Introduction

Sustainable urban development is paradoxically equated with new towns, be they in China or Kansas. In large part, this is because retrofitting existing cities is so much more complicated, taking place incrementally and without an overall plan. Perhaps more than any other ideological orientation toward urbanism, thinking green requires comprehensive coordination. No wonder we have had LEED ratings (however limited) for buildings since 1998, yet no similar ratings have been issued for neighborhoods a decade later. For architects, sustainability has not been particularly fertile ground for design. Instead, it is a victim of its own popularity, --the bandwagon that developers and cities alike jump on to enhance their appeal. Chicago’s Mayor Daly, for instance, insists that Chicago become America’s greenest city as an urban identity brand but thus far, the impact on design or even livability is negligible.

If sustainable building and development has benefited little from architecture, perhaps we have focused debate on the wrong target. Just like New Urbanism found its footing in new suburban development, ignoring the fact that this strategy
fundamentally contradicts its basic intentions, most “sustainable” development is a form of new suburban construction with some environmental pretense intended to mask the fact that it is indeed residential expansion that prevents both urbanity and sustainability. Instead the green focus should be on reclamation in existing urban areas. This same observation was made in 2004 when The New Yorker claimed that Manhattan was the greenest place in America. Following New Urbanism, the New Suburban Greenism is already facing the same fate: didactic and superficial imagery, oversimplification, developer-appeal, and rejection by architectural intelligentsia. It is no coincidence that after its total destruction by a tornado, Greensburg, Kansas is rebuilding itself as a sustainable city cloaked in new urbanist neo-historicism. The convergence of the two trajectories is occurring because neither effectively challenges the root of the problem. We must kill the elephant in the room: zoning, and most particularly, the R1.

While it may be counterintuitive, zoning as ideology and practice not only stands in the way of sustainable development but prevents the next era of urbanization in which architectural approaches to problems are essential. Looking at this claim through the eyes of the architect, sustainability powers the movement that will unleash architecture’s ability to operate effectively within contemporary urban conditions. To begin, we must demonstrate that zoning must die. As we shall see, New York may have been zoning’s birthplace, but Los Angeles will be its graveyard.
Ceci tuera cela. Is Zoning Terminally Ill?

The Case of Zoning in the US: Origins

Edward M. Bassett, called the father of modern zoning in the US, was a lawyer and public servant at the turn of the century in New York City. Bassett describes zoning as a *movement* that would regulate the chaotic growth of cities occurring across the US.iii Zoning responded to the explosion of speculative building by the newly emerging real estate industry, and capitalized upon the advancements of health advocates in the late 19\textsuperscript{th} century city, whereby tenement regulation met with broad popular support because people were convinced that unhealthy living quarters spawned epidemics that knew no geographic bounds.iv Thus, public interest intersected with the plight of a segment of the population to create political consensus to improve substandard building conditions. In New York, early zoning goals included stemming the exodus to the suburbs by wealthy households by preventing noxious conditions of adjacency that might endanger the population, or as Bassett argued “zoning must be done with relation to the public health, safety, morals and general welfare. If it is done arbitrarily or by whim or for aesthetics or for purely sentimental purposes or with unjust discrimination, the courts will not uphold it.”v

Nevertheless, Bassett’s main contribution to the history of urbanization was to be made in 1916 when he wrote the first comprehensive regulatory framework in the US. This ordinance, which marks the birth of modern zoning in the US, describes the three overlapping maps that would guide development toward the public
interest: one for height districts, one for lot coverage or what is now known as F.A.R., and the last for land use. The concept of zoning implies a concern for social equality and rights, or as the Advisory Committee on Zoning explains in 1926: “Zoning gives anyone who lives or does business in a community a chance for the reasonable enjoyment of his rights. At the same time it protects him from unreasonable injury by neighbors who would seek private gain at his expense.”vi

As we shall see, the intentions shaping the New York zoning resolution were not only contextualized in a concern for public good. On the contrary a significant part of the ordinance was based on accommodating the private interests of a very small part of the New York population, and doing so by means of exclusion.

The ways public interest is embedded in the New York zoning can be unpacked by consulting the architecture representational tools used to explain the law: the section and the plan. Each encodes a different and contradictory bias about the city. When looking at the sectional implications of the ordinance, the concern for public interest is apparent. Due to the famous setback codes embedded in the law, height and bulk restrictions “dictated that after a fixed vertical height, a building had to be stepped back as it rose in accordance with a designated angle drawn from the center of the street”.vii Thus a measure of light and air was preserved in the city’s canyons, which addressed not only public health concerns but provided a means of urban beautification implicitly advocated by the architects who helped to frame the legislation. Thus, an early form of sustainability was laid out by law: future development in cities with zoning would
conform to regulations that sustained access to light and air, property values, and indirectly, a particular population.

So much for section, but what about the urban plan? In accordance with the setback codes, the zoning law divided the city into districts regulated by use. These districts segregated Manhattan by functions that were outlined in plan. Operating on the premises of land use control they were worked out in tandem by private developers and city government in order to protect property values largely by means of social exclusion. The objective of the plan was the opposite of the section since it can be argued that strict functional segregation ran against the public grain.

Utilizing functional segregation for exclusionary purposes, particularly social segregation, was a basic motive of zoning. During the 19th century builders throughout the US had utilized restrictive covenants, or deed restrictions, as a form of land use control to attract an affluent clientele to new developments as well as to resist incursions by immigrants and the poor. As covenants usually stay with the land, individual owners sign their deeds hoping to secure investments by “limit[ing] development around their homes”. However, restrictive covenants were introduced to New York City just before the turn of the 19th century when wealthy citizens began to secure their neighborhood as elite residential areas. Especially the middle and upper class landowners of Fifth Avenue proactively applied covenants “for controlling the use of property ... and
to develop stable residential enclaves."ix Prior to the establishment of 1916 zoning ordinance, covenants secured the exclusiveness of Fifth Avenue by controlling use and reducing social and behavioral diversity.

The 1916 zoning law reflected the will and practices of the Fifth Avenue Association (FFA). Founded in 1907 the group’s goal was to preserve Fifth Avenue as an elite commercial and residential area. “To do so, the association undertook an enormous range of activities including legislative advocacy, policing the streets, awarding architectural honors, and placing traffic lights.” But with the influx of manufacturing, wealthy families of Fifth Avenue found restrictive covenants too weak “to achieve the spatial security they once enjoyed.”x In their quest for more potent land use regulations, zoning held magnetic appeal as it entailed enforcement via police power. And so, the FFA’s goals were mapped into the restrictive urban land use plans.

By dissecting the 1916 ordinance, urban regulations can be understood from a slightly different perspective. Regulations dictate urban development through the dual means of code and zone, where the code controls the setbacks and the zone regulates land use through functional segregation. However the two are lumped under the same term, namely zoning.

Zoning would slowly but effectively convert a heterogeneous urban fabric of land uses and people into the geography of enclaves that characterize the
contemporary city and its surroundings. From Jane Jacobs forward, critics have argued that zoning is a blunt tool for shaping the city, but that tool has been sharpened over the past century. Special use districts, overlay zones, historic districts, form-based zoning, enterprise zones, and business improvement districts, are all examples that Bassett’s “movement” grew like an urban virus that was capable of mutating to respond to specific geographic conditions and interests. These myriad sub-zones are patches that attempt to cover over the holes zoning creates by treating the city as an abstract canvas.xi

The concept of zoning as it originally developed in New York, was reconfigured in American postwar suburbanization. In the American suburb, the relationship between code and zone was transformed in concurrence with the decreasing F.A.R. of single-family housing developments. The code, invented as a section in New York City to balance public and private interests by securing light and air circulation, became a plan in suburbia regulating land use favoring the private interests of the American Dream. Rotated from vertical to horizontal, the code was transformed from urban to suburban reinforcing control over functional segregation. Hence in suburbia the code became an amplifier of the zone. This homogenization of zoning explicitly served to preserve the low density character of sprawl, increasing the rigidity of the R1’s single-family neighborhoods.

R1 Memories
New York and Boston may have pioneered comprehensive zoning, but in 1908, Los Angeles passed the Residence District Ordinance, becoming the first city to divide itself into residential and non-residential districts, and then to oust pre-existing uses that did not conform within the residential zone. The “single family-only” zone or R1 as a legal entity, was born and defended in Los Angeles. LA’s R1 has extended far beyond that original district, into the sprawl of subdivisions, extreme commutes, congested freeways, and a continuous landscape of single-family homes that stretches from the Mexican border north to Santa Barbara.

Zoning was conceived as a dynamic instrument, but its fundamental skeleton has resisted change, particularly when it comes to residential districts. The early “first-ring” single-use residential zones have been surrounded by further urban growth, extended by what urban historian Dolores Hayden has called “sit-com suburbs” of the 50s and 60s that offered a seeming haven from urban ills. These too have been exceeded by exurban tracts built since the 80s and that are more remote, affordable, and lifestyle-oriented. And though municipalities generally have numerous residential designations differentiating density or number of dwelling units per acre, the dominant residential zone is the R1, typically known as the single-family zone. The R1 is land zoned for one residential structure per parcel, thus producing a landscape of detached pavilions surrounded by their own property. The R1 has come to stand for suburban development.
Three interrelated factors insist that we revisit what is euphemistically known in the States as the R1. The first is a growing complex of environmental issues that implicate the suburbs; the second is the shrinking pool of large tracts of available land in major metropolitan areas; and the third is the real estate debacle that began to unfold in 2007 with the subprime mortgage crisis, followed by secondary and tertiary effects with no end yet in sight. The interconnections of these factors is evident in new critiques of exurban R1 tracts. As *New York Times* opinion writer and economist Paul Krugman put it in May of 2008, “And in the face of rising oil prices, which have left many Americans stranded in suburbia—utterly dependent on their cars, yet having a hard time affording gas—it’s starting to look as if Berlin [a city of four- or five story apartment buildings with easy access to public transit and plenty of local shopping] had the better idea.”

In his book *Sprawl*, Robert Bruegmann argues that suburban growth has been with us since the beginning of cities, as the natural geography of expansion. A recent change in that pattern however is an indicator that there is trouble in the R1: residential development at the urban fringe has grown denser. At the same time, demand for housing in the traditional (and according to some, non-existent) urban core is rising. Moreover, all kinds of ad hoc housing patterns have arisen in the R1 as means to cope with the high cost of housing, from garage housing and illegal backyard units, to doubling up. The further out into the exurban landscape, the lower house prices are likely to be, yet the longer the commute. If for some reason you find yourself driving out of Los Angeles at 4 am on any weekday, you
will be greeted by an eerie sight: a continuous river of headlights coming into town. From the north, for example, more than 20,000 residents of Antelope Valley stream 65 miles into Los Angeles every morning and return every evening. They leave early to minimize the commute time; at 4 am the drive might take just over an hour and a half, but by 7 am it can double. These drivers are among America’s 3.4 million “extreme commuters” – workers who travel ninety minutes or more each way to get to work. The Los Angeles region has two of the top five extreme commute areas (2003 data, US Census Bureau; Riverside and Los Angeles).xiv Even with Los Angeles’s postmodern geography of multiple city centers, with no center governing the hinterlands, research indicates that the R1 is finished. The most damning factors are environmental: we’re running out of water, land, and oil.xv

Long before the data showed sprawl had “hit the wall,” Reyner Banham wrote that LA’s deep obsession with a dreamy single-family house was its Id. He interpreted the dingbat, a 4 to 8-unit stripped-down apartment building on a single-family lot, as a symbol of disruption in the Plains of Id. “The dingbat, even more than the occasional tower blocks below Hollywood or along Wilshire, is the true symptom of Los Angeles’ urban Id trying to cope with the unprecedented appearance of residential densities too high to be subsumed within the illusions of homestead living.”xvi
Banham should have seen Pacoima. Or any of a number of first ring suburbs in Los Angeles that have become a cafeteria of shadow housing options, largely because there is no enforcement of zoning or other building regulations. Google Earth images reveal a wealth of backyard activity on lots large enough to make room for the extra units crowding behind a modest house at the street. None of these units is legal because this, --like Beverly Hills and Malibu, yet unlike them in nearly every other way, is the R1.

All across the L.A. basin, the anger that once characterized conversations about traffic congestion has been displaced by discussions of density. As the LA Times put it, "The density wars in Los Angeles are heating up." Homeowner associations are fighting the construction of more housing in their neighborhoods, while city officials seek ways to accommodate a population that is expected to grow by 6 million, or two Chicago's, by the year 2020. A number of bills have moved successfully through the state legislature that would alter current residential zoning throughout California, but each has met local resistance. Most recently, the state’s Republican governor signed into law an anti-sprawl bill that is the first in the nation to link land-use planning with greenhouse gas reductions. To sustain the state’s growth, the bill requires regions to set emissions targets and creates incentives for new development that is compact, dense, and near transit.
None of the new laws insures the quality of the development, nor sets design-related objectives. While a number of architects are experimenting with regulations as a source of creative design solutions, tackling zoning policy has not proven a productive avenue. If it is difficult to imagine how such goals might be established, the case of Pacoima offers one example. Our relatively young thinktank, cityLAB, is tackling a number of problems confronting the postsuburban city, with Pacoima as a principle site for rethinking the R1. cityLAB is an innovative new model for bridging several classic divides: between design and research, between town and gown, between academia and practice. It is a center founded by Dana Cuff with the mandate to bring together design and research to forge experimental proposals for the emerging metropolis. Its funding comes from private donations and research grants. Cuff, co-director Roger Sherman, and a team of graduate students including Per-Johan Dahl, initiate projects that will contribute to urban theory, advance architectural practices, and form productive collaborations with all arms of the building industry. Housed in UCLA’s Department of Architecture and Urban Design, cityLAB is an important channel for bringing real world issues into architectural education, starting with Los Angeles as its focus. While still in its nascent stages, this project on Pacoima’s infill housing is a collaboration between cityLAB, architectural practitioners, city planners, developers, local politicians, and community activists.

10K - Pacoima
Pacoima is a part of Los Angeles that sits in northeast San Fernando Valley. Eighty-five percent of its 100,000 residents are Latino, a third of the population is under the age of 18, and nearly 20% have incomes below poverty. High real estate prices and population pressures have led to a shortage of affordable housing. The lion’s share of Pacoima is zoned R1, but that says nothing about the way the R1 works. Although 80% of the 22,000 units of housing is single-family dwellings, at least one fifth of the residents live in shadow housing of the R1, that is in garages, rooms rented in single-family houses, or illegal units.

Like all communities, there are infill sites scattered throughout Pacoima. However, unique to this community, there are over a thousand extra-long single-family lots of more than 10,000 square feet (nearly twice the size of an average Los Angeles residential lot, and hence the 10K moniker). Of these, a full 95% currently have illegal units constructed in the backyard. It is on the remaining 5% that cityLAB intends to model sustainable, community-responsive, well-designed infill development.xx

After much study, design, and community interaction, a group of students and architects are working under the guidance of cityLAB Director Dana Cuff to invent a feasible way to provide for-sale, workforce infill housing in the "backyards" of existing residential sites.xxx We are constructing design, development, and finance strategies for the 10K sites. This will result in (1) policy recommendations to revise existing approval processes and zoning policies to support quality infill
development, (2) the design of three green housing models to serve as templates for development, and (3) collaboratively-shaped development scenarios for typical sites. cityLAB’s ultimate goal is to launch a demonstration project that will be constructed in Pacoima, utilizing the design templates and built by a local non-profit developer.

In this scenario, sustainability and community acceptance are working objectives as well as effective development restrictions. The building design invention extends beyond the granny flat, to a prototype that can be implemented on a range of sites, in a range of combinations. The neighborhood scale intervention concerns the incremental implementation of units that can respond to the emergent conditions. The housing templates will receive pre-approval from permitting agencies in the city (currently twelve different agencies must review such housing plans), not only creating cost efficiencies but insuring that infill units are well-designed. Developers who use the pre-approved templates reduce their soft costs substantially, while avoiding political and entitlement complications. Moreover, they receive the equivalent of a density bonus for building affordable, for-sale units. Working with both lawyers and housing developers, along with community representatives, cityLAB is inventing a new system of project delivery that insures community control over incremental growth. Our workshops in Pacoima indicate that residents want environmental benefits and contemporary design.
The Pacoima project is still two years from becoming a new policy and a built
demonstration. Nevertheless, it already successfully challenges the status quo.
With community participation, design innovation, city planning cooperation, and
physical opportunities for infill, the R1 can be modified in ways that will improve
neighborhood quality of life. Indeed, a study of all California cities found residents
of every race and every income level willing to live at higher densities provided
they can have the housing and services they need. This same research found an
abundance of infill sites across California’s urban areas, and the data does not
count most of the underutilized backyard space.xxii While it is unreasonable to
generalize these findings to major urban areas like New York, Boston, or
Chicago, there is every reason to imagine that denser neighborhoods could be
created by utilizing infill strategies in postwar sprawl throughout the US and
beyond. To do so will mean rethinking the R1.

Our Pacoima-10K project aims to develop innovative, environmentally sensitive,
and affordable housing models that show the benefits of rethinking community
planning from an architectural perspective. It revises those zoning practices that
reflect our region’s sprawling past rather than the needs of and opportunities
within each of our unique communities. The Pacoima-10K is a demonstration that
the types of infill sites we’ll find in cities are small and unconventional. A blanket
land use or FAR strategy is not helpful, whereas more tightly conceived site
typologies and solutions encourage fitting growth to the existing conditions. This
strategy sits squarely between the architecture and planning disciplines, requiring new ideological frameworks.

**Conclusion:**

There are good green reasons for infilling the R1 in the contemporary city. First, there are plenty of infill sites available if we proceed creatively, and there are few large tracts of open land remaining in urban areas. Building into cities rather than beyond them saves farmland as well as natural preserves. Second, detached dwellings are being built on smaller sites than in earlier eras without losing the suburban benefits. More dwelling units per acre means lower carbon footprints, densities that promote more adequate services, and lower housing costs (by lowering the amount of land attached to each house). Increased densities affords cities the opportunity to require sustainability practices. But what has not happened is the pairing of architectural solutions with planning goals.

Undoing the R1 is the most complicated part of reclaiming the city from the pathology of zoning. It will not be done all at once, but it will begin in the first ring suburbs and those that have already undermined the prescriptions of R1, through variances, illegal building activity, non-conforming use, and informal adjustments. Following that lead, site specific opportunism can move in where zoning failed. The motivation for this transformation will not be the creation of more affordable housing, though the current mortgage crisis could fuel the movement. Instead, perceived risks of change can be quelled by sustainability’s goals, both systemic
(like reducing global warming) and immediate (like reducing household energy costs). The catchword “density” can acquire implications about both individual and social goods, as is already demonstrated by recent shifts in housing preferences. For the first time history, more than half the world’s population lives in urban areas, and the trend of depopulation in existing urban centers is reversing.

It is important, however, not to confuse the eradication of R1 with the neo-liberal calls for de-regulations. Any city contextualized in the structures of economic accumulation will always be regulated, or as Lawrence Lessig puts it “changes that make commerce possible are also changes that will make regulation easy.” Indeed regulations are inherent in urbanization and the failure of zoning cannot be mended simply by abandoning the balance between public and private interests, which to a certain degree is sustained by regulations. Nevertheless, zoning as it has developed during the 20th century has failed and its paralyzed condition requires a radical re-thinking of the codes inherent in its comatose corpus. Indeed the re-coding of contemporary urbanism requires a new mode of flexibility capable of supporting architectural experimentation as well as to reconstitute the outmoded premises of R1, such as the preservation of functional segregation, the maintenance of low density urbanism, and the respiratory advocacy for social homogeneity.
There remains the problem of traffic, which is largely a problem of public transit. As areas undermine the R1, not only will new densities increase political support for public transit, but residential areas will be less isolated from goods, services, and jobs, thus reducing traffic. In addition, currently automobile manufacturers are reckoning with congestion as well as energy costs, by developing experimenting with new smaller cars, like electric cars and the Smart car, as well as "last mile" technologies built into cars, from Segways to bikes and scooters.

The 10K project in Pacoima is but one example of the many site-specific experiments that must be undertaken. It is indicative that these experiments are going to be complicated formulae crossing professional boundaries. They will be characterized by opportunism that responds to local ecologies, economies, and politics. The advance of the R1-busting experiments depends on the momentum that sustainable development provides, and the creativity that architects bring to the experiments.
Bibliography

A Zoning Primer by The Advisory Committee on Zoning. Department of Commerce (Washington, 1926)


Washington University Law faculty, The. 


NOTES

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i For two very different examples, see the plans for eco-cities Dongtan in China and Greensburg, Kansas.


iii The first comprehensive zoning was in Boston, where a building height limit of 125 feet was enacted in 1892 and upheld by the US Supreme Court in 1909. Subsequent modifications to the blanket building height set limits for different areas in the city (Beacon Hill and Copley Square were limited to 100 feet) and uses (residential buildings were limited to 80 ft). See Edward Murray Bassett. *Zoning*. New York: National Municipal League, 1932. p. 9.


viii In his handbook, Bassett says “In the great cities especially this danger of invasion of hurtful uses drove well-to-do families out of the city, where in
suburban villages they could to a greater extent obtain protected surroundings. Citizens whose financial ability and public enterprise made them most helpful within the city limits were the very ones that would often be tempted to remove their families outside of the city." Hurtful uses included public stables and garages, factories, poorly-built houses, and "high apartment houses." Edward Murray Bassett. *Zoning*. New York: National Municipal League, 1932. p. 4.


x Ibid., p. 53.; p. 52.

xi For a critical examination of such processes of abstraction, see James Scott's *Seeing Like a State*. New Haven: Yale University Press, 1999.

xii The establishment of a residential zone in LA led to a lawsuit with a brickyard owner, called Hadacheck v. Sebastian (1915). The case went all the way to the US Supreme Court, and established the constitutionality of retroactive restrictive zoning. The other primary decision, Village of Euclid v. Ambler Realty (1926), gave modern practices the name Euclidean zoning. See Bassett. *Zoning*. p. 9.


xviii SB 1818, passed in 2005, grants density bonuses of 35% if some units are priced for low or moderate income residents. Second unit or granny flat laws AB 1866 (2003) and AB 2702 (2004) allow second units in residential zones including the R1 without additional requirements, but local governments have found means to block implementation. Most recently, SB 375, the “anti-sprawl bill” was signed into law in 2008, that revises land-use policy in California to create more compact residential development near transit in order to reduce

A good example of architecture experimenting with regulations as a creative design solution can be found at 497 Greenwich Street in New York, an eleven story residential building by Archi-Techtonics, 2004. The significant glass façade facing Greenwich Street is described by designer Winka Dubbeldam as a reinterpretation of the New York regulatory system. Dubbeldam explains that the façade “integrates the strict building setback codes into a new, vertical landscape that folds and twists as it ascends affording differing vistas to each interior”. See the website: Greenwich Street [Project], 2002, [http://www.greenwichstreetproject.com/index.html](http://www.greenwichstreetproject.com/index.html).

cityLAB restricts its infill project in Pacoima to properties where no current resident will be displaced. Aerial and field surveys indicate that of the 1021 10K-XL lots, 54 contain vacant land on 50% or more of the lot. With current entitlements, 162 new dwelling units could be built. According to our housing studies, the lots could accept 250 units while still upholding community and sustainability goals, but this would require regulatory changes to current zoning.

The multi-disciplinary project team includes two community organizations, Pacoima Beautiful and ICON, senior staff from the LA Department of City Planning, Council District 7, the CRA, for-profit and non-profit developers, a land use lawyer, and staff and graduate student researchers at UCLA’s *cityLAB.* Co-author Per-Johan Dahl has been a leader of the 10K student team since its inception.