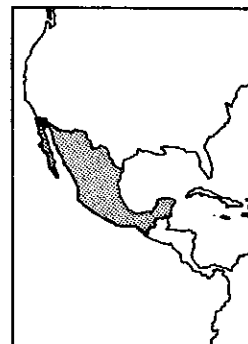


Tijuana

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In 1848, the fate of a small cattle ranching town in the Mexican territory of Alta California was decided. A 'rancheria' of little distinction known as Tijuana, which lay on the upper banks of a fertile river valley of the same name, was transformed into an international border town through an agreement between the USA and Mexico, aimed at settling a territorial war that had erupted two years earlier. At the Treaty of Guadalupe Hidalgo (1848), Mexican diplomats negotiated to preserve their nation's access to the Pacific Ocean via the Baja California peninsula.¹ The resulting bilateral agreement imposed a new international boundary line upon the landscape by stating that:

To avoid all difficulty in tracing on the land the limits that separate Upper and Lower California, it is agreed that the limit should consist in a straight line drawn from the middle of the Gila River, at the point where it meets the Colorado, to a point on the Pacific Coast, one marine league distant to the south of the most southerly point of the port of San Diego, according to the point drawing of this port which the second pilot of the Spanish armada, D. Juan de Pantoja, made in 1787 ...²

In this manner the border town of Tijuana was created. Only a century later, it was already one of the fastest growing

metropolitan areas on the continent, and the site of the largest international border crossing in the world.

The delimitation of the 1848 boundary line bisected the natural contour of the Tia Juana river valley, leaving the narrow upper portion of the river, a hilly surface interrupted by steep canyons and gorges, within Mexico, while the wide floodplain of the river, and its relatively flat lands, became the territory of the USA. It was not until more than a century later, that it was noted that Tijuana received the poorest lands in the region when the border line was drawn.³ It is now necessary for Tijuana, one of the largest cities on the rapidly urbanizing USA - Mexico border, to engineer an urban development plan for nearly one million inhabitants, superimposed upon a very difficult urban topographic surface which is dominated by floodprone canyons and river beds, steep sloping hills, mountainous terrain and inadequate sources of potable water.

Tijuana's spatial structure. Table 1 traces Tijuana's demographic transition from a rural village of 11271 inhabitants in 1930, to a national metropolis whose population will approach one million by the end of the present decade. Over time, three important determinants of the city's spatial organization can be identified: first,

¹D. Pinera and J. Ortiz, 'Semblanza del Valle de Tijuana' in D. Pinera, ed, *Panorama Historico de Baja California*, Centro de Investigaciones Historicas UNAM-UABC, Tijuana, 1983, pp 253-273.

²*Ibid*, p 271.

³K. Lynch and D. Appleyard, *Temporary Paradise: A Look at the Special Landscape of the San Diego Region*, Marsten Foundation, San Diego, CA, 1974.

City profile

Table 1. Population growth: Municipio de Tijuana, Mexico.

Year	Population	Growth rate (%)
1930	11271	—
1940	21977	6.9
1950	65364	11.5
1960	165690	9.7
1970	340583	7.2
1975	492666	7.3
1980	709340	7.3
1984	812404	5.6
1990	1129000	5.6
2000	1815000	4.8

Sources: Secretaria de Industria y Comercio, Direccion de Estudios, Censos de Poblacion 1930, 1940, 1950, 1960, 1970, and Oficina del Gobernador, Estado de Baja California, *Plan de Desarrollo Urbano de la Ciudad de Tijuana: Version Abreviada*, Mexicali, Baja California, 1984, pp 93–94.

the traditional emphasis on centralized urban design plans in Mexico; second, the physical setting, principally the Tia Juana river; and third, the international border.

The historic convention of designing rectangular structured cities centred around a single plaza can be traced to the period of Spanish colonization of Mexico in the 16th and 17th centuries. During this era, Spanish architects borrowed the Greek and Roman 'grid-iron' plan for city design. Following this scheme, the Spanish colonial urban plan called for a central plaza to serve as the functional nucleus of the city, while dominant urban institutions like the church and the municipal government office were clustered around it, and the elite members of society located in adjacent neigh-

'the city centre houses both a Mexican business district and the main tourist zone'

bourhoods.⁴ Consequently, Tijuana's early design clearly followed a centralized format (Figure 1), and the pattern has endured. Morphology is still compact, despite significant population growth since the 1950s. The city centre has dominated urban activity patterns throughout the city's history. Journey to work movements have traditionally displayed a strong centripetal geometry, reflecting a concentration of work place

locations in and around the nucleus of the city. Today the city centre houses both a Mexican business district and the main tourist zone of the city.

Tijuana's centralized structure has also been preserved for functional reasons. As the settlement grew in size, provision of infrastructure (roads, sewerage, drainage systems, piped water) and community services (schools, street lights) tended to emanate from the centre of the urbanized area outward, as well as along the main commercial spine of the city, which parallels the river (Figure 2). Thus, a residential location near to the centre of the city provided better opportunities for access to urban services. Social status has also tended to correlate spatially with centrality. Two of the wealthiest neighbourhoods in Tijuana, Chapultepec and Cacho, lie directly adjacent to the centre of the city, while many of the poorest 'colonias' (colonies, or communities typically lacking public services such as sewerage and paved streets) are located on the periphery of the urbanized region.⁵ In addition, an inadequate mass transit system, and a limited network of highways, have further restricted mobility, making it even more necessary to live near the urban core.

The morphology of Tijuana corresponds with the natural geographic structure of the Tia Juana river and its flood plain. The original settlement was located at the heart of the flat lands of the river plain, which increase in width towards today's international border. The city's growth has proceeded in a south-easterly direction, running parallel to the configuration of the river bed and its horizontal surface. On either side of the floodplain are steep hills incompatible with development. The principal commercial artery of the city, Aguas Calientes/Lopez Mateos Boulevard, also runs parallel to the river (see Figure 2), and like the city centre, this corridor has attracted many of the important land uses in the city, including the municipal sports auditorium, the racetrack and the city's main country club. It is hardly surprising

⁴D. Stanislawski, 'Early Spanish town planning in the New World', *Geographical Review*, Vol 37, 1947, pp 95–105.

⁵E. Griffin and L. Ford, 'A model of Latin American city structure', *Geographical Review*, Vol 70, No 4, October 1980, pp 397–422.

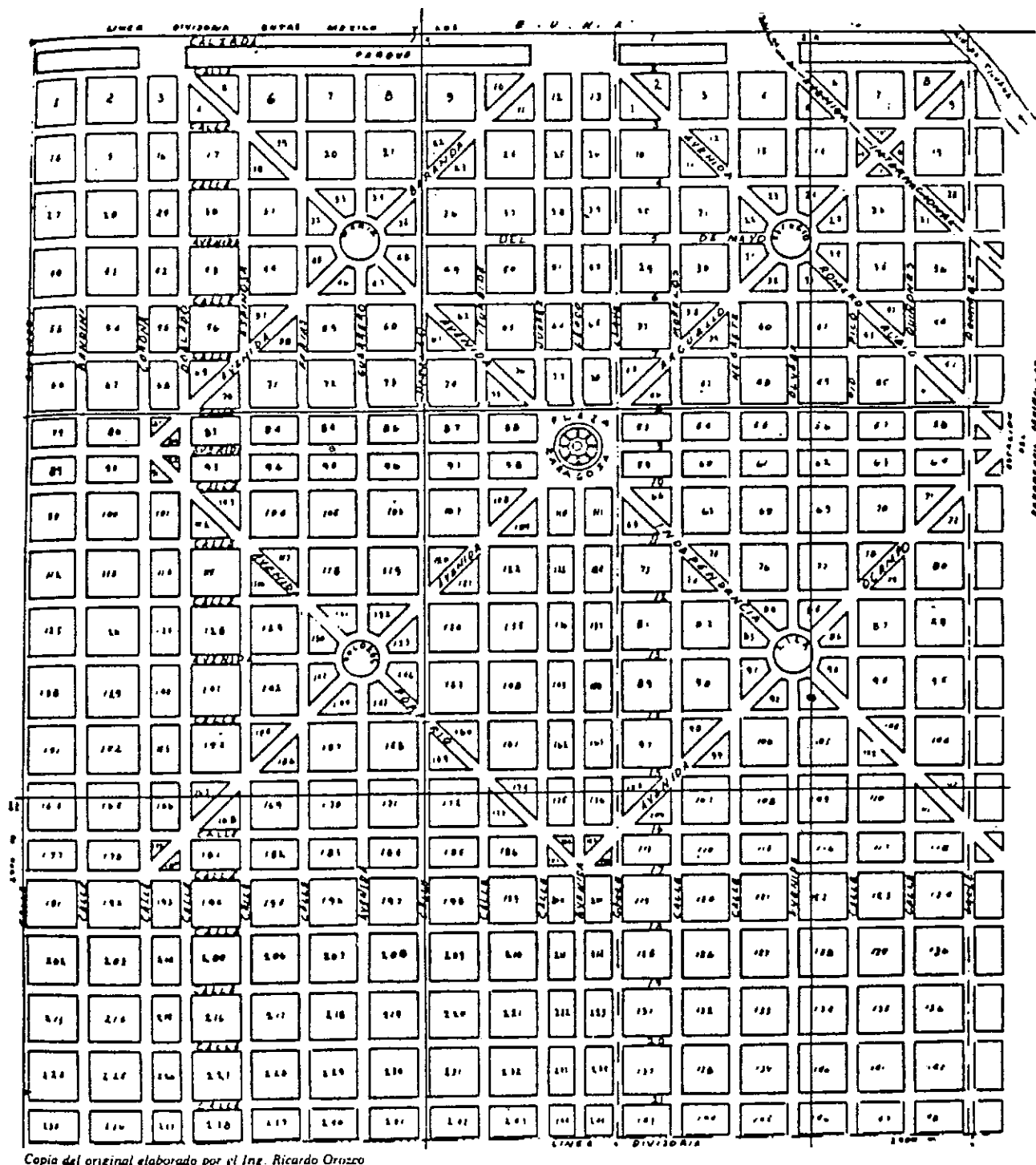


Figure 1. Original urban plan of Tijuana, 1889.

Source: After D. Pinera, ed, *Panorama Histórico de Baja California*, Centro de Investigaciones Históricas UNAM-UABC, Tijuana, 1983.

that the river has defined Tijuana's morphology, given the unaccommodating nature of the surrounding topography. Re-

cently, the Mexican government has proclaimed the river zone to be a major growth area for the city's long-range

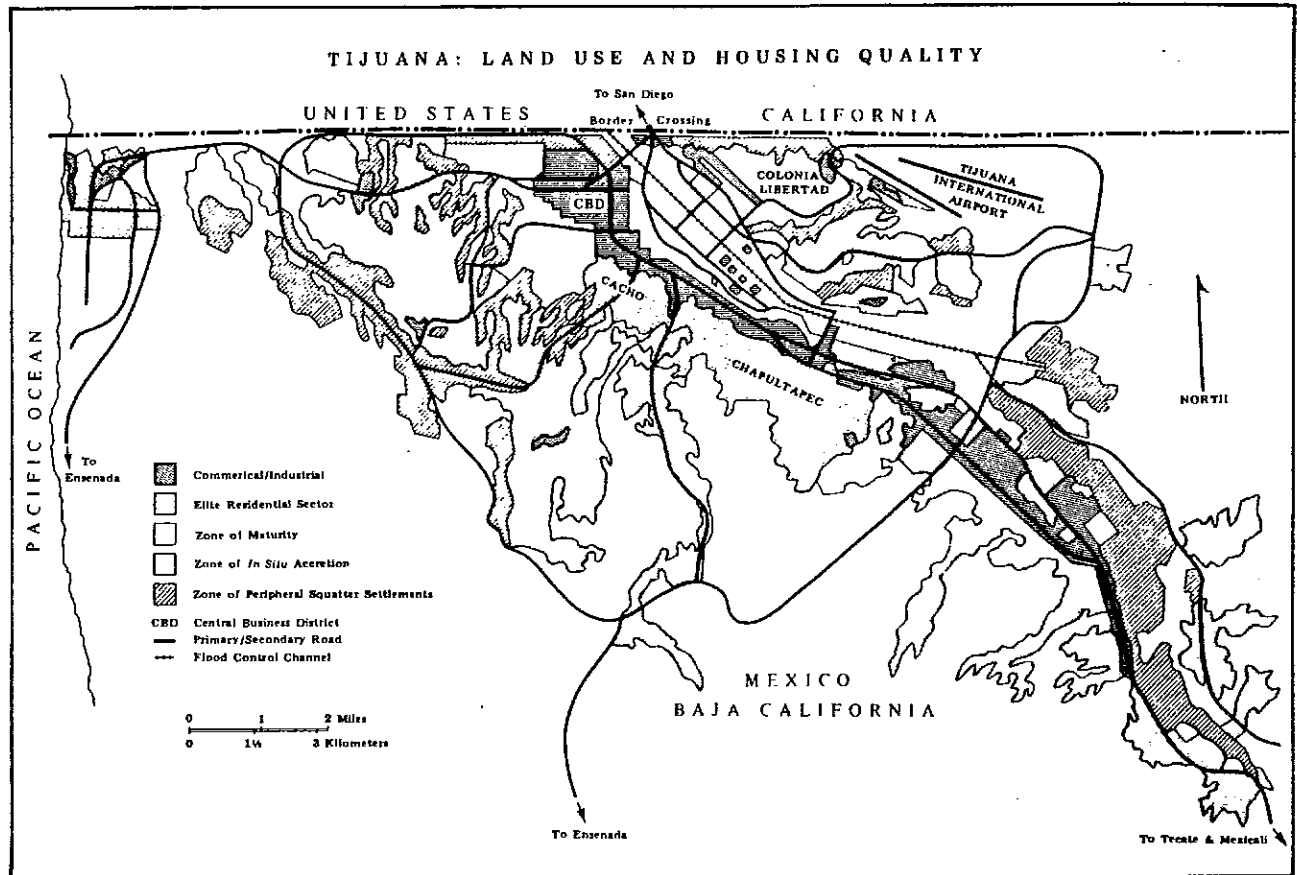


Figure 2. Tijuana land-use structure, 1980.

Source: After L. Ford and E. Griffin, *Geographical Review*, Vol 70, No 4, 1980, with permission of the American Geographical Society.

development plan, and by building a concrete channelization project, vacant lands have been opened up within the river basin to house new public and private development projects in this dynamic growth corridor.

A third important influence on the spatial configuration of this border city is the international boundary line. Subsequent to the drawing of the boundary separating Tijuana from the newly formed territory of Upper California in the USA, the city's *raison d'être* became inexorably tied to its northern neighbour. Trade, tourism, in short, economic interdependence with southern California would become the lifeline to a town that would otherwise have remained a marginal rural settlement in Mexico. Yet the border injected life into the city, and

from its inception, the urban core was located within a few hundred yards of the border and passage into San Diego, California. Tijuana's early development was not only oriented toward the USA; land subdivisions were often funded by US capital. The best example is Colonia Libertad, a neighbourhood lying directly on the boundary line, built originally by US interests to provide a district to house Mexicans being deported from California back to Mexico in the early 20th century.

In the 1920s and 1930s, Tijuana's structural ties with California were given further impetus, and the central business district's proximity to the border gate took on new meaning. Prohibition north of the border led to a boom in commercial development in Tijuana, highlighted

by the transformation of Revolution Avenue into a zone of cabarets, gambling houses, and other tourist and entertainment facilities. A religious organization in San Diego characterized the cityscape of that era by saying:

Everything goes at Tijuana. There are scores of gambling devices, long drinking bars, dance halls, hop joints, cribs for prostitutes, cock fights, dog fights, bull fights . . . the town is a mecca of prostitutes, booze sellers, gamblers and other American vermin.⁶

Modernization. The year 1961 marked another turning point in Tijuana's evolution. This was the date of the first major

'the government recognized the value of the border region as a national economic resource'

effort by the Mexican government to establish a programme to assist the rapidly growing northern border cities, such as Tijuana. By creating the Programa Nacional Fronterizo (PRONAF), the National Frontier Programme, the government recognized the value of the border region as a national economic resource and devised specific strategies aimed at maximizing the region's productivity. These strategies included; first, beautification of the border cities; second, strengthening of the regional economy, especially industry; and third, better city planning, including the provision of basic services (water, sewerage, drainage facilities), paving of streets, and eradication of substandard housing.⁷

Fuelled by the catalyst of government intervention in the two decades following the formation of PRONAF, Tijuana

'the emerging picture is one of a dynamic metropolis'

underwent a dramatic transformation. Facilitating these changes were public sector financed projects aimed at building industrial parks, freeways, housing and

tourist facilities. By the early 1980s, Tijuana was rapidly shedding its former image of a dusty, useless border town, as the modernization programmes began to leave their collective impact on the cityscape. Today the emerging picture is one of a dynamic metropolis with modern office complexes, freeways, shopping centres and glass and steel high-rise buildings.

Two centrepieces of the government modernization effort have been the city centre area, and the river zone (Figure 3), while other new growth areas are being stimulated east of the city centre, on the Mesa de Otay, and south-west of the city centre along the coast. The main commercial artery of the city centre zone, Revolution Avenue, has been widened, repaved and landscaped, to enhance its attractiveness to tourists. In addition, storefronts have been renovated, and private investors have relocated new banks, stores and other establishments to the boulevard. New office buildings and parking structures adorn the changing city centre landscape, while a recently constructed pedestrian walkway to the border crossing, and a nearby artisan goods market, add to the dynamism of the central business district and tourist zone.

The changes to the river zone are perhaps the most dramatic in the cityscape. Beginning in the mid-1970s, in a series of sweeping moves, government cleared and relocated the large squatter settlements that had illegally occupied lands in the river bed. An expensive concrete flood control channel was installed (Figure 3), freeing thousands of acres of land for development. This area was declared a federal trust ('fideicomiso'), and brought into the jurisdiction of the main federal urban planning agency of Mexico, the Secretary for Human Settlements and Public Works (SAHOP), which later became the Secretary for Urban Development and Ecology, under the De la Madrid administration. The River Zone Development Plan was an ambitious plan to convert the once un-

⁶J. Price, *Tijuana: Urbanization in a Border Culture*, University of Notre Dame Press, Notre Dame, 1973, p 53.

⁷C. D. Dillman, 'Urban growth along Mexico's northern border and the Mexican National Border Program', *The Journal of Developing Areas*, Vol 4, No 4, 1970, pp 487-507.

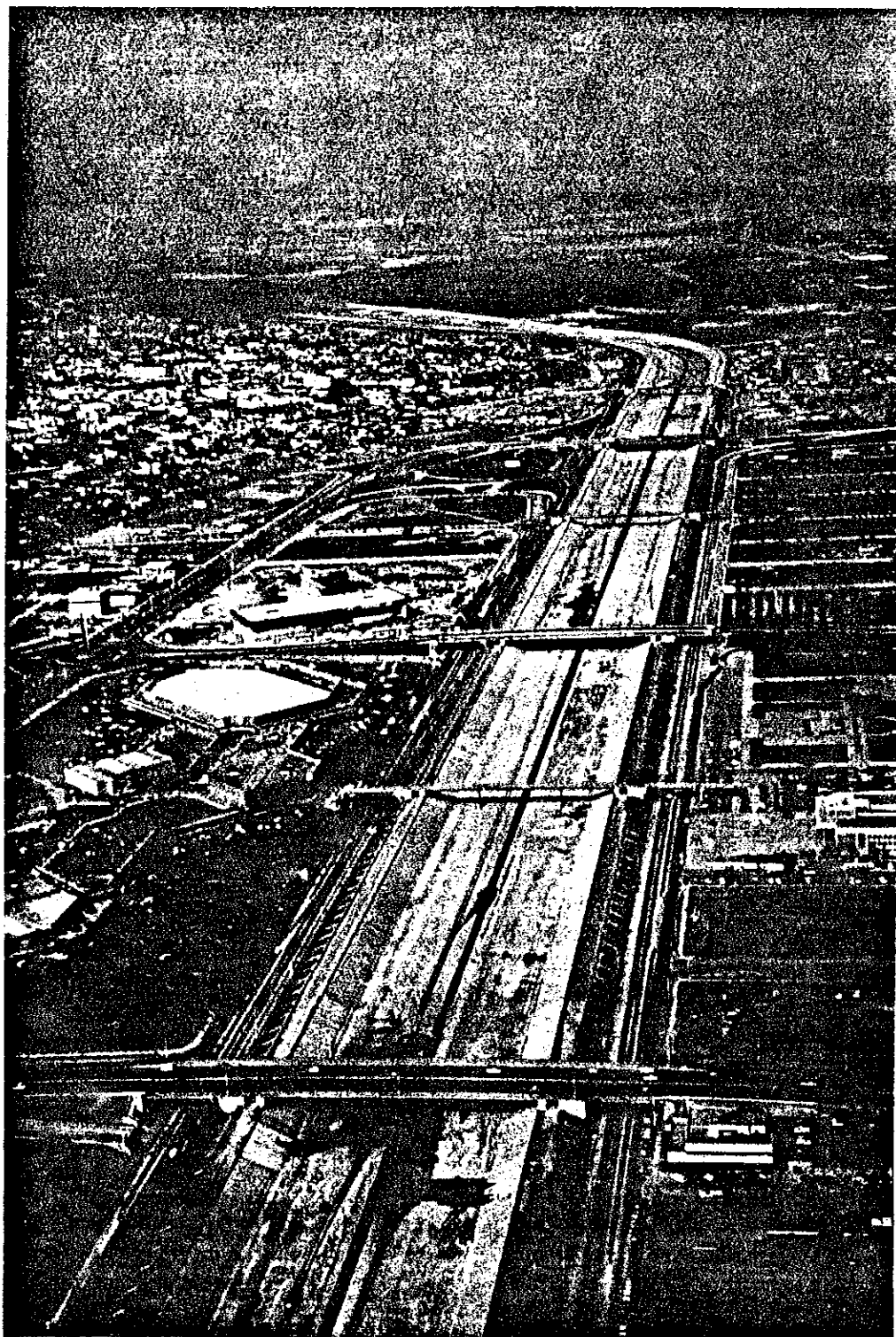


Figure 3. The River Zone modernization project with flood control channel and new highway transport grid.

stable terrain in the river floodplain into a corridor of high-grade commercial, residential and tourist land uses. The plan called for a modern regional shopping

mall, and a system of new highways designed in a rectangular format running parallel to the river, unified by a series of traffic circles, giving an air of Parisian urban design. Two other important land uses in the River Zone include the Government Centre, and the Cultural Centre, with its domed theatre ('la bola') a visible symbol of modernization to Americans crossing the San Ysidro border gate into Tijuana.

Implicit in the transformation of Tijuana into a modern centre of business, industry and tourism has been a gradual restructuring of the spatial organization of the metropolis. Two elements stand out in this spatial reordering. First, there is a clear indication that planners and officials wish to move the geographic centre of the city to the east, away from the old central business district. Second, there is evidence that planners envision a future Tijuana that is far more spatially dispersed.

Attempts to shift the geographical nucleus of the city on an easterly course reflect, in part, the functional necessity to relieve the growing congestion and high

densities associated with the old urban core (Figure 4). Also, most of the available flat land for development lies east of the city centre. The largest tract of good land for development lies on the Mesa de Otay, east of Tijuana Airport (Figure 2). This area has become one of the salient peripheral growth districts in the city and several key land uses are located here, including the city's largest university, the Autonomous University of Baja California, the New Tijuana Industrial Park, and

'Tijuana's future cannot be viewed with great optimism'

the Second Border Crossing into San Diego. The latter has become an additional reason for encouraging growth on the city's eastern flank – there is now rapid transport access into San Diego here. Also planned for the Mesa in the future are new commercial and tourist developments and a major government/office development complex.

Further evidence of the easterly shift in urban development is offered by the



Figure 4. Chaotic land-use pattern and excessive densities resulting from spontaneous growth in the urban core.

recent building of a new inter-city bus depot at the foot of the Mesa de Otay, and the location of the next major planned residential growth centre at El Florido, east of the central city on the road to Tecate (Figure 2). El Florido's development underscores a gradual shift towards building middle- and upper-income housing on the city's periphery. Mesa de Otay is another example of this, as is the Playas area along the coast. This trend is encouraged by public expenditures, particularly on the growing freeway system which is expected to cover 73 miles by the end of the decade.

Tijuana's future. Despite recent attempts at more rational planning by the Mexican government, Tijuana's future cannot be viewed with great optimism. Several decades of spontaneous, unplanned growth have left an essentially chaotic land-use pattern (Figure 4) that will be difficult to correct in the short and medium term. Government expenditures and modernization programmes are creating a city of polarized territories – redeveloped, tourist-oriented zones with modern facilities (the river Zone, the city centre) on the one hand; and poor, marginal and growing squatter communities (Figure 5) on the other. By the year 2000, nearly two million inhabitants will occupy a physical setting of increasingly scarce space, limited water supply, and fragile ecological conditions.

Perhaps the single most crucial ingredient in the city's future is water, a resource precious to all cities in the arid borderlands, and more so to Tijuana which is so distant from the nearest major source of fresh water, the Colorado River. Great hope is placed upon the Colorado River-Tijuana aqueduct as the solution to dire water shortages currently facing the city. Yet the provision of water and the construction of this aqueduct are further complicated by the inadequate condition of Tijuana's ageing sewerage infrastructure. Ironically, an expansion of the city's water supply and piped water facilities will generate a corresponding

increase in the demand for improved sewage management. More water overall will mean larger volumes of sewage flows. Further complicating the matter is the fact that raw sewage spills generally flow into the Tia Juana river watershed, and eventually seep across the international boundary into the USA. Recently, the Inter-American Development Bank, in granting a loan to Mexico for construction of the Colorado River-Tijuana aqueduct, requested a guarantee from Mexico that adequate measures

'43.8% of the city's population is without running water'

would be taken to construct sewerage facilities to arrest the flow of untreated Tijuana sewage into the USA.⁸

Water is but one of several public services severely lacking in many neighbourhoods of Tijuana. The city's second major challenge in planning for the future will be to provide the full range of basic urban services to the growing number of inhabitants living in the poorest zones of the city, termed by Mexican planners 'asentamientos irregulares', (irregular settlements), due to their chaotic and unplanned nature (Figure 5). According to a recent study, 43.8% of the city's population is without running water, 47% is lacking in drainage facilities, 58% of city streets remain unpaved, and 70.6% of those streets are without lighting facilities.⁹

In the short run, the outlook for providing comprehensive urban services to the ubiquitous squatter communities is not particularly encouraging. The Mexican government finds itself deficient in monies for 'soft' urban improvements (social infrastructure). A programme of fiscal austerity, including recent devaluation measures, has diminished the size of the public budget, making it more likely that government funds will be diverted toward capital-intensive projects, such as industrial parks or tourist facilities. The

⁸J. Gandelman, 'Wilson links Mexico sewage curbs, loan OK', *The San Diego Union*, 16 January 1985, pp 1 and 5.

⁹Comite Promotor del Desarrollo Economico, *Plan Integral de Desarrollo de Baja California: Asentamientos Humanos*, Mexicali, Baja California, 1979, p 63.

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**'Tijuana's future will be tied
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rubber tyres, dust pollution, industrial chemical run-off, pesticide pollution, and raw sewage spillages illustrate the severity of environmental threats already facing the city. Most importantly, these problems spill across the international

border, suggesting that Tijuana's future will be tied to that of its northern neighbour, San Diego, California. The two cities will become increasingly integrated in the future, and will be called upon to manage jointly urban growth, land use, water, energy supply and the environment. The ability to work out suitable mutual arrangements to accommodate the symbiotic trans-boundary effects of growth will have a great influence on Tijuana's well-being by the year 2000 and beyond.