

The View from the Road

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• THIS PAPER deals with the esthetics of urban highways: the way they look to the driver and his passengers, and what this implies for their design. The authors became interested in the subject out of a concern with the visual formlessness of American cities and an intuition that the new expressway might be one of the best means of re-establishing coherence and order on the metropolitan scale. Also, the highway offers a good example of a design issue that is typical of the city: the problem of designing visual sequences for the observer in motion.

Ugly roads are often taken to be a price of civilization, like sewers or police. The boring, chaotic, disoriented landscape, which seems to be the natural habitat for the American automobile, is tolerated with resignation by the highway user. Even those who are alarmed by the ugliness of the roadways emphasize the repression of vice: roads should melt into the landscape; billboards should be controlled; the scars of construction should be disguised by planting. There is little discussion of turning the highway experience to any positive account.

Yet roadwatching can be a delight. There are many journeys that are enjoyable in themselves: walking, horse-back riding, boating, rides in amusement parks, or on open bus tops. There are even a few roads in this country on which driving a car is a pleasure.

In an affluent society it is possible to choose to build roads in which motion, space, and view are organized primarily for enjoyment, like a promenade. But on highways whose primary function is the carriage of goods and people, visual form is also of fundamental importance and can be shaped without interfering with traffic flow. It is the landscape seen from these workaday urban highways that will be discussed here from the standpoint of the driver and his passengers; for the purposes of this analysis the issue of how the highway looks from the outside will be ignored.

The studies were begun by traveling repeatedly along several expressways, particularly the approaches to New York, Hartford, Boston, and Philadelphia. Tape recordings, films, photographs and sketches were used to record everything that the researchers found themselves looking at. Subsequently, an analysis was made of this experience, which was checked by analyzing the reactions of a group of twenty people riding along Route C1 in Boston, and a graphic language developed with which to describe it. Finally, this language was refined by using it in designing two hypothetical freeways. This paper presents some of the most general conclusions, neglecting the supporting data, the illustrative material, and the techniques for analysis and design that were also developed.

The highway experience varies with the user. The tourist sees the landscape with a fresh eye; he attaches relatively few personal meanings to it, but is urgently engaged in orienting himself within it. The commuter, or other habitual user of the road, is more likely to ignore larger landscape features, in favor of activities, new objects, or the moving traffic of the road. The driver must watch the scene constantly; his vision is confined to a narrow forward angle and focuses on the events in the road itself. His passenger is freer to look or not to look, has a wider angle of vision, and is not necessarily concerned with immediate traffic. Both driver and passenger are likely to be an inattentive yet captive audience that cannot avoid remarking, if only subconsciously, the most dramatic events of a scene that is too mobile and too dangerous to be ignored.

The modern car interposes a filter between the driver and the world he is moving through. Sounds, smells, sensations of touch and weather are all diluted. Vision is framed and limited; the driver is relatively inactive. He has less opportunity to stop, explore, or choose his path than does the man on foot. Only the speed, scale, and grace of his movement can compensate for these limitations.

The highway experience has some further special characteristics. It is usually reversible; people may traverse the road in either direction. In addition, it is serial and overlapping; people enter and leave the highway at intermediate points.

The driving experience can be described as a sequence played to the eyes of a captive, somewhat fearful, but partially inattentive audience, whose vision is filtered and directed forward. It is a sequence that must be long, yet reversible and interruptible.

The surveys tended to confirm the obvious regarding the identifiable objects or elements of attention. Along two routes, between one-half and two-thirds of all front-seat sightings were straight ahead. Along another route, two-thirds of these impressions were caused by the near, apparently "moving" objects, rather than the far, seemingly "stable" ones. They included the color and texture of the road surface, objects at the shoulder, signs, guardrails, retaining walls, etc. Even in periods of wide scanning, attention regularly returns to the road itself. It is concentrated particularly on the foreground at points of decision, or in sharply constricted spaces. But after such experiences the larger landscape is scanned with a fresh eye. This is a moment for visual revelations, when one is sure of an audience attentive to large effect.

Beyond this concentration on near detail, the fundamental sensation of the road, continuously referred to, was the sense of motion and space. This includes the sense of motion of self, the apparent motion of surrounding objects, and the shape of the space being moved through.

The sense of motion of self is perhaps the primary feeling. True kinesthetic sensations are slight in a steadily moving car on a modern highway. The driver receives some cues from his controls, but if the passenger closes his eyes it is very difficult for him to distinguish steadily held turning movements, levels of speed, or even gentle climbs or descents. Bodily sensations become strong only at points of abrupt change in speed or in angle of climb and fall.

Automobile riders depend on vision to give them a sense of the motion they are undergoing. They interpret the apparent motion of surrounding objects that they know to be fixed to be the result of their own progression. These clues may include the passage of roadside detail, the apparent rotation of near objects around far objects, the seeming outward radiation of detail and textures from the point dead ahead, and the illusion of growth as objects approach.

Where surrounding objects are far off, or few, or featureless, or moving with the vehicle, then the sensation is one of floating, of no forward movement. This can be temporarily a pleasant relief, but the inability to reach any goal can soon lead to boredom. Objects might, in such a case, be placed alongside the road, just to reassure the driver about his real motion.

The sense of varied motion is inherently enjoyable if continuous and not too violent. The rhythmical humping of the turnpike across the New Jersey flats, or the sweeping turns of the approach to Boston over the Mystic River Bridge possess such a quality.

The road alignment generates the motion of the driver. Because it predicts future movement, the shape of that line is always of compelling interest. In previous highway studies, this perspective view of the alignment has been considered paramount, along with landscaping and control of roadside detail. The "flowing" line now generally preferred is one sound technique for gaining a harmonious effect. But it is a technique rather than a principle. A kink, a sudden shearing off, a long straight slash may sometimes be part of the artistic content.

The apparent motion of objects can become a delight in itself. The welling up, splitting apart, and falling away of objects can become intricate dances when groups are seen together on a road of complex alignment. Landmarks may move across a background, rotate one way, then another, disappear and reappear, coincide or disperse. The road itself may feint, jog, swerve, or slide past them.

The distant view down the axis of a road, on which the driver can fix his attention

without losing touch with his path, is a static experience. If the road is also sloping down at this point, it may be possible to present a view that is meant to be looked at carefully, and that in some way epitomizes the city or an important part of it. Such classical views as San Francisco across the Bay, or New York across the Hudson, are important experiences. Occasionally, when the road makes a sweeping turn or the view is very restricted, the visual field becomes a dynamic one, rotating, rushing, or growing. This is a powerful if unsettling effect.

Things in the landscape that are also in motion, together with their paths of movement, exert a corresponding fascination. The driver will compare his own trajectory with that of a distant train, the ascent of an airplane, the progress of a ship; or relate his path to railroad lines, canals, and other roads which may parallel, interlock, intersect, pass over or under his own. Most impressive of all is the movement of accompanying traffic, which may be the principal visual impression for a commuter.

Simultaneously with the appreciation of objects in motion, there occurs the sense of space, which is basically one of confinement and of the dimensions of that confinement. The space may vary proportionately, through the character of defining walls, objects in the space, or by the position of the observer in that space. The driver can be low down in a concave space, high up in a convex space. The space may be narrow or wide, the walls solid, transparent, netted, smooth or jagged, filled with traffic or deserted.

In sequence, there can be dramatic contrasts between confinement and spatial freedom, such as the entry into Hartford from the Wilbur Cross Parkway, where the road descends towards the city, sinks into a cut, passes through a short tunnel, and bursts out into the central park.

One of the most important visual sensations is the relation of scale between a large environment and the observer, a feeling of adequacy when confronted with a vast space. The automobile with its speed and personal control begins to reduce the disparity in scale between man and the city, allowing man again to feel powerful and big enough to relate to his environment. The design of the vehicle as an extension of man, therefore, becomes a critical factor in his experience.

At the next level of organization the driver is engaged in orienting himself to the environment, in building up some image of it. Movement along the road consists of a succession of approaches to goals, which may be prominent landmarks, focal points, or other paths to be attained. By them he measures his progress and foretells his future. They may be distant goals that symbolize his final destination, or they may be nearer objects that divide the road into visual segments.

Goals may be organized in succession, as on the prairie when one proceeds from silo to silo. They may overlap, or there may be one dominant goal constantly visible, with minor goals playing against it. Thus the towers of Manhattan indicate the eventual destination of the New Jersey Turnpike while it maneuvers through the monumental landscape peopled by oil refineries, the Newark Airport, and the Pulaski Skyway.

Beyond the sense of progression from goal to goal, one is concerned with orientation in the general environment, with locating its principal features and relating oneself to them. This is partly a practical, partly an esthetic activity. A clear image of the city structure is a necessary counterpart for driver orientation on the urban freeway. Reliance on signs is not enough. There is positive pleasure in being able to recognize the urban scene and fit it together.

The shapelessness of Boston from the Mystic Bridge approach, and the frequent periods of orientation blindness are disappointing and disquieting, whereas the edge of Manhattan, from either the East or West River Drives, is satisfying just because the relationship between city and water is made visible.

The image of the highway itself may also be clarified. Successive sections may be visibly differentiated so that they can be recognized as distinct parts. Thus the motorist can see that he is "in the hilly part" as well as "approaching the center." The general alignment may be made to appear as a simple geometric form. Continuities of edge, surface, or rhythm may be used. Typical sequences and gradients may be developed, and the sequence in one direction may be made recognizably different from the sequence in the other. The road ahead may be exposed and strategic points may

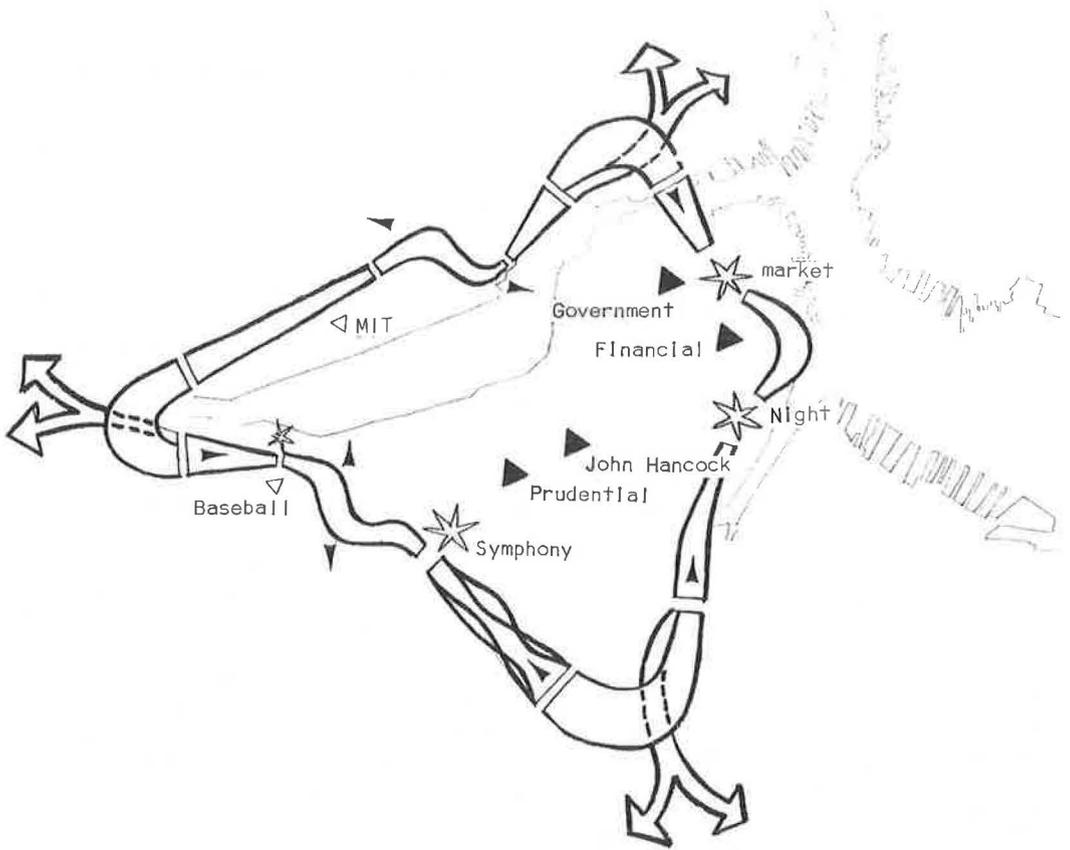


Figure 1. Inner belt expressway, Boston; structure of road.

be articulated. The form of interchanges may be clarified, so that driving decisions become self-evident and the shape is congruent with the principal flow of traffic.

Finally, the driver seeks meaning in his environment. He relates the visible objects to the stock of ideas in his mind. Such visual clues as the sight of an activity are essential to comprehension of the city. When the road makes apparently purposeless movements, or when a lively center of activity like Boston's food market is hidden from the road that passes overhead, an opportunity for contributing to an expressive environment is lost. Current efforts to "buffer" fast roads from the city by depression, distance, or landscaping are reducing the road experience to dull meaninglessness.

Would it be possible to use the highway as a means of education, a way of making the rider aware of the functioning, history, and human values of his world? The highway could become a sequential exposition of the city, by visually relating it to focal points, and picking out symbolic and historical landmarks. Travel guides, tape recordings, and signs, if imaginatively executed, could point out the meaning of the scene.

The most powerful experiences occur when space, motion, orientation, and meaning reinforce each other—when a landmark that is rooted in community history is the visible goal of a journey and the visible pivot about which the road turns. The pivot of motion on a highway today is all too likely a temporary shanty, and its goal a whiskey advertisement.

Using all these elements the basic artistic problem of the highway is the shaping of its sequential form. In such form the principal aim is to preserve continuity while developing, embellishing, and contrasting the material. The road itself furnishes an essential thread of continuity, but it must be supported by successions of space, motion, orientation, and meaning which become parts of a connected whole. An overlapping of

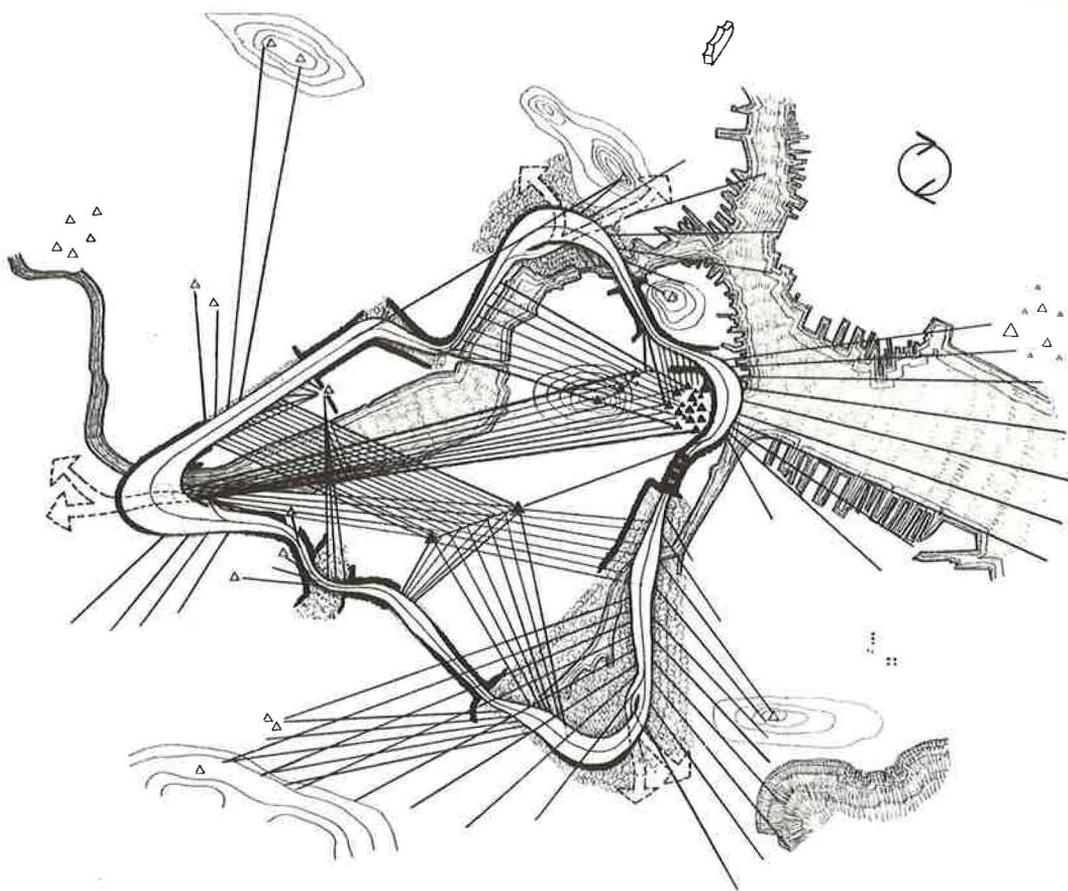


Figure 2. Clockwise route.

goals may do this, the repetition of previous movements, or a basic rhythm of attention.

The tempo of attention appears to be a sensitive index of the quality of a road. Where this tempo is rapid, attention concentrates on near objects straight ahead on the road; where the tempo is slow, scanning takes place. When either of these is prolonged, a sense of oppression or boredom occurs. Perhaps there is an optimum range for this time interval between strong impressions. Were this true, the roadscape should possess a basic, though varying, beat.

The traditional sequential form is to set in motion a drive toward a final goal. This drive may be interrupted, prolonged, and embellished at rhythmic intervals, but it never entirely loses forward momentum, and it achieves its destination at a climax, subsiding then to a conclusion with tension resolved. This is a useful model for highway design but it suffers from the handicap that the audience enters and leaves at different points. Thus, sequential form may have to be more like a magazine serial, with self-contained episodes, or it may have to be symmetrical with climaxes at both ends for a two-way audience, or the unified climactic form may have to be abandoned for the articulated but "endless" composition of the kind typified in jazz.

The principal objectives in shaping the highway visual experience may now be summarized. The first is to present the viewer with a rich, coherent sequential form, a form that has continuity, rhythm, and development, and that provides contrasts, well-joined transitions, and a moving balance.

The second objective is to clarify and strengthen the drivers' image of the environ-

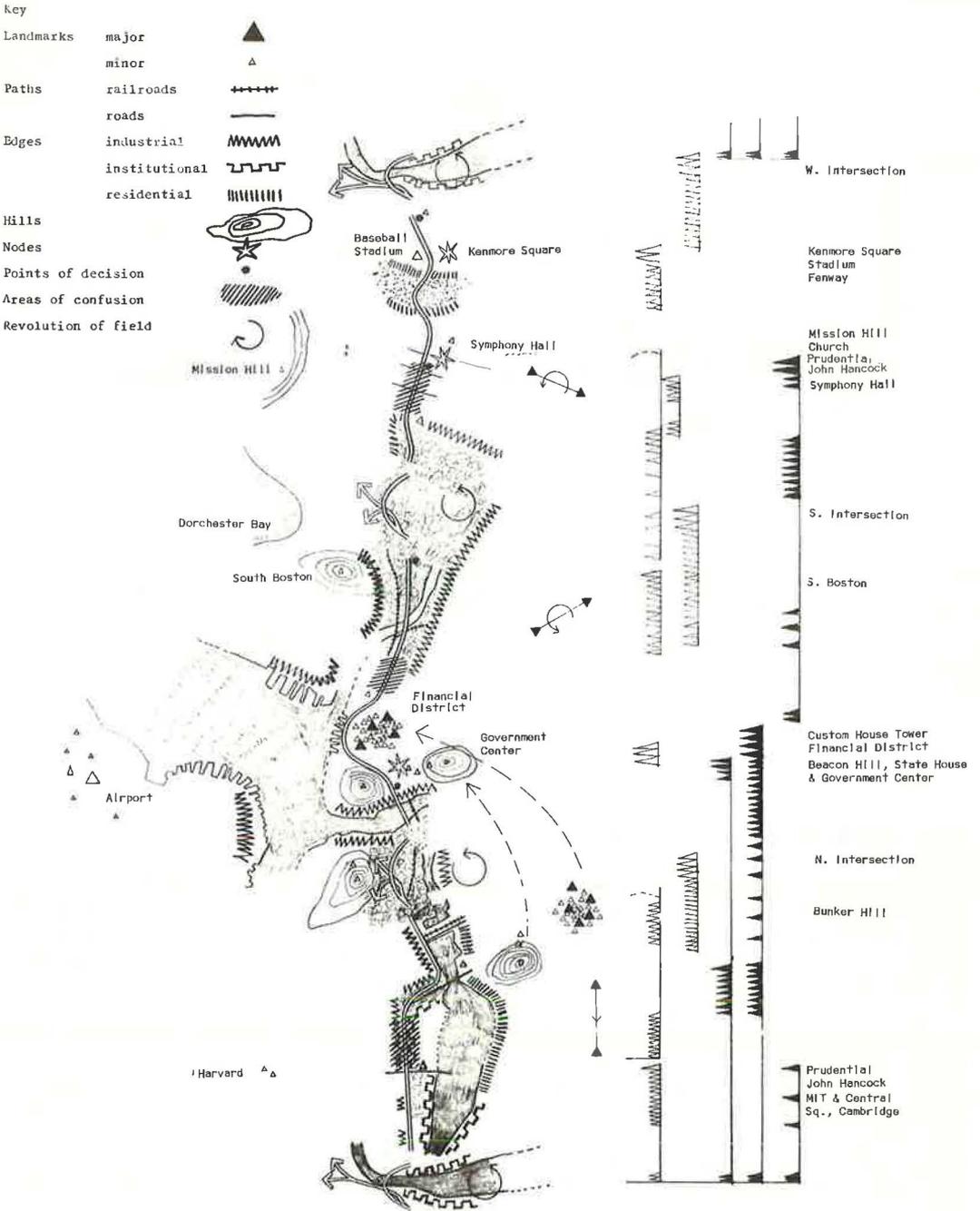


Figure 3. Orientation diagram to be read from bottom to top.

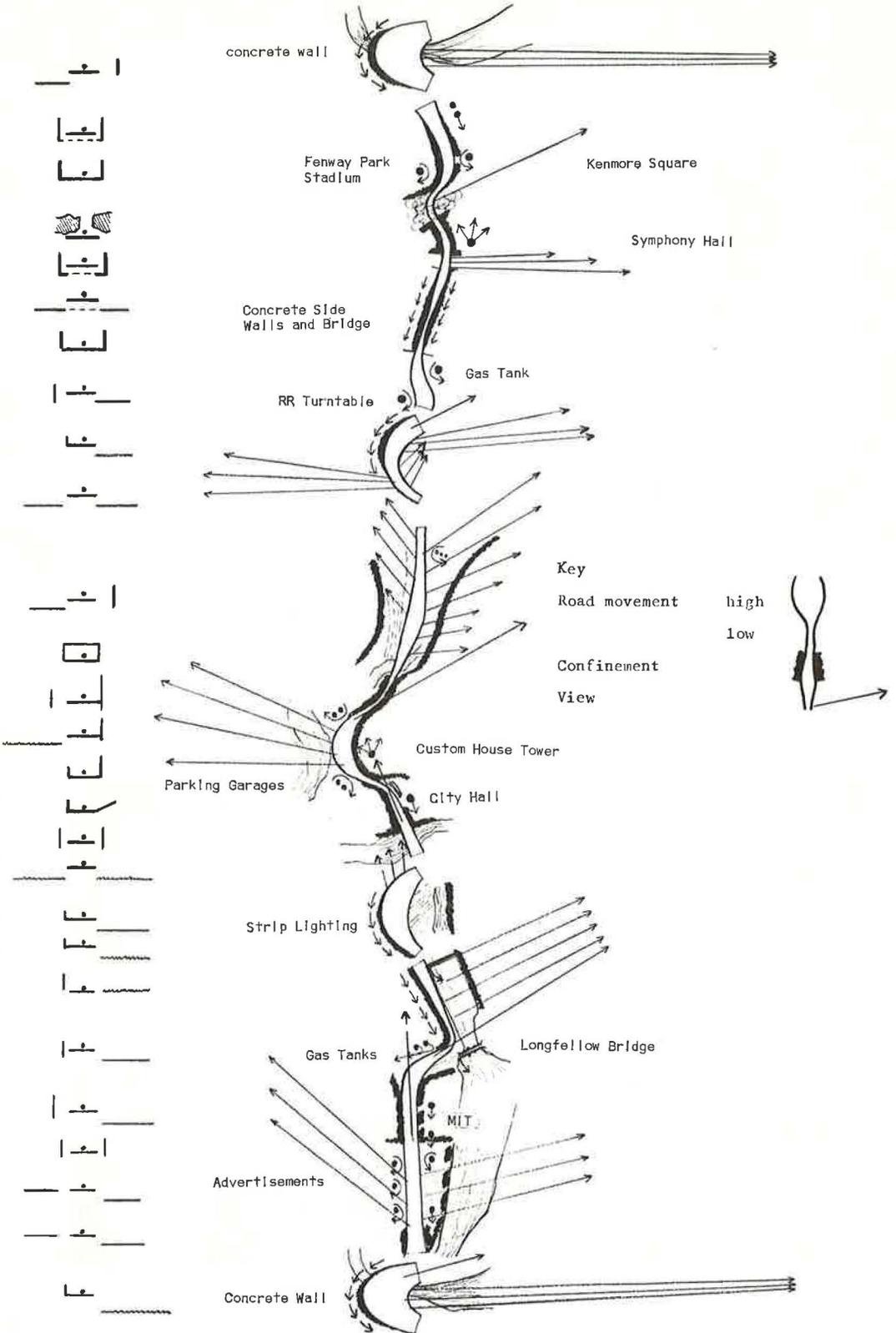


Figure 4. Space-motion and view diagram.

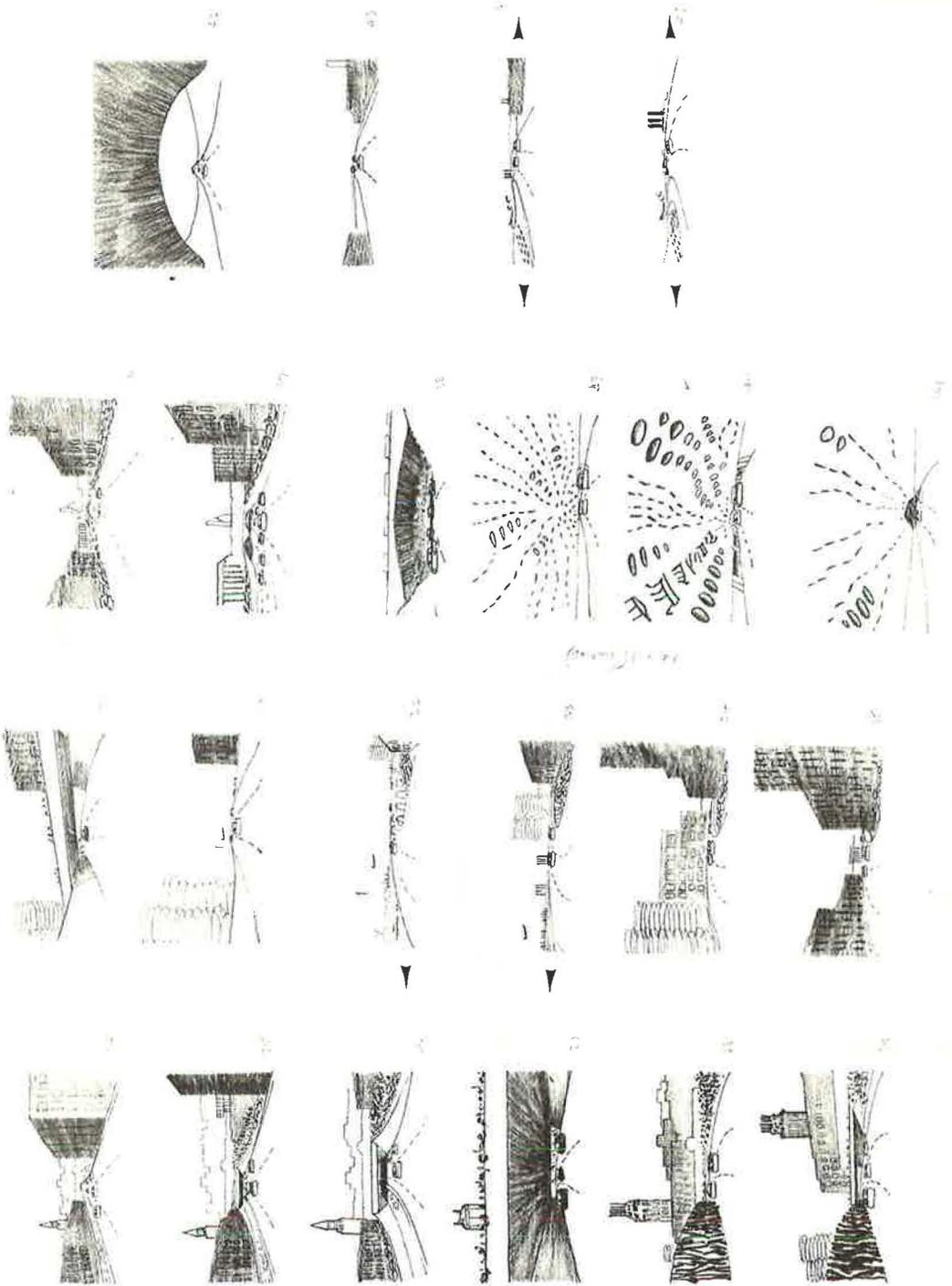


Figure 5. North-south sequence on Centerway.

ment, to give him a picture that is well-structured, distinct, and as far-ranging as possible. He should be able to locate himself, the road, and the major features of the landscape, to recognize those features with surety, and to sense how he is moving by or approaching them.

The third objective is to deepen the observer's grasp of the meaning of his environment—to give him an understanding of the use, history, nature, or symbolism of the highway and its surrounding landscape. The roadside should be a fascinating book to read on the run. Ideally, all three objectives should be achieved by means that interlock at every level.

These analyses are still fragmentary. It would be useful to study further the experience of the commuter, the problems of transition, the design of terminals, and the view of the highway from outside. Neither the design of highway networks nor the whole system of movement in the city has been considered. Both await the efforts of future research.

To illustrate some of the implications of the study, Figures 1 through 5 show a hypothetical design for Boston's inner belt expressway. Current plans locate this route in a loose and shapeless ring about the downtown, often too far out and suppressed to maintain orientation or visual contact with the center, and connected only sporadically to the incoming radials.

The redesigned road sets out to clarify three aspects of the environment for the road user: (a) the natural features (in this case, the harbor, rivers, and hills around Boston); (b) the functional pattern of the city, particularly downtown; and (c) the structure of the freeway system itself.

Boston's present image has many weaknesses which this road may help to eliminate. The location of water is confusing. The Charles River lacks continuity with the harbor, which itself is seldom seen. Almost the whole south side of downtown, an area of extensive railroad yards and industry, fades in the image; in fact the entire area surrounding the peninsula suffers from the inner ring "grayness" that characterizes almost every American city. There are also potentialities in the image. From the air or on a map, Boston possesses a formal clarity that is not apparent on the ground. Large open spaces that surround the peninsula might provide excellent viewing points were they accessible, and Boston's internally distinctive districts could help to create a highly differentiated and comprehensible image were their character exposed to the view from the road.

To overcome the difficulty of orienting on a circular route, three major intersections, leading to North, South and West radials are proposed. These intersections, acting as strong forms in confused areas of the city, become apexes of a triangle, the sides of which are visually associated with that part of the city being traversed. They are called the Riverway, Centerway, and Crossing, and each possesses a central climax. The Riverway parallels the Charles River at some distance, then, at the center, kinks inward and downward to the water's edge with cross-views to Cambridge and the State House, before continuing its parallel course beside the river. The Centerway is directed towards the financial and shopping district with a central outward curve around the financial district allowing views across the harbor to the airport. This curve is articulated at both ends by descent into areas of visible activity—to the north, Boston's Italian market; to the south, through the Dover Street tunnel, where a tunnel restaurant is proposed. The Crossing passes quietly through residential areas except for a curving stretch through Fenway Park with Kenmore Square and the baseball stadium to the northwest, and a new symphony hall square to the southeast.

The whole route contains a simple basic rhythm of intersection-climax-intersection which is overlaid by another rhythm marked by the two major downtown destinations: (a) the financial district, government center, and retail shopping around the Hub, and (b) the new Prudential-John Hancock complex around Copley Square. These major goals are picked out for viewing with regular frequency and alternating emphasis along the route, so that eastern travelers relate to the Hub, western travelers relate to the Prudential-John Hancock group. Within these major rhythms lie those of secondary goals, particularly those of outlying centers (South Boston, Mission Hill, Cambridge, Somerville, Charlestown and Logan Airport) that provide rhythms of inside to outside

viewing. (These and other aspects of the design, such as location of advertising, parking garages, the night scene, and road detail are described more extensively in the monograph. The drawings illustrated employ a notation system, which was developed to describe existing routes.)

This whole study was motivated by the promise of the new world of vision inherent in the speed of movement, and by a desire to find a visual means for pulling together large urban areas. The crucial test will come in applying these ideas to actual design problems, and in evaluating the results obtained. Not only would one learn much of technical interest from a serious attempt in this direction, but a road built for vision in motion would be a concrete example of what the highway experience could be, an example far more powerful and evocative than any number of paper projects. Might it be possible to construct such a road as a national experiment?

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