The Saga of Pittsburgh’s Liberty Tubes: Geographical Partisanship on the Urban Fringe
by Steven J. Hoffman

WHEN Fred Haller, a long-time resident of Mt. Lebanon, drove the first car through the Liberty Tubes, he helped inaugurate the transformation of his hometown into one of the Pittsburgh region’s premier early automobile suburbs. Built specifically to accommodate automobile traffic, the Liberty Tubes (or Tunnels) were one of the first such projects in the country. As an increasing number of Americans embraced the automobile as their transportation mode of choice, American cities struggled to adapt their transportation networks, often with unforeseen consequences.

In Pittsburgh, the opening of the Liberty Tubes in 1924 not only increased transportation access to the city, but sparked a residential building boom in the rolling hills south of the city as well. As more and more Pittsburghers incorporated the automobile into their daily routines, this sparsely settled region of farm land, a few churches and a tavern or two quickly became one of Pittsburgh’s most important suburban districts.

Steven Hoffman is finishing his doctoral degree at Carnegie Mellon University in Pittsburgh; his dissertation addresses race and class issues in the city-building process in Richmond, Va., 1870-1920. Hoffman, who considers himself an urban historian with a special interest in suburbanization, wishes to thank Joel A. Tarr at CMU for his many helpful comments and suggestions. Photograph: Motorists exiting the Liberty Tubes north-bound had to wait four years for a bridge directly across the river. Until then, a sharp S-curve (shown here, 1926) led traffic to Carson Street and the Smithfield Street Bridge.
The Liberty Tubes were a major component in the network of transportation improvements built in the Pittsburgh area during the 1920s that had important consequences for future residential development. A 1919 city bond issue provided $20 million for numerous bridges, highways, tunnels and other transportation improvements, while a 1924 county bond issue provided specifically for automobile-related improvements, allocating over $8 million for roads and $1 million for the Armstrong Tunnel, as well as money for 21 bridges. Other projects completed in the 1920s included the replacement of the Sixth, Seventh, Ninth and Sixteenth Street bridges, as well as the construction of the Washington Crossing Bridge, the Liberty Bridge (connecting the Liberty Tubes with the north side of the Monongahela River) and the Boulevard of the Allies. The completion of these projects opened up the Pittsburgh region to automobile traffic and spurred residential development not only in the South Hills but throughout the area, including previously inaccessible sections of the North Side, Squirrel Hill, Penn Hills, and Fox Chapel.1

By the early twentieth century, Pittsburgh’s real estate developers and other civic boosters were well aware that the key to successful suburbanization lay in improved transportation access to the downtown. Although the hilly terrain of the Pittsburgh region made land transportation in any direction difficult and costly, access to the south was almost completely blocked by the Mt. Washington escarpment. The residents of the South Hills, as well as their counterparts in the city, realized that a tunnel under Mt. Washington was needed to open the abundant land south of the city to suburban development. Although a small streetcar tunnel pierced Mt. Washington early in the twentieth century, it quickly became clear to South Hills residents that a larger, more versatile tunnel was needed for the area to
realize its full potential.

Selecting the location for this important infrastructure improvement, however, was a lengthy and contentious process. A total of at least six separate tunnel projects were proposed and contemplated before the county finally decided in 1919 on the current site of the Liberty Tubes. Initially proposed as a non-controversial improvement to link the South Hills with downtown Pittsburgh, the economic ramifications of differing tunnel locations quickly became apparent to everyone involved. As support for the construction of a tunnel under Mt. Washington grew, so too did the controversy over where that tunnel would be located. The ensuing debate reflected a kind of geographical partisanship, as people from throughout the South Hills formed groups to advocate tunnel locations that would be of greatest advantage to their particular localities.

The Streetcar Era in the South Hills
Throughout the nineteenth century, Pittsburgh’s suburbanization largely followed the path of least resistance. Hemmed in by three rivers, tall surrounding hills and the rugged Mt. Washington escarpment to the south, Pittsburgh had expanded primarily eastward on the relatively level land along the rail line running through Shadyside, East Liberty and Wilkinsburg. In 1904, however, William Flinn, ex-senator and long-time boss of Pittsburgh politics, dug a streetcar tunnel under Mt. Washington with his associates, thereby opening up large tracts of undeveloped land in the South Hills and along the back face of Mt. Washington. This streetcar initially ran as far as Dormont, on the edge of Mt. Lebanon, and from 1903 to 1909 an extension ran through Mt. Lebanon to Castle Shannon.

The coming of the trolley precipitated an explosion of residential development in the South Hills. Land values soared as speculators and home buyers flocked to the area. Three farms in Brookline increased in valuation from $68,000 to $1.3 million between the opening of the trolley tunnel in 1902 and 1910. The total cost of houses being built in the West Liberty, Beechview, Brookline, Dormont and Mt. Lebanon sections of the South Hills immediately adjacent to the trolley line amounted to $1.5 million in 1910. While this building activity in the South Hills was impressive, the limits to expansion were obvious. Since the tunnel was designed for passenger streetcar service, it could not accommodate heavy team freight. This restricted the movement of goods from the city and kept the transportation cost of building materials high. In 1910, the South Hills Board of Trade, a local booster organization, estimated that transportation charges added $450,000 to the cost of goods coming into the South Hills. Thus, the streetcar initiated the process of suburbanization in the South Hills, but could not adequately sustain it. In addition, although the streetcar connection to Pittsburgh fueled a building boom in Beechview, Brookline and Dormont, its effect on Mt. Lebanon and the other communities further out in the South Hills was more subdued. While Dormont increased its population almost six-fold between 1910 and 1920, Mt. Lebanon grew about 30 percent. Because of their location near the end of the streetcar line, Mt. Lebanon and many nearby communities had to wait for better connections before their growth could match those areas closer to the city.

A Traffic Tunnel is Proposed
As early as 1908, South Hills residents, realizing the limitations of the trolley connection to Pittsburgh, formed themselves into groups and began agitating for a “traffic tunnel” under Mt. Washington. But Pittsburgh’s downtown financial interests, the sector usually credited with promoting suburban development, were not interested in promoting the continued residential growth of the South Hills; their interests lay in the topographically more accessible East End. Even Flinn, the principal backer of the streetcar tunnel under Mt. Washington, maintained a low profile in the movement to build a traffic tunnel into the South Hills. As the editor of the Mt. Lebanon Messenger charged, “The prevailing big interests of Pittsburgh are more in favor of maintaining the supremacy of the East End than in developing a new residential Pittsburgh in the South Hills.” Although support from some downtown interests was essential for an improvement of this magnitude to succeed, the problem of actually finding a way to get the tunnel built was left largely to the residents of the South Hills themselves.

The South Hills Board of Trade was formed in 1908 and from its inception worked to secure a highway and tunnel route from downtown Pittsburgh to the South Hills. Comprised of businessmen from the South Hills communities of Allentown, Beltzhoover, Mt. Oliver, Knoxville, Carrick, Beechview, Brookline, Mt. Lebanon, Castle Shannon and others, the organization boasted a membership of 250 in 1910. Arguing that over 100,000 persons lived in the South Hills and that the district required 2,000 wagon loads of supplies daily, the group attempted to persuade county commissioners to build a tunnel and bridge combination that would provide access to Pittsburgh’s downtown.

Frank I. Gosser, president of the group, maintained that a new traffic tunnel would pay for itself in increased county land valuations and higher tax revenues in a few short years. He noted that the tunnel tunnel under Mt. Washington “added $30 million or more to the assessable valuations within three and a half miles of the [county] court house, and the population of the district had increased 40,000.” The effect of a traffic tunnel, he argued, would be even more substantial.

The idea of a highway and tunnel connection between the South Hills and downtown Pittsburgh was initially well received. Upon being presented with a plan in late 1909, Allegheny County Commissioners indicated that they “heartily favor[ed] the proposed highway.”
but they would give “no definite promise” as to the date of construction. The proposed plan, also known as the Shingiss-Haberman plan or “high” tunnel, was for a tunnel with a northern portal on Mt. Washington above Brownsville Avenue (present-day Arlington Avenue) and Carson Street, and a southern portal at Haberman Street near Washington Road (present-day Warrington Avenue). The plan also included a double-deck bridge crossing the Monongahela River, with the upper deck connecting on the river’s north shore with Shingiss Street, which today winds up the hill onto the Duquesne University campus above Forbes Avenue. The lower deck connected Carson Street with Shingiss and Forbes. The planned grade of the road leading to the tunnel was 3.78 percent, making the north portal of this tunnel 80 feet higher than the present-day Liberty Tunnel, and 184 feet higher on the south side.11

This tunnel and bridge plan was published as a two page spread in the January 1910 edition of the Allied Boards of Trade Journal, along with an account of the meeting between the South Hills Board of Trade and county commissioners. The Journal’s reporter suggested that, despite the presence of a specific plan, the emphasis of the meeting was on convincing the commissioners to support the idea of a tunnel, noting that “no particular location was advocated, the citizens contemplating themselves with pressing upon the County Commissioners [the] necessity of the improvement.”12 This contentment, however, did not last long.

The issues involved in siting the South Hills Tunnel ended up being more a matter of politics than engineering.13 Although civic sentiment in the South Hills suggested that the proposed tunnel was “not a sectional improvement,” engineering criteria alone would not determine the tunnel location. Judging by their rhetoric, Pittsburgh’s progressive reformers wanted improvements such as the South Hills tunnel as “matters of business and not of politics,” but the behavior of the people involved in the process suggested otherwise.

Both Pittsburghers and their South Hills counterparts were well aware of the political and economic implications of the tunnel location. The various plans with their differing portal locations augured dramatically different effects for the future direction of South Hills development. As one tunnel advocate remarked, “The location for this proposed initial highway is of the greatest importance. The first great improvement will largely control future destinies.” Gossler even went so far as to suggest that “the location is of controlling importance — probably more so than the improvement itself.”14 Engaged in a high degree of geographical partisanship, various groups of South Hills residents mobilized their forces in an effort to obtain the tunnel location that would be of most benefit to them.

Geographical Partisanship and the Debate Over Tunnel Location

The first group of residents to split from the South Hills Board of Trade was the Liberty Avenue Bridge and Shalerville Tunnel Association. Although this group shared the original group’s desire for a tunnel, they wanted it in a completely different location. Comprised of residents of Carnegie, Bridgeville, Oakdale, Greentree, Crafton, Rennerdale, Scott Township, Union Township, Robinson Township and South Fayette Township, this group advocated a tunnel that would pierce Mt. Washington from the south in Shalerville, at the junction of Big and Little Saw Mill runs (below Duquesne Heights, near the intersection of Banksville Road). This Shalerville plan, or “western” tunnel, would have been located near the site of the Fort Pitt Tunnels (which did not open until 1960), and would have provided access along the ridges running south and west of the city, an area not well served by the Shingiss-Haberman plan.15

A second splinter group, calling themselves the South Hills Tunnel Association, was formed to promote yet another tunnel location. This one became known as the Bell Tavern plan, or “low” tunnel. Comprised of residents from Beechview, West Liberty, Brookline, Brentwood, Fairhaven, Dormont, Mt. Lebanon, Castle Shannon, and Bridgeville, this group advocated a tunnel near the one originally suggested by the South Hills Board of Trade, but with a lower southern portal.16 A low-reaching tunnel would provide access to communities lying due south of Mt Washington along the valley stretching through Dormont and Mt. Lebanon, as well as eastward along Saw Mill Run valley into the boroughs of Brentwood and Fair Haven. These communities would not have been as well served by the originally proposed high tunnel option (the Shingiss-Haberman plan), which would have provided access to the communities located high in the hills along the Carrick ridge stretching southeast from the tunnel location, such as Allentown, Beltzhoover, Mt. Oliver, Knoxville, Arling- ton Heights, St. Clair, and Carrick.17

This “low” option was initially put forward by Ed- ward M. Bigelow, the state highway commissioner and former director of the Pittsburgh Public Works Department. It called for a tunnel with a northern portal at Carson and South First streets in the Southside and exiting low in the South Hills by the Bell Tavern in the Saw Mill Run valley, near the junction of West Liberty and Warrington avenues. This tunnel would have been 6,280 feet long with a rising grade of 2.12 percent. Lambasted by Gossler and discounted by Frederick Law Olmsted, Jr. in his 1911 planning report for the city of Pittsburgh, this proposal nonetheless exerted considerable influence on the final selection. The eventual location of the Liberty Tubes’s south portal was very close to that proposed by Bigelow in this plan.18

Not surprisingly, membership in the various tunnel groups was largely determined by geographical location. The only community to belong to more than one group was Bridgeville, located far enough to the south to benefit from almost any of the tunnel options.
This 1919 map shows proposed locations for tunnels to the South Hills. 1 is the Haberman, or “high” tunnel; 2 is a proposed extension; 3 was the Morse tunnel. It was almost parallel to the Neeld tunnel, which was started and quickly stopped in 1915. 4 was not a tunnel at all but would have been an open cut, similar to a proposal by City Engineer W. M. Donley, who hated tunnels. 5 was the Shalerville, or “western” tunnel, and 6 was a variation; neither was in the running for long, but the Fort Pitt Tunnels built in 1960 closely paralleled the Shalerville proposal. The Bell Tavern, or “low” plan, was chosen in 1919 and built as the Liberty Tunnel, as indicated on the map. The map to the right shows some early thoughts on connecting the tunnel to a bridge and adjacent streets.

The western-most tunnel, the Shalerville plan, failed to attract much attention and dropped out of public discussion. As a result, the major dispute over the proposed tunnel’s location involved only the high and low options, a decision that ultimately lay in the hands of the Allegheny County Commissioners. Plans for the connecting bridge were stalled while county officials tried to resolve the dispute over the location of the tunnel. This bridge, now known as the Liberty Bridge, was eventually built by the city of Pittsburgh instead of the county, and opened to the public in 1928.19

The tunnel supported by the South Hills Board of Trade, the Shingiss-Haberman “high” tunnel plan, was also the choice supported by Olmsted. Olmsted stated that the high route was clearly “the best” choice and indicated that this route would provide access to 1,091 acres within 2 1/2 miles of City Hall, and 7,408 acres within 4 miles (as opposed to 156 acres and 6,329 acres respectively for the low level route).20

As a staunch advocate of the high tunnel option, Gosser illustrates the political dimensions of the tunnel debate. Arguing for acceptance of the Shingiss-Haberman proposal, Gosser suggested that it was the only logical choice because it would connect an already
developed and highly populated section of the South Hills with the downtown area. Perceived by Gosser as providing an "almost incalculable benefit to the entire community," the Shingiss-Haberman location would have the effect of

cheapening and quickening transportation; enlarging the business area of the downtown section; bringing one hundred thousand people miles nearer the center of the city; revitalizing a vast section immediately east of the court house; affording to thousands of poor people, in a district now isolated, the opportunity to walk to and from their employment, etc.21

According to Gosser, adopting the low-exiting Bell Tavern plan would be detrimental to the interests of the city as a whole. If the Bell Tavern plan were endorsed, he said, "the whole splendid conception would be prostituted to the imaginary interests of a few land sharks." Suggesting that the "sentiment for the Shingiss Street-Haberman project has ruthlessly been appropriated by exploiters of a big land speculation beyond Bell Tavern," Gosser charged that "a highway leading from Carson Street, by the longest subterranean tunnel for general traffic purposes on record, out into vast vacant territory — is a matter that ought to be inquired into."22 Whether and in what ways the matter was "inquired into" is unclear, but Gosser and the other high level tunnel advocates ultimately lost their spirited battle for the votes of the county commissioners.

The debate over what was best for the development of the South Hills was not just restricted to the question of tunnels and their location. As it became increasingly evident that the political will existed to provide public funding for some sort of transportation improvement to the South Hills, many other groups and individuals scrambled to present their plans. An alternative to all of the tunnel propositions, titled the "Hill Top Plan," was proposed by Pittsburgh City Engineer W.M. Donley in November 1914. Displaying a vehement anti-tunnel bias, Donley attempted to gain support for his plan by denigrating tunnels and extolling the virtues of bridges and streets.23 In acknowledging that "the certainty of a new era for the expansion and development of the South Hills" existed, Donley suggested that

Tunnels are restricted in their possibilities in development, bridges and streets are all-conquering and pervasive in theirs. People prefer the open air and views of their surroundings and perspectives, in going from place to place, not the isolation and the fetid air of tunnels. Tunnels, whose lengths run into the thousands of feet repel the pedestrian as well as the man in the vehicle, because there is a vast distinction between the great outside and the small inside, atmospherical-

ly considered. Streets and bridges will do more for the South Hills than tunnels multiplied by tunnels, ever will."24

Donley's proposal, as odd as his reasoning sounds to the modern ear, was quickly supported by Dr. J.P. Kerr, a Pittsburgh City Councilman from the Southside, and Charles A. Poth, a prominent Mt. Oliver attorney. Both these individuals had interests in promoting development high in the South Hills along the hilltops facing the city, rather than lower in the valley or along the interior ridge.25 The Southside could only benefit from increased bridge access to Pittsburgh, and Mt. Oliver, owing to its location along the ridge overlooking the Monongahela, would benefit the least of any of the South Hills communities from a tunnel under Mt. Washington.

Actual construction of a tunnel began in 1915, only to be halted by a court challenge testing the right of the county to build tunnels. This first tunnel project was named after its consulting engineer, A.D. Neeld (who also supervised the Liberty Tubes). The Neeld tunnel was located approximately half-way between the high and low options. It would have connected Carson Street near South Third Street to a point 67 feet below the grade of Warrington Avenue near Boggs Avenue on the south.26

Contracts for the Neeld Tunnel were let in the fall of 1915 and the contractors diverted a sewer on the west side of the tunnel before stopping work pending the outcome of the court suit. The Pennsylvania Supreme Court, however, decided in favor of the tunnel opponents in July 1916, ruling the act authorizing

The Pittsburgh contracting firm of Booth and Flinn also built the Holland Tunnel in New York while it completed the Liberty Tubes.
construction unconstitutional due to a defective title. Once the act was rewritten the following year and the authority of the county to build tunnels was firmly established, the Neeld Tunnel was re-evaluated. At this point, the county commissioners delegated the decision on tunnel location to the newly created County Planning Commission. 27

Although some work on the Neeld Tunnel had already been done, the commission rejected the project because its north portal, connecting with Carson Street at grade, would interfere with cross traffic, and the 6 percent grade of the approach along Warrington Avenue to the south portal was deemed too steep. When construction of a South Hills tunnel resumed in 1919, it was for a tunnel exiting even lower into the undeveloped valleys of the South Hills. 28

The Liberty Tubes

After years of controversy, lawsuits and false starts, the supporters of the low tunnel option were victorious. On May 23, 1919, the Allegheny County Planning Commission decided unanimously in favor of the Bell Tavern Plan, and on December 3, 1919, the commission awarded the contract for a low-exiting tunnel to the contractor of the ill-fated Neeld Tunnel, Booth & Flinn, Ltd., the construction firm aligned with Pittsburgh's Republican political machine. Although the Magee- Flinn machine had lost considerable power in the early years of the twentieth century, Booth & Flinn still competed successfully for many local city-building projects. Perhaps as important as its political connections at the time of the Liberty Tubes contract, however, Booth & Flinn had recently been named the major contractor for the Holland Tunnel in New York. 29

Ground-breaking ceremonies for the Liberty Tubes were held on December 20, 1919, and actual construction began the next month. Anticipated to cost approximately $4.5 million when let out to bid, the final cost of the Liberty Tubes amounted to $5,994,642.83. Slated for completion on June 17, 1922, labor troubles
and economic depression delayed construction for almost a year. Work began again in March 1921 and the workers set new records in tunnel excavation, averaging 36 feet per day for a year. During the two years workers were actually digging the tunnel, three men were killed in separate incidents when they prematurely investigated why their explosive charges failed to detonate. This was considered a “minimum of fatalities” according to the standards of the time.\[30\]

The actual boring of the tunnels was completed in July 1922. Over the course of construction, 200 workmen removed 400,000 cubic yards of earth and rock and used 120,000 cubic yards of concrete requiring 820,000 sacks of cement and 2,100 tons of steel reinforcing. By January of 1924, the Liberty Tubes were virtually completed and were opened to the public. Unrestricted use of the tunnels, however, had to wait until the ventilation system was completed the following year, 1925.\[31\] Traffic monitors counted vehicles and hours of use were restricted.

At the time of their construction, the Liberty Tubes were the longest vehicular tunnels ever built. The Liberty Tunnels extend 5,889 feet from portal to portal and consist of two tubes 59 feet apart from center to center. The portal of the Liberty Tubes on the Pittsburgh side is 132 feet above river level and slopes upward at a 0.329 percent grade to a 20 foot higher elevation at its southern portal near the Bell Tavern in the Saw Mill Run valley. Each tunnel is 28.6 feet wide, with a maximum finished height of 20.75 feet above the 11 inch concrete roadbed. The roadways themselves are 21 feet wide and were originally constructed with 4 foot sidewalks to the right of the roadway in each tunnel.\[32\]

The Liberty Tubes have the distinction of being the world’s first long automobile traffic tunnel, although they are rarely accorded that honor. New York’s Holland Tunnel is usually credited with being the first “Motor Age” tunnel” despite the fact that its construction began one year after the Liberty Tubes were started and it was not completed until three years after the Liberty Tubes were opened to the public.\[33\] Since the Liberty Tubes were, in fact, specifically designed to accommodate automobiles, the reason for this slight is unclear. A possible explanation is that the Holland Tunnel’s design plans were developed prior to those of the Liberty Tubes. Further, the Holland Tunnel was designed solely for use by automobiles, whereas the Liberty Tubes were designed to accommodate pedestrians, streetcars and horse-drawn wagons as well as automobiles, although streetcar traffic was banned by the county commission while the tunnels were still under construction. In addition, unlike the Liberty Tubes, which are land tunnels, the Holland Tunnel was constructed under the Hudson River and is somewhat longer (8,463 feet, portal to portal, with 5,480 feet of the tunnel beneath the river).\[34\] Both the Holland Tunnel and the Liberty Tubes, however, qualify as “Motor Age” tunnels because their designers recognized the need to build ventilation systems capable of removing the deadly exhaust of automobiles.\[35\]

Representing an engineering feat of no small proportions, the ventilation system of the Liberty Tubes was one of its most notable design features. Since the Liberty Tubes were built at a time when little was known about the effects of “poisonous gases discharged by motor vehicles in tunnels,” considerable time and energy was invested in designing an adequate and safe ventilation system. Working in conjunction with the U.S. Bureau of Mines, the Liberty Tubes’ engineers designed a system that would remove the polluted air at a point halfway through the tunnel while simultaneously providing a new supply of fresh air.\[36\]

In order to ventilate the tubes, a shaft comprised of four compartments was built for each tunnel. Located slightly off-center from the middle of the tunnels, the ventilation shafts extended 200 feet vertically from the top of the tunnels to the fan house floor located high above in Mt. Washington. Utilizing the current provided by moving vehicles, fresh air was pulled in with the traffic at each portal and pulled to the center, where the ventilating shafts drew the vitiated air up out and out through a tower 110 feet above grade at the fan house building. Fans also forced fresh air through a different compartment of the same shaft down into the tunnel, blowing it in the direction of the moving traffic from a point about 50 feet from the location of the intake vents. The air was then carried along with the flow of traffic and exhausted out the other end. Wind breaks constructed at the tunnel faces prevented cross-currents of outside air from interfering with the air flow exiting the tunnels.\[37\]

Although the ventilation system was not completed until 1925, intense pressure existed to open the tunnel to traffic early. On Saturday morning, May 10, 1924, after the tunnel had been in restricted operation for a few months, a traffic jam occurred as the result of a streetcar strike. According to the checker assigned to count the number of automobiles entering the tunnels, 649 cars entered the in-bound tube between 7:30 and 8:00 a.m., setting a new record. Originating in the downtown district, automobiles backed up the entire length of the in-bound tunnel. The traffic officers on duty ordered everyone to shut off their engines, but many drivers ignored the command. According to the official investigation, as the air became polluted with exhaust fumes, many of the motorists stuck in the tubes “became panicky, abandoned their machines and rushed for the exits.” Twelve people were taken to local hospitals, but no one was seriously injured. After six hours of hauling out the many abandoned vehicles, the Liberty Tubes were opened again. No further episodes of this kind were reported, and by the time the ventilation system was fully operational, the Liberty Tubes were already fulfilling their expected potential. By the end of 1925, building activity in the South Hills had outstripped that of all other sections of the city.\[38\]
The Effects of the Tubes

The original proponents of a South Hills tunnel had promised a residential building boom, and the Liberty Tubes delivered it. Increasing population, traffic counts and tax valuations all attest to the rise of the South Hills as Pittsburgh’s pre-eminent residential district. With the barrier posed by Mt. Washington effectively breached, thousands of Pittsburghers streamed into the South Hills seeking building sites far from the smoke of the industrial city.

Not surprisingly, the population of the South Hills district increased dramatically during the decade the Tubes were opened. Between 1920 and 1930, the population of Mt. Lebanon increased a staggering 494 percent. The Brookline-Beechview section of Pittsburgh increased its population 117 percent, while Dormont experienced growth of 104 percent. The population increase of nearby communities was not as dramatic, but was nonetheless substantial. Overbrook, Brentwood, Castle Shannon and Baldwin Township increased their populations a collective 83.9 percent. In comparison, the communities that would have been best served by a tunnel exiting high in the hills, such as Allentown, Beltzhoover, Carrick, Knoxville and Mt. Oliver, experienced a combined growth of only around 25.8 percent (See Table p. 139).

The increasing population of the South Hills district inevitably led to the increased use of the tunnels. Since
the Liberty Bridge was not completed until 1928, the opening of the Tubes initially created more traffic problems than it solved. In order to enter the downtown district, traffic exiting the Tubes had to manage a sharp S-curve, then travel west on Carson Street before crossing the already over-crowded Smithfield Street Bridge. Although the opening of the Liberty Bridge on March 27, 1928 helped relieve this congestion, the tunnel and bridge connection was still barely able to keep up with the expanding number of commuters.41

By 1930, traffic counts at the Liberty Tubes indicated the tunnels were already operating at their maximum design capacity. At a meeting held in 1932 before the county commission debating the need for an additional tunnel under Mt. Washington, many people complained that the Liberty Tubes were too congested. One Mt. Lebanon realtor even suggested that Tube congestion was beginning to act as a detriment to sales.42 An engineer hired by a downtown business group to write a report in support of a second tunnel summarized the general consensus by stating “there is little doubt that the Liberty Bridge and Tubes have reached their traffic handling capacity under peak load conditions and relief is needed.”43 The report indicated that traffic through the tunnels had increased dramatically during the late 1920s, rising from 10,044 automobiles per day in 1928 to 24,345 in 1931.44 On one day in December 1930, over 2,000 vehicles headed into the city at the morning rush hour between 8 and 9 a.m. By 1933, morning peak totals averaged from 2,341 to 2,632 per hour and evening outbound totals were almost as high. Given the depressed economic conditions of that period and the consequent drop in number of automobile registrations, the increase in automobile traffic through the tunnels is all the more significant.45

Although the most dramatic result of the opening of the Liberty Tubes was the residential expansion of the South Hills, its residents were not the only users of course. In fact, of 23,824 vehicles indentified entering and leaving the Tubes on November 23, 1933, only 26.7 percent (6,361) were registered in the South Hills. Passenger cars accounted for about 90 percent of the vehicles passing through the tubes daily, with the rest in truck traffic.46 The data suggests the importance of the Liberty Tubes in the overall transportation network of Allegheny County and the Pittsburgh region. They were clearly of major economic value to the region.

The effects of the Liberty Tubes, however, were not just confined to increased population, more frequent traffic jams and better regional traffic flow. By the early 1930s, the South Hills district was contending with the East End as Pittsburgh’s premier residential district.47 Although the East End community of Squirrel Hill remained one of the most affluent communities in the
Pittsburgh region, housing values in the South Hills were also quite high. Compared to Squirrel Hill housing, fewer houses in the South Hills were valued at $20,000 or more, but 89 percent in the South Hills topped $10,000 in value, compared to 85 percent for Squirrel Hill and only 29.9 percent city-wide.48 In addition, houses in these two elite, residential areas were larger and more likely to be built of brick or stone, another sign of each district's affluence.49 Although the East End remained a strong residential choice for Pittsburgh's middle class well into the twentieth century, the South Hills district was clearly growing in wealth and importance.

The improved access to the city provided by the Liberty Tubes also resulted in significantly higher property values in the South Hills. Mt. Lebanon's taxable valuation, for example, increased from $4.3 million in 1920 to $27.8 million in 1931, an average increase of over $2 million per year. Prior to the opening of the Liberty Tubes, Mt. Lebanon's growth rate had averaged only about $760,000 per year.50 The value of real estate in the area directly affected by the Tubes, including Beechview, Brookline, Dormont, Mt. Lebanon, Castle Shannon, and other nearby communities, increased 192 percent between 1920 and 1935.51 If real estate values in the area had increased only at the same rate as in the city, they would have been slightly over $26 million in 1935 — less than half their actual 1935 value.52 A 1935 report analyzing the Liberty Tubes confidently attributed this additional value directly to the increased access they provided.53

Not surprisingly, geographical partisanship over the location of transportation infrastructure in the Pittsburgh region did not end with the opening of the Liberty Tubes. South Hills residents and their downtown allies continued to fight for improved access to the city. In 1926, only two years after the Tubes were opened, plans for another tunnel under Mt. Washington were formally proposed. This plan called for a tunnel further west than the Liberty Tubes, and would have connected Saw Mill Run Boulevard on the south with a bridge over the Monongahela River parallel to the Wabash bridge near Ferry Street downtown.54

In 1933, the Southside Advancement Association proposed a high-level tunnel connecting Carrick, Knoxville and Mt. Oliver with Pittsburgh via a tunnel exiting into the Southside, with traffic planned to cross over the 10th Street Bridge.55 Another Depression-era plan, part of a larger infrastructure-building project to be financed by the Works Progress Administration, called for remodeling the Wabash railroad tunnel as a toll tunnel for automobiles. Public resistance to the proposed tolls, however, caused the entire deal to fall through.56

Despite the many plans put forward over the years, it was not until 1960 that a second tunnel under Mt. Washington, the Fort Pitt Tunnel, was constructed. However, congestion was still not eliminated, as traffic through the Liberty Tubes continued to increase — considered over-burdened in 1932 with a daily load of 25,000 vehicles, by 1975 that burden had grown to 60,000.57

Conclusion

The full possibilities of automobile ownership could only be realized through the construction of new infrastructure, and in the Pittsburgh region, the rugged topography required the construction of especially large and expensive projects. The resulting expansion in land values and housing developments, however, far outweighed the initial high cost of construction. In Pittsburgh's South Hills, this link between the automobile, highway improvement and rising real estate valuations

| Population Change of Certain South Hills Communities, 1920-1930 |
|-------------------|-------------------|-------------------|
|                   | 1920    | 1930    | % change |
| Dormont           | 6,455   | 13,190  | 104.3   |
| Mt. Lebanon       | 2,258   | 13,403  | 493.6   |
| Brookline         | 4,959   | 10,131  | 104.3   |
| Beechview         | 4,988   | 11,417  | 128.9   |
| Overbrook         | 2,185   | 4,967   | 127.3   |
| Brentwood         | 1,695   | 5,381   | 217.5   |
| Castle Shannon    | 2,353   | 3,810   | 61.9    |
| Baldwin Twp.      | 4,928   | 6,371   | 29.3    |
| Mt. Oliver        | 5,575   | 7,071   | 26.8    |
| Allentown/Beltzhoover | 10,223 | 21,974  | 8.6     |
| Carrick           | 10,504  | 16,033  | 52.6    |
| Knoxville         | 7,201   | 8,303   | 15.3    |

was clear. The Liberty Tubes provided the transportation access that transformed Pittsburgh’s southern periphery.

But the saga of the Tubes is more than just a story of improved access to the city. In many ways, it highlights the important inter-connections between citizen action, politics and urban growth. As the geographic partisans of Pittsburgh’s periphery were all too aware, the most important consideration in the construction of the Liberty Tubes was not one of engineering, traffic flows or exhaust ventilation; it was a question of location. For the people involved in getting the tunnels built, as well as for the many subsequent residents of the South Hills, the crucial issue—the one which provoked the most heated debate—was whether the first automobile tunnel to carry would-be suburbanites under Mt. Washington would exit into the South Hills high or low.


3 Allied Boards of Trade Journal, Feb. 1910, 2 and 8; and May 1910, 13.


8 Mt. Lebanon Messenger, Sept. 1916, 1; Pittsburgh Board of Trade, East End: Greater Pittsburgh’s Classic Section (Pittsburgh, 1907); and John N. Ingham, “Steel City Aristocrats,” in City at the Point, 275-78.

9 In addition to promoting the development of new projects like the South Hills Tunnel, the South Hills Board of Trade was dedicated to improving existing connections to the city. Believing that easy transportation access was the key to the region’s success, the group worked to relieve congestion on the Smithfield Street Bridge and to improve the South Hills’s trolley connections to Pittsburgh. Along with the constant promotion of a tunnel through Mt. Washington, such endeavors were the mainstay of the organization. Allied Boards of Trade Journal, Jan. 1910, back cover advertisement; Feb. 1910, 2, 13, 16; May 1910, 13-14; and Pittsburgh Sun, May 26, 1922.

10 Allied Boards of Trade Journal, Jan. 1910, 3, and back cover advertisement; and Feb. 1910, 2.

11 Allied Boards of Trade Journal, Jan. 1910, 3-5; and Description of the Liberty Tunnels, Power Plant and Bridge, compiled by Department of Public Works, Bureau of Bridges, County of Allegheny (Pittsburgh, c. 1926), 1.

12 Allied Boards of Trade Journal, Jan. 1910, 3-5.

13 The report by the Allegheny County Public Works Department which describes the various projects considered relies solely on engineering criteria as explanation for each site rejected. Since this report was prepared at the request of county commissioners “for the benefit of other communities who [were] facing similar problems,” its explanations probably reflect the county commissioners’ “sanitized” version of the debate rather than actual circumstance. Description of the Liberty Tunnels, cover letter and 2.


16 Pittsburgh Leader, Dec. 21, 1919; and, Frederick Law Olmsted, Pittsburgh: Main Thoroughfares and the Down Town District (Pittsburgh, 1911).


18 Description of the Liberty Tunnels, 1; Olmsted, 51-56; and The Municipal News, May 20, 1911, 9.


20 Description of the Liberty Tunnels, 1; and, Olmsted, 54-55. In Description of the Liberty Tunnels, engineers suggested that this project was not built “because of its heavy grade and the height of the bridge and the long climb from West Liberty Avenue to its south portal.”


22 Ibid.

23 It is interesting to note that Donley continued to work on tunnel proposals, offering several plans of his own as well as participating in designing the plan that was ultimately accepted. Description of the Liberty Tunnels, 2; and, “Pittsburgh South Hills Tunnel and Earlier Projects,” Engineering News-Record (July 24, 1919), 167.

24 Hill Top Record, Nov. 27, 1914.

25 Ibid.; and The Index Co., Prominent Families — 1915: Pittsburgh, Suburban Districts and Adjacent Towns (Pitts
The Saga of Pittsburgh's Liberty Tube

Evening south-bound totals ranged from 2,184 to 2,563. Zemberry, I.E.3.1 and I.E.3.a; and Hearings, opposite 86.

Vehicles registered in the City of Pittsburgh accounted for 26.4 percent (6,288) of the total, and 26.5 percent (6,326) came from Pennsylvania localities outside Allegheny County. Allegheny County registrations outside the South Hills contributed 11.2 percent (2,681), and out-of-state cars made up the rest (9.1 percent or 2,168). Automobiles numbered 10,832, while 1,131 trucks used the tunnels. Zemberry, I.E.3.a.


A 1934 survey showed 28 percent of Squirrel Hill's 4,021 owner-occupied, single-family homes were valued at $20,000 or more, compared to only 13 percent of Mt. Lebanon's 2,124 owner-occupied, single-family homes. In 1930 Squirrel Hill had 4,959 owner-occupied dwellings, both single and multi-family, Mt. Lebanon had 2,074, and the City of Pittsburgh had 62,309. Real Property Inventory of Allegheny County (Pittsburgh, 1937), 119, 124; and U.S. Census Bureau, Fifteenth Census of the United States, 1930, Population, Volume VI, Families, Tables 21 and 24.

Over 45 percent of Squirrel Hill's houses had seven rooms or more, as compared to 36.5 percent for Mt. Lebanon and only 20.5 percent city-wide. Furthermore, 88.2 percent of the homes in Squirrel Hill were built of brick or stone, while Dormont and Mt. Lebanon boasted percentages of 91.9 and 87.7, respectively. This compares to a city-wide average of 52.7 percent. (Note: The calculation for the number of rooms per unit was based on the total number of dwelling units, not the number of houses/apartment buildings.) Squirrel Hill had 10,428 dwelling units in 1930, Mt. Lebanon had 4,579, Dormont 3,873, and the City of Pittsburgh 154,074. (The number of structures built of brick or stone was based on the total number of housing structures, not the number of housing units.) Squirrel Hill had 6,833 dwelling structures in 1930, Mt Lebanon had 3,460, Dormont 2,760, and the City of Pittsburgh 104,494. Real Property Inventory, 202-08 and 76-82.

Hearings, 10-11.

The area described also included Overbrook, Brentwood, Baldwin, Bethel, Jefferson, Scott, Snowden, and Upper St. Clair. Zemberry, II.A.4.

Actual values were about $55 million. Zemberry, II.A.4.

Zemberry, II.A.4.

Zemberry, III.C.1.

Pittsburgh Post-Gazette, June 1, 1933.

Hearings, 7-8; Zemberry, I.F. and III.B.; Pittsburgh Post-Gazette, Oct. 2, 1933; Pittsburgh Press, June 1, 1934; and, The Bulletin Index, April 4, 1935.


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