled, and Los Angeles' backyards were allowed to host a second layer of real estate development, then a new city building model capable of transforming suburban extent could be formalized. Focusing on implosion rather than expansion, this new city building model would dictate urban change through incremental densification rather than through master planning.

Figure 4  
 Single-family residential zones in the City of L.A. (including R1, RE, RE11, RE15, RE20, RE40, RE9, RS, RU, RW1, RZ2.5, RZ3, RZ5), June 2010: 457.610 lots.

If incremental densification became a formalized city building model, then the universal premises of urbanism ought to be complemented by the mere site-specific elaborations of architecture. In such a scenario, architecture becomes an instrument for urban planning.

### Informal and illegal backyard homes

Single-family residential zoning continues to hamper the incremental densification of suburbia. Still, the city building model previously outlined has palpably taken root in the City of Los Angeles, transforming the backyards into a mix of diverse, and often unidentified, forms and contents. Only detectable through Google Earth technology, thus not visible from the street, alternative land uses are introduced to the suburban metropolis through the implementation of backyard homes.

Most backyard homes in Los Angeles are built informally, thus homeowners have provided a solution to the current housing shortage through illegal garage conversions and amorphous housing additions. The hodgepodge of unidentified structures that fills the backyards of various communities challenges not only single-family residential zoning, but the building codes as well. These, overseen by the Department of Building and Safety, regulate substandard conditions that include plumbing inadequacies, poor construction, and health-related problems. Substandard conditions may spur «*[l]ife safety issues, including fatal fires*», which encompasses a by-effect of unpermitted backyard home developments (Cuff, Higgins and Dahl, 2010, p. 10). The provisional character of informal backyard homes also catalyzes a fluctuating resident population, which counteracts community stability.

One community with such tendencies is Pacoima, a community of 100,000 people, located in the north-eastern San Fernando Valley. When the UCLA think tank cityLAB pursued research in the community in 2007–2009, data collection through survey showed that at least one-fifth of Pacoima's residents were living in informal units (cityLAB, 2009, p. 7). High real estate prices and population pressures had led to a shortage of affordable housing in Pacoima, which made backyard homes a viable alternative to common housing models. However, the illegality implicit in the informal housing stock caused uncertainty in the community, which then raised question about legal ways to stimulate backyard home developments. By pursuing research in Pacoima, cityLAB's objective was to «*invent a feasible way to provide for-sale, workforce infill housing in the 'backyards' of existing residential sites*», which included design, development, and finance strategies as well as policy recommendations to revise existing approval processes (cityLAB, 2009, p. 7).

To better understand the existing housing conditions in Pacoima, cityLAB organized a series of workshops for community members in collaboration with local agencies and non-profit organizations. In response to

the idea of legal alternatives to the informal housing stock, the participants expressed various concerns such as potential parking issues, the loss of privacy, and the lack of safety rooted in shared easements. The participants also acknowledged, however, that «*increased homeownership would help to create community stability, and would counteract the fluctuating resident population*» (cityLAB, 2009, pp. 34–35). Emanating from cityLAB’s objective, the research on Pacoima also pointed to the do-it-yourself (DIY) tradition implicit in backyard homes, where community expertise and know-how can be mobilized for construction.

The lessons learned in Pacoima offer some criteria for disciplinary engagement in the development of backyard homes. While single-family residential zoning prevents the formalization of backyard homes, it also maintains certain behaviors associated with land-use arrangement and distribution of densities on a suburban site. The issues of parking and privacy raised by the Pacoima residents, for example, reflect such behaviors. As these behaviors have grown deeply rooted in the social and cultural premises of single-family residential districts, they reflect certain spatial constituencies useful for disciplinary practices when engaging in the development of backyard homes. Because urban approaches to land use and density fail to satisfy the needs of suburban culture, the references to traditional urban models that often are postulated in concurrence with suburban densification projects may counteract disciplinary intent and, as a result, hamper the formalization of backyard homes.

## A formalized approach to suburban densification

### The accessory dwelling unit

The formalized response to backyard homes is modeled through the building type commonly referred to as *Accessory Dwelling Unit*, or ADU. Other names frequently used include in-law apartment, granny flat, cottage-housing, second unit, and accessory unit. The abbreviation ADU will, together with the last two terms, be frequently used throughout this paper.

The ADU encountered disciplinary grounds in the 1970s when it was recognized by both architecture and urban design as a small-scale building type feasible to support urban consolidation projects. Its capability to add density to the American city, and thus support mixed land use and reduce automobile dependency, was contextualized by Barton Myers and George Baird in their 1978 survey of forgotten parcels in suburban backyards.<sup>7</sup> Scholarly interest in the accessory unit has been rather modest since the early ‘80s. We lack, for instance, adequate theory on ADU architecture. Baird explains this lack of interest as the «*decline in influence of the concepts of typology and morphology after 1980*». This reduced interest was a result, he says, not so much of the concepts themselves

7 Barton Myers and George Baird co-edited the 1978 issue of *Design Quarterly* titled «Vacant Lottery». Myers said that «*[l]ow-density cannot support mixed land use. Expensive freeways are necessary to move people in and out of the core, and these in turn have a traumatic impact on inner city neighborhoods that stand in their way. The overall view of this new urban pattern is one of extreme inefficiency and wastefulness*» (Myers, 1978, p. 11).

but of «*the increasingly historicist urbanism then being practiced by designers such as Leon and Rob Krier*» (Baird, 2004, p. 8).

Despite modest interest, some definitions have arisen. Richard Yukubousky, for example, examines the programmatic aspects of the ADU when he defines it as «*a separate additional living unit, including separate kitchen, sleeping, and bathroom facilities, attached or detached from the primary residential unit, on a single-family lot*» (Yukubousky, 1995, p. 1). Even if Yukubousky's definition is helpful, we need a more substantial contextualization of the potentials and risks associated with ADU architecture, including formal references with reflections on land-use arrangements and density distributions. Thus the various disciplines engaged in conjectural stipulation ought to be consulted. If architecture and urban design have showed modest interest in the accessory unit, urbanism has been more proactive, particularly through scholarship on informal settlement patterns and inadequate planning regulation. By examining the ADU from the discipline of urbanism we can successively elucidate a disciplinary context for ADU architecture.

### The urbanism of ADU

The story of the ADU reveals an extensive battle against single-family residential zoning. Various attempts have been made to update planning regulation, which intractably has counteracted implementation of second units. The State of California, for example, has since 1982 proactively passed laws to encourage the ADU as a complementary unit to traditional single-family homes. With their *Second Unit Law*, state legislators authorized local planning administration to approve the creation of ADUs by enacting local ordinances.<sup>8</sup> By promoting the ADU, the State of California has tried to respond to the changing conditions of urban life that many cities face, such as the increasing number of one-person households, sharply rising housing costs, and shifting demographics (Cuff and Dahl, 2010, p. 27). Although encouraged by the State, a comprehensive legislation of ADU has proven difficult to obtain since California Cities have amended their single-family residential zoning in different ways. El Cerrito, for example, imposes hardened setback requirements for second units, which hampers implementation by lot size, and South Gate requires that all ADUs include a washing machine, which increases the financial commitment for any homeowner interested in implementation. California legislation in the form of AB 1866, enacted in 2003, requires «*that each city in the state have a ministerial process for approving secondary units*» (Chapple, et al., 2011, p. 1). Being more explicit about the criteria for ADU development, AB 1866 requires municipalities without ordinances to approve variances for ADU development without instigating supplementary requirements. Still, the fuzziness sustained by differing legislation, which changes from city to city, creates Kafkaesque bureaucracies and miniscule loan opportunities, which continue to thwart ADU implementation in the State of California.

8 The *Second Unit Law*, or California Government Code 65852.2, was enacted in 1982. The code says that «*[l]ocal governments may allow for the creation of second-units in residential zones, set development standards (i.e., height, setbacks, lot coverage), require minimum unit sizes and establish parking requirements... State standards apply if localities do not adopt a second-unit ordinance in accordance with the intent of second-unit law*» (Creswell, 2003, p. 2).



Despite these two amendments, state initiatives remain largely ineffective in stimulating formalized ADU implementation, both in the State of California and in the City of L.A. Between 2003 and 2010, for example, only eleven accessory units received permits in the City of Los Angeles (Cuff, Higgins and Dahl, 2010, p. 7). So far, among California cities, the City of Santa Cruz appears to have adopted the ADU most successfully. Drawing from zoning changes that preceded the Assembly Bill by one year, the City published an Accessory Dwelling Unit Manual in 2003 with «*the purpose of assisting homeowners with the process of developing an ADU*» (Dahl, 2010, p. 132). Offering a comprehensive package of altered legislation, guidelines on building code navigation, and low-interest loan programs, City of Santa Cruz had, by 2005 – three years after the implementation of the manual – an average of eight ADU permits per quarter. The Santa Cruz example suggests that zoning updates have a better chance to catalyze urban change when multiple fields and disciplines, including the financial sector and architecture, are involved in code amendment.

### The rationality of ADU

ADU development encourages more compact land-use, which supports lifestyles and demographics beyond those formatted by suburban extent. In their study on «*changes in demand for denser, more walkable environments*», Dowell Myers and Elizabeth Gearin show that the increasing numbers of households without children, and households of retirement age, are more amenable to smaller lot and house sizes (Myers and Gearin, 2001, p. 12). Similar tendencies were already recognized in the mid-1980s, when Dolores Hayden called for «*replanning [of] single-family neighborhood where there is pressure for accessory apartments*» (Hayden, 1984, p. 175). «*At the same time as the elderly are seeking smaller units*», she said, «*the demand for smaller homes is also increasing among the younger*» (Hayden, 1984, p. 174). Hayden's scholarship shows that the increased density and the scale of ADU architecture coincide to bring about a housing type that serves as alternative to common models.

Hayden also points to other prospects for ADU development when she recognizes the economic potential associated with extra units. If single-family zoning is altered and the ADU legalized, «*short-term private investments of time and money can be used to support homeowners' long-term investments*» (Hayden, 1984, p. 181). Hence, with standards for ADU development, homeowners are eligible for loan programs to finance design and construction. Hayden's recognition was supported by Charles Waldheim some twenty years later. The legalized ADU, he said, «*promises a kind of architectural sleight-of-hand, producing prime buildable lots [sometimes] in the most desirable districts of the city*» (Waldheim, 2004, p. 31). Waldheim points to the fact that the «*combination of modest cost, reduced size, and unconventional land acquisition tends to highlight precisely the role of professional architectural design services, adding value through design*» (Waldheim, 2004, p. 31). If we cross-reference

Hayden and Waldheim therefore, it can be argued that the legalized ADU provides additional income to the homeowner while developing new markets for the design and building industry.

However, the economic potential of ADU development previously recognized by Hayden and Waldheim also raises a dilemma. ADU development implies renovation of architecture and urban space. All renovation includes a financial risk. The scale of the risk conforms to the scale of architecture, thus for ADU development the risk is limited and feasible for the homeowner to handle alone. The net income provided by the property improvement will balance the financial risk. When net income converts to profit, housing prices tend to increase through speculation, and urban areas tend to gentrify. This procedure has been repeated in various American cities through loft conversions, which is an architectural intervention of similar scale as the ADU (Dahl, 2012). Thus there are legitimate concerns that ADU development may catalyze gentrification. The City of Santa Cruz recognized this dilemma when city leaders amended their previously discussed ordinance (The City of Santa Cruz, 2003). By prohibiting subdivision of properties with ADUs and requiring that the property owner must occupy either the primary or the accessory dwelling, the City of Santa Cruz seeks to prevent ADU development from catalyzing gentrification.

## Towards a disciplinary context for ADU architecture

### The architecture of ADU

Drawing from the urban dimensions of ADU development, a disciplinary context for ADU architecture can be elucidated. The intention of such an undertaking is not to provide a singular definition of ADU architecture, but rather to formulate an intellectual milieu feasible to use when assessing the potentials of ADU architecture in single-family neighborhoods. As previously concluded, we lack adequate theory on ADU architecture. Analysis, thus, must go beyond literary research to encompass case study research on significant projects. Several architecturally designed accessory units can be found in the beach-front neighborhood Venice, California. Through explicit engagement in issues of scale, exposure, distribution of densities, and land-use arrangement, some of these projects share conceptual grounds which make them suitable for case study research.

### Three ADU cases

Morphosis' 2-4-6-8 House from 1978, for example, encompasses one of these projects (figure 5). Drawing from an intellectual exercise of geometrical modulation, the expression of the accessory unit evokes what Robert Venturi would describe as «*many levels of meaning and combinations of focus*» (Venturi, 1977, p. 16). With asphalt shingles cladding and

a series of yellow window frames that «reinforce the centrality of the space», it responds to the diverse character of the surrounding neighborhood (Mayne and Rotondi, 1985, p. 16). Conceived of as a one-volume detached house placed over a two-car garage behind the primary unit, the 2-4-6-8 House distributes densities by adding form and content to the aligning alley space and, thus, demarcating the rear entrance to the site. Arranged as a vertical extrusion of demarcated land use, the formal statement of the 2-4-6-8 House instigates a dialectical relationship with the main structure, which creates privacy for both units. As the client served as the builder of the project, the architectural precedent of the 2-4-6-8 House meets with the DIY tradition previously discussed. Morphosis' Revell-like drawing kit «documented the project in a familiar format that could be understood by a layperson, and could help to alleviate some of the fear and confusion inherent in undertaking» the task of construction (Cook, 1989, p. 53).



Another project useful to study is Frank D. Israel's Baldwin Residence from 1992. Proposed for a 4,500 square feet lot on Brooks Avenue, the un-built project complies with the architectural characteristics of the attached ADU by consisting of a single volume that includes a prosperous living unit and a two-bedroom rental unit (figure 6). Steven Shortridge was the project architect for the Baldwin Residence. He describes the project as a residential house that «looks like one, the roof folding over

Figure 5  
Morphosis, 2-4-6-8 House, Venice, California, 1978.  
Photographer: Per-Johan Dahl.

*the top...to find the two units together in one form»* (Shortridge in interview by the author, 27 October 2011). Separated by a masonry wall, the main unit is clearly superior the second unit by means of size and volume.<sup>9</sup> Reaching a height of three stories, the main unit wraps the three car garage to anchor the folded roof that shoots out and exceeds the exposed masonry wall when rising towards the northwest. Compressed between the garage and the folded roof, the accessory unit that looks over the backyard is camouflaged by the façade composition, hence made invisible by architecture. Provided with a separate entrance from the alley, the second unit describes an autonomous living environment that faces *«a private garden in the rear of the site»* (Hines, 1992, p. 174). With the masonry wall as an explicit divider, the Baldwin Residence uses the entire building volume to establish a clear hierarchy between primary and secondary unit while instigating a sense of privacy for both.

- 9 Building form and program interconnects the main unit with the garage. Square footage: main unit, 1,370 square feet; garage, 1,300 square feet; and second unit, 1,275 square feet. Total, 3,945 square feet. One square foot equals 0.1 square meters.



Building on the disciplinary trajectory of Morphosis and Frank D. Israel, Daly Genik Architects remodeled the Palms Residence on Palms Boulevard, which included the up-date of an accessory unit (figure 7). Completed in 2009, the project encompassed both a restructuring of the primary building and a reconfiguration of spatial attributes to push the proximities between intimacy and resolution. Kevin Daly of Daly Genik Architects explains that the site included the primary house and an existing apartment on top of a garage when Daly Genik Architects were com-

**Figure 6**  
Frank D. Israel, ¼ inch scale model of Baldwin Residence, 1992.  
Photographer: Per-Johan Dahl. Courtesy of Shortridge Architects.



missioned for remodeling. The apartment was used as a living unit by the client's parents when they visited Los Angeles, and thus included the separate kitchen and bathroom facilities with which Yukubousky is concerned. Conforming to the programmatic aspects of the ADU, Daly Genik Architects deployed their concept of «structuring the envelope into a space that can be occupied» (Daly in interview by the author, 17 December 2010). Through architectural design, they carved out an outdoor terrace to enhance the notion of privacy. By wrapping the 400-square-foot unit with a second skin of factory painted perforated steel, light was harvested and gaze controlled.



The Palms project raises an issue about land use, which seems to be symptomatic of the accessory unit concept. Always claiming underutilized resources of land or structure to demarcate site, and thus situate construction, the ADU, however, avoids compromising the character of the residential neighborhood. Adopting the capability of the chameleon, the formal expression of the ADU might be explicit, however camouflaged in the surroundings. We have seen that Frank D. Israel camouflaged his accessory unit at Baldwin Residence. Responding to the strategy of camouflage, Daly explains that a successful ADU «has to be invisible because that is what allows the scale and existing nature of a neighborhood to

**Figure 7**  
Daly Genik Architects, Palms Residence,  
Venice, California, 2006–2009.  
Photo credit: Benny Chan/fotoworks.



*stay intact, which makes it that less people are likely to object the increasing density»* (Daly in interview by the author, 17 December 2010). Adding a second layer of meaning to John Kaliski's argument that densification of L.A. must proceed *«while maintaining a sense of privacy and the presence of the individual homestead set within a garden»* (Kaliski, 1995, p. 22), Daly continues to explain that *«[y]ou should be able to make a case that adding the unit doesn't really change the neighborhood in a way that anyone outside that particular site would know»* (Daly in interview by the author, 17 December 2010).

Adopting a similar land use strategy as Morphosis' 2-4-6-8 House, the accessory unit at the Palms Residence used the roof of a garage to give new meaning to under-utilized structure. Particularly interesting is the reversed location of primary house and accessory unit that characterizes the Palms site (figure 8). With the main building pushed back on the site, the garage had been erected in the front yard and the unit built on top of that. Given this unusual situation, Daly Genik Architects used the concurrent remodeling of primary house and accessory unit to create aesthetic references between the two structures that, on the one hand, unify the housing pair and, on the other hand, establish a clear hierarchy between the two. With a design strategy that complies with existing trees and bamboo hedges, the accessory unit draws from its subordinate position on the site to camouflage itself with reference to the surrounding neighborhood. The Palms project shows that the dichotomy of front and back is irrelevant for the ADU concept. The invisibilities and spatial hierarchies that often are accustomed the dichotomy of front and back derive more from aesthetic relationships and sensitivity to site-specific conditions than from preconceived ideas of land-use arrangements.

**Figure 8**  
Palms Residence. The main house (left) and the accessory unit (right).  
Daly Genik Architects, Palms Residence, Venice, California, 2006–2009.  
Photo credit: Benny Chan/fotoworks.



With the Palms Residence as a reference, Daly points to the possibility of utilizing the ADU as a device to explore material practices that go beyond the conformist modes of design and fabrication (figure 9). For Daly Genik Architects, he says, the Palms accessory project is yet «another experiment in the mediating skin» (Daly in interview by the author, 17 December 2010). Daly claims that Daly Genik Architects «is interested in the issue of the [building] envelope in general and making it something that, instead of being a technical issue, can become something to be experienced» (Daly in interview by the author, 17 December 2010). He also claims that the capacity of the ADU to stimulate non-conformist design and fabrication processes neither complies with the architectural components of the edifice, such as scale or program, nor with the socio-economic aspects of accessory units, such as reduced land costs or shifting demographics, but rather with the legislation that oversees construction. He argues that «a house design is not as governed by codes and regulations as, for example, a public building» (Daly in interview by the author, 17 December 2010). Being defined by city ordinances as housing, the ADU seems to be more flexible in terms of design than other building types because of the reduced impact from building codes.

Figure 9  
The inhabitable envelope of the accessory unit at Palms Residence.  
Daly Genik Architects, Palms Residence, Venice, California, 2006–2009.  
Photo credit: Benny Chan/fotoworks.



## Discussion and conclusions

The disciplinary context for ADU architecture encompasses a housing type decreed for single-family neighborhoods, which increases density through infill projects by undermining the low-density principles of single-family residential zoning. Responding to lifestyles and demographics beyond the ones formatted by suburban extent, ADU architecture is accustomed to idiosyncratic solutions and temporal expressions. Claiming the underutilized resources of land or building as site for construction, ADU architecture adds density without compromising the character of single-family neighborhoods. Being subordinate to the primary house by means of size and aesthetics, ADU architecture sets up a dialectical relationship with the main structure to conform to the privacy of primary unit and, thus, render land-use arrangement in terms of circulation, intimacy, light, and exposure.

ADU architecture introduces an incremental approach to city building, which, in Los Angeles, encompasses *one* viable solution for how to tackle shifting growth patterns. This incremental approach, however, also challenges certain behaviors associated with the low-density characteristics of suburbia, such as the proliferation of social and cultural autonomy, the cultivation of mono-functional environments, and the advocacy for stagnant urban space. When these behaviors are challenged, anxiety tends to rise among homeowners, who then mobilize zoning codes to obstruct implementation. To acknowledge the need for zoning updates, the disciplinary context for ADU architecture would benefit from an interdisciplinary component, where architecture joins forces with urbanism and finance to instigate code amendments. With such interdisciplinary components, design expertise could coalesce with experts on legislation and loan programs to provide comprehensive solutions that are beneficial for both the homeowner and the community.

This paper has targeted the City of Los Angeles to unveil a disciplinary context for ADU architecture. The concept of using ADU architecture as an instrument for urban planning should not, however, be limited to Southern California geography. On the contrary, the surfacing of ADU architecture, which has been discovered in Los Angeles, suggests a viable solution for other cities to deploy when investigating means of how to amend the policies that straitjacket land use transformation. Single-family residential zoning holds a strong position as land use determinant in L.A. as well as in most American and European cities. A European Environment Agency (EEA) study, for example, verifies that *«more than 90% of all residential areas built [in Europe] after the mid-1950s were low density areas»* (EEA, 2006, p.11). The efforts to undermine the authority of single-family residential zoning do require architectural and urban models feasible to be utilized for instigating prospects beyond common routines and criteria. In the light of such procedure, the formalized ADU could become a prototype for a new generation of housing, both in the

U.S. and in Europe, which challenges the low-density principle of single-family residential zoning.

Single-family residential zoning not only regulates density; it also represents density. Thus, the zoning code signifies the spatial characteristics of suburbia with which the homeowner is concerned. One spatial characteristic upheld by the code is the concept of the backyard, which encompasses a preconceived idea of land-use arrangement where the position of a primary unit on a site instigates the dichotomy of front and back. ADU architecture, however, renders this dichotomy irrelevant, thus an accessory unit elaborates on aesthetic relationships and sensitivity to site-specific conditions, rather than on preconceived ideas of land-use arrangements. Because single-family residential zoning concerns itself with the distribution of densities on a property, the distribution of densities on a site may rather concern the community. When the concern for density moves from zoning to community, the representation of density goes beyond the code to become an architectural exercise. Therefore, the disciplinary context for ADU architecture opens up a field of research, whereby experiments on the architecture of the single-family residential site can stipulate various formal relationships between the primary and the secondary unit, and between the secondary unit and the site. With such relationships, the discipline of architecture can point to ways of camouflaging amplified density and, thus, propose new regulatory mechanisms beyond the interlocked criteria of single-family residential zoning.

## Acknowledgement

The research for this paper was supported by Moss Scholarship/UCLA Arts, Lars Erik Lundberg Scholarship Foundation, and UCLA Dissertation Year Fellowship. The author was appointed Senior Graduate Research Associate at cityLAB, UCLA Department for Architecture and Urban Design, when the research for this paper was conducted. The writing of this paper was pursued at the City University of Hong Kong, Division of Building Science and Technology.



- Babcock, R.F., 1966. *The zoning game: Municipal practices and policies*. Madison: The University of Wisconsin Press.
- Baird, G., 2004. Foreword. In: B. Shim and D. Chong, eds. 2004. *Site unseen: Laneway architecture and urbanism in Toronto*. Toronto: University of Toronto Faculty of Architecture, Landscape and Design.
- Banerjee, T. and Loukaitou-Sideris, A., eds. 2011. *Companion to urban design*. New York: Routledge.
- Banham, R., 1971. *Los Angeles: The architecture of four ecologies*. Berkeley, CA: University of California Press.
- Barnett, J., 1982. *An Introduction to Urban Design*. New York: Harper & Row.
- Bassett, E., 1932. *Zoning*. New York: National Municipal League.
- Chapple, K., Wegmann, J., Nemirow, A. and Dentel-Post, C., 2011. *Yes in my backyard: Mobilizing the market for secondary units*. Berkeley, CA: The Center for Community Innovation.
- cityLAB, 2009. *10K Pacoima: Backyard homes archival report*. Los Angeles: cityLAB UCLA Department for Architecture and Urban Design.
- Cook, P., 1989. *Morphosis: Buildings and projects*. New York: Rizzoli.
- Creswell, C.E. and Department of Housing and Community Development, 2003. *AB 1866 Section 65852.2 (second-unit law)*. Sacramento, CA: Division of Housing Policy Development.
- Cuff, D., 2000. *The provisional city: Los Angeles stories of architecture and urbanism*. Cambridge, Mass: The MIT Press.
- Cuff, D. and Dahl, P.-J., 2010. Rx for the R1: Sustaining the neighborhood. *306090: Sustain and Develop*, 13, pp. 24–33.
- Cuff, D., Higgins, T. and Dahl, P.-J., eds. 2010. *Backyard homes LA*. Los Angeles: cityLAB UCLA Department of Architecture and Urban Design.
- Dahl, P.-J., 2010. The Shadows of L.A. *Critical Planning*, 17, pp. 124–139.
- Dahl, P.-J., 2012. Tracing the architecture of the loft. In: P.-J. Dahl and C. Dahl, eds., 2012. *Loft P: Tracing the Architecture of the loft*. Wien, New York: Springer.
- Davis, M., 1990. *City of quartz: Excavating the future in Los Angeles*. New York: Verso.
- De Solà-Morales, I., 1997. *Differences: Topographies of contemporary architecture*. Cambridge, Mass: The MIT Press.
- Deleuze, G. and Guattari, F., 1983. *Anti-Oedipus: Capitalism and schizophrenia*. Minneapolis, MN: University of Minnesota Press.
- EEA, 2006. *Urban sprawl in Europe: The ignored challenge*. Copenhagen.
- Fishman, R., 1987. *Bourgeois utopias: The rise and fall of suburbia*. New York: Basic Books, Inc.
- Giedion, S., 1967. *Space, time and architecture: The growth of a new tradition*. Fifth edition. Cambridge, Mass: Harvard University Press.
- Haar, C.M. and Kayden, J.S., eds., 1989. *Zoning and the American dream: Promises still to keep*. Chicago: Planners Press, American Planning Association in association with the Lincoln Institute of Land Policy.
- Hayden, D., 1984. Reconstructing domestic space. *Redesigning the American Dream: The Future of Housing, Work, and Family Life*. New York: W.W. Norton.
- Hines, T.S., 1992. *Franklin D. Israel: Buildings + projects*. New York: Rizzoli.
- Jacobs, J., 1961. *The death and life of great American cities*. New York: Random House.
- Kaliski, J., 1995. Re-visualizing the dream: Los Angeles and the future of single-family homes. In: R. Sherman, ed. 1995. *Re: American dream: Six urban housing prototypes for Los Angeles*. New York: Princeton Architectural Press.
- Lavin, S., 1995. Order in the house. In: R. Sherman, ed. 1995. *Re: American dream: Six urban housing prototypes for Los Angeles*. New York: Princeton Architectural Press.
- Mayne, T. and Rotondi, M., 1985. 2-4-6-8 House. *GA Houses Special California Architecture*, pp. 14–21.
- Mostafavi, M., 2003. Landscapes of urbanism. In: M. Mostafavi and C. Najle, eds. 2003. *Landscape urbanism: A manual for the machinic landscape*. London: AA Publications.
- Mumford, E., 2000. *The CIAM discourse on urbanism, 1928–1960*. Cambridge, Mass: The MIT Press.
- Myers, B., 1978. Urban consolidation. *Design Quarterly*, Vacant Lottery, pp. 8–15.
- Myers, D. and Gearin, E., 2001. Current preferences and future demand for denser residential environments. *Housing Policy Debate*, 12, pp. 633–659.



Rossi A., 1982. *The architecture of the city*. New York: The Institute for Architecture and Urban Studies.

Sorkin, M., 2006. The end(s) of urban design. *Harvard Design Magazine*, pp. 5-18.

Southern California Studies Center, 2001. *Sprawl hits the wall: Confronting the realities of metropolitan Los Angeles*. Los Angeles: The Southern California Studies Center, University of Southern California and The Brookings Institution Center on Urban and Metropolitan Policy.

The City of Santa Cruz, 2003. *ADU zoning regulations. Title 24 zoning ordinance of the city of Santa Cruz*. Santa Cruz: The City of Santa Cruz.

Venturi, R., 1977. *Complexity and contradiction in architecture*. Second edition. London: The Architectural Press.

Waldheim, C., 2004. Urbanism in the aggregate: Toronto laneways and the centrality of marginal practice. In: B. Shim and D. Chong, eds., 2004. *Site unseen: Laneway architecture and urbanism in Toronto*. Toronto: University of Toronto Faculty of Architecture, Landscape and Design.

Willis, C., 1986. Zoning and zeitgeist: The skyscraper city in the 1920s. *The Journal of the Society of Architectural Historians*, 45 (1), pp. 47-59.

Yukubousky, R., 1995. *Accessory dwelling units: Issues & options*. Seattle, WA: Municipal Research & Services Center of Washington.



PHOTO CREDIT: FREDRIK DAHL

### Biographical information

Per-Johan Dahl  
Ph.D. in Architecture, SAR/MSA, AIA  
City University of Hong Kong  
Department of Architecture and Civil  
Engineering  
Tat Chee Avenue  
Kowloon, Hong Kong  
Phone: (852)3442 7633  
E-mail: jpdahl@cityu.edu.hk

Per-Johan Dahl is Assistant Professor at City University of Hong Kong Department of Architecture and Civil Engineering. He was educated at UCLA Department for Architecture and Urban Design (Ph.D.); Lund Institute of Technology School of Architecture and University of Texas at Arlington School of Architecture (M.Arch); and Blekinge Institute of Technology (B.Sc.). He is a professional member of the Swedish Association of Architects (SAR/MSA) and the American Institute of Architects (AIA). He was Senior Graduate Research Associate at cityLAB; he holds a board member position at the Research Institute for Experimental Architecture (RIEA.ch). His research and practice has been published and exhibited internationally. His co-authored book *Loft P: Tracing the Architecture of the Loft* was recently published by Springer.

