Tourscapes

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The View from the Road

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Contents:

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This book is one of a series published under the auspices of the Joint Center for Urban Studies, a cooperative venture of the Massachusetts Institute of Technology and Harvard University. The Joint Center was founded in 1959 to organize and encourage research on urban and regional problems. Participants have included scholars from the fields of anthropology, architecture, business, city planning, economics, education, engineering, history, law, philosophy, political science, and sociology.

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The View from the Road BY DONALD APPLEYARD, KEVIN LYNCH AND JOHN R. MYER

The sense of reality is improved if a scale model is prepared, showing the road and its environs, and perhaps allowing for placement of the road in alternative positions. The situation is still seen as an over-all pattern rather than as a sequence, but it occupies three-dimensional space. Details may have to be carefully executed, or even exaggerated, especially just at the roadside. Otherwise the model may convey the general spatial form but obscure the way in which this is modified and overlaid by detail and texture. Nevertheless, quick and rough study models, made of such inexpensive and pliable materials as cardboard, Plasticine, balsa, or Styrofoam, are an essential part of the process of designing a spatial composition.

It is also possible to capture some sense of sequential effect from a model, if the eye is brought down by some optical means to a simulated position on the road surface and then is moved along that surface at a speed which corresponds to the real speed at the model scale. This can be done crudely by a small mirror, and much better by a hand-
55B held periscope or one on a mobile mount. We now have a technique that records *sequence*, but the record is perishable and visible to only one person at a time. Therefore it is still not adequate for comparability, nor for communication to groups of people.

We are thus tempted to go to motion pictures, which record sequences in a permanent form
55A that can be shown to large groups of people. Movies may be taken of existing highway sequences, either at normal speed or at exaggerated speeds, to convey in brief the essentials of the major visual effects. We have made a number of such highway movies, which are quite useful in conveying the sense of motion. There are technical problems of support for the camera to prevent vibration, but the most serious difficulty is the inherent difference between the camera and the human eye. The eye has a very small angle of acute vision, coupled with a very broad angle of hazy vision. It perceives the details of objects by searching the visual field in a quick irregular motion, while sensing the spatial relationships of the whole field partly by means of blurred, peripheral sight. The camera, on the other hand, is a staring eye of uniformly acute vision over an angle of moderate size. In one way, it records too much, if we want to simulate the workings of a human eye; in another way, it records too little by reducing peripheral vision. Furthermore, its center of attention does not leap from object to object as does the eye. There are also other differences, such as the absence of binocular vision and a fixed rather than a variable depth of focus; but these seem to be less important here.

The net effect of these differences is that a movie, taken while looking ahead along a road from a moving platform, looks "flat" to us, and seems to be taken either from a tunnel or with blinders on. Its attention appears to be fixed with insane intensity. It can have a hypnotic effect and will exaggerate such features as road curvature, traffic, or the visual "growth" of objects at the roadside. It will neglect many other elements, such as the sense of total space, or the appearance of more distant objects in the landscape which are not directly ahead.

There are techniques for circumventing these defects. Several co-ordinated cameras may be used, and their film may be projected on a wide-angle or curved screen, so that the observer is presented with a view which extends to the periphery of his vision. There results a marked sense of three-dimensional reality, and the eye of the observer can scan the whole scene much as it would in reality. The technique is difficult and expensive, however.

To simulate the scanning of the human eye, the camera may be pointed at one object after another, while the vehicle is moving. The result is vertigo for the observer, since he has no compensatory mechanism to assure him that the world is stable when the visual field is moving so rapidly. Movie cameramen have therefore developed many compromise devices, such as the panning shot, the dissolve, the close-up. These symbolize the scanning, selective action of the eye, but in a very slow and formal way, so as not to disturb the equilibrium of the observer. These techniques require a skilled operator, and must perforce select the visual elements and interrelations to be shown. The result is a work of art (whether good or bad), which has already interpreted the scene.

Despite these problems of technique and cost, a motion picture gives such a direct sense of sequence that it is a valuable adjunct to studies in map, sketch, and model form. Multicamera, wide-angle films are useful as permanent recordings of important existing sequences. Selective camera work, in the more conventional style, can be used to record brief sequences, details, or special aspects, as supplements to other records. Motion pictures may be employed to communicate, as a work of art, the character or meaning of a sequence, after that sequence has been thoroughly analyzed and understood. High-speed movies may be used to compress the outstanding events of a trip into a brief compass.

It is also possible that the advantages of movie presentation may be brought to bear on the study of proposed designs via the use of scale models. If a motion-picture camera can be coupled to a mobile periscope, then
55C movies of apparently correct scale could be made of any desired path of motion through a model. Thus the visual effect of a great number of alternative paths through a given environment could be recorded and compared, or the appearance of proposed new environments could be predicted as they would be seen by the moving observer. The view of a pedestrian—or that from an automobile, airplane, or any other vehicle—along any trajectory and at any velocity could be easily simulated. This would be valuable not only in highway layout but also in many phases of architectural, landscape, and city-planning design.

Such an instrument has been partially developed by us, but it presents problems of lighting, exposure, and particularly of mounting and moving the periscope. Even when perfected, the resulting films will still encounter the difficulties of simulating peripheral and scanning vision. The periscope itself, however, has already been developed to the point that it is useful for the direct visual inspection of scale models.*

*This type of model-viewing periscope is now manufactured commercially by Optec Ltd., 54 Upper Montagu St., London W1, England.

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55C
A periscope movie of a model of the same road.

An Abstract Notation of Motion and Space

All of these techniques suffer from disadvantages of cost or complexity, of failure to abstract the essentials, or of inability to communicate the sense of sequence. It would be useful to devise a simple graphic technique of recording visual sequence, employing easily made, easily understood, reproducible drawings on paper, which could compress the essence of the experience into a small space. Such a technique would allow the rapid communication and comparison of sequence alternatives, stripped to their essentials.

Our proposal for a technique of this type borrows heavily from the previous work of Philip Thiel,* who has worked on this question in depth. The technique does not present sequence directly as in a movie, but rather symbolizes it by placing elements along a continuous line or staff, as in musical notation. This is probably an inevitable feature of any simple presentation on paper.

Any abstract notation, however clear it may be logically, is never at first intuitively obvious. The reader should be warned that it will take time and some practice before any such system will seem to communicate the "feel" of a complicated experience of motion.

Our studies have led us to think that the essential experience of the highway consists in the perception of roadside detail, the sense of motion and space, the feeling of basic orientation, and the apparent meaning of the landscape. The sequence of roadside details that are significant at the scale of the entire road—changes in lights, signs, rails, or paving texture—is easily recorded. The sequence of meaning (beyond that of simple functional meaning) is quite difficult to analyze. We therefore chose to develop techniques for communication of: (1) locational orientation, and (2) the experience of motion (both of self and of surroundings) through a changing, light-filled spatial form.

The perception of motion and space may be analyzed into the following parts:

1. Apparent self-motion: speed, direction, and their changes (stop-go, accelerate-decelerate, up-down, right-left).

2. Apparent motion of the visual field: passing alongside, overhead, or underneath; rotation; translation; spreading or shrinking of outline or texture; general stability or instability; apparent velocity or lack of it.

3. Spatial characteristics:

a. Presence and position of enclosing objects or surfaces, their solidity and degree of enclosure.

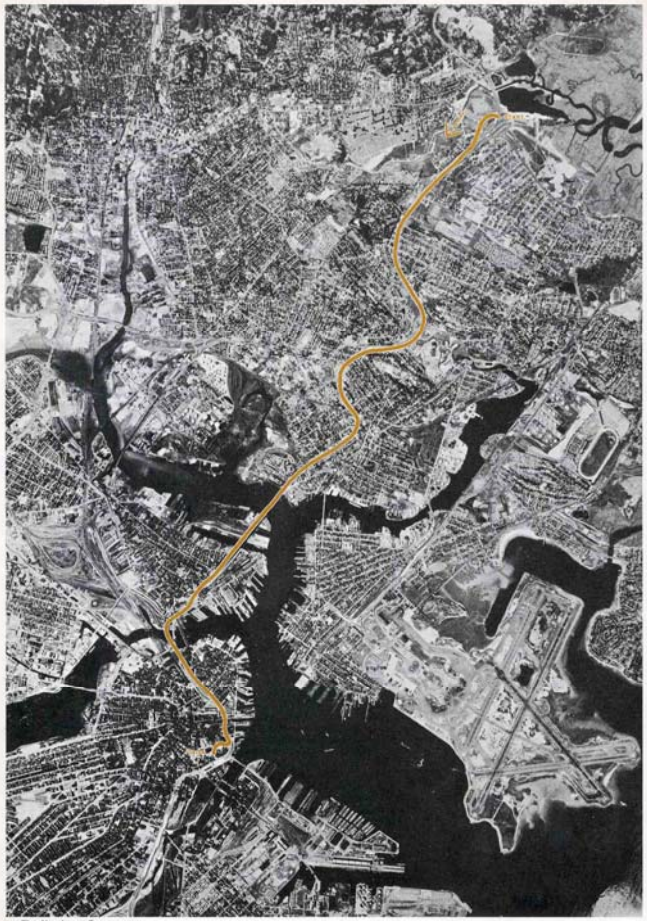
b. General proportions of the space enclosed; scale with respect to the observer; position of the observer.

c. Quality of the light which makes the space apparent: intensity and direction.

d. Relationship of spaces in sequence: jointing and overlapping.

e. Direction of principal views, which draw the eye toward different aspects of the spatial enclosure.

*See his unpublished memoranda: "The Urban Spaces at Broadway and Maxon," August 1959; "An Architectural and Urban Space-Sequence Notation," August 1960, his article in the *Town Planning Review* for April, 1961, entitled: "A Sequence-Experience Notation," and that in *Landscape*, Autumn 1961, "To the Kamakura Station."



63 The Northeast Expressway

3. Analysis of an Existing Highway

This monograph is based on various tests of the visual impact of the highway. The substantive results have been summarized in the first chapter, but we must also describe the tests themselves in order to identify the source of our conclusions. To illustrate both source and method, this chapter will concentrate on the test results from one particular route.

Our conclusions were built up from the study of many urban highways in the East: Route 2, Storrow Drive, and the Northeast Expressway in Boston; the approach to Hartford over the Connecticut River; the East River and West Side Drives in New York City; the Jersey Turnpike from Newark to New York; the Schuylkill Expressway in Philadelphia, as well as the approach to the central part of Philadelphia through Fairmount Park; the Rockefeller Parkway in Cleveland. We have drawn upon the visual experience of many other roads, but we have studied the above roads in some detail. All of them were chosen because they have at least some quality as sequences.

The basic technique used was the one common to all artistic criticism: numerous repetitions of the experience, and its analysis and evaluation both on the spot and from memory. The process was aided by the use of tape recorder, camera, and sketch pad to record momentary impressions. Our conclusions are therefore based largely on the reactions of alert and presumably sensitive and educated observers. The reactions of other subjects might be expected to be less sharp; but what scanty evidence we have indicates that they would not differ markedly in kind, at least among other middle-class people to whom the road is not a matter of long habit. The greatest divergences are likely to occur among people of another class or culture (about which we know nothing), or possibly among daily commuters along a highway, on whom we have extremely little data.

Our guess as to commuters is that they would respond in the same (if in a somewhat muted) way wherever the visual sequence was a powerful one. Elsewhere on the road they might be able to shut out the view from conscious attention, although if they were stimulated to look they would enjoy even these mild and familiar scenes, much as we find pleasure in driving through a well-known countryside. On the other hand, except again for dramatic sequences, a daily commuter, even if he chooses to look, may possibly find pleasure or meaning primarily in other kinds of phenomena: novelties such as new construction, changing activity or signs, new detail, moving traffic. We lack information on this.

During our investigations, we made all trips in the daytime, in the presence of normal city traffic, but not at rush hours. Thus they do not convey the night-time view or the experience of the road in very heavy traffic.

Most of our data comes from this subjective evaluation, but other kinds of tests and records were also made. The use of photographs, sketches, and motion pictures has already been noted. We experimented with recording a continuous stream of verbal impressions, given without pause and at such speed that the observer loses much conscious control of his observations and must say the first thing that comes into his head. These were done for a number of the roads, particularly the Northeast Expressway in Boston, by several research personnel. These recordings were transcribed and timed, and analyzed

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signs of emotional reaction. When several runs are compared, they prove to be valuable indices of where attention is compelled to focus on a common object and where it ranges more widely.

A similar graphic technique was used on the Northeast Expressway only, and was carried out by a somewhat wider sample of people (twenty subjects; mostly, but not entirely, middle-class and professional). Here the subject was given a small pad of paper and required to sketch the scene at an extremely rapid tempo, averaging three drawings per minute. Again he is under such pressure that he cannot consciously control what he records. The sketches were timed to indicate the location in which each was made; they could then be arranged in rows one above another, all drawn to a common time scale. Thus it was possible to see what the entire set of subjects recorded at similar points on the road.

The drawings are necessarily crude, and many of the indications are so compressed as to be unintelligible to those who do not know the road. Each subject was asked to identify all ambiguous elements of his drawings immediately after the run was complete. Most of the subjects had at least minimum graphic skill (little as this may be apparent under such conditions!), but a few were completely untrained. The latter drawings exhibit a poor ability to connect parts. They have a fragmentary look, but the content is still similar to the more highly connected drawings. It would be interesting to expand these tests among other groups, particularly among the daily users of a route.

This sketch technique gave us further data on the tempo of attention and the objects of attention. At climactic moments, attention is "forced," and the drawings by many people are surprisingly similar. Considering the vast quantity of objects that could potentially be recorded, the high selectivity and general concurrence was striking. Features such as the forward view of the roadway, spatial confinement at the side or overhead, outlines silhouetted against the sky, roadside detail, obstacles to vision or movement like large buildings or the rear ends of trucks, and long axial views appear again and again. Detailed results of these verbal and graphic recordings are woven into the analysis described below.

Other tests of the subjective impact of the road might be imagined: the correlation of physiological reactions to visual events, or laboratory experiments in which the highway experience is simulated and varied in a more controlled fashion. There might be testing of other groups: those with different degrees of familiarity, or with different temperament or background. Responses of subjects who are placed in different positions in the car might be studied. (Our examination dealt primarily with the case of the front-seat passenger.) None of these other tests have been attempted by us.

64 Map of Northeast Expressway

The Approach to Central Boston via the Mystic River Bridge

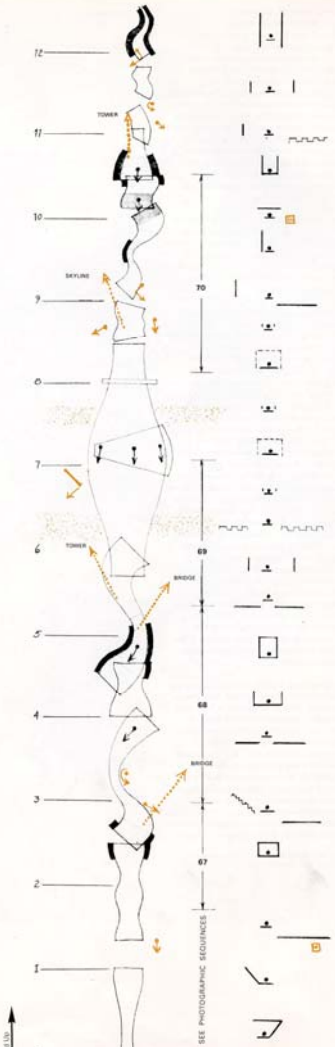
Boston affords at least one interesting example of the approach to the central city: the Northeast Expressway, which comes in at a high level over the Mystic River Bridge. It traverses strong topographical and urban forms and has a decided shape of its own. In its variety and its tempo it illustrates many of the visual possibilities of urban highways: panoramas, fast concentrated motions, the interplay of major and minor goals. It has many visual flaws, and yet it affords a dramatic approach to the city. This is the approach that Whitehill refers to in the opening words of his book on the history of Boston:*

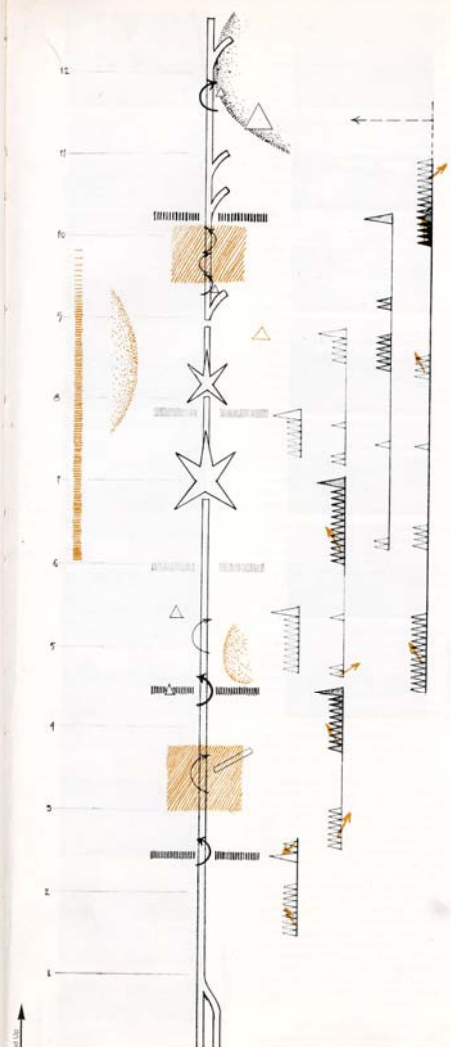
"Only residents of Essex County and Maine and New Hampshiremen, traveling by car, approach Boston with any decency. From the upper deck of the Mystic River Bridge, particularly in the early morning, a marvelous panorama of the city in Monet-like blues and grays unfolds itself."

A study was made of this route from its intersection with Squire Road in Revere to
63 the Fort Hill exit on the heart of downtown
64 Boston, a distance of 6¾ miles. This trip takes 12½ minutes at an average speed of 32 miles per hour. Map 64 shows the general layout of the road. From the flat ground near the Revere airport, it runs southwest through a thinly settled area and then turns southeast to pass around the nose of Fennos Hill. It swings southwest between Mt. Washington and Powder Horn Hill and makes a similar double turn once again as it enters Chelsea and comes into line with the Mystic River Bridge. It crosses the river at a high level, crosses a smaller channel on another bridge, and descends across the eastern end of Charlestown, to turn southeast once more as it traverses the mouth of the Charles River in a region of railroad yards and docks. Passing alongside North Station, it enters Boston proper, still at an elevated grade, skirting Haymarket and Dock Squares and curving around the eastern edge of the financial district. Although the expressway now continues on south past South Station, at the time of our test it terminated at the Fort Hill exit, where the off-ramp turns sharply to the right and descends to street level between massive old buildings.

The impressions of this road given below are primarily those of two men who took the trip many times, both as driver and as front-seat passenger. They are built on the basis of on-the-spot recordings of the experience. These recordings were verbal (in both a "stream-of-consciousness" and also a more considered style) and graphic (rapid on-the-spot sketches, plus slides and movie sequences). The view is fundamentally that of the front-seat passenger who is paying conscious attention to the scene. The analysis by these two observers was supplemented by the rapid sketches of twenty other subjects.

*Walter Muir Whitehill, *Boston: A Topographical History*, Harvard University Press, Cambridge, 1959.





Sequence Diagrams

Some of the visual components of this experience are graphically presented in Figures 65 and 66, drawn to a time scale, in which the course of the road has been diagrammatically simplified to a straight line. The time markings on the conventional map, Figure 64, allow the reader to relate it to these special drawings. Figure 65 is a diagram of the passenger's sense of motion and space, while Figure 66 illustrates his orientation — his image of the total landscape. Both of these diagrams follow the conventions developed in the previous chapter.

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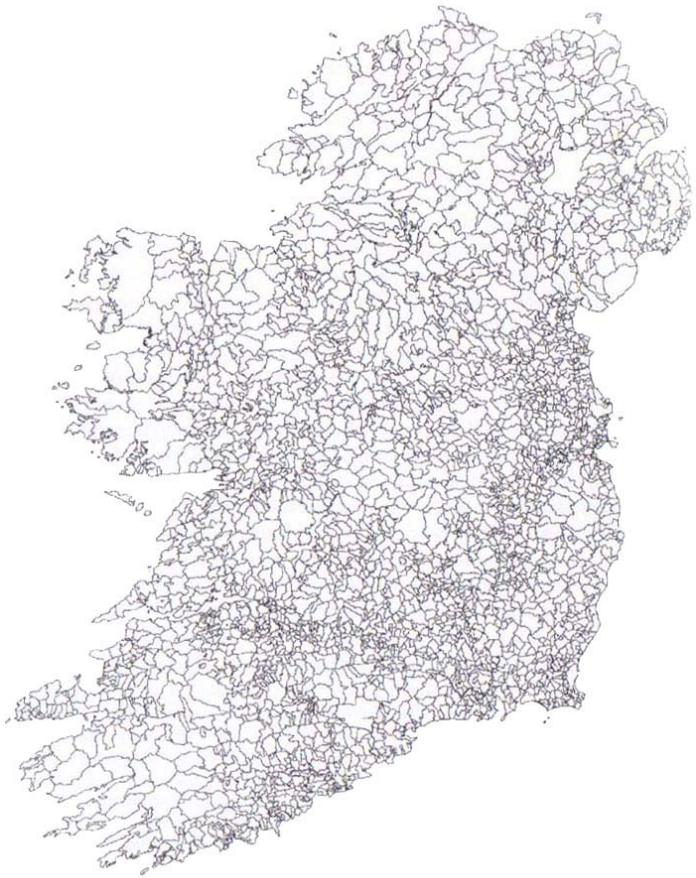


Rural Housing Design Guideline Areas

Urban Development Plan Areas

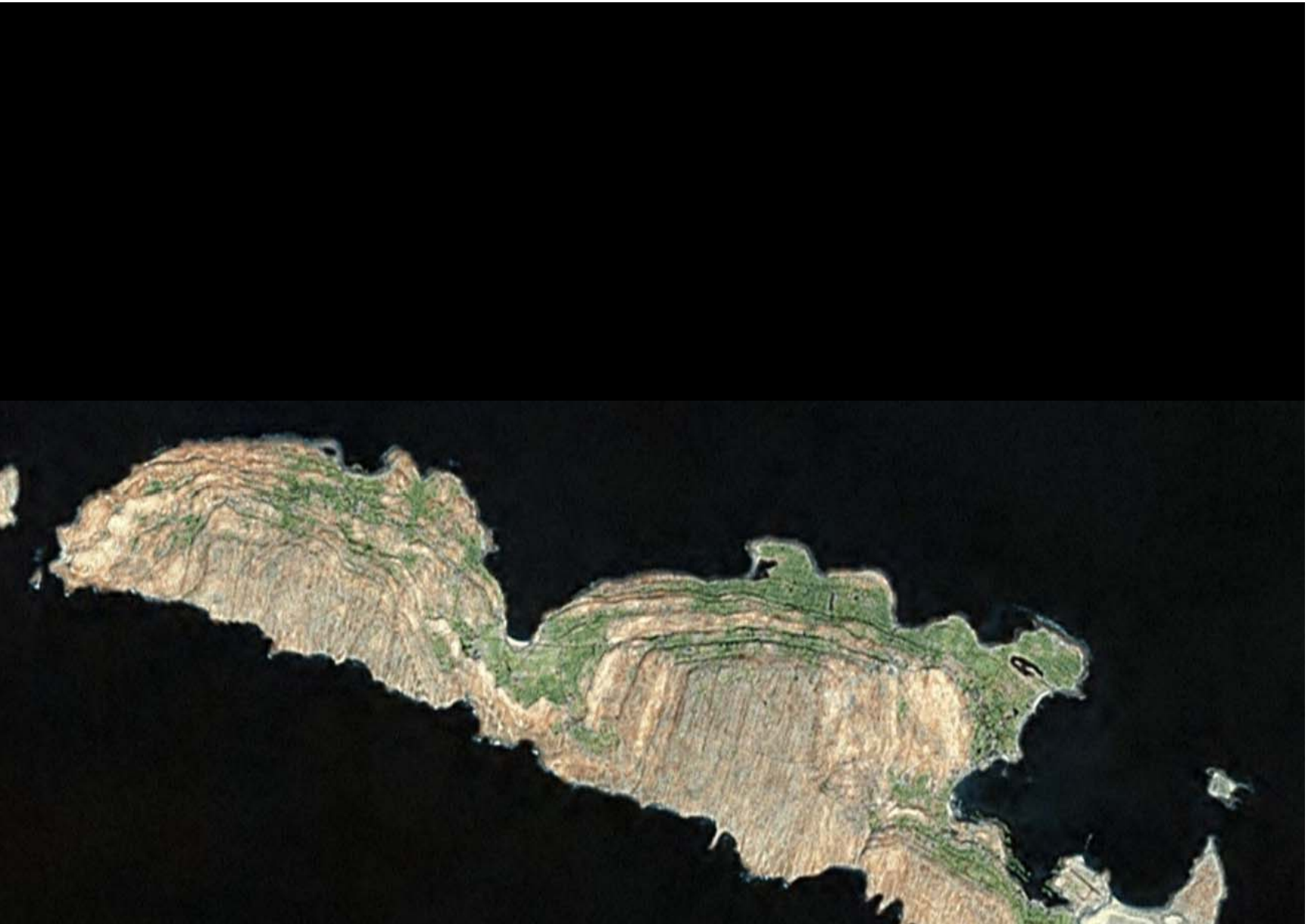
No Design Guideline Areas

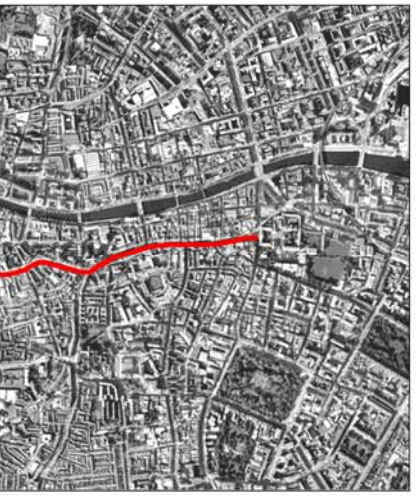
'Quiet' Areas

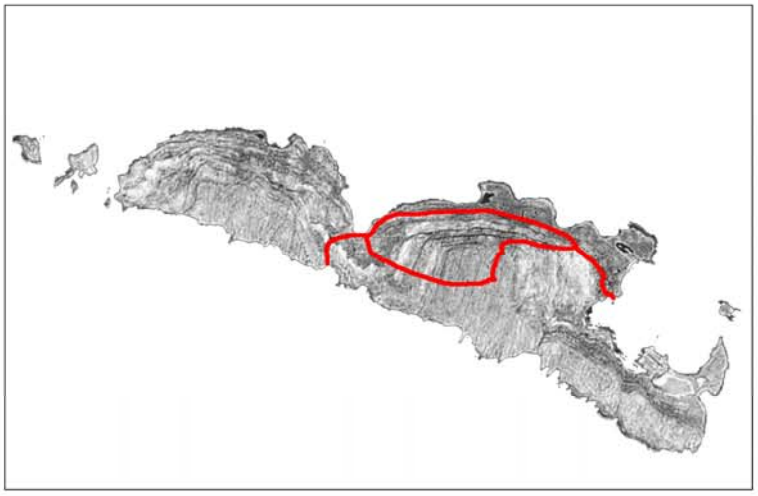
Guideline Free Suburbs

Inis Mór

Kerry







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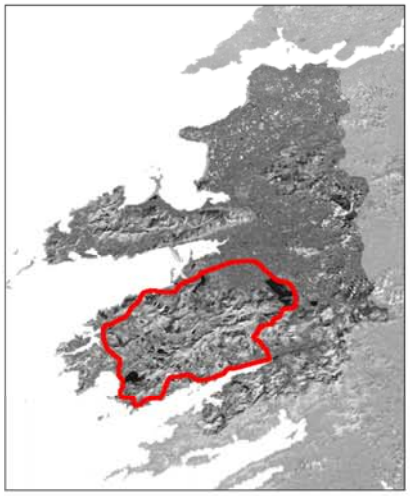

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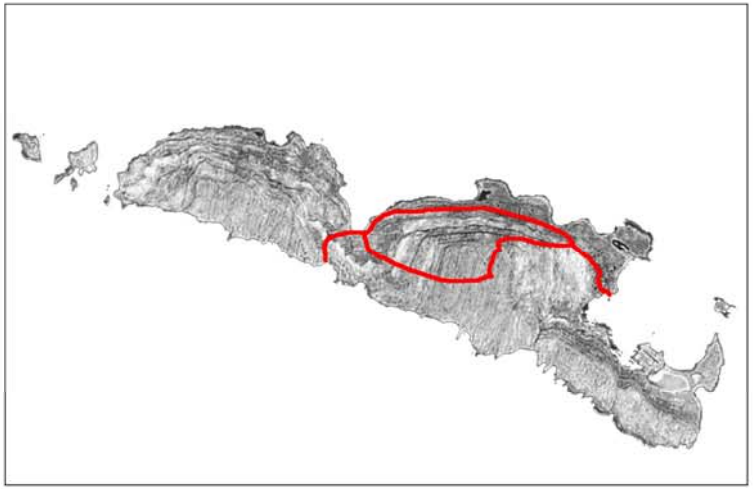

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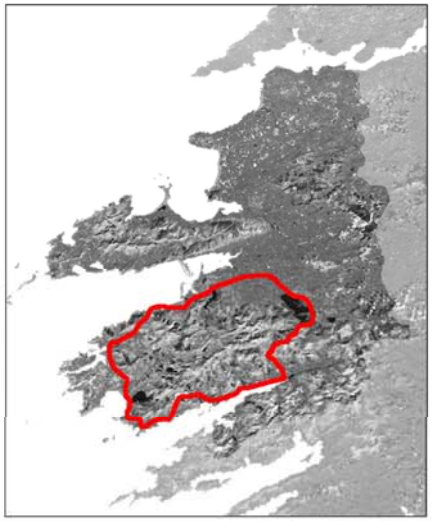

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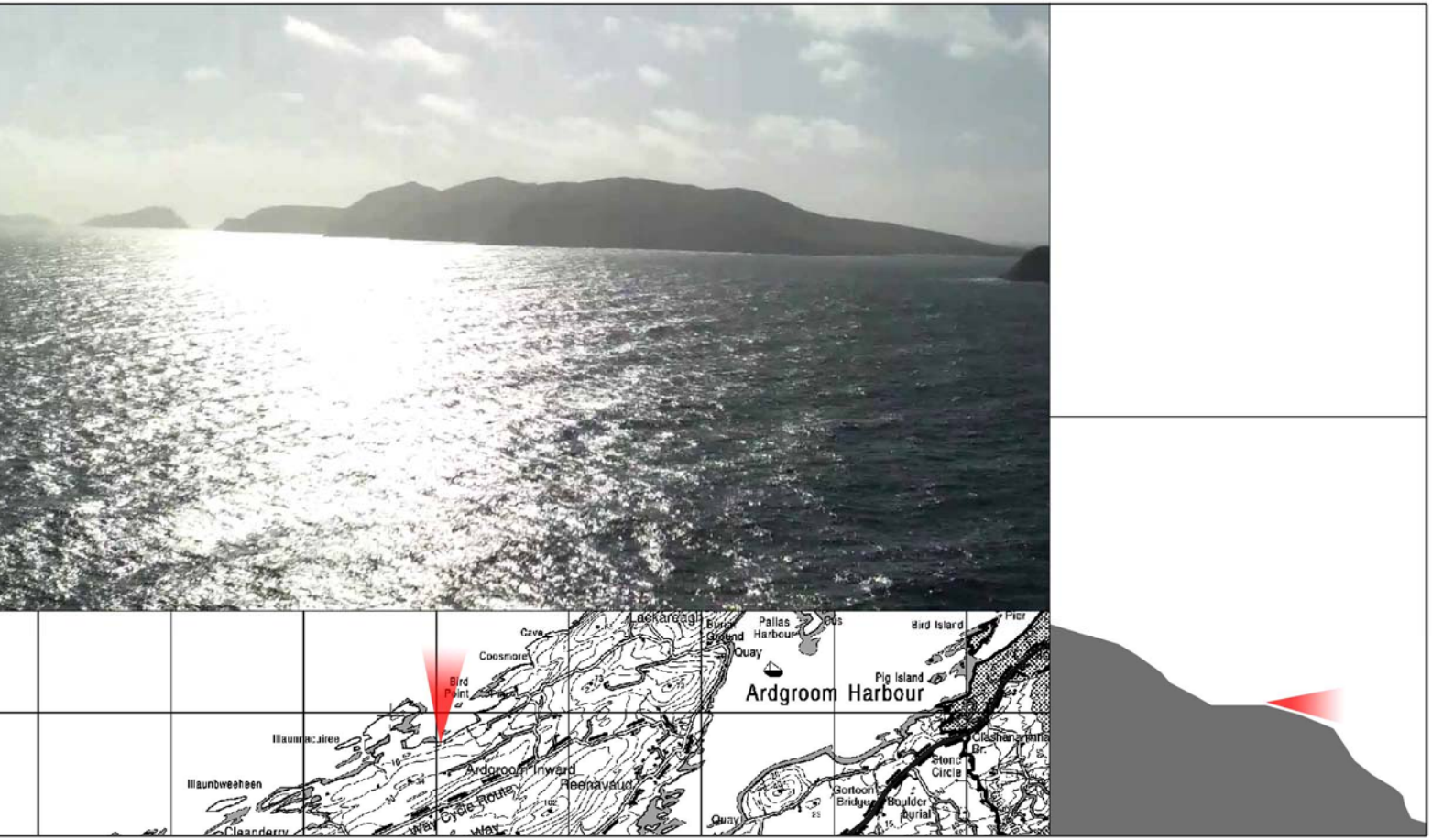
Lackareagh
Cave
Coosmore
Bird Point
Pallas Harbour
Quay
Ardgroom Harbour
Bird Island
Pier
Pig Island
Illaunmcairee
Illaunbweeheen
Ardgroom Inward
Reenavaud
Cycle Route
Clashanamuing Dr.
Stone Circle
Gortboom Bridges
Boulder Burial
Quay