Urban Morphology and Integrative Efficacy in Quito's Major Metropolitan Parks

Since the beginning of explosive population growth in Quito, Ecuador around 1970 (Gifex, 2017), the capital city has introduced or refurbished several parks intended to serve Quito's dense urban parishes. However, mere episodic attention to planning and the adoption of discontiguous development strategies has given rise to green spaces antagonistic to their neighborhoods. Examining the evolving plans, physical forms, and land use of Quito's green spaces for accessibility and service success unveils the struggling neighborhood integration efficacy of the city's major metropolitan parks.

Quito first measured its total park area in 1989, discovering that the city's green space-per-inhabitant was around four square meters (Suárez, 2019). This figure is less than half of the nine square meters per capita recommended by the World Health Organization (Trujillo et al., 2019), and the city accordingly revised its 1985 town plan, Ordinance 2446, this time incorporating more green space to ameliorate the life quality of city inhabitants. In recent decades, the concept of life quality "has begun to be increasingly used in the health assessments field or as a well-being measure" (Trujillo et al., 2019). Parks, grass, and trees in urban areas all contribute to the city population's overall quality of life. The study claims that Quito's metropolitan parks "help to improve the life quality of all inhabitants in the urban system" (Trujillo et al., 2019). However, due to largely untamed urban sprawl, when the municipality attempted to rectify its green space per capita, little space was left in proximity to the urban center (Gifex, 2017). Instead of broadly making the city more open and green, in 1993 urban planners settled on opening a single new park that would be large enough to meet the city's green space quota. This project came to be Guangüiltagua Metropolitan Park. Although the

initiative succeeded in achieving a city-wide green space per capita figure over nine square meters, the figure is functionally skewed, suggesting a more equitable and accessible park system than the population's lived reality (Carrión, 1993), meaning the necessary service radius of each park increases.

The service radii of Quito's urban parks were examined in 2019 by urban planner Ana Belen Suárez to determine the value and accessibility of each park. Examining urban forms using official cadastral maps, researchers measured the total size of every major park and its effective radius of influence across the city's parishes. From the results, four parks stand out as having the most significant range of accessibility and service. On the northern end of the metropolitan area, three parks have assumed positions of integral value to their respective neighborhoods. First is Bicentennial Park, the northernmost park with a total area just over a half square mile and a radius of influence of 3111 meters. Nearby are Guangüiltagua Park, two square miles with a service radius of 3484 meters, and La Carolina Park, just a quarter of a square mile, yet boasting a 2756 meter radius of influence. The other two parks with the greatest radii of influence are Chilibulo and Metrosur Parks, with approximately one and three square miles in area respectively. Despite their large areas and greater accessibility resulting in both having service areas over 3000 meters, Suárez notes that these have some of the lowest monthly visit totals at 5,000 and 11,000 respectively (2018: 18), meaning the green space of these parks is of proportionately lower service quality and value to the city and its residents. Conversely, the significant northern parks of Guangüiltagua, Bicentennial, and La Carolina have some of the largest average monthly visitor totals of 56,000, 100,000, and 228,000.

While these statistics may appear to privilege higher population numbers in the northern parishes, Quito's most populous and dense areas fall almost equidistant between the three

denoted northern parks and the two large parks of the south (Gifex, 2017). Geographical distribution is moderately balanced, as “98% of Quito’s population lives within 800 meters of a designated greenspace” (Watson et al., 2022). However, over a quarter of the city's population lives outside a 300 meter radius from the nearest designated greenspace (Watson et al., 2022), a distance considered the “average pedestrian proximity” for frequent visitors living in the area (Hermida et al., 2015). According to Suarez, the disparity between supposed geographical importance and usage frequency “is due to the low relationship of the parks with their surroundings. They are green areas that work as closed classrooms and not active green areas” (2018: 19). Based on these figures, effective integration into the neighborhood is seemingly the most paramount morphological consideration for those in charge of Quito’s green spaces. Collected data shows that these parks typically see three or four times more usage during the weekends, which Suarez’s study attributes to “distance, transportation, difficulty of access, or lack of supply of daily activities” (Suárez, 2019). Poor integration into neighborhoods means that most citizens only find time to visit the underutilized parks on weekends, lessening the effect of these green spaces on the population's quality of life.

Suarez notes that there exist “several factors” that can reduce a park’s usage frequency and subsequently a park’s value, but that “without a doubt the accessible open perimeters and their relationship with the city are of importance for optimal operation” (Suárez, 2019). Edge permeability analysis reveals the accessibility of metropolitan parks. In the case of Quito, this concerns connections to public transportation systems such as the metro line or the ecovía bus system, private transportation considerations such as road network access and parking, pedestrian entrances and routes with potential natural or urban form obstructions, all

contextualized against usage statistics and population density within the 300 meter “average pedestrian proximity” (Hermida et al., 2015).

La Carolina park, “a Central Park analogy” (Trujillo et al., 2019: 4), reflects all of these quintessential traits of an accessible, permeable urban green space. Surrounded by four major thoroughfares of the city and possessing no fence, wall, or any built barriers to entry, the park is highly permeable for both pedestrians and vehicles. Multiple bus stops, cycle paths, and a two-way subway stop (Gifex, 2017) compliment the effective integration into the neighborhood’s fabric.

But La Carolina is in many respects an outlier. The majority of Quito’s major green spaces are underutilized (Suárez, 2019) namely because they have a minimal relationship with their surrounding neighborhood. Through the lens of edge permeability analysis, most parks are evidently deficient in terms of accessibility. This highlights perhaps the most prominent barrier to the success of Quito’s green space network — the fact that “cities and nature are always connected” (Barragán, 2021), so crafting one must always entail thinking about integration with the other. Quito should inherently follow this principle better. The right to the city and the rights of nature are both exalted in the Ecuadorian Constitution, yet in practice while creating designated green space, their supposed harmony is discontiguous. The built environment, architecture, and the neighborhood all must blend with the ecosystem for the highest quality metropolitan parks.

In the past, the city has had a more sustainable relationship with its broader environment. “Historically, green space in Quito was defined by the rural–urban relationship”, as parks were “ejidos” — agricultural or livestock zones near the edge of the city (Watson et al., 2022). This finally changed in the 1945 Town Master Plan by Jones Odriozola. Up until then, the

urbanization process did not consider parks while planning and designing the populous urban sprawl that continues through today (Aragundi et al., 2016). This depicts the morphological backstory of why Quito still struggles to provide accessible, valuable parks. A case study examination of Guangüiltagua Metropolitan Park can grant a deeper understanding of the accessibility deficits.

The lack of edge permeability for Guangüiltagua Metropolitan Park derives from its antagonistic relationship with its neighborhood. La Carolina Park, a nearby green space in an increasingly central urban location, was established following the purchase of La Carolina Hacienda in 1939. Between 1945 and 1956, the fringe-belt development focused upon northern areas around La Carolina Park, and the development of green spaces at the time was limited geographically by not just uneven terrain, but the largely untamed expansion of residential neighborhoods (Gifex, 2017). As a result, places like El Batán Cemetery and Atahualpa Olympic Stadium were constructed at the outskirts to serve as a growth limit to the northern sprawl (GAD, 2011). Today, the spaces are both within the main city, yet by design disassociate from it. The cemetery was resigned to disuse before the turn of the century, remaining walled off to pedestrian or visual relationships with the broader neighborhood. The stadium, intended to serve as a single south-facing facade, struggles to relate to the built fabric of significantly smaller and lower edifices. It generates vacuums of activity due to its specialized land use and subsequently infrequent usage (Suárez, 2019). During this period, the land that would come to be Guangüiltagua Metropolitan Park was part of the Miraflores Hacienda (Salazar, 2013). By 1974, the urban residential area had expanded to the western limits of the hacienda. Development was limited until 1977, when a water treatment facility was finally installed in the area (Vasconez et al., 1997). This spur of development on the western edge began to populate the neighborhood

with the urban forms that today impede the accessibility and integration of the modern park. At the opposite end, the eastern side of the park meets a eucalyptus forest on a steep 77% slope, a topological barrier that makes the entire side of the park impermeable (GAD, 2011). Improvements to the road network of the metropolitan area ushered into the neighborhood both greater populations and a new stage of morphology. Specifically, the construction of two major thoroughfares provided some effective transportation routes to the park. Both completed in 1983, these were Simón Bolívar Avenue and Eloy Alfaro Avenue. While the road network serviced an influx of population and construction, both avenues were designed with the intent to form a perimeter, resulting in wide six-lane streets that generate disconnection and hinder pedestrian traffic to this day (GAD, 2011).

In perhaps the single most important act in Quito's metropolitan parks design morphology, the city composed a survey in 1989 to evaluate the amount of green space per resident for the first time in the city's history. Resolving the study with a figure of less than four square meters of space per inhabitant, Quito's urban planning philosophy altered to include life quality considerations of the "ecological system and public space as an element of urban structuring" (Suárez, 2019). With the ultimate objective of significantly raising the green space per capita, the city began creating designs for large metropolitan parks intended to have regional influence beyond city limits. In their mission, they delineated eight zones for ecological conservation and selected the expansive site of the Miraflores Hacienda for the creation of a park to address the major green space deficit (Carrión, 1993). Their designs were guided by the necessity for more public space and ecological protection, serving both the recreational and conservation needs of the area, but the city utilized the park project to address other deficits as well. The increasing lack of open space in the limited usable terrain of the valley demanded

attention, and the urban sprawl needed herding. The Miraflores Hacienda location was in-part selected for a strategic purpose, curbing and containing eastern expansion with an enormous, impassable green space (Suárez, 2019). Not only this, but the location also would serve as a safe evacuation point for the northern residential areas during natural disasters (Watson et al., 2022). The city's Andean topography beside the active Pichincha volcano puts it at a "relatively high seismic hazard" for earthquakes, landslides and active faults. Historically, disaster fallout was the primary use for public green spaces in Quito, such as the refugee camps assembled after the earthquakes during the 1860s in the Plazas Mayor and Santo Domingo. This provision became integrated into Quito's professional urban planning practice during the creation of official safety sites across the 20th century (Metro Ecuador, 2019).

As urban sprawl continued to populate the border with denser forms and fabric, the expropriation of the hacienda began in 1993, and in 1994 the Master Plan of Bellavista Metropolitan Park was drawn up, although the park would later be renamed Güanguiltagua (Salazar, 2013). Included in the initial plan was a transition strip between the park and city, based on other facilities in the surroundings, to create a coherent neighborhood around the new park. Unfortunately, the plans are far from fully developed or adhered to. The relationship between the green space and its neighborhood is poor and discontiguous, and the initial edge integration "treatment criteria were not applied" (Suárez, 2019). Despite the 1994 Master Plan and a successive 2007 Comprehensive Management Plan, which officially renamed the park Güanguiltagua, it took until 2011 for Municipal Ordinance 2818 of the Metropolitan District of Quito to designate the precise borders of the park and neighborhood. However, by this time residential construction had autonomy on the most important western edge, the side of the park facing the city. Quito was unable to expropriate properties or leverage special construction and

land use regulation on previously built edifices “that have no relationship with a park that did not exist before” (Suárez, 2019). As a result, the neighborhood has been evolving separately from the park. The urban forms along the western edge preserve a unified facade facing outward to the city, ignoring the metropolitan park with bland, imposing walls. This already was a concern at the outset in 1993, when urban planner Fernando Carrión opined that Güanguiltagua’s primary issue “is that of its integration into the urban fabric or that of the articulation of the natural space in development with its built environment” (Carrión, 1993), but these circumstances remain unaddressed. As years pass, the forms on the property edge continually grow higher. In multiple cases, old one-to-three story residences have recently been torn down to preference construction of housing up to eight floors tall (MDMQ, 2015), increasingly impairing the possibilities of openings spawning between the city parish and Güanguiltagua.

Today, Güanguiltagua Metropolitan Park suffers from a lack of permeability and integration of its northern, western, and southern edges. Both the number of construction projects and the building height along the border have escalated, most notably in the north and south (Suárez, 2019). Despite the topographic challenges on these ends, where the mountain to the east descends into the city, the greater amount of open space has instigated aggressive development of several four-to-five floor private buildings since the first announcement of the new park (Gifex, 2017). The uneven terrain presents far less of a construction challenge along the front, western edge of the park, although the network of primary roads in this neighborhood creates difficulty for pedestrian access. The major Avenues of Eloy Alfaro, 6 de Diciembre, and de los Granados transit the neighborhood at different topographic levels while all running parallel to the park, which creates challenges to flowing traffic and accessibility (GAD, 2011). The relatively flat topography on the western edge made it the obvious choice for both the vehicular and

pedestrian access points, but the roads and neighborhood were already well developed by this time and the properties enclosed the green space, most dominantly with “three private residential complexes that even privatize entrances to the park” (Suárez, 2019). As a result, all four sides of Güanguiltagua Metropolitan Park have either natural or constructed impediments of form toward a coherent urban fabric.

In contrast, La Carolina Park represents the success of a Quito park dating back to its 1939 inception, long before the sudden municipal attention toward green space. The fact that the park was established before the majority of the modern northern development (Gifex, 2017) meant instead of retroactively jettisoning a park into a neighborhood like they later did with Güanguiltagua, the developers and urban designers over the coming decades were tasked with conforming construction to the prime business district’s centrality of La Carolina. The sustainable morphology in the area immediately surrounding the park seamlessly integrates the park with no need for walls or fencing, meaning the park has 100% permeability (Murray, 1997). Accessibility is further increased with tree-covered parking and trailheads along every edge of the park. Over the years, La Carolina has come to be Quito’s quintessential park thanks to its accessible location and successful neighborhood integration, and changes in land use have kept the park relevant to city culture. While historically the park served as disaster fallout and for social or cultural gathering (Watson et al., 2022), the attention toward life quality has shifted the usage of La Carolina toward recreational activities (Trujillo et al., 2019). According to Quito’s official tourism website, the park has numerous soccer fields and courts for basketball and ecuavolley, alongside a skatepark and pond for boating (2010). Of course, the park has not abandoned its prior gathering uses, still hosting an exhibition center, botanical gardens, and a

vivarium. The accessibility and array of uses garner flocks of visitors more than double of any other metropolitan park in Quito, and demonstrates why other urban parks have failed to do so.

Neglecting to calculate the green space per capita until 1989 has left Quito and its parks system to play catch-up for years to come, now hindered by the challenges of modern built fabric. In their outline for Quito's future through 2040, "the municipality of the Metropolitan District of Quito recognized the importance of an urban green network for delivering social and natural benefits" (Watson et al., 2022). The drive toward expanded life quality in Quito — an urban area often associated with imagery of unrest and protest — today devotes a portion of the movement to achieving better and more equitable green space (Barragán, 2021). Yet, as the 2040 outline acknowledged, the road ahead is not easy nor clear. While Güanguiltagua has demonstrated problems, the park situation in the south of the city is even worse, lacking better parks in the area to compensate, as is the case with La Carolina with regards to Güanguiltagua. The south has been routinely marginalized by worse parks (Barragán, 2021; Loor et al., 2021), in part attributable to the challenging geography like ravines and steep inclines (Watson et al., 2022). Overcoming this is not a transient issue, but a prolonged onus of effective morphological practices from the municipality. As they actively work to improve park conditions, green spaces such as Rumipamba and Chilibulo Metropolitan Parks, which were once created for disaster safety and to contain east-west expansion (Suárez, 2019), are now being approached with a lens of improving recreation and life quality. Even Güanguiltagua is being readdressed. Parks consisting largely of forest area, such as Güanguiltagua and Metrosur, have undergone a nine-year reforestation program and are now portioning some land use toward the expansion of activities (Pirjevec et al., 2021). This is to meet the population's demands for more recreational areas such as sport courts, which nearly half of Quito wants more of (Watson et al., 2022: 9). Just

as the built fabric of Quito continues to proliferate with a growing population, the urban green space network of the city must also grow in tandem. As the contrasting case studies of La Carolina and Güanguiltagua represent, successful and sustainable parks develop best when done concurrently with the development of the neighborhood (Fierro & Hoyos, 2019). Else, it becomes increasingly more difficult to create public green space that is not antagonistic to the neighborhood as years pass and the built forms of the city are raised. The central morphological issue that has and will continue to confront Quito's parks is the harmonious integration of green space and urban forms.

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