

# Urban Slopes: the Inclined Elevators of Pittsburgh and Valparaíso

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## Overcoming Topography

Situated where the confluence of the Allegheny and the Monongahela Rivers forms the Ohio, Pittsburgh was founded as a strategic fort at what was then the frontier of the American West. Cheap energy from coal, availability of other raw materials and easy access to the Mississippi all contributed to Pittsburgh's rapid development and by the first quarter of the nineteenth century it had become a major industrial and manufacturing center. But other than the narrow strips along the riverbanks, flat land was in short supply; development costs were high communication among the various city neighborhoods difficult. Frederick Law Olmstead, Jr. observed that "no city of equal size in America or perhaps the world is compelled to adapt its growth to such difficult complications of high ridges, deep valleys and precipitous slopes as Pittsburgh."<sup>1</sup>

By the 1880s, Pittsburgh had come to exemplify American industrial growth. Its panoramas of smokestacks belching fumes and fire were spectacular, and its industrial output a source of considerable local pride and satisfaction with the young nation's technological achievement.<sup>2</sup> Yet many visitors to Pittsburgh experienced a sense of unease and even despair, and widespread environmental degradation suggested that the price of progress might be too high. There was little interest in civic and social amenities that made urban life tolerable elsewhere because industrial production had become an end in itself: "The mill-master lived for work and the laborer worked merely to survive."<sup>3</sup>

Valparaíso's economy was based on shipping rather than heavy industry, but its environmental problems were equally serious and as in Pittsburgh, topography was an impediment to urban expansion. After Chile's independence from Spain in 1810, trade began to transform Valparaíso from a small colonial outpost into the major cosmopolitan center it would become by the end of the nineteenth century. Before the completion of the Panama Canal in 1915, Valparaíso was the first major Pacific port after the arduous voyage around Cape Horn. Its small, marshy foreshore ringed by steep hills forms a natural barrier, preventing easy access to the adjacent plateau. Unlike older Latin American cities developed according to the colonial town planning ordinances set down in the *Laws of the Indies* by the Spanish Crown, Valparaíso's particular conditions defied the traditional city model and instead demanded imaginative design solutions to solve its particular technical and spatial problems.

## Immigrants

In order to stimulate economic development both Pittsburgh and Valparaíso were forced to import labor.<sup>4</sup> Immigrants fleeing poverty and religious persecution came to America to work as laborers in Pittsburgh's furnaces, foundries, forges and mills, where they could earn significantly more than in their native countries. *The Pittsburgh Survey 1907-1908*, a detailed account of the effects of industrialization indicates that these workers were frequently paid less than standard wages, despite having to work in crowded conditions, intense heat and noise.<sup>5</sup> The labor force lived close to the mills in the congested lowlands; there were also densely populated and filthy residential areas on the fringes of the central business district, largely occupied by unskilled and semi-skilled immigrants who faced frequent job changes and sporadic unemployment. Contemporary accounts describe a single water hydrant shared among as many as thirteen houses, of several families crowded into quarters intended for one, and overcrowded cellars and basement rooms with inadequate sanitary facilities.<sup>6</sup>

In Valparaíso Europeans immigrants or American immigrants of European descent were employed as artisans, mechanics and business people. They lived in the hills overlooking the harbor, occasionally married into the Chilean middle and upper classes, and were generally treated with curiosity and respect. Place names in better neighborhoods such as Paseo Yugoslavo (Yugoslavian promenade) and institutions such as the German Hospital or the Anglican Church survive as reminders of Valparaíso's immigrant past.

Disparity in skill levels alone did not account for the very different treatment afforded to some immigrants. Descendants of the Spanish conquerors looked upon the indigenous people with contempt but welcomed tall, light skinned immigrants from Northern Europe (Jews and Italians were less welcome) who then dominated Chile's economy and society. But foreign influence in Valparaíso was out of proportion to the actual number of foreigners who lived there.<sup>7</sup> Despite the Chilean government's efforts to attract European immigrants with technical skills, relatively few actually came.<sup>8</sup> Between 1889 and 1907, only fifty five thousand arrived, while during in the same period well over two million Europeans emigrated to Argentina.

These skilled immigrants were among the relatively few residents of Valparaíso who lived in agreeable circumstances. For

most of the others, conditions were no better than in Pittsburgh. Most areas lacked plumbing and potable water until well after 1900. In 1905, *El Mercurio*, the city's main newspaper, described the city as "infected, fetid, pestilent, with its streets covered with a thin layer of fermenting filth ... a port from which any man who values his life should flee... The Spanish language, so rich in its words, does not have words sufficient to describe such a pigsty with accuracy."<sup>9</sup>

### Structuring the City

The extraordinarily long hours demanded of Pittsburgh's factory workers forced them to live close to their place of work. But by 1870 industrial development occupied most of the land near the Monongahela, Allegheny and Ohio Rivers, prompting the search for additional living space. Valparaíso's sliver of flat land between the ocean and the coastal mountains was almost completely taken over by commercial development. Both cities would eventually be forced to expand up the hills but before that could happen, the arduous ascents had to be made more manageable.

Transportation became a major urban concern during the second half of the nineteenth century as cities expanded rapidly and people sought living space farther removed from city centers, resulting in a rapid quick succession of innovations in mass transit. The invention of the elevator brake in the middle of the nineteenth was followed by the construction of the first passenger inclined elevator in Lyon in 1862, and others in Vienna and Budapest.<sup>10</sup> In Pittsburgh, the Monongahela Incline (1870) was the first of a series of devices installed to master its abrupt change of level, most likely an adaptation of an ingenious method used locally for transporting coal. From 1867 until 1910, as many as thirty-one companies were authorized to build inclines in Pittsburgh, although only twenty were ever actually constructed.<sup>11</sup>

Omnibuses, cable cars, trolleys and railways encouraged horizontal expansion in other cities, but the inclines overcame the barrier presented by the dramatic change in elevation between the industrial districts near the rivers and developing residential neighborhoods on the hilltops.

As in other rapidly industrializing cities of the United States, pollution, environmental degradation, and the population densities that resulted from large scale immigration gave rise to a collective nostalgia for the rural life many had left behind.<sup>12</sup> Most industrial workers, however, could not afford the time or money required for commuting and continued to live within walking distance of their plants and factories, particularly those who worked in the steel industry, Pittsburgh's largest single employer.<sup>13</sup> As the city expanded up the hills and into the countryside, the working poor were left behind. By enabling the emigration of the middle class beyond the urban periphery, the inclines also promoted their isolation from the industrial and factory workers, the separation of the city into residential, industrial and commercial zones, and the growth of extensive suburban developments.

Until the beginning of the nineteenth century Valparaíso, like Pittsburgh, was a city where people of all social classes lived together in the same neighborhoods and businesses not segregated into areas according to specialization. The poor, many of whom had moved to the city from the countryside, lived in *conventillos*, courtyard buildings where several families lived together in a single room and shared the central *patio* with families from other rooms. *Conventillo* could be situated next to opulent single-family homes, shops or warehouses. The poorest residents lived in shacks, mostly on the hillside or in the gorges between them. In 1822, the first hillside developments began on Cerro Alegre and Cerro Concepción, where today prosperous Chileans still reside. These settlements were among the first exclusively residential districts in Valparaíso and established the practice of settling individual hills according to income group. To link them with the commercial districts around the port, twenty-eight *ascensores* - inclined public elevators of all shapes and sizes - were built by entrepreneurs between 1883 and 1912.

### Inclines and Ascensores

At their peak years of operation in the 1920's there were twenty inclines in Pittsburgh carrying as many as twenty million passengers annually.<sup>14</sup> The Monongahela and Duquesne inclines carry thirty and twenty-four passengers respectively.<sup>15</sup> The Penn incline had the most impressive cab: it weighed forty-five tons when empty and had a gauge of about ten feet.<sup>16</sup>

Successive editions of Sanborn maps and contemporary photographs reveal that incline terminals were magnets for commercial development and community life. The "up front", as the upper terminal of the Duquesne incline was affectionately called, was close to shopping facilities, a movie theater, bars and a savings and loan association.<sup>17</sup>

A photograph hanging in the terminal building itself, taken around the turn of the century, shows children playing ball in front of it and adults watching nearby. Sanborn maps indicate that there were shops clustered around most terminals and two stores, one still in operation, remain near the lower terminal of the Knoxville incline. Several documents report that in 1890 an inn was built at the top of the Penn Incline to attract other new business.<sup>18</sup>

Photographs of the inclines show terminals designed to resemble smaller nineteenth century railway stations, domestic in scale and vernacular in character. The lower terminal of the Monongahela incline is a symmetrical two-story high structure with a pitched roof and a small spire. Photographs of the Knoxville incline and earlier versions of the Monongahela incline that carried vehicles had terminals that resembled oversized carports.<sup>19</sup>

Like other vehicle carrying inclines, the Monongahela had an enclosed compartment for passengers on one side, allowing the vehicles to load at one end and exit at the other.

With space for between seven and fifteen passengers, the

ascensores have less than half the carrying capacity of the smallest Pittsburgh inclines, and proportionately smaller terminals. Often only an entry sign distinguishes the entrance to an *ascensor* from other low-rise commercial or residential buildings on a block. Even when the terminal is a freestanding building like Ascensor Cordillera or Ascensor Barón the architecture is modest, as if to reinforce the notion that the city itself is the journey's real destination. An exception is Ascensor Polanco, a grand structure rising through and against the hill. At the lower level, Polanco is entered through a tunnel that leads to an elevator shaft. As it emerges through the hill, the elevator shaft becomes a tower connected to the hilltop by a bridge, a monumental presence in the landscape.

Against the panorama of the Andean foothills, the *ascensores* became visible place markers, identifying individual neighborhoods, where each became a focal point for the local community. Informal socializing takes place around the terminals and the *ascensores* soon became social magnets in the communities. Journeys from the hills to the port and commercial districts could be accomplished in short periods of time and with little effort. When in motion, the vehicles add a characteristic noise to the city, like giant zippers with urban edges and streets running above or below them. As they climb the hills the *ascensores* offer surprising and changing views of the port and the ocean.

Terminals often lead directly to belvederes, plazas or gardens from where further views can be enjoyed. One of the more impressive of these public spaces is Paseo 21 (Veintiuno) de Mayo. The space is bound by the gardens of the old Escuela de Artillería (Naval School) to the west, a public terrace offering spectacular views of the bay to the east, public conveniences to the north and Ascensor Artillería's upper terminal to the south. The terminal building itself is a modest two-story wooden building that contains a small shopping arcade leading to a *mirador*, an hexagonal cantilevered pavilion with sweeping views of the port. Two formal rows of trees shade the *paseo* linking the pavilion on the public terrace to the public conveniences at the opposite end. The axial planting and the strategic location of the pavilion give order to a space otherwise loosely defined by its surroundings.

The Paseo 21 de Mayo is neither a formal set piece in the grand tradition of the Italian *piazza*, a nor an accidental byproduct of uncoordinated development but a public space that successfully merges the local neighborhood with the scale and grandeur of the landscape. As symbols of a new world in which railroads, telephones, radios, telegraphs, electricity and eventually the automobile gave time and space a new dimension, Valparaíso's *ascensores* and Pittsburgh's inclines not only shaped each city's destiny but became agents of urban expansion and social change, emblematic of the cities themselves.<sup>20</sup>

## Decline

At the beginning of this century, Pittsburgh already had in Oakland one of the most beautiful residential suburbs in the na-

tion.<sup>21</sup> As the century progressed, the increasing popularity of the car further encouraged decentralization by making it easier to settle farther away from downtown. But advances in transportation also affected Pittsburgh's economic base. As steel mills and other heavy industries were no longer obliged to operate in close proximity to an energy source, they were able to decentralize and seek locations nearer consumer markets. Pittsburgh was left with a ravaged urban landscape and industrial infrastructure rendered obsolete by economic stagnation and technological change. The rate of migration away from the central business district increased as transportation became faster and cheaper, further devastating the central core.

If earlier visitors had admired Pittsburgh's astonishing productivity, by the nineteen-thirties there was little of it left to cherish. In 1935 Frank Lloyd Wright, on a highly publicized visit to Pittsburgh, went so far as to suggest scrapping the whole place and rebuilding it from scratch.<sup>22</sup> But by mid-century as a result of a comprehensive redevelopment program, including smoke control legislation, Pittsburgh was in the process of re-making itself. Lighter manufacturing and financial institutions replaced the heavy industries and by the mid-nineteen sixties Pittsburgh could boast that one-quarter of its old industrial downtown had been rebuilt.<sup>23</sup> In November 1948, the *Wall Street Journal* reported that of the original twenty, Pittsburgh had "six mountain climbing railroads" known as incline planes left and that they had carried more than four million passengers that year.

By the nineteen-eighties the two remaining inclines, the Monongahela and the Duquesne, survived because of preservation initiatives organized by private citizens and their appeal to tourists. With smog long gone, visitors in Pittsburgh today can admire views over the redeveloped downtown and the magnificent river landscapes. The inclines also serve a few restaurants and residential developments in surrounding areas taking advantage of the breathtaking panoramas. Once the other inclines had been disassembled, few traces of them remained. Parking lots or new housing projects replaced the old terminal buildings and the nearby shops closed or relocated. Thus inclines that had served the industrial city at the beginning of the century had become nostalgic entertainments at century's end.

Valparaíso's never experienced redevelopment or reinvented itself to improve its image. When the Panama Canal and the container port of San Antonio south of Valparaíso were created early in the century, Valparaíso began a gradual but steady decline, eventually losing its preeminent position in the Chilean economy. In the 1930's, its importance was further eroded by the decline of foreign trade, the growth of domestic manufacturing and the expansion of the neighboring city of Viña del Mar, itself the product of suburbanizing trends. There was no land left in Valparaíso where suburban houses surrounded on all sides by ample yards could be developed. Expansion continued on up the slopes in much the same way as it had lower down in the hills, with relatively continuous urban tissue serviced by buses and cars rather than *ascensores*.

In Valparaíso of the approximately thirty *ascensores* once in

operation, fifteen are still running today. Many ceased to function, as alternative means of transport became available. The *ascensores* could reach a maximum of two hundred and fifty feet above sea level but by 1960, residential neighborhoods extended over a thousand feet above the sea level. Construction of the *caiman de cantera*, a beltway, made it possible for buses and taxis to reach and connect the upper levels of the city without returning to *El Plan*, the coastal strip. The low level of ridership at Ascensor El Barón is explained by the fact that buses now service both its upper and the lower terminals and for approximately the same price as a trip on the *ascensor*, passengers can travel much greater distances. Other *ascensores* have stopped running because of maintenance problems, earthquake damage, accidents, landslides or fires.<sup>24</sup>

Despite their diminished ridership, the *ascensores* remain an important means of transportation in Valparaíso. Once on *El Plan* travelers can continue their trip by trolley, bus or on foot. By continuing to serve those who would otherwise be pedestrians, *ascensores* have remained an important role in the life of the city, linking a network of services, amenities and public spaces that has grown up around them. With many of the necessities of life available within walking distance of the terminals, casual encounters between neighbors are frequent, reinforcing a strong sense of community identity on the hillsides.

## Conclusion

In Valparaíso and Pittsburgh transportation, technology was adapted to physical and social circumstances to serving the expanding economies and in Valparaíso most of the *ascensores* also generated a network of public spaces around them. Many urban theorists have argued that public space remains a relevant concept for contemporary society. A related issue involves efforts to coordinate public transportation and suburban growth to contain sprawl. Because of its social cohesion, physical beauty and sense of continuity with its past, Valparaíso has significance for planners and architects, but its distinctive residential fabric results not from prescriptions but its particular culture and context which cannot easily be replicated. Attempts to re-establish the relationship between urban form and pedestrian networks through the imposition of design codes and regulations have been mostly unsuccessful. The re-introduction of porches, a recent preoccupation of urban design, ignores the fact that most American families now spend their leisure time watching television rather than street life.

In comparing Valparaíso's delicate urban texture built over time with Pittsburgh's dynamic ambition to continually re-invent itself, the difficulties in transferring spatial concepts from one context to another became apparent. Pittsburgh's topographical and urban discontinuities, the migration of its citizens from urban to suburban areas and the transformation of its downtown from an industrial rust belt to a light industrial and financial services center are reflective of a society in a ceaseless search for better opportunities. By making the terrain accessible, the

inclines generated architecture and urban form. In Valparaíso civic culture favors public space, permanence and continuity over time. Pittsburgh has thrived on discontinuity. In Valparaíso, the weathering or the aging of materials and surfaces suggests endurance rather than obsolescence or decay. In Pittsburgh the public built environment provided a necessary but utilitarian support for industrial production, sustaining economic activity while allowing daily life to take its course; permanence is a process, the continuing ambition to transform and remake society.

In *The Necessity for Ruins*, J. B. Jackson has suggested that Americans and Latins have distinct approaches not only to monuments but also to history itself.<sup>25</sup> For the latter, past and present are linked by a contract that acquires visible form through monuments while contemporary American commemoration suggests that the past is remote, and celebrated as a restoration of the "old days". For restoration to occur there must be a discontinuity, a period during which a particular occasion, event or environment has been forgotten. Continuity in America does not necessarily take physical form. Today Pittsburgh's remaining inclines are the expression of a resolve that endures into the twenty-first century even as most the original objects through which it was expressed have disappeared. In Valparaíso the material reality endures, but the ambitions that created the *ascensores* have moved on.

## NOTES

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