Field Container

as a Regional Strategy for Revitalizing the Los Angeles River

by

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Abstract

This thesis is the study of the Los Angeles River as a multi-layered field with urban condensers that revitalize the river, connect and revitalize the municipal districts bordering the river, and restructure the region to support a denser fabric. The project establishes the nature of public space in the city as a highly contested sphere of multiple interests and constituencies and utilizes the river as a platform to engage these tensions.

The Los Angeles River epitomizes the artificiality and ingenious of Los Angeles as a city which molded its environment to suit its will, inhabiting a dry, arid desert and structuring one of the largest metropolises in the world. The merging of these two instances, the particular geography of Southern California and man’s desire and ingenuity to overcome this nature by man’s engineering is the story of how Los Angeles became a global city from an agricultural village.

With a population approaching four-million inhabitants, the city is examined after the Southern California development phenomena of “dense sprawl” and is used as a model to examine the future potential of the river, currently a mono-functioning, concretized flood control channel, to become a multi-functioning infrastructure mediating a density of program and flows at the regional, metropolitan and local scales. The thesis examines the river’s stretch from the Glendale Narrows through downtown to the city of Vernon and the creation of a public landscape armature with six urban condensers, areas designed according to a set of criteria that challenge the current condition of urban infill and the erasure of public open space. The expectation is that these projects will engage the socio-economic complexity of Los Angeles and overcome the limitations posed by jurisdictional boundaries.

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Re-Contextualizing Metropolitan Los Angeles

Los Angeles' unique urban form can only be comprehended by understanding the nature of mobility and its ability to transcend through the diffused, homogenous fabric. The legacy of the Spanish and Mexican currents bestowed onto the area a pattern of property lines, boundaries, and place-names. The ecological transformation of Southern California from a desert wonderland to a true Eden could only have been fulfilled through the accessibility of water, and consequently the politics of hydrology played a significant role in establishing the boundary of Los Angeles. But irrigable land was an asset only if it could be accessed through transportation. Railway began to connect scattered communities into a larger mega-community, while serving and stimulating flow of urbanization that went along with the introduction of oil, the forming of the movie industries and development of the harbor. Thus, before transportation, land and water were the first shapers of the city, transforming Los Angeles from a desert to a garden oasis.

In many ways, amidst the giant homogenous built-up seventy square mile flat plain of Los Angeles, it is the fluid infrastructure and open space that binds the metropolis. The roads, the freeways, the beaches, and the river, non-compartmentalized into private interest zones like most of the city, serve as the most public grounds, fostering a large democratic zone where each person despite their background prevails equally. The movement made possible as a consequence of their being, is the essence binding the city. As major geographies, they define the urban fabric and the image of the city.

The River's condition is of particular interest to the contemporary metropolis. It was the backbone that
supported the unimaginable growth of the city from a small agricultural village to the metropolis that it is today. Within a period of two hundred years, an instant city formed (a mere dent in the history of most European or Asian cities). Harnessing the river’s potential, its water, became a paramount cause for city officials and entrepreneurs. Its discarded condition today is testament to the subconsciously utilitarian ethos of the city: It served its purpose when most necessary as water distributor. Today it’s built up concrete channel and shallow condition identifies it less as a river, and more so as the city’s gutter than anything else. Although it still operates as a flood control channel, a means to deliver seasonal floodwaters safely to the sea, nearly all the water that flows in the river is treated sewage, authorized industrial discharges, or street runoff. During the dry season, the sewage treatment plants provide all of its flow. It also serves as a giant conduit for urban waste, discharge from industries, and trash. The irony is that the water added from the treated sewage has improved water quality by diluting street runoff and contaminated ground water and spurred the growth of vegetation in particular segments. It has been argued that the reclaimed water has the potential to provide up to 10% of the city’s water supply.

Within the past twenty years, however, there has been an ardent desire within planners, landscape urbanists, academics, ecologists, environmentalists, to revive the Los Angeles River, paralleling an overall global interest of revival of urban rivers. The river right of way as a whole suggests a powerful potential infrastructure for connecting the metropolis at the scale of another urban geography. Moving through the diffuse urban texture of Los Angeles, the river presents an opportunity for providing a vibrant open space that can inhabit this zone of disuse and re-
activate the spaces around it.

The difficulty with all past proposals for the river’s revival, however, lies in the compartmentalized nature of the metropolis. Its multiple jurisdictions, its multiple constituents, its multiple property owners, have throttled aspiring visions to revive the river. The fifty-one mile stretch of the river passes through some twenty smaller cities, and the land edging the banks is both publicly and privately owned by hundreds of parties. Mediating amongst these diverse constituents is essential to beginning the process of river renewal. Consequently, this thesis looks at group form and multiple agency development as two theoretical frameworks for describing a new collective urban space and proposing a means of negotiating amongst the multiple players to create an urban landscape. By designing criteria that can be deployed as an urban design strategy, the expectation is that the new framework will formulate a process for revitalizing the river and its edge and serve as a methodology for potential future urban designs at the metropolitan scale.
1.1 Analyzing Los Angeles’ Development Through the Transformation of its River

If seen from a satellite image today, the city of Los Angeles with its built-up urban fabric and streamlined freeways traversing like serpentes across land and mountain would preclude any idea that once in the history of the city its land composition consisted of a verdant blanket of vegetation, marshes and forests, filled with willow and sycamore trees, and a rich array of wildlife such as trout and grizzly bears. In fact it was this picturesque setting set amidst the semi-arid, Mediterranean climate that tempted the earliest explorers, travelers and eventual settlers to the Western land. As a consequence of the particular geography of this Western frontier, the Los Angeles River was one of the few streams with a year-round flow between Burbank and Downtown Los Angeles - a natural phenomenon that allured the first villages, aboriginal and European to the area. Nearly two dozen Indian villages were located along various parts of the river, and in the

![Satellite Photo Los Angeles 2005](source: geology.com)
eighteenth century Spain decided to locate near the river to establish an agricultural settlement to supply food to its military outposts in the surrounding region. In 1781 this village eventually became the pueblo of Los Angeles.

Up until 1913, the Los Angeles River and its underground supply would be the city's sole water source — a condition simultaneously propelling the urban growth of the region, and the region's growing demand on the river. This was the dialectic that the River presented: the promise of an Arcadian paradise and the image of a growing metropolis, an image inducing nature and an image exhausting it.

Geographers, ecologists, natural and urban historians, planners, landscape architects, etc. have focused much of their attention on this paralyzing duality of the river's potential. More significant than this relative condition, however, is how the combined realities of the river, its geography, history and morphology, designed the context for the birth and proliferation of the decentralized form and structure of the modern metropolis of Los Angeles. It was the socio-political struggles formulated in the context of the water — necessary for sustenance and development and detested with respect to flooding — that generated the fragmented, multi-nucleated metropolis of Los Angeles. This paper wants to re-examine the role of the Los Angeles River in architectural and urban design production as related to contemporary philosophies and theories. Despite the innumerable failures perceived by planners and designers of the city's urbanistic potential, Los Angeles' environmental history, suggested through the process of harnessing nature and the river in service of creating the "paradisiacal garden," necessitated a level of enterprise and technological innovation. William Deverell
and Greg Hise\textsuperscript{1} suggest this ingenuity attracted the capital and generated the wealth required to build and sustain the metropolis' growth and leadership in international trade. This dynamic pivots not only environmental change, but also social and political change, cultivating new systems of jurisdiction, policy, and planning to support the transforming ecology and urban form of the city. Deverell and Hise see the cumulative effect of these policy and planning objectives, whether physical, environmental or social, as the direct initiative for recasting American cities as metropolitan spheres; Planning became a major ingredient in the generation and maintenance of a metropolis the size of Los Angeles. These same conditions, however, gave birth to a power structure that has created a legacy of triumph of private power over public space and social democracy. In the relegation of private interests over public and civic benefit, Los Angeles struggles to deal with pollution, congestion, high natural resource and energy consumption and a lack of public open space. This disparity is only further enhanced by the sprawled nature of the city.

Analyzing the birth of the metropolis of Los Angeles through the transformation of its river affirms the growth of the city as a dispersed, distributed entity. Although this paper recognizes the significance of the natural being of the Los Angeles River, the particularity of place and time, in the formation of the urban metropolis, the central thesis supports that the primacy of developing a planned distributed system of political and policy controls in relation to the river structured the organization of the whole of the growing metropolis, setting the stage for the generation of a distinctive metropolitan urban form whose

\textsuperscript{1} Deverell, William and Greg Hise. \textit{Land of Sunshine}. (University of Pittsburgh Press, 2005), pg. 2.
structure, character and culture foreshadow much of the development of urban America after World War II.

Contemporary Los Angeles’ successful operation relies on the suggested representative control of this whole – the metropolis – rather than the mere assemblage of its parts. The River’s morphology analyzed in parallel with the city’s morphology suggests an urban realm driven by desires and simulations resulting in the growth of a new disassociated Urbanism. Rather than accepting traditional views of Los Angeles as a dystrophic landscape, this paper examines the transmutation of the river alongside other phenomena with respect to these collective parts and analyzes their assemblage in the production of a holistic form, shape, and image of the metropolis, rendering a perception of the city more cogent with contemporary theories of perception and form making.

Underlying much of this analysis, is William Cronon’s study of Metropolitan nature: the study of how people transform nature in particular sites and of how what is created in particular locales is generative for local and broader culture. Consequently, by considering the geomorphology, climate, and local biological ecologies in concert with property ownership, state regulations, and social and market economies we are brought to a deeper understanding of the complex process of city formation. Cronon divides this process into two natures: first nature and second nature. Cronon accesses “first nature” as the process of how city builders and dwellers transform local ecosystems and in process create a new environment with different species. This altered landscape and modified climate in all its complexities is what Cronon

has termed “second nature” with a focus on studying the urban systems (for water, power, waste removal), land use, design, engineering, construction, conservation of local ecologies, provision of open space, parks, and community gardens. This paper uses these concepts of “first nature” and “second nature” as a given base for constructing its analysis.

1.1.1 Beginning of the Environmental History of Los Angeles

Once the history of the city is brought under review, it is immediately apparent that no city has ever been produced by such an extraordinary mixture of geography, climate, economics, demography, mechanics and culture; nor is it likely that an even remotely similar mixture will ever occur again. Reyner Banham, *Los Angeles Architecture of Four Ecologies*.

The nature of urbanism affirms the process of altering the natural landscape and coincidentally altering human perceptions of the environment over time. For cities such as Paris, Egypt, and London, born as a consequence of their advantageous location close to a verdant river (the Seine, the Nile, and the Themes) with inherent capacities for sustenance, transportation, and trade, the natural landscape and emerging urban scape of the city still manifest a quasi-metaphysical symbiosis. Los Angeles, on the contrary, possessed a utilitarian ethos regarding the environment and the city’s relationship with the river was far from symmetrical. The virtues of the Los Angeles River were acknowledged only so far as the city’s aridity.

could be irrigated through the control and use of its water supply. Blake Gumprecht, writing on the erratic nature of the region's climate, its geography and flood control engineering, describes, "Nothing doomed the Los Angeles River more than the physical environment that created it and human perceptions of that environment."

The concrete culvert that today defines the Los Angeles River, thought of as the backyard ditch to many residents, demonstrates the bravado of city officials to suppress and control the stream that during most of the year had barely a trickle of flow. It's seemingly innocuous state of containment describes the reason d'être why the historic center is located where it is (strange as it may seem located nearly fifteen miles east from the ocean) as well as validates the state of paranoia expressed by city officials and real estate developers who insisted on fixing the unpredictable and variable course of the river to mitigate flooding disaster and secure their investments.

The Los Angeles River's serendipitous history began as a natural reservoir in the San Fernando Valley, northwest of Los Angeles. Called the "the upside-down river", the bulk of its flow originated from this subterranean water basin. In fact, it is this particular phenomenon that birthed the river which allured the Native Americans, the Spanish, the Mexicans, and ultimately the Americans to the land. The particular geography of the site influenced the nature and formation of the river basin supplies that in turn was instrumental in producing and locating the river's flow. The mostly impervious soil of the mountain-enclosed rim of the Valley, formed of soft, sedimentary rock, coupled with the more porous and permeable sediments of the Valley.

floor, formed after years of erosion of the granite slopes of the San Gabriel Mountains, allowed for the formation of a giant underground storage basin, 24 miles long and 12 miles wide, fed by the runoff of the San Gabriel Mountains. The Valley’s absorptive floor surface took in the massive quantity of runoff from the San Gabriel Mountains, whose steep elevation at 7,000 feet received more precipitation and added more water to the Valley bowl than any other source. In total the subterranean reservoir held 3.2 billion acre feet of water (1 trillion gallons).

The flows of the early rivers of the San Gabriel and Santa Monica Mountains carried boulders, rocks, gravel, sand and silt down the mountainous slopes to the valley and coastal plain on the southern side, depositing sediments and forming the ground surface of metropolitan Los Angeles. During the rainy season, this thick layer of alluvial deposits caused runoff to sink into the ground collecting in an underground basin. As a result, streams flowed both above and underground. The flow, however, was so little above ground that the channels remained shallow and poorly defined, hence incapable of containing great quantities of water. As a result of the erratic nature of the semi-arid climate and being the desert watercourse it was, the Los Angeles River expressed two schizophrenic states of extreme, opposing surface flows: a small gentle stream with a mere trickle most of the year to a large, turbulent, unpredictable torrent flooding the plain during heavy precipitation. Throughout its history, the river’s location and density remained dynamic like the climate, shifting across the coastal plain, spreading over the countryside, changing courses and paths to the ocean, and joining with springs flowing from the hills to form marshes, shallow lakes and small ponds. The shifts in the course of the river varied over twenty miles to the ocean.

figure 1B | Changing Courses of the Los Angeles River
Major diversions after periods of flood.
from Santa Monica Bay to San Pedro. The rich soil that prevailed as a consequence made Los Angeles one of the most productive agricultural counties in the U.S. until the 1950s.

1.1.2 First Settlers and Land Policing: 1542-1848

The Gabrielino were the first Indian settlers near the Los Angeles River; Encino, near the Glendale Narrows, being the site of the earliest Indian settlement. In total, there were at least 45 Gabrielino villages located near the Los Angeles River, concentrated in the San Fernando Valley and the Elysian Valley. Their stark sustainable practices of non-agriculture, reliance on nourishment from the abundant plant and animal life, and utilization of raw building materials from the forests for their jacales or wickiups structures, bares heavy contrast to the methodological control of the natural environment practiced by their predecessors. Lt. Edward Ord who drew the first map of Los Angeles wrote of the Gabrielino in 1856: "No wonder they hate us, for you see the generations of them have only learned to take from the soil and the animals enough to satisfy their few natural wants, but the Americans have learned to want all the soil (and) animals they can take, and take all they want, too."

In a group of 52 settlers from New Spain, which were predominantly of African descent, set out from the San Gabriel mission to establish a settlement along the banks of the Porciúncula River (now Los Angeles River). These settlers were of Filipino, Indian and Spanish ancestry, of whom two-thirds were mestizo or mulatto. The arrival of the Spanish in 1542 began the process of the initial exploitation of the river. In fact, it was the promise of
this river that prompted Spain to settle and colonize near the Los Angeles River. After Captain Gaspar de Portola's expeditions in 1769, from San Diego to Monterey, suggested the benefits of this location - providing drinking water for the nascent missions and presidios as well as a suitable flat plain and irrigation for the production of grains and fruits for the growth of the village - the self-serving use of the river and land had begun. In 1777, the new governor of California, Felipe de Neve, recommended to the viceroy of New Spain that the site be developed into a pueblo. The area was duly named "El Pueblo de Nuestra Señora la Reina de los Ángeles del Río de Porciúncula" ("The Town of Our Lady the Queen of the Angels on the River Porciúncula"). In 1781 Spain officially established El Pueblo de la Reina de Los Angeles as one of three agricultural villages founded in California to help provide food to the missions and presidios established to help secure the territory for the Spanish crown.

Built on a broad terrace west of the river (called Río de Porciúncula), the pueblo's elevated ground protected the village from flooding while the lowlands along the river offered fertile land for farming. In addition, a dam was built for irrigation. By 1786 the pueblo was self-sufficient. It remained a small ranch town for decades, but with help from the Indian labor pool by the 1800s Los Angeles was becoming an important agricultural settlement on the Pacific Coast. By 1820 the population had increased to about 650 residents, making it the largest civilian (non-mission) community in Spanish California.

Los Angeles' population remained steady near a thousand until California became the property of Mexico in 1835. In the next decade, Los Angeles' agricultural potential developed, making it the first wine producing center as
French immigrants such as Jean-Louis Vignes, the first wine maker, transformed the village into the “City of Vines.” The ample supply of water provided by the river enabled farmers to diversify and experiment with a variety of crops, producing oranges and grapes as staples. The river was fundamental in transforming the physical environment from an arid landscape to a fertile, producing agricultural scape.

1.1.3 Commoditizing the Water Supply: 1848-1885

In 1848, Mexico ceded California to the United States by treaty at the conclusion of the Mexican-American War. It was not incorporated as a municipality until April 4, 1850—five months before California achieved statehood. After California was acquired by the United States, Americans
began to migrate and settle in Los Angeles. The discovery of gold near Sacramento in 1848 began the first step in the transformation of Los Angeles from an agricultural village into a regional trading center. The increased demand for food statewide spurred development in Los Angeles as the village became a primary supplier of goods. The crucial element for development however was not the allure of gold that brought visitors westbound from afar, nor the radiant Garden of Eden, but rather the availability and controllability of water. When California became a U.S. state in 1850, the network of irrigation ditches was expanded, a domestic distribution system was created, and access to water gained real estate value. Ceremoniously the river was named after the pueblo. Before 1850, the population was around 1694 and settled along Main Street. The U.S.'s primary steps to control the distribution of water
from the river enabled a rapid expansion of the pueblo. With the development of a network of small irrigation ditches (zanjas) and the spawn of private water carriers, the population of Los Angeles tripled. The Zanja system can be described as one of the earliest instances of the pueblo’s technological innovation implemented by means of a systemized planning venture.

With the population steadily growing on the basis of the river’s distributed water supply, the Zanja system acquired more importance and in 1860 the Los Angeles Common Council established the position of Zanjero to overlook the system and regulate permits for use of irrigation water. City officials began to impose fees for the use of water as well. The commoditization of this natural resource had both the positive effect of expanding the zanjeros network while on the negative end, water theft became a paramount concern. The zanjas were growing beyond the city’s control, allowing the river to become a point of disposal of accumulated garbage. This unsanitary repercussion persuaded the city to confront the waste issue, and in 1892 the city began construction of a sewer system with storm drains, the negative result of the outfall sewer emptying into the ocean at Playa del Rey.
The more commoditized and marketable water became with regards to agricultural production and real estate value, the more franchised the distribution of water became. In 1857 William Dryden was granted the franchise to distribute water in pipes. A year later the Los Angeles Water Works Company was formed to develop its own domestic water system and dam with Sainsevain managing and extending its distribution. In 1868, the Los Angeles Canal and Reservoir Company formed to supply water to other undeveloped areas and by 1872 the third water company Prudent Baudry was established. The steady proliferation of the water system was rooted in the ingenuity of the water company distributors, whose clever focus on setting up distribution channels for properties near and far from the river attracted the capital and generated the wealth required to build and sustain the city’s fervent and dispersed growth. The technological capacities of distributed channels off the serpentine river, generated a linear city form whose branches densified depending on the variability of the River. In areas near downtown where the water’s flow was more consistent, land values skyrocketed. Meanwhile, land away from the water, unirrigated land, (e.g. Boyle Heights, Lincoln Heights) sold very cheaply and the southern tail of the river varied route with occasional flooding reduced the desirability of that land.

1.1.4 The Expansion of the Metropolis: 1885-1900

Between 1850 to 1885, the development of Los Angeles remained steady and fairly concentrated to the city center. Robert M. Fogelson\(^5\) indicates that the transformation

of rural land to urban property remained in the hands of private enterprise rather than municipal authority. Developers and utility corporations alike only undertook major projects unless a measurable profit could be ascertained. Consequently, the development of Los Angeles was limited to the area two miles from the town’s center until 1885. Landowners likewise found Agricultural as a profitable market over conversion and subdivision of their land. Slowly, however, the desire for separation of home from work and shop drove the expansion of Los Angeles and its water network. Although the less wealthy Chinese and Mexicans still lived in adobes shacks, hotels, gambling dens and houses of prostitution near the old plaza, the more prosperous native Americans and European immigrants sought out homes in outlying areas. Retailers followed the residential development while wholesalers moved closer to the railroads, professionals concentrated on Temple Street and craftsmen spread all over. Although these enterprises concentrated on a few blocks, their presence helped locate the commercial center in 1885.
Water - the controlling factor for development – demanded protection and control in order to secure the city’s privileged position. The city’s preeminent right to the water flowing in the river was first administered in the Los Angeles City Charter amendment in 1874 after the California Assembly granted the city absolute ownership of the water, later termed the "pueblo right." This and later court rulings gave Los Angeles exclusive right to tap the river's flow, placing the San Fernando Valley legally off limits to the river’s water supply; suffocated of water the San Fernando Valley’s agricultural potential was limited to wheat production which required no irrigation. Not until after the opening of the Los Angeles-Owens River Aqueduct in 1913, was irrigation brought to the Valley and urban development began. It was this "de facto" right of the city to this flow that helped assured its status as the most dominant city in the United States.

While Gold Rush fever gripped northern California, American settlement of this part of California was comparatively slow. This changed when the Southern Pacific Railroad, the first transcontinental railroad, reached Los Angeles in 1876 and the Atchison, Topeka, and Santa Fe Railroad arrived in 1885. The railroads helped transport valuable agricultural goods from California to wealthy easterners and boost the economy. Alongside this effort, to generate an economy in freight traveling from east to west, the railroads needed to entice passengers. The gold rush provided a great public relations effort, and cheap railroad tickets enticed people from the east to settle in the promised land out west.

But irrigable land was an asset only if it could be accessed through transportation. Railway began to connect scattered communities into a larger mega-community,
while serving and stimulating the urbanization that went along with the introduction of oil. The rival railroads established a series of cities along their lines which served as distribution and processing centers for nearby farms. Word of the agricultural potential of the Los Angeles Basin, and the railroad bringing people in search of land, fortune, and paradise, spurred a land boom, and between 1880 and 1890, the city’s population grew from 11,000 to 50,000.

To allow for development in far-flung communities around the region, the original boosters covered the Los Angeles Basin using a far-reaching intra- and inter-urban street car system. This system of local railroads, called interurbans, and trolleys began to grow in the 1890s, connecting the scattered cities and towns of the region to each other, to Los Angeles, and to its harbors. Two main streetcar lines developed – the Pacific Electric “Red Car” system and The Los Angeles Railway (LARY) “Yellow Car” system around which central L.A. was developed. The streetcar system grew rapidly through the first decade of the 20th century, when the population of Los Angeles more than tripled. At the turn of the twentieth century Los Angeles could boast of an extensive commuter rail system with more than 1000 miles of track.

As Los Angeles grew, the water resource slowly depleted,
and despite efforts of subsurface drilling, the river was becoming an inadequate source of water. With the arrival of the transcontinental railroad, the Southern Pacific Railroad, in 1876 and the mad rush to Southern California, the landscape of Los Angeles was forever changed.

Residential and industrial development displaced farmland and demand for water increased. By 1880 new towns such as Burbank, Hollywood, Pasadena, Redondo Beach and Covina formed. Between 1870 and 1880 the population of California nearly doubled.

In Los Angeles, the river's value proved more economical than aesthetic; it was used unsparingly without attention to its state of being. With the arrival of the railroad in 1887, the river's landscape dramatically transformed. Prone to flooding, the riverfront lands were undesirable and hence became the first areas for railroad construction. Lined on both sides by freight yards, the river now beckoned industry, warehouses, manufacturing plants, and foundries. The arrival of industries helped establish the earliest Los Angeles-San Pedro line, later overtaken by the Southern Pacific and eventually the Union Pacific in 1905. Industrial growth especially expanded after WWI as the automotive industry, led by Ford and Chrysler, established itself close to the river, followed by the steel manufacturers, Owens Glass, Alcoa Aluminum and General Mills. The pollution of the river due to the industries was intense, especially due to the low water flow after the revamped flood control projects.

During the period between 1880 and 1900, the city transformed from the quiet “City of Vine” to the Metropolis by means of quick and steady advancements in expanding the water network. In 1886, the completion of the second rail line, the Atchison, Topeka, & Santa Fe Line, spurred a
fare war attracting more settlers and increasing demand for real estate. The birth of new towns and residential developments consumed irrigable, productive agricultural land in the city; and the overwhelming necessity of water for domestic use reallocated value in favor of agriculturalists' land which was worth more as real estate than the agriculture it produced. By 1886 there remained only a third of the irrigated crop acreage. As a result of this population growth for the first time agricultural development began outside of the city (north and south), and between 1880 and 1888, irrigation ditches were built to carry water outside city limits. Fogelson\textsuperscript{6} writes, “Henceforth the landscape of greater Los Angeles was dominated by homes, offices, stores, and factories; streets, sidewalks, and railways; and water mains, gas pipes, electric lines, and sewers.” In 1890, after the Los Angeles Water Works Company relinquished control of the water supply to the city, the domestic water system was once again calibrated through the acquisition of reservoirs, installation of infiltration galleries, and piping of the zanjas, while initial attempts at conservation began. The municipalization of the water-works, undertook with a commitment to the expansion of the city, charged the system with expanding its network.

Harnessing the river had become a key element in the growth of the metropolis even before the arrival of the transcontinental railroad in 1887. With California’s variable weather, including periods of extreme drought, combined with a high demand for water and a lack of water meters, the water was slowly drying. As William Mulholland\textsuperscript{7} described, “Our population climbed to the top and the

\textsuperscript{7} Mulholland, William. “Last Spike in Deal Closed,” Los Angeles Times, July 29 1905.
bottom appeared to drop out of the river."

In Los Angeles, the River's value proved more economical than aesthetic; it was used unsparingly without attention to its state of being. With the arrival of the railroad in 1887, the river's landscape dramatically transformed. Prone to flooding, the riverfront lands were undesirable and hence became the first areas for railroad construction. Lined on both sides by freight yards, the river now beckoned industry, warehouses, manufacturing plants, and foundries. The arrival of industries helped establish the earliest Los Angeles-San Pedro line, later overtaken by the Southern Pacific and eventually the Union Pacific in 1905. Industrial growth especially expanded after WWI as the automotive industry, led by Ford and Chrysler, established itself close to the river, followed by the steel manufacturers, Owens Glass, Alcoa Aluminum and General Mills. The pollution of the river due to the industries was intense, especially due to the low water flow after the revamped flood control projects.

1.1.5 River Run Dry 1900-1930

Between 1902 and 1905 Los Angeles began to exercise stricter control over the Zanjas and the reallocation of water. Meters were installed to help the conservation process while new dams, wells to pump water, and infiltration galleries sucked the river dry. New reservoirs, e.g. Solano, Elysian, Ivanhoe and Silverlake, were made, surface streams were diverted, and marshes were drained to harness water. In parallel during this time Los Angeles' population doubled from 128,000 to 240,000 fostered by the character of its populace: the entrepreneurs and developers who encouraged growth and the immigrant
families and individuals who aspired for a good living embodied in single-family housing, and the water table continued to drop. The local water sources were simply insufficient.

Fred Eaton, mayor of Los Angeles, convinced Mulholland that the Owens Valley, situated 200 miles from the city could provide the water source necessary to support the city's present as well as future consumption. Owens Valley was the junction fed by over forty mountains in the eastern slope of the Sierras. Consequently, a 233-mile aqueduct was built from Owens Valley through the Mojave Desert, through the San Gabriel Mountains into the San Fernando Valley. Bonds were approved for $1.5 million for the water and land rights and $23 million for the construction costs and in 1913 the 1913 Los Angeles-Owens River Aqueduct became the new Los Angeles River. The increased surface flow itself became a problem as the existing

figure 1B | 1914 Flood

figure 1B | Los Angeles Times Cartoon
To garner support behind $1.5 million in bond measures to pay for the purchase of land and water rights along the route of the Los Angeles-Owens River Aqueduct, the Los Angeles Times ran this cartoon on the eve of the election. Gumphrecht, Blake. *The Los Angeles River*. (The Johns Hopkins University Press, 1999).
facilities were incapable of capturing the water flow and the river's course began oscillating. Wells were established to lower the surface flow, levees were built and flood control projects were begun anew to recalibrate the water machine. In 1940 the aqueduct was extended 105 miles to Mono Lake and in 970 a second aqueduct paralleling the first was completed. Today forty percent of the city's water is provided by eastern Sierra's runoff. In the first decade of the century, the population of Los Angeles tripled. The San Fernando Valley also witnessed the benefit of the Los Angeles-Owens River Aqueduct by enabling its subdivision (Chatsworth, Owens Valley, Van Nuys, and Lankersheim were formed), allowing for intensive agriculture and urban development. Inadvertently, the quality of water was threatened due to its increased use.

Gumprecht argues that Los Angeles's water supply was its only main advantage in comparison to other competitive cities at that time. Although San Pedro had its port, Anaheim its vineyards, Long Beach and Santa Monica

Bay the ocean, Torrance and Vernon its manufacturing, and Burbank its bid for the railroad, Los Angeles' power position, held through its water monopoly, enabled it to grow through accession. Practicing its "pueblo right," the city forced other cities to become part of its jurisdictional agglomeration in order to gain access to the water. By 1915, the City of Los Angeles had annexed dozens of neighboring communities without water supplies of their own, allowing the city to further expand.

1.1.6 A Thought Toward Parkland: 1930-1935

The railroad and subsequent industrial development successfully transformed the river into a polluted, unsanitary wasteland of contaminants. Its drastic deterioration prompted some of the earliest proposals to improve the river for holistic reasons. In 1896 Dana Bartlett first suggested that the river could be a line of beauty. In 1910, Charles Mulford Robinson, a NY-based leader in the City Beautiful movement, proposed clearing the river and planting it with trees. Frederick Law Olmsted Jr., son of Central Park designer Frederick Law Olmsted, and Harland Bartholomew were the first however to envision a radical restoration of the river. In 1930, their firm proposed a comprehensive and coherent network of parks, playgrounds, schools, beaches, forests, and transportation to promote the social, economic, and environmental vitality of Los Angeles and the health of its people. According to the Olmsted Report\(^9\) in words that remain true today:

\[\text{Continued prosperity [in Los Angeles] will depend on}\]

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providing needed parks, because, with the growth of a
great metropolis here, the absence of parks will make
living conditions less and less attractive, less and less
wholesome. . . . In so far, therefore, as the people fail to
show the understanding, courage, and organizing ability
necessary at this crisis, the growth of the Region will tend
to strangle itself.

The Olmsted Report recommended 71,000 acres of
parkland, and another 92,000 acres in outlying areas, with
440 miles of connecting parks and parkways, including a
parkway along the Los Angeles River. The Olmsted Report
proposed the joint use of parks, playgrounds, and schools
to make optimal use of land and public resources, and
called for the doubling of public beach frontage. The report
warned that, unless the greening of Los Angeles
organization to execute Olmsted’s blueprint for a green utopia, and the plan was shelved, with as few documents being printed to dissuade any fluttering interest. The thousands of acres of proposed parkland were paved over, leaving the city of Los Angeles with few parks, particularly in its poor, urban neighborhoods.

Although the Olmsted Plan was never implemented, the Los Angeles River Pollution Committee was created in 1948. Ultimately the inability of local officials to control the pollution of the river forced federal government agencies to enter the forum. The EPA began its inquiries and cleanup program in 1984 and soon the wells were shut down due to contamination and mandated all local water agencies to secure that no water flow into the river from its natural source - the huge subterranean reservoir beneath San Fernando Valley.

1.1.7 Channelization: 1935-1955

The onset of the Depression placed a halt on intense development. At around this same time, flooding had continued to be a major issue, and the city was at a loss over how to handle flood control. Local flood control programs had proven incapable of limiting flooding in the growing metropolis. The final intervention of the federal government sealed the fate of the Los Angeles River. The Flood Control Act of 1936 gave power to the United States Army Corps of Engineers work in channel (1939). Guphreicht, Blake. The Los Angeles River. (The Johns Hopkins University Press, 1999).
Complicating this effort was the fact that much of the river was privately owned. The nature of the development and the price of real estate along the river limited the flood control strategies that government officials could consider. Landowners more interested in the potential for future development than flood protection forced acquisition of the right of way to be kept to a minimum. The concretization of the 52 miles of the Los Angeles River was begun, with requests for added funds for beautification or watershed management chastised as superfluous.

Two years after channelization began, after a week of rain, the most damaging flood in the history of Los Angeles County struck. The flood of 1938 left millions of dollars of destruction, wiped out much of the earlier flood protection, and killed 85 people. However, where channelization had been implemented the damage was not as severe. The flooding helped catalyze support for the flood control project. By 1955, fifty one miles of the river had been concretized except for three locations: the Sepulveda Basin, the river’s soft bottom stretch in the Glendale Narrows and its final outpour into the Pacific Ocean at Compton Creek in Long Beach. The high water table in these areas made it impossible for the river bottom in these areas to be sealed in concrete, thus preserving at least a small portion of the river’s natural bed.

The immediate effects of channelization were both beneficial and detrimental. The channel provided temporary flood control from the variable precipitation patterns of the region, by managing to deliver massive amounts of rainwater to the sea during the rainy season.
as anticipated; however, the entire ecology of the region was drastically transformed as natural vegetation, wildlife, and recreational space were immediately eliminated with the concrete construction. Over the next few decades, the condition of the river deteriorated as pollution from garbage, urban runoff from city streets (toxic in some conditions), and storm water runoff filled its supply. Channelization also drastically changed the region’s water supply. Presently during the dry season, tertiary recycled sewage water makes up eighty percent of the water.
Metropolitan Los Angeles grew rapidly after World War I, and the city widened its streets to accommodate the proliferation of automobiles. During this time, the economy diversified; Los Angeles became an important industrial area and the motion picture industry moved into “Hollywood.” The region's famous citrus groves and farms gradually disappeared as they were swallowed up by suburban growth. It became increasingly difficult for people to reach jobs that might be 20 or 30 miles away. Freeways
transportation planning focused on designing streets and highways to connect people and emerging towns to where the jobs and commerce were being located. One of the first limited access highways in the nation, the Pasadena Freeway, was opened in 1940. The freeway system grew rapidly after World War II, encouraged by the creation of the national interstate express superhighway system in 1956. A few decades earlier, fixed rail and bus transit were important systems of transport in these regional designs; however, during the post-World War II era the main focus shifted toward street and highway systems.
to facilitate the establishment of the car. Randall Crane of the Institute of Transportation Studies suggests that in the process of expanding the roadway system, planners reinforced patterns of urban and regional development that moved millions of residents and jobs away from the central urban core to emerging centers throughout the region. Alongside a decentralized economic base, the rapid increase in women in the workforce (which complicates family commuting patterns and increases income availability for larger houses), the tax subsidy for home ownership, and the desire for a single-family home, the freeway system helped propagate the creation of suburban communities. By the 1960s, Los Angeles was starting to reach the limits of its original planning with cheap land in increasingly short supply, freeways clogged with growing numbers of commuters, and smog becoming a major problem.

1.2 Source of Water

Today ten to fifteen percent of Los Angeles’ water supply is still pumped from beneath the San Fernando Valley. The source of the Los Angeles River’s water however is not the same historic stream; ironically most of the flow during the dry season today originates from the huge concrete treatment tanks at the Tillman Water Reclamation Plant in Van Nuys that clean the city’s wastewater and discharge it into an outflow channel that empties into the river just upstream from the Sepulveda Dam. Its flow is also supplanted by the Burbank reclamation plant and the Los Angeles-Glendale treatment facility at Verdugo Wash. Thirty percent of its dry season flow is from storm drains.
and only five percent of its water is from the ground water basin that was once its historical source. Hence the great historic water supplier of the city has formally become its waste gutter; its flow consisting mainly of treated sewage, authorized industrial discharges, and street runoff of sewage treatment plants. The river still serves as a flood control channel delivering seasonal floodwaters safely to the sea. Ironically, the volume of treated wastewater that runs today in the river is substantially more than its historic run and this in turn has improved the water’s quality by diluting street runoff and contaminated ground water and allowing in some places for the growth of vegetation. Some researchers have suggested that the reclaimed water in the Los Angeles River has the potential to provide up to ten percent of the city’s water supply.

1.3 The Great Public-Private Collaboration

Los Angeles’ historic growth still puzzles most historians. Unlike most cities founded by virtue of a geographical advantage, a natural port or navigable river for instance, Los Angeles was founded by the Spanish in 1781 on a semi-arid, desolate coastal plain, fifteen miles from the ocean. There was little evidence to foreshadow the city’s explosive development from an agricultural village of 1,610 people in 1850 (the year California joined the Union), to a city of 1.2 million and a metropolitan district of 2.3 million eighty years later. Overnight, Los Angeles became the largest settlement on the Pacific coast, with a supporting network of railways and highways, center for commerce and industry, and verdant domestic water supply that allowed it to become the economic hub of the Southwest. As Robert Fishman11 states, “Precisely because Los

11 Fishman, Robert. Foreword to The Fragmented Metrop-
Angeles lacked natural advantages and a dominant industry, its leaders realized that they would have to create these attributes themselves.” The character of the people, in fact, was the essential ingredient that mobilized the process of growth. Their farsightedness to establish an alliance between public resources and private profit helped generate an infrastructural base of water, power, port, and transportation that allured more migrants and businesses which ultimately sustained the metropolis’ growth.

The transformation of Los Angeles from a small Mexican village into an American town and the empowerment of its suburbs over its metropolis is a story that exemplifies the city’s contradictory nature of growth and its ambivalent condition of survival. An uncompromising disposition for urban expansion, espoused by the affluent, Midwestern white migrants that settled in the small village in the late nineteenth century, and also by the wave of international immigrants that came to the city in the 1980s, added fuel for the continuous sprawl of the large metropolis. Fishman describes the ingenuity of the elite population that drove urban expansion by both championing ethics of free enterprise yet still procuring the power of public authority, big government and municipal ownership, in pursuit of profit. The metamorphosis of the Los Angeles River exemplifies this point exceptionally. The growth and fragmentation of the city, politically, socially, and culturally, can be paralleled in the river’s complex battles for control. The majority homogenous white population wielded the power to focus the growth of the city while its minority groups of blacks, Hispanics, and Asians were physically and socially isolated within the development of the city. Fishman relates, “Even as a global city and Pacific Rim

capital, Los Angeles remains recognizably... a city hooked on growth, deeply divided socially, and perhaps too fragmented to generate the kind of public life that could override the destructive consequences of maximizing private profit."

In the early twentieth century, Henry E. Huntington’s overcharge of the railway lines in conjunction with the networking of the river, reformed the boundaries of the city. An extensive railway system, including the Los Angeles Railway and Pacific Electric Railway systems, operated over a thousand miles, spurring the growth of the city as extensions promoted real estate developments on the city’s periphery. The city was able to maintain its cohesion by promoting development in areas directly adjacent to the rails and with all lines directed toward downtown. This helped control the fragmentation of the city. However, with the arrival of the automobile industries and the Major Traffic Street Plan of 1924 switching public expenditures toward automobile usage, mass transit in the form of the rail system slowly evaporated from use. The road grid proposed opened the entire LA Basin to development and sealed the fragmentation of the metropolis and the decline of downtown.

Robert M. Fogelson\textsuperscript{12} asserts that Los Angeles firstly used its publicly subsidized port and transportation network to attract national corporations. The settlement of the aircraft industry in Los Angeles before and during World War II secured an advanced engineering foundation which further developed during the Cold War period with federal government defense expenses which propelled the birth of a high-tech industry with fields in aerospace, computers,

\textsuperscript{12} Fogelson, Robert M. \textit{The Fragmented Metropolis: Los Angeles, 1850-1930.} (University of California Press, 1967), pg. 22.
and biotechnology.

Federal programs implemented after the Great Depression also directed the homebuilding and construction industries. After 1945, the reformed system provided long-term mortgages at low rates to help the new migrants attain their own parcel of the “American Dream” – a single family home on cheap land. The entertainment industry provided television, film and music production. The low-tech industry based on garment production also prospered with the cheap immigrant labor. The rise of the Asian nations had a two-fold beneficial effect for Los Angeles. Firstly, it strengthened the Pacific connection to the U.S., making the Los Angeles-Long Beach Port, by virtue of its relative position, the most significant port in the country. Secondly the accrued Japanese capital was distributed downtown for the creation of a new center for international finance.

The prosperity and population growth by the 1970’s began a twenty-year spiraling inflationary housing and land boom that impelled further dispersion of the city. Housing prices rose nearly ten times their original value forcing new home buyers further outward in search of cheaper arid land. The growth further strained the city’s natural resources, such as water as well as the road network. By the late 1990’s the county had developed eastward into the Inland Empire and Riverside County.

1.4 Los Angeles’ Incessant Development

Up until the 1970’s, Los Angeles’ growth suggested a
pattern of low density expansion outward. However, between 1970 and 1990, the city continued to expand according to a new pattern of high density development. As the Sprawl City department of the U.S. Bureau of Census Data on Urbanized Areas states13, "Unlike most American Urbanized Areas, Los Angeles stopped all individual sprawl. That is, the land consumption per resident did not increase. In fact, the urban land per resident shrank by 8%. That means the density increased. From 5,313 residents per square mile in 1970, Los Angeles increased its density to 5,801 per square mile in 1990. Moreover...density increased in both the core city and in the suburbs."

Between 1970 and 1990, Los Angeles grew across an extra 394 square miles (252,160 acres), adding to the 1,572 square miles it already occupied in 1970. Population growth accounted for the unparalleled dense growth of the city, with increased immigration provided by the federal program. During this time period the L.A. Urbanized Area grew by 3.1 million residents - largely because of the federal program of increased immigration levels. The Bureau further states that by 1990, land consumption per L.A. resident had fallen to 0.11 acre making Los Angeles the most densely populated Urbanized Area in America. In comparison, no other urban area provided so little land per resident.

Mike Davis, in his profound but idiosyncratic City of Quartz: Excavating the Future in Los Angeles (1989), established that the history of Los Angeles articulates

in highly revealing ways the major forces transforming global society in the late twentieth century. I argue that the current dialogue over revitalizing the Los Angeles River presents a global discourse on the conditions facing many urban rivers worldwide. It reveals the condition of many young post-industrialized cities whose growth of industry and influx of population early in the twentieth century perpetuated the decline of the ecological health of the river and its pollution. Rivers such as the Rio Salado in Tempe, Arizona, the San Antonio River in San Antonio, Texas, the Guadalupe River in San Jose, California, the Platte River in Denver, Colorado, the Nine Mile Run in Pittsburgh, Pennsylvania, the Cheonggye River and the Han River in Korea, and the River Volme in the City of Hagen all have been the focus of joint municipal efforts to reclaim a healthy water ecology.

This renewed desire to recover the condition of these urban rivers is more a necessity than a choice. As I will describe in the following paragraphs, after a closer investigation of the Los Angeles region, the continued growth of urban cities alongside global population growth provides an imperative force toward redesigning the existing river system and its operation in the city. The Los Angeles River, like others, cannot remain a dormant facility, but must be retrofitted to reestablish itself with a strong urban agenda.
As suggested earlier, the history of the Los Angeles River is fundamentally tied to the region's patterns of development. With Los Angeles' continued population growth, the future of the river and any proposal to revitalize it cannot be measured without an understanding of the larger urban conditions facing the metropolis. Thus in the following section, I describe five main urban conditions facing the Greater Southland region. This analysis of the larger urban conditions serves as the backbone structuring my proposal for the river.

2.1.1 Urban Infill

Territorial annexation guided most of the expansion of the city of Los Angeles from 1850 to 1930. Throughout most of the twentieth century, the economic development and land use policies pursued in Southern California encouraged rapid population growth and the urbanization of land. These policies helped populate the five counties that comprise the “Southland” region – Los Angeles, Orange, Riverside, San Bernardino and Ventura – which presently have a population of 16 million people, a seven-
fold increase since 1900. Presently, one of the most pressing problems facing the Southern California region is the anticipated population growth within the next twenty to twenty-five years. Four out of the top ten locations listed for intense population growth by the Wharton School of University of Pennsylvania\textsuperscript{14} are located in Southern California: these being Los Angeles County, Orange County, Riverside County, and San Diego County.

In relation to past urbanization, there is a significant change in the region's anticipated growth pattern. Unlike past periods of urbanization, where population growth stimulated a territorial expansion of the region, the anticipated growth in the next twenty years is focused on existing centers and neighborhoods that will densify to satisfy the needs of the increased population. This marks a significant shift in growth patterns from dense expansion to dense "infill". The diagram below illustrates this anticipated increase in population from 2000 to 2030. As shown, the growth remains limited to existing jurisdictional boundaries, suggesting a profound impact on existing infrastructure and equipment.

\subsection*{2.1.2 Flooding}

An analysis of Los Angeles' watershed shows that continued development has encroached upon the floodplain with reckless abandon. As urbanization fills the hills and valley that once absorbed the rainfall, less rainwater now seeps into the earth and is forced rapidly into storm drains and from there into the Los Angeles River. With over 60\% of the Los Angeles Basin watershed now paved over, the carrying capacity of the river is...

\textsuperscript{14} Published: June 28, 2006. \url{http://knowledge.wharton.upenn.edu/article.cfm?articleid=1510}
heavily taxed, since most of this water would have been absorbed into the water table and not diverted to the river. This condition also contributes to the flood-control problem by reverting water from underground aquifers that would otherwise have been replenished with usable water supplies.

A comparison of major floods since 1900 suggests the inability of flood control measures, through regulation dams and levees, to keep pace with the continued urbanization of the region. Within the last century, three major floods categorized as the 100-year storm have overrun the region, suggesting moreover a thirty year cycle. By 1992, the flood control channel that had been built only 37 years earlier was incapable of handling the flood waters from this cyclical 100-year flood. The effect of this condition is that nearly five to ten percent of the basin (the non-mountainous area) is in threat of inundation by flood waters with almost 500,000 people at risk.\(^\text{15}\)

Another issue resulting from increased urbanization is a dwindling supply of usable water. One third of the region’s population receives its drinking water from wells that pump water reserves from aquifers, underground reservoirs that

\[\begin{array}{|c|c|c|c|}
\hline
\text{Deaths} & 1914 & 1938 & 1992 (est.) \\
\hline
\text{Damage} & $162.7 & $898.9 & $11 & $2,300 \\
\hline
\text{Flooded Area} & 110 sq mi (12%) & 168 sq mi (15%) & N/A & 82 sq mi (7%) \\
\hline
\text{Peak River Outflow} & 75,400 & 99,100 & 103,000 & N/A \\
\hline
\end{array}\]


**Flood Statistics**
soil under the valleys and urbanization, however, and the drainage of water diverted into the channel, the aquifers’ water reserves are diminishing. This coupled with more demand for water due to a growing population has strained the city’s external water resources. Alan Loomis’s research suggests, that this combined effect of hard-surface development, forced movement of water into the channel, and use of the river as an outflow for treated waste water has tripled the river’s natural surface flow\(^6\). This runoff is the equivalent yearly supply for 1,000,000

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**Figure 1B**

LA River Watershed Map, Inundation Map, and Key Flood Areas

Diagrams by the author.

Source data: U.S. Geological Survey, Army Corps of Engineers, Los Angeles District

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people.

Compounding this issue is the unpredictable nature of the Los Angeles River. As seen in rainfall data from 1877 to 2003, there has been no average year. Many describe its temperamental nature as a "Dr. Jekyll and Mr. Hyde" personality, flowing gently for many years of low rainfall, raging wildly during occasional years of flooding. Because of this unstable nature, the original settlements could be safe for many years, and then be washed away overnight. During the recorded history of Los Angeles, the pueblo and the city, the river changed course nine times, most notably during the floods of 1815, 1825, 1889 and 1914.

2.1.3 Shortage of Parkland

Another major urban condition facing the growing region is the lack of open park space. Los Angeles has the least amount of public park area of any large metropolitan region in the country, and did at the time of the Olmsted-Bartholomew plan as well. The limited extent of parks and recreation facilities throughout the city and their irregular distribution is still a concurrent condition today as it was in 1930. The region, led by the drive to develop and subdivide land in the process, has been converting at a rate unlike any other city, much of its open territory into suburban developments.

figure 1B | Average Yearly Precipitation 1877-2003 U.S. Geological Survey.
figure 1B | Existing Parkspace in the Los Angeles Region
Map by the author.

figure 1B | Comparative Parkspace of Major American Cities

figure 1B | Parkland Ratio in 2025
to population ratios in the country. Although Griffith Park, Topanga State Park and Angeles National Forest constitute large parks and reservations, much of their area is mountainous terrain and therefore unable to be accessed. In total, about thirty-five square miles of park are accessible to a population of over six million people in the valleys and coastal plains.

The anticipated population increase of 25 percent within the region by 2025 as predicted by the Southern California Association of Governments further magnifies the shortage of park space. With no increase in park space, limited expansion of the region and an increased population density from 5625 people per square mile to nearly 7000 people per square mile, the existing park space and recreational facilities will be further strained as the parkland to person ratio is further reduced.

2.1.4 Traffic Congestion

Randall Crane’s research on traffic congestion suggests that “Traffic is the product of complex interactions involving the level of economic activity, the region’s spatial structure, the design of the transportation network, and the choices facing individual travelers.” Thus, understanding the complex nature of traffic conditions in the region is essential to managing traffic problems and producing beneficial transportation alternatives.

2030 Transit Corridor System
Map by the author.
Source data: Southern California Association of Governments. (http://www.scag.ca.gov/).

Urban Form and Travel Patterns for Major Metropolitan Areas

Air Pollution Indicators for Major Metropolitan Areas

Table 1. Key Indicators for metropolitan areas (2000)

<table>
<thead>
<tr>
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<th>Los Angeles</th>
<th>Houston</th>
<th>Chicago</th>
<th>New York</th>
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<tr>
<td>Housing Characteristics</td>
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<tr>
<td>1,000 units per sq. mile, metro area</td>
<td>0.81</td>
<td>0.27</td>
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<td>1,000 units per sq. mile, urbanized area</td>
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<td>% of units in 10+ Bldg</td>
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<td>23%</td>
<td>19%</td>
<td>50%</td>
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<tr>
<td>Highway Roadway Lane Miles per 100 Households</td>
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<td>3.50</td>
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<td>Average number of lanes per direction</td>
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<td>2.21</td>
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<td>Travel Patterns Work Commute</td>
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<tr>
<td>Car Pool</td>
<td>15.1%</td>
<td>14.2%</td>
<td>11.9%</td>
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<tr>
<td>Transit</td>
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<td>3.3%</td>
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<td>Avg. Time (minutes)</td>
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<td>29</td>
<td>31</td>
<td>39</td>
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<tr>
<td>Trip Characteristics</td>
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<tr>
<td>Percent of VMT on Freeway</td>
<td>45%</td>
<td>42%</td>
<td>39%</td>
<td>36%</td>
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<tr>
<td>Congested Peak Vehicle-Miles</td>
<td>80%</td>
<td>62%</td>
<td>80%</td>
<td>69%</td>
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Table 2. Air pollution indicators for metropolitan areas

<table>
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<th>Los Angeles</th>
<th>Houston</th>
<th>Chicago</th>
<th>New York</th>
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<tbody>
<tr>
<td>Air Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Unhealthy days</td>
<td>88</td>
<td>53</td>
<td>16</td>
<td>22</td>
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<tr>
<td>CO dominant days</td>
<td>32</td>
<td>7</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Source of CO Emissions</td>
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<tr>
<td>Onroad Vehicles</td>
<td>84%</td>
<td>62%</td>
<td>65%</td>
<td>69%</td>
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<tr>
<td>Passenger Vehicles</td>
<td>43%</td>
<td>33%</td>
<td>35%</td>
<td>38%</td>
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<tr>
<td>Passenger Car CO Emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Tons Per Household</td>
<td>0.26</td>
<td>0.30</td>
<td>0.26</td>
<td>0.17</td>
</tr>
<tr>
<td>Annual Tons Per Personal Vehicle</td>
<td>0.16</td>
<td>0.18</td>
<td>0.17</td>
<td>0.22</td>
</tr>
</tbody>
</table>
sign of a healthy economy. On the other hand, the state has less road capacity than all but two of the 65 largest U.S. regions\textsuperscript{8}. As Crane describes, this strained capacity can only be relieved by substantially less driving per person, many fewer drivers, or both.

In the late twentieth century, as the city continued to expand on a decentralized economic base, transportation planners reinforced patterns of regional development that focused on moving people and jobs to areas outside the city center. As these outer areas expanded and densified, congestion in the region expanded in parallel. As the graph below shows, Los Angeles’ current population density, though less than New York, is comparatively higher than other major cities, such as Houston and Chicago. Taking simply urbanized areas into account, Los Angeles actually has the highest comparative density than all three major cities.

The issue is further complicated when we examine the usage of personal vehicles. Although the number of personal vehicles per household in Los Angeles is twice as large as in New York, Houston has more cars per person and Chicago is close behind. Crane’s research brings to attention that a number of Angeleno workers share a ride in either a car pool or on public transit, for a combined rate that is similar to that for Houston and Chicago. The number of vehicle miles per person also indicates that Los Angeles is not at the extreme.

Adding to these problems is the fact that through the last century, urban travel grew at an even faster rate than population growth. In the last two decades, total region-

wide “vehicle miles traveled” (VMT) nearly doubled while the population rose 44 percent and the capacity grew even less. As the 2000 U.S. Bureau of Transportation Studies data shows, arterial and local lane-miles increased by only 20 percent during this period. Limiting road construction was the high cost of construction and rising land value. As the gap between travel demand and roadway construction continues to expand, congestion continues relentlessly. In 2001, congestion cost Americans an estimated $70 billion in 2001 as a sum of lost time and extra fuel consumption.

A major by-product of this traffic congestion is air pollution. The EPA ranks Los Angeles as having the worst air pollution in the nation. Mobile sources are a key component of carbon monoxide emissions with cars contributing more to air pollution than in the other three regions. In comparison to the other three major cities, Los Angeles had the most unhealthy days and carbon monoxide dominant days.

The reason for traffic congestion and its resultant air pollution rests more in the combined effect of the city’s increasing population density, high usage of personal vehicles, strained road capacity and physical geography of the region.

sustainability have meant in LA: land as first nature, land as property and capital, land transformed through labor and through the mind’s eye.”

Los Angeles serves as the principal example of an American city recast as a metropolitan region. On the one hand, its success can be measured based on its regional success in terms of planning objectives to urbanize and expand. Los Angeles and the surrounding region that developed grew by its ability to formulate systems of land and environmental control and a nested system of governance that allowed it to function and manage this control. The overarching regional agenda saw land as opportunity while nature was seen as an obstacle in pursuing future urban development. Thus the city's planning history mirrors the corresponding environmental consequences of this planning. Deverell and Hise view the jurisdictional complexity of the region and its political shortsightedness as having created a brief and narrow utility.

“The concerted regional effort to harness nature in service of an earthly Eden in Southern California has required

enterprise and given rise to technological innovation. Enterprise and innovation have in turn attracted capital and generated wealth."

Due to this nested system of governance, the metropolis was forced to divide power amongst its multiple scales of jurisdiction at the county, metropolitan, and neighborhood levels. With such a complex political structure in place, regional planning remained a weak tool as compliance was needed at all scales for any action. On the other hand, zoning and land use policy served as principal methods for shaping city building. In the 1920’s, expansion of the urban footprint became a priority conditioned on maintaining functional and social separation. Residential districts were established westward while industrial zones were established east in cities such as Vernon, Torrance and Commerce.

Other initiatives such as the fiscal initiatives of the 1930s made possible through tax relief and subsidies or through mortgage insurance created the framework for purchasing single family homes. The post-WWII freeway system further implemented such plans has shaped land use and regional ecologies considerably, and demonstrates the ability of the metropolis to garner support where development was a priority.

2.2 Precedent Proposals

2.2.1 1930 Bartholomew-Olmsted Plan

In 1930, Olmsted Brothers and Bartholomew Associates
proposed *Parks, Playgrounds, and Beaches*, a report on the condition of parks in the city. The report brought to attention the dire state of parks and recreational facilities that had been compromised as a result of explosive growth of the city. The result was that the city was far short of the national park per capita ratio. In their opinion, without a deliberate, systematic park program, Los Angeles’ lack of park space would become worse. The Plan itself called for a comprehensive metropolitan/regional plan for a coordinated park and parkway system. The plan proposed a network of large reservations, beaches, reserves, regional parkways and parks, regional athletic fields, and local recreation facilities, playgrounds, recreation parks and special units. The report further mentioned the creation of a large, powerful parks authority to achieve the regional scale park system it proposed. Greg Hise and William Deverell present in *Eden by Design*21 that the report, immediately after it was delivered, was in fact suppressed by the very agency that commissioned it - the Los Angeles Chamber of Commerce. When the report was presented to the full Chamber leadership, their immediate response was one of fear at the idea of an agency that could challenge their regional power. In consequence, the report was shelved without public review.

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Nearly eighty seven years later, the park and recreational facilities situation still holds true. The erasure of public open space for more construction has placed the city in the condition of having the worst park facilities in the U.S. As Warren Olney stated in the mayoral debate in 2000, Los Angeles has 0.9 acres of park per person, versus a national average of 10 acres. The limited extent of parks and recreation facilities throughout the city and their irregular distribution still remains true suggests the inability of private enterprise to provide opportunities for recreation. Bartholomew and Olmsted saw the problem of park shortage as a public responsibility, especially considering the difficulty for obtaining money for parks given the highly speculative cost of land. Hence, they urged public authority to secure what was at that time available land.

The sharp difference between the time when the Olmsted-Bartholomew plan was produced and today’s current situation, is the sparse growth of the region at that time. The urban population was spreading sparsely into the expanding territory, and still presented an opportunity for acquiring lands for parks. Presently, however, the growth pattern has reversed; the region has stopped expanding and is now densifying internally. In the process, the city is developing any remaining open space and land for parks no longer exists in open tracts waiting to be acquired, as it did in 1930. Today any open space is located in abandoned industrial brownfields or in the vast concrete fields of the LAUSD (which is the 2nd largest owner of concrete in California, after CalTrans).

The lack of progress in increasing parkland for the region since the 1930’s demonstrates the failure of public power to exercise future judgment in matters of the public health. Overall, any proposal to help fill this shortage of park space cannot be done without a larger coordinated strategy envisioned with respect to various public agencies, from the highways, schools, and commercial enterprises with the MTA, the LAUSD, and the LAPD currently serving as models for large regional agencies.

figure 1C | Los Angeles River Revitalization Master Plan
Detail of site work.
County of Los Angeles,
Department of Public Works (http://ladpw.org/wmd/watershed/LA/LA_River_Plan).
2.2.2 2007 Los Angeles River Revitalization Master Plan

The Master Plan effort was spearheaded by the Los Angeles Ad Hoc River Committee which was established in June of 2002 and composed of members of the Los Angeles City Council. In 2005, the city of Los Angeles' Department of Public Works-Bureau of Engineering issued a Request for Proposals for the preparation of a Revitalization Master Plan for the Los Angeles River. As the Master Plan states, its primary goals are to revitalize the river (enhancing any flood storage and water quality), green the neighborhoods, capture community opportunities (by making the river the focus of activity) and create value (through employment, housing, retail, environmental sensitivity and improved quality of life) and stimulate private and public reinvestment in the communities adjacent to the river. The Plan also proposes a management structure for a revitalized river. The entire proposal aims to make the Los Angeles River the "front door to the city" and plans on being implemented as funding becomes available over as many as 50 years. The total cost of the project is estimated around $2 billion.

When examined closely, the master plan for the River, though implying a bold vision, has no clearly detailed larger regional goals. It remains disconnected as a river improvement proposal, without undertaking any larger contiguous issues, such as transportation, culture and education. Even its endorsement of increasing public
enjoyment remains unfulfilled as the plan is grounded in very spare amounts of actual recreational facilities. Although the Plan outlines 239 projects, including creating parks, bridges, pedestrian and bicycle trails, river channel modifications, and revitalized riverfront communities and identifies larger "Opportunity Areas" along the River’s edge as example sites of what might be possible in various River development scenarios, many of these sites are designed as generic riverfront property sites, offering market-rate commercial and housing development. The plan falls short of looking at more versatile programming strategies that offer ways of garnering economic value, promoting job creation, providing much needed housing (affordable included) and educational facilities, and creating a higher quality of life for the diverse constituency base of Los Angeles. It also fails to consider the needs of communities not directly adjacent to the River whose tax dollars will be contributed to the project. Los Angeles’ pressing urban conditions, as described earlier in this chapter, suggest that more substantial solutions are required as the metropolis and the larger region enters the next twenty years of population growth.

One of the reasons the Master Plan fails to consider these bigger issues is that the proposal begins at the scale of the city of Los Angeles and the River’s 32-mile stretch within its jurisdiction from west San Fernando Valley to East Los Angeles. The proposal eliminates the lower Los Angeles River and the River’s composite geography in the larger scale of the region. The Master Plan, scaled in reference to the City of Los Angeles, limits itself to the river’s particular width and stretch in this consolidated area.

Other large concerns facing the Master Plan is that increased property values along the river may lead to
gentrification and the replacement of long-term residents and old communities by new, wealthier residents. The city itself has suggested that housing developers allocate a portion – in some cases 20 percent – of new units to rent to low-income residents and the use of zoning measures to prevent rapid neighborhood changes; however, balancing the overall goals of the revitalization project, the effects of any new development and the current condition of existing neighborhoods remains a prominent issue.\textsuperscript{23}

The Master Plan’s greatest asset is its goal to restore a continuous, functioning riparian ecosystem along the River corridor and provide water quality treatment. This would involve restoring riparian vegetation to support birds, mammals and fish and water treatment to reduce water pollution.

\subsection*{2.2.3 Cheonggye River, Seoul, Korea}

In 2002, Seoul’s mayor Myung-Bak Lee managed to remove the arterial expressway serving the city center to restore the river below it and encourage auto users to find alternate means of transport. Twelve lanes of traffic that carried 170,000 commuters from the eastern suburbs to the central business district were replaced by a river with a pedestrian path and two lanes of local traffic on either side.

The circumstances surrounding the initial construction of the old expressway were brought on by the growth of industry and influx of population in the twentieth century. Initially the same site was the historic location of the Cheonggye River. The perpetuated decline of

the ecological health of the river and a more automotive dominant culture led to its ultimate covering in 1958 with a 5.8 km elevated expressway. Ultimately finished in 1972, the expressway was a symbol of Korea’s technological advancement. At around the turn of the century, the expressway’s structure was in need of expensive repair and the areas surrounding the expressway showed a depressed economy with declining development.

In order to access the larger urban problems facing the city, the Seoul Development Institute (SDI) was begun as a think tank to research and develop government-planning policy. The SDI then used the Cheonggye River Restoration Project as a platform to address the highway’s infrastructure problems, traffic congestion in the city, and economic disinvestment at the city core. By eliminating the elevated highway all together, commuters were relegated into the larger urban traffic problem which began to be remedied through the 2004 restructuring of the public transportation system. This new integrated system created a more streamlined transit system with higher allocation of dedicated transit lanes.

The Cheonggye River Restoration Project which cost around $360 million is expected to bring $12 billion of investment to the city. The project also brought the benefit of a restored ecosystem to the city. The river is a major catalyst in the transformation of the historic downtown district surrounding the river. Similarly to Los Angeles’ historic center, the area contains a number of cultural and entertainment amenities, a high number of jobs, and also the area’s lowest residential population. As reported in the Urbanite Baltimore, the Jongno district to the north

of the river is flooded by an influx of 1.8 million people during peak office hours. This accounts for nearly twenty-five percent of all automobile traffic in the city. With the development of downtown perpetuated by the revitalization of the River, the new residential sector is expected to alleviate much of this congestion.

The Cheonggye River Restoration Project presents a few critical points for a river revitalization project for Los Angeles. The first important point is the river’s catalytic effect on the central downtown revitalization movement. Developers have already begun converting empty, abandoned office blocks to residential condos, apartments.
and lofts in the adaptive use process, while the city has made huge investments in the cultural sector with the establishment of the Grand Avenue Redevelopment Authority. The second point is that the river itself can serve as an active landscape for the many cultural events that occur in downtown. The River, if spatially organized and connected to the larger goals of the city, can be integrated into existing and planned civic areas. The third major point is a comprehensive approach to thinking about the River Revitalization project in regards to broader urban issues.

The river's extension through the regional landscape suggests its interaction with many other systems, such as the freeway and road system, the park system, the educational system, the commercial system. By realizing the interconnected nature of urban phenomena, insertion of a new river system could restructure the metropolis to deal with Los Angeles' larger problems; its growing population, the threat of flooding, traffic congestion, park shortage, and its jurisdictional complexity.
3.1 Scales of Intervention

As Banham\(^1\) comments, “It is true that in its new incarnation the diffuse, sprawling, and endlessly mobile world metropolis is fundamentally different from the city as we have known it. But for the architect and the urbanist to turn their backs on this new form, which is the backdrop to everyday life for the vast majority of people, is both condescending and self-defeating. This new species of city is not an accretion of streets and squares that can be comprehended by the pedestrian, but instead manifests its shape from the air, the car or the mass transit railway. Landmarks are reduced to flashes of slow-moving traffic, glimpsed from above on elevated highways amid a glittering river of red stoplights, or famous place names translated into the illuminated station signs that punctuate the darkness of metro tunnels.”

Los Angeles’ reliance on its river as a water supply first transformed it from a small village to a city. Its flood control necessities changed it even more radically from a city to a metropolitan giant of multiple jurisdictional and social boundaries. The problematic urban conditions facing the city today compel the region towards a broader agenda but also suggest an investigation into how to build a consensus in such a fragmented society in order to implement any productive solutions to these urban problems.

The growth of Los Angeles presently, suggests a pattern of inward growth, an inversion of the historic pattern of outward expansion. In the anticipated densification of the region, the River is reexamined as a primary site of development to be infilled with new parametric conditions

guiding its performance and ability to organize space.

My proposal for revitalizing the river is designed at 3 scales of intervention: regional, metropolitan, and local. These scales work in synthesis to deliver the desired goals for the proposal.

The conceptual basis of the project is defined by the potential of River to deal with the larger urban conditions facing the region. The River, in my proposal, becomes the focal site to confront these issues.

3.1.1 Regional

To begin to deal with these urban problems, my proposal is the expansion of the river infrastructure into a multi-layered infrastructure to accommodate the following overlapping fields that deal directly with the problematic urban conditions described earlier:

- Urban Programming
- Flood Management
- Park and Recreation
- Transit
- Water Treatment

These new systems engage the opportunity of organizing flows, referencing existing buildings and neighborhoods, framing views, and enlisting a new topological dimension.

The Field Container strategy translates the River from a singularized, mono-functioning flood control channel to a container of multiple fields. This retrofitted river infrastructure supports a multiplicity of systems that
mediate a density of program and flows at the regional, metropolitan and local scales that respond directly to the larger urban conditions facing the city. The river is translated from a singular line in the geography of the region to a field containing multiple systems. These systems are manifest in two types of major development: Urban Cores and Urban Condensers. These Urban Cores/Condensers serve as sites of a high density of program and flows that trigger development along the river. The distinction between the two lies in the nature of the development in relation to its surrounding context. Urban Core development is focused toward a regional agenda, while Urban Condenser development is focused toward a local agenda. This new River infrastructure (Field Container) is integrated into the regional context of other centers in the city so that the systems accommodated by the Field Container have a direct, integrated relationship to the overall region.

The proposal suggests how the river infrastructure will be transformed and expanded to accommodate these overlapping fields:

- flood mitigation
- water filtration (removing pollutants in water) and reclaiming river water as an increased source of water for the region
- open/park space
- urban programming (cultural, educational, entertainment, recreational facilities, mixed income housing)
- socio-economic diversity
- economic development (serving as an economic base for nearby communities)
- increased mobility
In this manner, the river infrastructure is optimized to maximize its performability to deal with the current issues of increasing development and densification.

In regards to land use planning, Los Angeles works reasonable well compared to the national standard as a system of relatively dense subcenters. The challenge is balancing high-density in-fill with mixed uses while conserving open space and flood control measures and managing congestion.

The overall strategy redefines the role of technology and nature. In this proposal, they are not seen as mutually exclusive, but rather reinforce each other to redefine the region. By proposing a new strategy for reviving the river, the design aims to expand the public and private program within the parameters of the site in order to accommodate a new multiplicity and density of program and space that operate at multiple scales.

The limits of the design are set within an understanding of the contextual systems and relationships and ability of River to respond to it. The River’s infrastructure is explored in its ability to obtain a multiplicity, or layering, of space, systems, program, and surfaces in order to accommodate the density required.

My thesis seeks to determine how through the implementation of a particular strategy focused on re-framing the River as a Multi-layer Infrastructure with embedded Urban Condensers/Cores, the surrounding edges can be challenged to densify, connect, and revitalize towards becoming active neighborhoods, the River can be revitalized to deal with larger urban conditions, and the region can be structured to support a denser fabric.
figure 3.1 | Satellite Map of Los Angeles
A satellite map showing the location of the urban cores.

figure 3.2 | Regional Diagram of Field Container
The diagram shows the location of Urban Cores and Urban Condensers and their integration into the larger regional system.
My focus area operates at the Metropolitan Scale within the city of Los Angeles in the stretch of the River from the Glendale Narrows through Downtown Los Angeles. The city of Los Angeles is used as a model to examine the future potential of the river deploying this strategy of the Field Container.

3.1.2 Metropolitan

At the metropolitan scale, my research focuses on the River's stretch from the Glendale Narrows through Downtown Los Angeles. The River in this stretch forms the edge of multiple districts within the city of Los Angeles. Comparative population densities for this area show that seven of the twelve areas have relatively higher concentrations of people compared to the city average of 7,828 people per square mile. The neighborhood of Boyle Heights shows the highest density of people with 16,367 people per square mile. Examining vacancy statistics for the area, the historical city center has some of the highest vacancy rates in the region. The land use map shows the nature of these statistics, with Boyle Heights being a predominantly residential district and the high vacancy of housing units located in the industrial center of Downtown Los Angeles.
figure 3.3 | Population Density and Vacancy Diagram
These diagrams show relative data for districts near the River

figure 3.4 | Existing Land Use Map
Unfolding the river into a linear diagram I examined the specific conditions affecting the edges. This linear mapping showed high residential concentrations to the east of the River, high concentrations of industrial use on both the western and eastern edges of the River, commuter and freight rail lines inhibiting access to the River, and the infrequency of river crossings.

A map showing publicly-owned and privately-owned land shows the high proportion of private property along the River's edge. Elysian Park and the Twin Towers Correctional Facility, both to the north of Downtown, are the only large tracks of publicly-owned land in the area.

With the movement of the industrial sector eastward into the Inland Empire, many industrial buildings are slowly relocating from Downtown Los Angeles. Thus, prominent rail yards that once served the industries at the River's edge have already closed or are in the process of terminating their service. I identified major transition areas, as potential sites for expanding the river infrastructure to deploy my Field Container strategy. In this context I describe transition areas as areas in disuse or areas changing uses towards a new identity, such as Taylor Yard, Mission Road Rail Yard, and Crown Coach.
I then identified key existing districts in the area, critical axes to the River, transition areas bordering the River, and transition areas near the River. My intervention area was a composite of these components. This area becomes activated by the deployment of the Field Container and its corresponding layers of Urban Programming, Flood Management, Park and Recreation, Transit, and Water Treatment.

These layers are distributed over two systems: Land Systems and Flow Systems. Land Systems deal with issues pertaining to flooding, water treatment, and urban development. Flow systems focus on managing congestion and transit through the area and larger region.
Transition areas along river's edge

1. Taylor Yard
2. Arroyo-Santo Confluencia
3. Downtown-Confluencia Area
4. Mission Road Rail Yard
5. Boyle Heights Confluencia
6. Downtown Area District
7. Downtown Industrial Area
8. Santa Fe Warehouse
9. Sears/Crown Coach

Established districts in surrounding area

10. Chinatown
11. Grand Ave/Colorado Center/Bunker Hill/Financial
12. Little Tokyo
13. Jewelry District
14. Gallery Row
15. Toy District
16. Fashion District
17. South Park

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**figure 3.7**
Transition Areas
Areas in disuse or changing uses along the river's edge.

**figure 3.8**
Components of the Intervention Area
Existing districts, critical axes, and transition sites near river.
figure 3.9 | Composite Intervention Area
Land Systems:

The Flood Zone layer distributes water storage areas on six major sites in the area. These sites allocate land as flood zones to deal with increased water volume from the predicted development of the region. Looking at the detailed map of downtown with the 100 year and 500 year flood inundation areas, these six flood mitigation areas serve as reserve overflow zones in addition to the carrying capacity of the channel.

The Water Filtration/Treatment Landscape layer treats storm water from the region. Regional water treatment facilities are located at three locations for progressive treatment of water: one located in the Glendale Narrows, another located at the confluence of River and its tributary, and the last located at the city boundary north of Vernon.

The other three layers show developable areas near the River. Three sites are selected as locations for developing the Urban Cores. Located close to major freeways and transit lines, these areas offer an opportunity to create dense urban centers along the River.
figure 3.11 | Flood Mitigation Layer
Flow Systems:

The proposal seeks to establish alternate methods of transit that integrate into a large system to reduce traffic congestion in the areas. Proposed is a new river metro line connecting communities along the run of the River and integrated into the larger metro system. To make the River more porous and allow for easier access to and across the River, a denser system of crossings (both pedestrian and vehicular) are proposed. The last layer proposed is a bus network with Express buses traversing into the fabric of the neighborhoods. The routes are chosen in relation to major axes and relative to other public facilities.

The proposed routes and transportation systems forms a new flow diagram. This diagram guides the location of potential developable sites.
These new sites for development are located according to the new flow diagram.
Superimposing these layers from the two systems forms the new geography of the Los Angeles River.

Figure 3.15 | Proposed Geography of the Los Angeles River
The following sequence shows the process of deploying the urban condensers and urban cores onto this metropolitan stretch of the river.
The new land use map shows the relocation of existing industry in concentrated areas in the interior of downtown while the riverside sites are distributed between park space and flood zones. Hybrid land-use categories are proposed to suggest mixed use occupation of the site.
3.1.3 Local

The sequence that follows shows the morphogenesis of the form of the Urban Core. By expanding the line of the River into an active field, the site becomes the focal point of the surrounding communities. The Urban Core serves to highlight these tensions by connecting key points on the site through an infrastructural building of mixed programming.

figure 3.18 | Generation of Urban Core
figure 3.19 | Proposed Plan of Media Arts Central
figure 3.20
Sectional Restructuring of Infrastructure Lines

figure 3.21
Programming the Urban Core
figure 3.22 | Media Arts Central Programming

Programming the Field Containers
figure 3.23 | Sections
3.2 Implementation

The process of implementing the Field Container strategy must deal with the complex nature of jurisdictional power from the regional level to the local level. Dealing with entangled land rights and obtaining privately owned property along the river’s banks serves as another major issue.

To manage the complex nature of jurisdictional power in Los Angeles, I propose a multi-agent development approach for the River Revitalization project. This involves collaboration at the regional, metropolitan and local scales and the involvement of both public and private interests in generation of value. This the conceptual base for the project combines regional, metropolitan and local interests and takes into consideration multiple constituencies.

In order to provide for regional planning and systems coordination, a regional level agency is proposed. This agency (The Los Angeles River Agency) would be composed of four major planning committees to deal with the major fields of the project and oversee the design-development process. The major committees proposed are the Flooding Committee, the Water Treatment Committee, the Transportation Committee, and the Urban Programming Committee. Their field of operation is divided into five development zones, chosen with respect to River conditions and city boundaries. These committees would work with the various municipal jurisdictions towards the development of the River and its regional agenda. Within this broader framework, the cities would be given the independence to develop the areas along three main structures: public, public/private, or private.
The following map shows the restructured property lines (dotted) for new developable building parcels.

The resultant design becomes an opportunity to combine public and private interest and funds for developing the Riverscape.
figure 3.26
Restructured
Property Lines
Los Angeles' history and continued growth show that its future relies on the management of an entire trans-ecological system. The systems that manage and integrate the vast basin into a cohesive architecture, such as its major transportation systems and urban policy, become fundamentally important as well as the bodies who use and operate them.

In this thesis I have tried to demonstrate how a project for revitalizing the Los Angeles River can be the motivation and impetus for structuring larger goals. As the region begins to grow internally and densify, these systems must be evaluated and restructured toward the betterment of the city and its inhabitants.

In this thesis I tried to address the complex regional, metropolitan, and local issues affecting the growth of the Southland while respecting the jurisdictional complexity of the region and the diverse population that constitutes its area. My belief is that the River presents an opportunity to create an integrated ecological system for the future of a region that is still defining its history.
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V. Bibliography:


