

# MASSACHUSETTS ROUTE 128: A NONEMULATIVE ENIGMA

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The objective of this paper is to examine the history of one of the first urban circumferential highways, Massachusetts Route 128, to determine the relationship between roadway economic development and development of the road. This economic development has long been thought to be directly related to the advent of the roadway. Therefore, many people have felt that similar economic attributes would follow construction of a similar roadway in an urban area. The results of this research tend to obviate that concept. The research covered the years 1925 through 1965 because initial construction occurred around 1925 and "completion" and widening (in several locations) had occurred by 1965. Furthermore, by 1965 substantial economic development had taken place along the highway. The results of this investigation indicated that the initial economic development along the roadway may be ascribed to previous events (antecedent development) and as such was a continuation of earlier processes. Thus the possibility exists that this initial economic development would have occurred without the construction of the road. Economic development associated with this roadway was concluded to be part of the developmental forces operating in the Boston urban area rather than as a benefit from the roadway itself.

•MASSACHUSETTS Route 128 is a limited-access circumferential highway encircling the Boston metropolitan area. When originally conceived, it was not considered a factor in the economic growth of the metropolitan area; its initial function was to link suburban communities while bypassing Boston proper.

The purpose of this paper is to examine the history of this roadway and in so doing to show that the economic development of the roadway did not follow any grand plan but was a fortuitous product of the general pattern of urban development. Research indicates that Route 128 emerged, by coincidence, at a time when Boston's communities were growing and were developing socioeconomic patterns less dependent on the city and more on mutual interaction. At the same time, new modes of transportation, both individual and commercial, were rapidly increasing peripheral urban traffic.

For ease in analysis a chronological pattern has been developed that aids in the understanding of this history:

1. In phase 1, from 1925 to 1945, initial planning and construction took place.
2. In phase 2, from 1946 to 1957, major planning and major construction occurred, and economic development was initiated.
3. In phase 3, from 1958 to 1965, the roadway was completed, then widened, and economic development became the key element.

## ORIGINS OF ROUTE 128

What is known today as Route 128 is not a new road. It has gone through several stages of growth and transformation. Shortly before the introduction of numbered routes in Massachusetts in the early 1900s an interconnected series of local streets existed that allowed one to travel from the North Shore to the South Shore in a somewhat circuitous route around Boston proper. This road became known as the Circumferential, sometimes referred to as the Great Circumferential or the Boston

Bypass. When route numbering began in the early 1920s, this sequence of roadways was identified as Route 128. The precise streets followed are no longer known. Over time, the roadway has used different streets in several communities. In the mid 1930s old Route 128 was approximately 55 miles (88 km) long. Today the length of the roadway is approximately 64.5 miles (103.2 km).

#### PHASE 1, 1925 TO 1945: THE ROAD TO NOWHERE

The concept of constructing a new circumferential roadway around Boston, as nearly as can be determined, emerged in the early 1920s, certainly before 1930 (the precise year is in doubt because official records that could have verified the date were donated to a paper drive during World War II). For purposes of this research, 1925 was somewhat arbitrarily selected as an initial date (if incorrect, this date would be somewhat too early).

Lewis Mumford ascribes to Benton MacKaye a key role in the planning of Route 128 (10). MacKaye, a leading figure among the men who conceived the Appalachian Trail, was a dedicated conservationist. His writings in the 1920s and early 1930s championed the cause of conservation. Most especially, MacKaye had done some research and writing for the Trustees of the Public Reservations and their proposed Bay Circuit. The Bay Circuit was to be an extension of the metropolitan park system combined with the development of a state parkway through a number of reservations encircling Boston proper. According to MacKaye the proposed Bay Circuit was to conserve and give proper access to the natural environment of the area. The prospective roadway was to possess only a limited number of entrances, exits, service stations, and restaurants. To implement this plan, he called for the control of the land uses on the highway as well as alongside it.

In a letter addressed to me, MacKaye, ever the purist, bemoaned the fact that this advice was not followed and that Route 128 is "choked with development." As will be seen shortly, MacKaye did influence the actual planners of Route 128. Control of the abutting land uses, MacKaye's concern, remains, however, a major problem for highway planners. Land use abutting a transportation system is still dominated by the transportation system rather than the other way around; MacKaye, like later highway planners, was concerned with this problem.

Route 128 was designed as basically a limited-access road, and, although not explicitly intended to integrate the park and recreational sites detailed in the Bay Circuit proposal, it does circle and bypass the Boston area linking communities. Following MacKaye's advice, strict attention has been paid to the control of uses on and beside the roadway where possible. As of this writing, there are only 2 restaurant and service station facilities along the major portion of the roadway.

At the time when the Bay Circuit proposal was being defeated, Franklin C. Pillsbury was the project engineer for the State Department of Public Works (DPW). Pillsbury planned several important roads in Massachusetts, including especially the Worcester Turnpike (Route 9) and Route 128. G. H. Delano (3) wrote:

In this capacity he planned such great roads as the Worcester Turnpike, the Providence Turnpike, the Southwest Connection by-passing the City of Worcester, the highways connecting the East Boston tunnel with the North Shore road, Revere Beach Boulevard and the Newburyport Turnpike, the Concord road, Northern and Southern Arteries, and the Circumferential Highway—in fact, every important highway built by the State in recent years.

Sometime in the mid 1920s, Pillsbury and the DPW started to plan and map the new Route 128. In 1928 a far-reaching report was released concerning the serious traffic problems prevailing in the Boston area (5). This report found that an "automotive region" existed that ~~extended from the city of Boston to a distance of 40 miles (64 km)~~ and that in this "area between which and the city [Boston] proper there is exchanged daily a substantial flow of motor traffic" (5, p. 40). This report thus pointed up not only the importance of the roads in Eastern Massachusetts but also the need to maintain, improve, and build new roads both to keep this traffic moving and to maintain com-

munication between Boston and its suburban area.

It is reasonable to assume that the initial planning for Route 128 was almost complete before 1929. In that year, the State Planning Board, in conjunction with the DPW, recommended to the Massachusetts Legislature that the Great Northern Circumferential be constructed. The work, however, did not actually begin until 1936 although some right-of-way acquisition had begun along the proposed corridor. [In 1934, the Hayden-Cartwright Act permitted federal highway funds to be used to study highways from an engineering as well as an economic point of view. The use of these funds to examine the economic potential of Route 128 before any portion of its construction (or even its reconstruction) never came about.]

Beginning as it did toward the end of the Great Depression, the development of Route 128 continued uninterrupted except during the war years. The construction of the highway may also be thought of as a stimulant to the regional economy expressed in terms of public works programming. [Part of the Depression Recovery Program was stated to be highway construction (13): "In 1933, all road improvement was quickened by large grants made by the Federal Government to provide work for the unemployed."]

In 1936, the construction of Route 128 commenced. Between 1936 and 1941, 8.47 miles (13.5 km) of roadway were constructed. In 1937, the DPW and other interested parties postulated that the circumferential highway would cut roughly a wide circle around Boston, permitting a quick transfer of cars and passengers from one route to another. The vigorous development of Route 128 was indirectly encouraged by national political factors. One of the results of postdepression recovery programs was the emergence of the regional city concept. The implementation of this concept, although not directly supported by federal policies, certainly was assisted by 2 New Deal programs. One was the development of highway construction to help relieve unemployment. The other was the establishment of the Federal Housing Administration. The construction of suburban roadways was encouraged under the first program, and housing was constructed in the suburbs under the second program. In Massachusetts, Route 128 benefited from both of these federal programs. By the end of 1941, a double-barreled highway of 2 lanes had been completed between Beverly and Lynnfield.

During World War II, all road building virtually ceased, and construction was limited to those roadways considered essential for defense purposes. Route 128 was not among them and its construction was interrupted. Roadway planning, however, was not neglected during the war years. As a result of the experience gained from World War I, several study groups became operational in World War II. Most prominent among these groups was the Special Commission Established to Make an Investigation and Study of Traffic Congestion in the Vicinity of the City of Boston and Throughout the Commonwealth and Certain Other Matters Appertaining to Motor Vehicles. In 1942, this group proposed that a new circumferential, Route 128, be developed and instead of beginning in Beverly, they recommended that it begin at Rockport. Later, a postwar highway commission was also convened to examine the need and develop a program for the construction of roadways in Massachusetts. On the federal level, the Federal-Aid Highway Act of 1944 recommended a national system of interregional highways totaling 40,000 miles (64 000 km). The grant formula was 50 percent federal funds matched to 50 percent state funds. This act initiated and encouraged the building of many roads, including Route 128.

In 1945, the finished portion of the Route 128 roadway, unchanged since 1942, ran only from Danvers to Lynnfield, a total of 8.47 miles (13.5 km). The circumferential concept remained a theory, and the prospective Boston bypass was a meaningless road to nowhere.

## PHASE 2, 1946 TO 1957

### Planning and Construction

Immediately after World War II, the construction of Route 128 was restarted. In 1947, Governor Robert F. Bradford continued this construction. During his term in office contracts were let for more than 6.5 miles (10.4 km) of this road.

Of all the highway-related policies and programs that were promulgated while Bradford was governor, probably the most significant for Route 128 as well as the entire Eastern Massachusetts area was the first interim report of the Joint Recess Commission on Highways and Motor Vehicles in 1948. This commission, following up on the many other wartime study groups, recommended the construction of more highways in Massachusetts. In contrast to the report of the 1942 special commission, it recommended that Route 128 begin in Gloucester, not Rockport, and terminate in the Hingham-Hull area. The joint recess commission's recommendations were closely followed by the publication of the Master Highway Plan Commission's report, the 1948 Master Highway Plan (8). This report also argued for a major highway construction program in the commonwealth and concurred with the joint recess commission's report on the terminal points of Route 128. The 1948 Master Highway Plan was of particular importance because, beyond immediate recommendations, it projected a highway network—a transportation system—to serve all of Eastern Massachusetts. [Most radials, at the time of the issuance of the plan, were in much the same condition as was the then Route 128; that is, they were a collection of municipal streets overburdened with traffic. The combination of the radials and the circumferential as proposed would have allowed traffic not only to bypass the Boston metropolitan area but also to move in and out of the area at selected locations quite quickly. In various locations, the radials have taken on an importance somewhat similar to that of Route 128. These radials have in essence become feeder routes to Route 128 and have a tendency to induce traffic to travel on Route 128. The radials and this induced traffic concept have become an important factor in the development of the municipalities that make up the Route 128 community (6, p. 5)]. The 1948 Master Highway Plan remains today the basis for most highway development in the eastern Massachusetts area (including even the controversial Inner Belt, Route I-95).

In 1948, the second interim report of the joint recess commission included the proposed master highway plan and requested a \$100 million bond issue as a method of financing the master plan. Governor Bradford submitted to the General Court a bill implementing these recommendations. The bill was defeated, as was Bradford in the ensuing elections by Paul A. Dever. An interview with former governor Bradford included the following interchange:

Q: What was your main purpose in promoting the building of Route 128?

A: Every town should have a front door on Main Street with unclogged traffic.

Q: Were you concerned with or aware of the potential economic benefits of such a roadway?

A: Not at all. I have had a long interest in highways and transportation . . . I was concerned with road congestion . . . Everything had to come into Boston in order to get around Boston . . . There were obsolete roads all over the state and we were building roads so slowly that these roads were becoming obsolete before they were finished. Dever's highway plan was almost 100 percent mine.

When one compares Bradford's proposed 1948 legislation, H 1867 and H 2428, with Chapter 306 of the Acts of 1949 (sponsored by Dever), one tends to agree with Bradford.

In his inaugural speech at the beginning of his first term, Governor Dever urged the development of the Massachusetts roadways. He requested passage of the \$100 million bond issue to accomplish this (11):

We need to adopt at once a \$200,000,000 highway construction program. We need the immediate authorization of a \$100,000,000 bond issue in order to get the program under way. I recommend that you authorize such a bond issue.

The legislature acted quickly, and, in May 1949, after only 5 months in office, Governor Dever signed into law "An Act Providing for an Accelerated Highway Program" authorizing the issuance of bonds in the total amount requested to finance the construction and reconstruction of selected roadways in Massachusetts. Dever appointed, or in a sense reappointed, William F. Callahan to the position of commissioner of DPW. During the time these men were in office (1949 to 1952), the development of Route 128 advanced significantly.

If Benton MacKaye and Franklin C. Pillsbury are the men who most strikingly influenced the inception and planning of Route 128, Robert F. Bradford, Paul Dever, and William F. Callahan are also notable for the role they played in bringing about the realization of the concept. But to Callahan alone must go the distinction of taking responsibility for the construction of the road. [Further information on Callahan's legal skirmishes after the construction of Route 128 is available elsewhere (12).] Callahan did more to complete the Circumferential than any of his predecessors or successors. Between 1949 and 1953, approximately 30 miles (48 km) of Route 128 from Lynnfield to Weston were contracted for (total contracts exceeded \$40 million). Occurring, as it did, just after World War II, this new construction made Route 128, for the second time, a stimulus for the economy.

Route 128, however, was not yet finished. What was completed ran from Gloucester to the Dedham-Needham-Westwood area and consisted of 2 barrels of 2 lanes each. From the southerly terminal point in Westwood, Route 128 joined the old existing system. Commissioner Callahan, showing foresight, worked diligently to persuade the legislature to allow him to construct a 4-lane double-barreled highway system. The legislature was dissuaded by the cost of this endeavor as well as by the prospect of excessive land taking. Callahan, however, was convinced that future transportation needs would require a wider highway, and time has proved him correct.

In 1953, Christian A. Herter was elected governor and chose John A. Volpe as commissioner of DPW. In these positions, Herter and Volpe served together for two 2-year terms (1953 to 1956). In that time period, 12 more miles (19.2 km) were added to the Route 128 system. Several interesting events of the 1950s also greatly influenced the Massachusetts roadway. The first might have proved prejudicial to Massachusetts. During the 1950s, the federal Interstate Highway Program was being developed. The Federal-Aid Highway Act of 1956 included, among other items, 3 important elements:

1. A federal highway trust fund was established that earmarked funds for highways;
2. The office of Federal Highway Administrator was to be established (a position Volpe was later to assume); and
3. A 13-year program for the building of 41,000 miles (65 600 km) of roads was promulgated.

At that time, highway officials in Massachusetts had plans for the construction of a new outer urban circumferential (Route 495) and hoped to have this roadway recognized as the Massachusetts portion of the Federal-Aid Highway Act of 1956; the federal plan called for the incorporation of Route 128 as the Bay State allotment. Route 128 at this time was almost complete, contracts having been let on its last 3 miles (4.8 km). The federal plan would have represented a potential loss of almost \$65 million to Massachusetts. When Commissioner Volpe heard of this proposal, he made several trips to Washington and finally convinced federal officials to change their plan and allow Route 495 to become I-495.

A second development of the period, in this case beneficial, increased the importance of Route 128. In 1954, the New York, New Haven and Hartford Railroad opened a railroad station in the Canton-Dedham-Norwood area at Route 128. The opening of this station occurred almost simultaneously with the opening of that section of the roadway. Suburban commuters were now provided with an additional method of traveling to and from Boston.

Finally, the third significant event of these years was the opening, in 1957, of the 111.4 miles (178.24 km) of the Massachusetts Turnpike under the aegis of William F. Callahan of the Massachusetts Turnpike Authority. The roadway at that time extended from Route 128 in Newton and Weston to the state of New York; the remaining link of the turnpike, 11.5 miles (18.4 km), was soon to be completed. One significant result of the turnpike construction was to increase the volume of activity on Route 128 because the turnpike served as a link to this roadway, much as the roadway provided an access to the turnpike.

## Background and Initiation of Economic Development

In his book, *Road to Ruin*, Mowbray (9) described the mental set of a roadside developer:

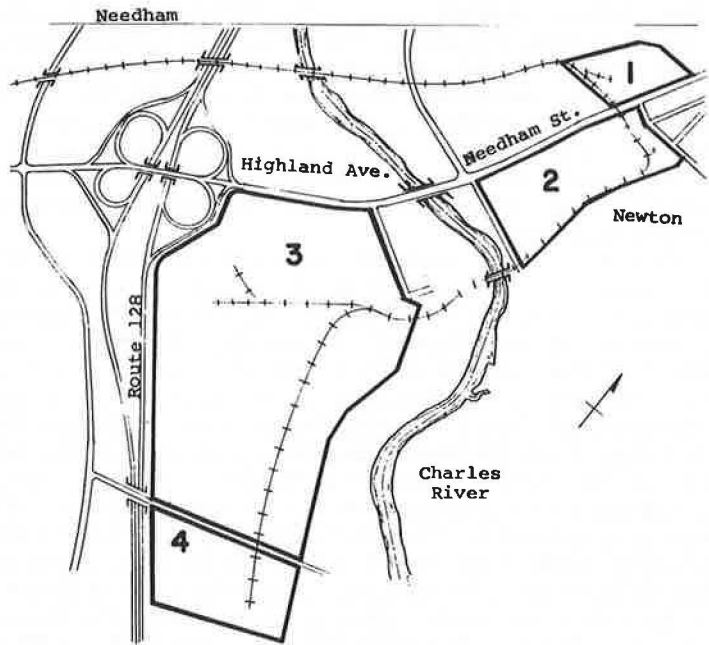
To the developer, the sight of a field or marsh brings visions of a natural chain of events that leads to a profit. First, there must be roads. The pressure of an expanding population ensures that automobiles move along those roads, and that the motorists will have the usual desires: to build homes, to eat hotdogs, to trade in their old jalopies, to have a bottle of beer, and so on. The end result is money. But first there must be the road.

If one travels along Route 128 from Needham to Newton, immediately after crossing the Charles River (the Needham-Newton boundary), Highland Avenue in Needham becomes Needham Street in Newton. Newton's Needham Street has had a long continuing history of economic development. In this area, factories using the water power of the Charles River were built in the 1800s. Several of these factories are operating today. In the early 1900s, the street also provided locations for a gas station, a snack bar, and an automotive products distributor. As early as 1927, the New England Concrete Pipe Company, Inc., chose to build its plant along this road because of the availability of rail facilities as well as the general accessibility of the site.

During the next 2 decades, development along this portion of old Route 128 was erratic. Beginning in 1946, however, a series of propitious and related events occurred that influenced the development of the new Route 128 and because of which this section of Needham Street in Newton Lower Falls was to be nicknamed Newton's miracle mile. As with the new Route 128 some years later, investigators came to analyze this miracle mile in the hope that the phenomenon could be emulated elsewhere.

In 1946, the David Nassif Company of Newton acquired through tax titles in the city of Newton approximately 9.5 acres (3.8 hm<sup>2</sup>) of land along the northwest side of Needham Street (Figure 1). This property was zoned industrial and bounded on the north by a rail system. The importance of these rail facilities is significant. In those days, access to a rail facility was considered an important and necessary element for industrial expansion. Shortly thereafter the David Nassif Company successfully developed this location into one of the first planned industrial package sites in the Northeast. An interview in late 1971 with David E. Nassif, the son of David Nassif, confirmed these data and contributed further information about the father's motives and methods in developing this area. According to his son, Nassif was one of the first men to foresee the expansion of warehousing facilities outside the city of Boston. The David Nassif Company, which had offices in Newton on Needham Street (old Route 128) close to the Needham line, was both a heavy construction contractor specializing in the building of roads and a franchised dealer in heavy road construction equipment. After Nassif had acquired the Needham Street real estate through tax title, he convinced Sunshine Biscuit Company of the advantages of the location and shortly thereafter built for them a distribution plant on a portion of this site. A railroad spur was also constructed to service the Sunshine Biscuit Company as well as the entire tract. Sunshine Biscuit, the first tenant, was followed by other major concerns until, by 1951, the area was largely rented. Between 1946 and 1951, the David Nassif Company also acquired a much larger site of approximately 26 acres (10.4 hm<sup>2</sup>) across the road, on the northeast side of Needham Street. According to his son, Nassif began to develop this site but, to complete its preparation, he needed a land development loan that was not forthcoming. He then sold the site to the real estate firm, Cabot, Cabot and Forbes (CCF), which, under the aegis of Gerald Blakely and later assisted by Robert Linell, obtained funds and was able to develop the site. CCF was also able to extend the rail spur across Needham Street and into this new site, no common achievement because it meant that an on-grade rail facility was constructed across a state highway; it attested to the firm's persuasive ability and influence. [A recent article on transportation has concluded that the existence of and continuance of on-grade rail crossings are a carry-over from the days when rail dominated the highway as a more important mode of transport (4, pp. 163-184).] Several years later, CCF purchased from Nassif his original site on the northwest side of the road, and together these 2 sites are known today as the Newton

Figure 1. Industrial development along Route 128 in Needham and Newton.



Sequence and Identification:

- 1 - Original site developed by Nassif (Newton)
- 2 - Site started by Nassif; development completed by C.C.F. (Newton)
- 3 - Needham Industrial Center (Needham)
- 4 - Latest Industrial Park (Needham)

N.B. - Sites 1, 2, and 3 constitute the New England Industrial Center

Industrial Center and as such constitute the nucleus for the miracle mile concept.

In an interview with Robert Linell and Russell Cox (who was affiliated with Blakely and Linell in CCF at this time), Linell described the context of the acquisition of the location of what is known today as the Needham Industrial Center, which played so crucial a part in the economic development of Route 128. Linell stated that several important considerations prompted the effort to develop the Needham Industrial Center. He said that, in the late 1940s, he had been to Texas on a business trip and had an opportunity to examine a planned industrial center situated in a campuslike setting. Linell said that he was impressed with what he had seen and became convinced that such a real estate venture would be feasible in the Boston area. He and Blakely shared Nassif's conviction of the need for distribution space in the Boston region. With regard to the development of the Needham Industrial Park and its unforeseen effect upon Route 128, however, Mr. Cox insisted that "CCF did not create the demand, they just served it." Linell summarized the sequence of events that preceded the development of the Needham Industrial Park. In 1951, CCF purchased, subject to rezoning, an abandoned gravel pit with frontage on Highland Avenue in Needham near the Charles River. To many people, this site seemed to have little potential and its development presented problems. The ownership was vested among several dissident members of one family; an elderly eccentric aunt lived in a tarpaper hovel located almost in the middle of the site. There was also a question of zoning; the site, once an operating pit, was zoned residential and had been since 1924. Finally, although the construction of Route 128 had reached Wellesley, the right-of-way through Needham had yet to be defined. But largely because of the prestige and perseverance of CCF, all of these obstacles were overcome. After much consideration, the town officials, anticipating the influx of ratables that an industrial park would bring, agreed that a change in zoning would be an asset to the

town. This acceptance did not occur without the input of several other significant factors. The town of Needham was undergoing intensive growth and there was a need for these ratables (mainly to finance the increased services made necessary by this growth); furthermore, the site was located in an area that was (slowly) being rezoned from residential to commercial. The site was rezoned industrial with controls worked out by the town and the developers. That the president of CCF, F. Murray Forbes, had been a long-time resident of Needham surely did not constrain the issue. Before long, plans were announced specifying the location of the right-of-way of Route 128. It adjoined this site.

Several entrances and exits were also planned for Highland Avenue and Route 128. This perhaps reflects interests besides those of CCF and the town officials. Companies located on old Route 128 and dealing with a regional market had a vested interest in the proposed location of Route 128 and its exits. For example, a large and well-known automobile dealer had been located in Needham for many years. This concern had been doing business along Highland Avenue in proximity to the old Route 128 and would unquestionably have lost trade without access to the new Route 128. And just before the fixing of the Needham intersection, this concern had completed the construction of a large showroom and service installation. This and other such firms were undoubtedly among those who actively urged for the current location of Route 128 with its existing entrances and exits. The positioning of exits at this location was quite rational from a planning construct because Needham and Highland Streets were established radial routes. Shortly thereafter, the railroad bridged the Charles River from the Newton Industrial Park to serve this area. Finally, when, in 1953, the American Can Company purchased more than 23 acres (9.2  $\text{hm}^2$ ) of this site and CCF constructed for them a large warehouse facility, the Needham Industrial Park became an impressive reality. The success of this industrial park signalled the beginning of Route 128's economic development. The old "road to nowhere" had become a crucial area for industrial investment, and the economic development of the new Route 128 has continued vigorously to the present.

### PHASE 3, 1958 TO 1965: THE GOLDEN SEMICIRCLE

By 1957, Route 128 had reached its total length, but, because of the increased traffic volume, road conditions were almost as unsatisfactory as they had been on old Route 128. It was soon apparent that it would be necessary to widen the roadway, and, between 1958 and 1963, more than 27 miles (43.2 km) were reconstructed. Since 1963, Route 128 has gone through several additional widenings, as Callahan had hoped for.

In 1965, CCF, the real estate firm that had been responsible for the industrial park in Needham, purchased a sizable tract of land in the Canton-Dedham-Westwood area at the intersection of Route 128 and, after working out an agreement with the railroad, built a new railroad station in the adjoining community of Norwood with parking facilities for more than 1,000 cars. This real estate transaction permitted CCF to develop yet another industrial park, the Norwood Industrial Center [118 acres (47.2  $\text{hm}^2$ )], abutting not only their existing Route 128 Westwood Industrial Center [145 acres (58  $\text{hm}^2$ )] but also the Norwood Airport. The Westwood Center was opened in 1963, and the Norwood location was available for tenants early in 1966.

The success of the Needham Industrial Center had clearly demonstrated the economic potential of Route 128, and this development significantly modified the original concept of the highway. The change was gradual, however, and was furthered by propitious but unpredictable events. Not least among these was the fact that the regional highway transportation network as projected in the 1948 Master Highway Plan had reached a high degree of sophistication and completion. The Mystic River Bridge (known today as the Tobin Memorial Bridge) had been open for almost 10 years. Storrow Memorial Drive, an alternate radial from the suburbs into Boston that was started in 1949, was substantially complete early in 1957. The second tunnel under the Charles River, Callahan Tunnel, was opened for traffic in 1961 and provided an additional link between downtown Boston, the airport, East Boston, and points north. In addition, several other



major arteries and radials in and out of Boston linking up to Route 128 as well as radiating out from Route 128 had been completed or substantially completed by the early 1960's. They are the Central Highway, also known as the Fitzgerald Expressway (I-95); Routes 2 and 3; I-95 South; Route 93; and Route 24. In addition to these roads, the Massachusetts Turnpike was substantially completed. By the early 1960s, then, the remaining link from Route 128 to downtown Boston had been constructed. This extensive highway network served to increase the significance of Route 128 itself.

Several other factors played an important part in the further development of Route 128. The opening of the widened roadway coincided with the beginnings of the World War II reconstruction cycle. Most industry in the region was concentrated in Boston; additional industrial space was hard to find and, when found, was at a premium; in many cases, available sites were not adapted to modern manufacturing methods, were not easily accessible, and had poor parking facilities. The burgeoning development along Route 128 was attractive both geographically and economically. The suburban movement of people and industry had begun, and the Route 128 highway gave access to relatively low priced land in areas on the edge of a metropolitan labor market area that was not too far from the core of the city and yet was surrounded by attractive suburbs (1, 2).

When the Russians launched the world's first orbiting satellite in mid 1957, the United States was impelled to intensify its technological and scientific rivalry, resulting in the creation of new and new kinds of firms and the expansion of others. What followed was a major economic explosion. Route 128 became the vortex of industrial activity for Boston and Eastern Massachusetts and the center for the East Coast electronics industry. Route 128 became a community, a frame of reference in itself. The story of the ugly duckling had been revived; the road to nowhere grew into the golden semicircle.

## SUMMARY AND CONCLUSIONS

When originally conceived, Route 128 represented a significant change in the philosophy of highway planning. This roadway circling Boston, moving along the fringes of communities, was an example of the bypass concept allowing for a successful linkup between these suburban communities. Benton Mackaye's theories, Franklin Pillsbury's plans, Robert Bradford's aspirations, Paul Dever's political success in promoting Bradford's plan, the abilities of William F. Callahan, the vision of David Nassif, the support of Gerald Blakely and Robert Linnel all contributed substantially to the completion and success of the roadway. Their role in this process should not be minimized.

The roadway did develop considerable economic potential, but not as a direct result of planning; the original investments were the fortuitous policies of private firms rather than programmed results of highway planning. The planners' purpose was to design an effective bypass road; they did not consider it necessary to concern themselves with socioeconomic factors. Years later, after economic development had inescapably occurred, the highway became better known for its economic than for its transport function. And the absence of planning here may make it questionable whether the highway was really a cause of the ensuing development or was merely one of various factors, some perhaps independently significant.

Various contingent factors should be considered. The expansion of commerce out from the city that fortuitously corresponded with the roadway's construction is one such unplanned phenomenon. Growth and expansion in the city of Boston became difficult, if not almost impossible; land when available was rather limited, hardly accessible, and expensive. Parking was an ever present problem, and, finally, the population was shifting to the suburbs. Route 128 has provided an effective context for this expansion, and the road continues to function both as a link between communities and as an economic community in itself. It should be recalled that, even if urban expansion had been planned, regional impetus would not have been sufficient without the cooperation of national policy, an unpredictable element. A further significant and unplanned factor was the coincident completion of a major portion of the roads projected in the Master

Highway Plan, which adventitiously integrated Route 128 into a major regional transportation network. Still another unforeseen development was the establishment of the successful industrial park in Needham; but this center was, in turn, predated by the establishment years earlier of several similar industrial developments on a smaller scale in adjoining Newton. Finally, economic development in those days was greatly influenced by rail facilities, possibly more so than by roadways. The initial economic development along old Route 128 had direct access to roads and rail. This was a prime reason for industry to locate on and create the Newton miracle mile.

It is entirely plausible, then, that some economic benefits attributed to the advent of Route 128 were really a predetermined result of antecedent developments, a continuation of prior processes. The construction of the roadway at that time and place ensured the expansion and thus the continuation of the flow of these benefits, but this result was not produced by purposeful planning. It is quite possible that, if Route 128 had emerged several years later, a great deal of the current economic activity would already have been established because growth in the urban area was not contingent on building this highway. For example, there is every indication that the industrial center in Needham would have been established on a smaller scale at its current location without the construction of the new highway.

It seems legitimate to conclude that the Route 128 highway transportation process is a product of developmental forces operating in an urban area, rather than to conclude that the roadway itself is the source of such development. If this conclusion is valid, then it follows that the possibility of reproducing the economic growth that characterized the golden semicircle by copying the concept responsible for Route 128 depends on an environment in which similar urban growth and changes would coincide with construction of the road. On the basis of this research (22), the conclusion may be drawn that the chances of such a coincidence existing again in an interlocking matrix seem negligible.

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