numbered, the photographs were duplicated, and the students returned the next week distributing the photographs to the commuters, with a cover letter explaining our purposes, and a questionnaire dealing with the phenomenon of the familiar stranger. We found that 89.5 percent of those questioned reported at least one familiar stranger. The average commuter claimed 4.0 individuals at the station whom he recognized but never spoke to, compared to a mean of 1.5 individuals with whom he conversed. Some familiar strangers turn out to be "socio-metric stars" in that they are recognized by a large proportion of commuters at their station, even if never spoken to.

Many passengers told us they often think about their fellow commuters, trying to figure out what kind of lives they lead, what their jobs are like, etc. They have a fantasy relationship to familiar strangers that may never eventuate in action. But it is a real relationship, in which both parties have agreed to mutually ignore each other, without any implication of hostility. Indeed, sometimes only the right circumstance is needed to change the relationship. Consider this: a woman collapsed on the streets of Brooklyn, not far from her apartment house. She had been a familiar stranger to another resident of the street for years. The resident immediately took responsibility for the unconscious woman, not only calling an ambulance, but riding with her to the hospital to make certain she was treated properly, and to assure that her possessions were not stolen by ambulance attendants. She said later that she had felt a special responsibility for the woman, because they had seen each other for years, even if they had never spoken. The familiar stranger status is not the absence of a relationship, but a special form of relationship, that has properties and consequences of its own.

Why do familiar strangers exist? It is a response to overload: in order to handle all the possible inputs from the environment we filter out inputs so that we allow only diluted forms of interaction. In the case of the familiar stranger, we permit a person to impinge on us perceptually, but close off any further interaction. In part this is because perceptual processing of a person takes considerably less time than social processing. We can see a person at a glance, but it takes more time to sustain social involvement. If the temporal relations were reversed, that is, if perception took a longer amount of time than social communication, a quite different phenomenon would result: We would typically talk with people whom we did not have time to visually perceive.

7 A PSYCHOLOGICAL MAP OF NEW YORK CITY[1]

A city consists of streets, squares and buildings that exist in objective, geographic space. But there is also a psychological representation of the city that each inhabitant carries around in his head. When a man comes to a strange city, at first he does not know his way around. He sticks close to a few known reference points, such as his hotel or the main shopping street, and quickly feels disoriented if he strays from these few familiar paths. With increasing experience, he begins to build up a picture in his mind of how the streets connect with one another, the relationship among paths, and specific turns he must take to move from one point to another. He acquires a representation of the city which we may call a psychological map. A psychological map is the city as mirrored in the mind of an individual. The acquisition of an adequate representation of the city may be a slow process, filled with confusion, and inevitably only partial in its achievement. Very few individuals, if any, have a total grasp of all of the streets and intersections of a major metropolis, but each of us holds at least the fragment of such a map.

In this paper, we shall describe a psychological map of New York City constructed by our research team. But before going further, I would like to raise some general questions about psychological maps and review some of the work that has been carried out in this field. We start with the notion that the person has a psychological representation of some features of the environment. The first question, then, in constructing a mental map, concerns the units of the environment that are to be mapped. In previous research, the scale of maps has varied from those of small campuses to the maps people have in their head of the entire world (Saarinen, 1971; Hooper, 1970; Stea, 1969; Gould, 1967). There is an important difference, of course, in acquiring a mental map of one's campus and that of the world. The campus map is mediated by direct experience, moving about the university buildings and piecing scenes together into some cognitive structure. The image of the world is learned not from direct exposure, but through formal schemata of it as represented in maps and atlases.

Once we have decided what units of geography are to be mapped, we need to decide which psychological features are of greatest interest. The most basic question

This paper was written in collaboration with Judith Greenwald, Suzanne Kessler, Wendy McKenna, and Judith Waters. It was first published in *American Scientist*, Vol 60, No. 2 (March–April 1972), pp. 194–200.

is whether a given geographical entity exists at all in a person's cognitive repertory. If asked to draw a map of Central America, does he include Costa Rica and El Salvador? If asked about New York City neighborhoods, is the subject aware of the existence of Chelsea and Morningside Heights? And beyond the identification of an element lies the question of whether he knows the geographic position of one entity in relation to another. (He may be able to name Chelsea, but not know its position in relation to other neighborhoods.) In addition to these purely cognitive features, the individual may possess a set of attitudes or feelings toward different parts of the region or city. In principle, it is possible to map an entire city, block by block, in terms of *any* definable psychological dimension (e.g., perceived level of safety-danger). Gould (1967) has mapped the geography of England in terms of the residential desirability of its varying regions.

The major methodological problem in all this is how to externalize the mental map, that is, how to get it out of the individual's subjective experience and onto paper for public scrutiny. One simple method is to ask a person to draw a map of the area in question, say a city, showing all of the streets he knows, and indicating all of the neighborhoods and landmarks he can think of. A decade ago, Kevin Lynch (1960), at MIT, asked a group of Bostonians to do this. While certain landmarks, such as Paul Revere's house and the Boston Common, as well as paths linking them, turned out to be widely known, large areas of the city were not represented in typical mental representations. Certain neighborhoods hardly existed at all in the minds of Bostonians. This again highlights the difference between the cartographer's map and the psychological map. Donald Hooper (1970) informally applied this cognitive

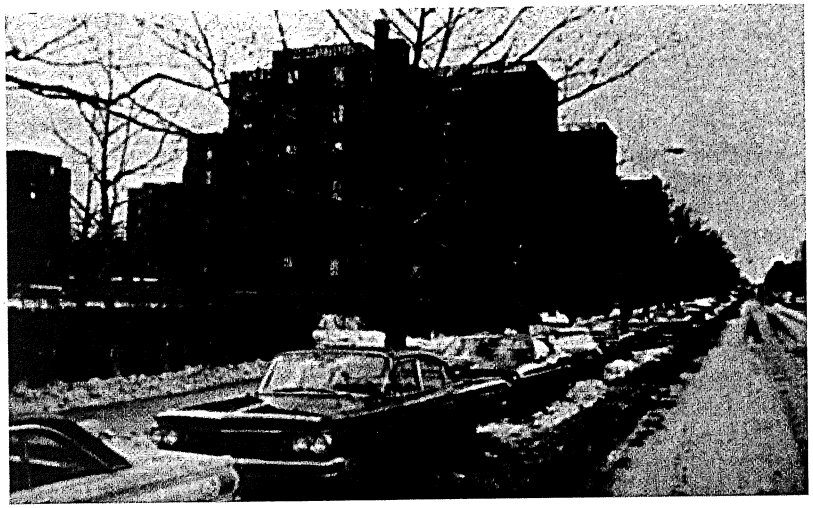

FIGURE 7.1 Queens (Q-7), Woodside houses between Broadway and 31st Avenue. The percentages of subjects who correctly identified this view are: borough: 22 percent; neighborhood, 3 percent; street, 0.9 percent.

mapping technique to New York City with similar results. The psychological representation of New York was found to be localized in downtown landmarks, with much of the city having no cognitive representation at all.

Once the map of a single individual has been externalized, the next problem is that of aggregating the individual maps so as to be able to draw some general conclusion. The problem is that unique configurations are always difficult to aggregate in any meaningful fashion. One is reminded of the work of a nineteenth-century criminologist who attempted to find the average criminal type by superimposing the photographed faces of many criminals onto a single photographic plate, using the resulting portrait as an ideal or average type. Unfortunately, the resulting face was virtually nondescript and resembled no one, criminal or otherwise.

However, the problem of aggregation can be reduced by imposing appropriate constraints. The greater the number of constraints imposed on the subject in externalizing his map, the more readily the production of several individuals can be combined. The psychological map devised by our team is heavily constrained. Subjects are asked to make a simple unidimensional judgment (i.e., whether they can or cannot recognize several scenes of New York). The results of all subjects are then combined without difficulty. This procedure generates a second general type of psychological map, one which takes for granted an objective geographic map, and attempts to plot psychological characteristics onto it. It parallels the approach of a meteorologist mapping weather. In a weather map variables such as temperature, barometric pressure, and wind direction are made at various points and are plotted onto a preexisting map of the region. Similarly, our psychological map attempts to plot a psychological variable onto the geography of New York City.

Psychologists have not been the only persons interested in psychological maps. Geographers such as David Stea (1969), Peter Gould (1967), and Thomas Saarinen (1971) have tried not merely to describe cognitive representations but also to develop concepts for analyzing such maps. Stea asks: "What are the elements out of which people mentally organize large geographic spaces?" and concludes that people think in terms of *points* (New York, Chicago, Canada, etc.). Further, he concludes that these points may be arranged in some *hierarchy* (some are larger, more important, desirable, etc.); that the areas are *bounded* with clear or fuzzy lines of demarcation; that people think in terms of *paths* connecting different points and whether *barriers* block any pair of points. Stea says that "it matters not a whit that we cannot directly observe a mental map. . . . If a subject behaves as if such a map existed, it is sufficient justification for the model."

In typical studies employing these concepts, subjects are asked to make distance, direction, or size estimates of geographic points. Average results are then compared to the objective reality, the point of interest being the type of deviation from reality contained in the mental images. Thus Griffin (1948) argues that the relative areas ascribed to various regions reflect the importance individuals assigned to them. We have all seen the map of the "New Yorker's idea of the United States," in which the city occupies a vast area of the country, and the Midwest is shrunk to a fraction of its actual size.

A final question concerns the manner in which individuals use mental maps in

everyday life to locate themselves in the environment or navigate from one point to another. The question of orientation was raised as early as 1913 by Trowbridge, and continues as a lively issue. Stea suggests that two very different mental approaches may be used in moving from one point to another. In one case, the person proceeds on the basis of a set of specific operations, so that the map consists less of an overall image than a sequence of directional instructions tied to specific cues. The person starts off in an initial direction until he comes to cue_1, such as a building or landmark, at which point he turns right or left until he gets to cue_2, and so forth, until his destination is reached. In a second strategy, the individual proceeds not in terms of a sequence of operations but through a generalized image of the city. Through successive approximations, he zeroes in on the target, constantly referring his position to his knowledge of the city's structure. This second strategy allows for the use of alternative routes, whereas the former method does not. Moreover, Stea points out that in the specific sequence method, "if you miss a cue [choice point], you're lost."

The capacity to form such a representation of the overall structure of the city depends not only on the individual but on the city as well, and the degree to which it is imagible. A highly imagible city does not mean that every point is equally identifiable. Rather, there are clearly identifiable focal points throughout the city which are interconnected and thus form a coherent picture. Lynch, in his seminal work, *The Image of the City* (1960), argues that high imagibility is a crucial condition for a livable and enjoyable social setting. Moreover, imagibility is crucial in orienting an individual in a city, in communicating a sense of place to him that

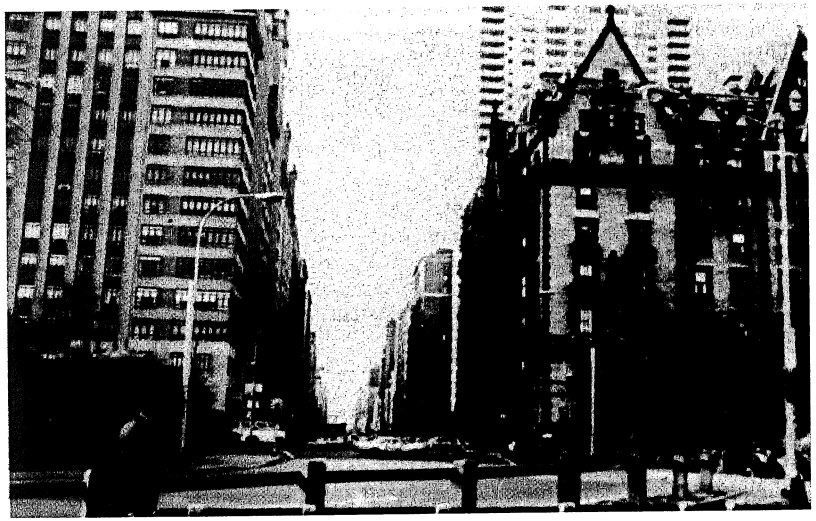

FIGURE 7.2 Manhattan (M-26), the entrance to Central Park at West 72nd Street (the Dakota). The percentages who correctly identified this view are: borough, 90 percent; neighborhood, 59 percent; street, 39 percent.

immediately informs him of location, direction, etc. The total absence of such orienting features is an unnerving experience. It is interesting that the anxiety inherent in such disorientation is most acutely expressed in nightmares in which an individual wanders aimlessly in vaguely familiar but elusively unidentifiable streets.

The imagibility of different parts of the city is interesting for another reason. It allows us to define the psychological boundaries of a city, which need not, of course, coincide with its political boundaries. The methods used by Lynch and others are natural starting points in the assessment of a city's imagibility. But the next step, we felt, should be in the direction of precision by constructing a map that goes beyond landmark specification to the measurement of the exact degree of cognitive significance of any one point in the city relative to any other point. The remainder of this paper describes the method we employed in obtaining a cognitive map of New York City. The key paradigm underlying the psychological map presented here takes the form: if an individual is placed at random at a point in the city, how likely is he to know where he is?

In order for a person to know his location three requirements must be met. First, the scene he confronts needs to be differentiable in some respect from other scenes in the city. If all buildings look exactly the same, a person cannot know where he is. Second, he must match the unique input against some memory of it. The memory may have been acquired through direct exposure, or indirectly through the study of photographs, maps, or hearsay. Third, even if an individual can recognize a scene, he cannot necessarily place it in relation to other parts of the city. ("This street is terribly familiar, but I don't have the slightest idea where we are.") Placing the scene in the larger framework is a final requirement if we are to say that the subject knows where he is. Our main goal, then, was to make a precise assessment of just which parts of New York City are easiest to recognize and which are most difficult. Our problem was to devise methods that would uncover, in an objective and reliable fashion, the mental representations of New York City held by its residents.

SAMPLING AND PROCEDURE

Only by applying an objective method of scene sampling can assertions drawn from a limited number of cases be applied to the phenomenon as a whole. To illustrate this point, consider the case of a casual investigator who wants to know whether Manhattan or Brooklyn is more recognizable.

He shows a group of people a picture of the Empire State Building to represent Manhattan and his uncle's garage to represent Brooklyn. He would find, no doubt, that more people could recognize the Empire State Building in Manhattan than his uncle's garage in Brooklyn. But that would hardly be an objective basis for asserting that Manhattan was more recognizable than Brooklyn. In one case, he deliberately chose a well-known landmark, and in the other, an insignificant structure. A Brooklyn lover could as easily bias his photographs in the opposite way, photographing the Brooklyn Academy of Music and an insignificant hot dog stand in Manhattan. The only way to control this kind of bias is to introduce an objective

method of geographic sampling that could be readily applied not only in New York but in any city in the world (should comparative studies be attempted).

There are many objective ways to choose a set of viewing points. We decided to take advantage of the fact that the entire world is mapped on a coordinate system, lines of latitude and longitude, and that they form regular intersections, so that any point on earth can be specified in terms of these coordinates. While the lines of latitude and longitude appear very far apart on the usual maps, it is possible to obtain maps that carry the system down to a very fine coordinate system. We selected a grid system based on the 1,000-meter Universal Transverse Mercator grid ticks shown in U.S. Geological Survey maps of New York City. Wherever a 1,000-meter line of latitude intersected a 1,000-meter line of longitude, we took a viewing point for our study.

For economy, we systematically thinned out the viewing points in the Bronx, Brooklyn, Queens, and Staten Island, and the final pattern of viewing points is shown in Fig. 7.3. We ended up with 25 viewing points in the Bronx, 22 in Brooklyn, 31 in Queens, 20 in Staten Island, and 54 in Manhattan. Since we wanted to use a large number of subjects, we could not take the subjects to each location, and instead we showed them color slides and asked them to identify the location pictured. A professional photographer was instructed to take a picture that would give the most information to the viewer (e.g., a building rather than an empty lot).

Since familiarity with different parts of the city probably depends on place of

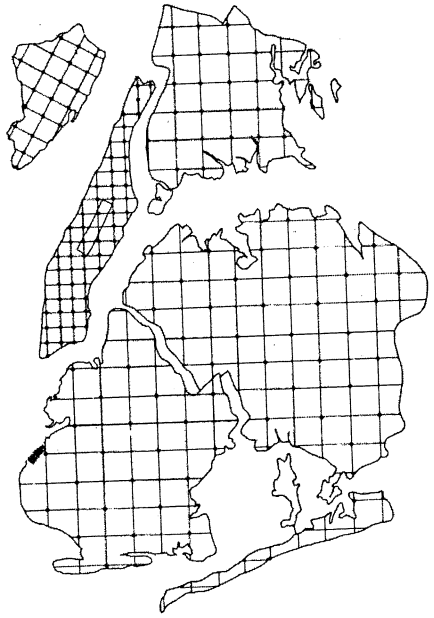

FIGURE 7.3 The stylized map of the five boroughs on the next page shows the percentage of correct placements in neighborhoods of 152 viewing points in the city. The map to the left shows the grid that formed the basis of selection of the viewing points. Photographs taken at some of the grid intersections are shown on the following pages.

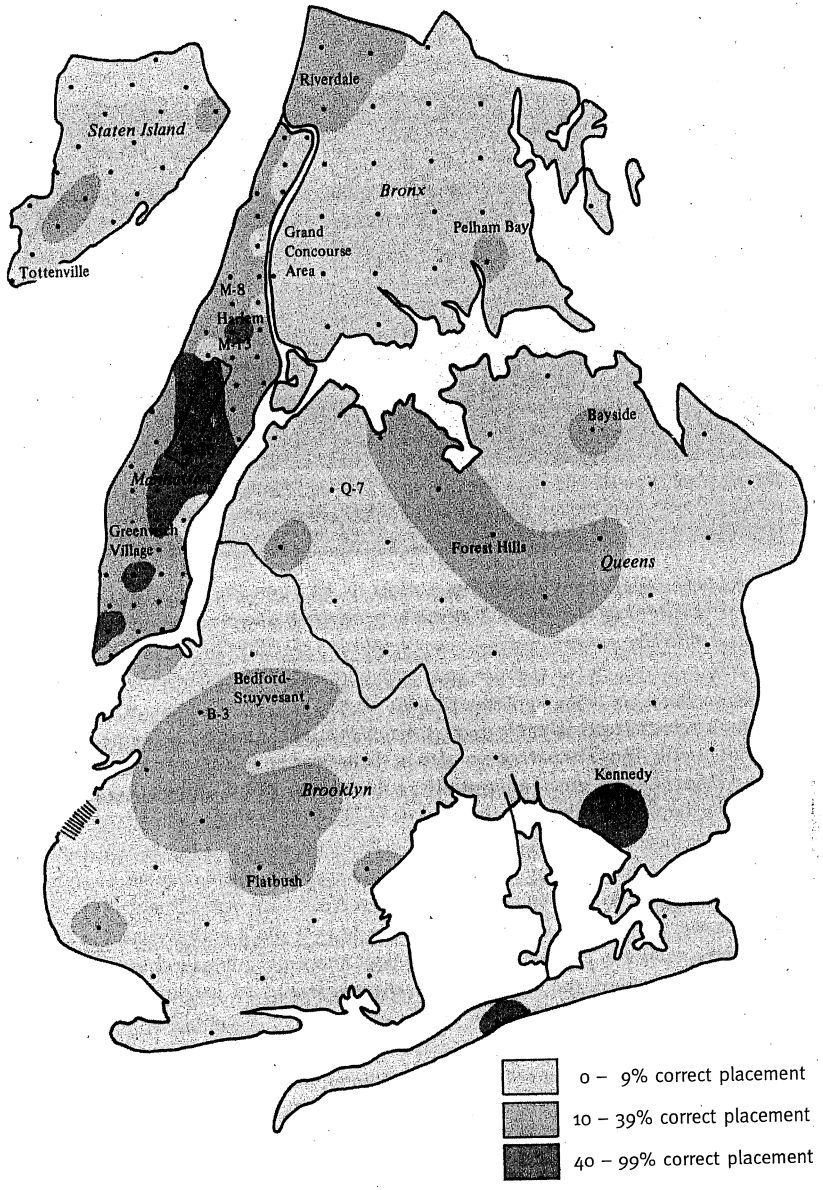

FIGURE 7.4 This stylized map of New York City shows the correct placement of scenes at 152 viewing points in the city, placed according to neighborhood.

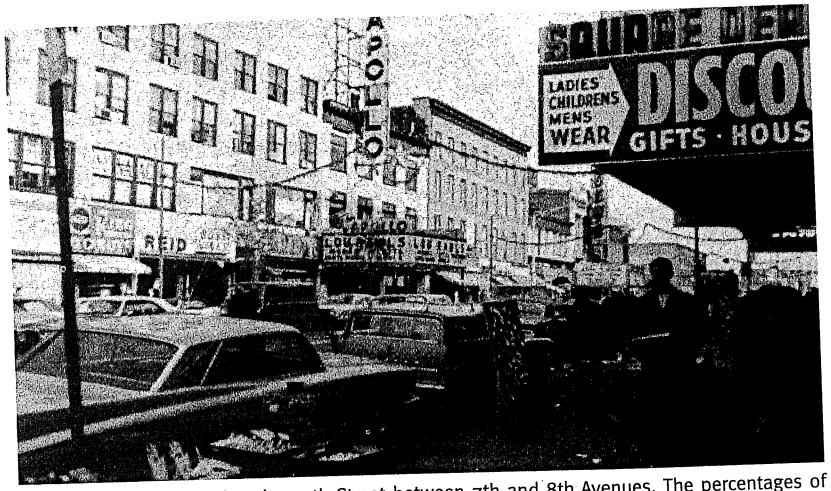

FIGURE 7.5 Manhattan (M-13), 125th Street between 7th and 8th Avenues. The percentages of subjects who correctly identified this view are: borough, 86 percent; neighborhood, 78 percent; street, 49 percent.

residence, we needed a representative sample of all New Yorkers. Thus the most important variable on which our 200 subjects differed was place of residence: they were geographically representative of the population distribution by borough, based on the 1960 census. Subjects were recruited with an advertisement in *New York Magazine*, whose readers, we assumed, would be interested in the city and thus motivated to participate. The total sample represented a particular segment of the New York population. Though some were in their teens and some in their sixties, the majority of the subjects were young adults in their twenties, with a mean age of 28.9. The sex distribution paralleled the city's, with a slight majority of women. According to the Hollingshead scale of social position (1957), the median subject held a job at the minor professional level and had completed college. The median subject had lived in his neighborhood five to ten years and in New York City over 20 years.

Subjects were assembled in groups in a large lecture room with a screen in front. Upon arrival, each was given an answer booklet and a neighborhood map and told to become familiar with the map, which was divided into 54 neighborhoods. They were informed that the main purpose of the study was to discover how well people can recognize various parts of the city. The color slides were then projected onto the screen, and the subjects were asked to imagine that they were viewing these scenes from the window of a bus that was touring the city. The subjects were then asked to indicate in the answer booklet which of the five boroughs they believed the scene was located in. They were also called upon to identify the scene in terms of more exacting criteria – in what neighborhood the scene was to be found and, beyond that, on which precise street. The entire procedure took about ninety minutes.

see study by French girl ☺ Yahoo

RELATIVE RECOGNIZABILITY

Based on the proportion of subjects who were able to place each of the 152 scenes in (a) its correct borough, (b) its correct neighborhood, and (c) its exact street location, we may now ask a series of questions concerning the relative recognizability of each of the five boroughs. (It is possible that the figures are somewhat inflated by the fact that if a person took a guess he would be correct 20 percent of the time in any case.)

What proportion of the scenes from each borough were correctly attributed to that borough? By summing the percentage of correct responses for all points in the borough and dividing this figure by the number of points, we arrive at the overall characterization of the borough in terms of an arithmetic mean:

Bronx	25.96%
Brooklyn	35.79
Manhattan	64.12
Queens	39.64
Staten Island	26.00

Clearly, Manhattan emerges as the most recognizable of the five boroughs, with about twice as many correct placements as the others.

There is another way to look at the data. Of the 26 viewing points that were placed in the correct borough by at least 75 percent of the participants, 23 viewing points fall in Manhattan. This certainly corresponds to our generally held notion that Manhattan is better known than other parts of the city.

However, our data tell us more than this, for we may now adopt a more stringent criterion of recognition and ask: What proportion of the scenes in each borough were placed in their correct *neighborhood*? Another way of formulating this is to ask to what degree a street scene communicates to the person the neighborhood he is in. Examining the information on neighborhood placement, we find very substantial differences according to borough:

Bronx	5.85%
Brooklyn	11.42
Manhattan	31.98
Queens	10.76
Staten Island	5.40

A randomly selected scene in Manhattan is five times more likely to be placed in its correct neighborhood than a randomly selected scene in the Bronx; Manhattan scenes do almost three times as well as scenes in Brooklyn and Queens. The superior information value of Manhattan becomes even more pronounced when a more exacting criterion of recognition is applied. When we ask subjects to identify each scene in terms of *street location*, we find the following distribution of accurate guesses:

FIGURE 7.6 Manhattan (M-8), 147th Street between Riverside Drive and Broadway. The percentages of subjects who correctly identified this view are: borough, 50 percent; neighborhood, 18 percent; street, 9 percent.

Bronx	2.56%
Brooklyn	2.83
Manhattan	15.52
Queens	2.21
Staten Island	0.6

The reader must again be reminded that these scenes were not selected because of the likelihood they would be recognized, but were mechanically sampled completely independent of their scenic value.

This overall picture holds true no matter which borough the person comes from. A resident of Queens is four times more likely to identify a street location in Manhattan than in his own borough (3.76 percent for his home borough of Queens vs. 15 percent for Manhattan). Areas of Queens have often been accused of being nondescript, and taxi drivers are reputed to fear entering Queens lest they never find their way out. And with good reason, when even the people who live in Queens are lost in their home borough compared with the sense of place they experience in Manhattan! Thus it is correct to say that New York City is not merely culturally but also imagistically rooted in Manhattan.

Aside from Manhattan, residents recognize their own borough better than they recognize any other, and they are better at recognizing their own borough than people from any of the others. But these results are overshadowed by the pre-eminence of Manhattan in the psychological map of all New Yorkers, irrespective of where they live (see Table 7.1).

We have been interested not only in the correct guesses made by subjects but also

FIGURE 7.7 Brooklyn (B-3), Adelphi Street between Fulton Street and Atlantic Avenue. The percentages of subjects who correctly identified this view are: borough, 48 percent; neighborhood, 27 percent; street, 2 percent.

in the kinds of errors they made. When a subject misclassified a scene from the Bronx, where did he tend to place it? Table 7.2 presents a matrix which indicates not only the percentage of subjects who accurately guessed the correct borough but also the percentage of subjects who erred, broken down according to the boroughs which are mistakenly guessed. It appears that, while Manhattan is rarely confused with any other borough, the Bronx, Brooklyn, and Staten Island are often thought to be Queens. It is as though subjects said to themselves: "Well, I don't really know where that was taken, but it looks as if it might be Queens." One could refer to the phenomenon as a Queens response bias. While the largest percentage of subjects either guessed the correct borough or answered "Don't know" (in the case of the Bronx and Staten Island), the second largest percentage of subjects guessed Queens.

Finally, we may ask whether the residents of any one borough are better at recognizing the city as a whole than the residents of any other borough. As shown in Table 7.3, the differences among residents of the five boroughs are not very large on any of the categories. In other words, there is no evidence that residents of any particular borough are more accurate at recognizing the city as a whole than residents of any other borough.

What general principles account for the major findings of the study? First, an area can only be recognized if people are exposed to it. As we might expect, Manhattan's high index of recognizability is due, in important measure, to the fact that, as the cultural and entertainment core, it attracts persons from all over the city. Even a highly distinctive architectural display will not be widely recognized if it is too far off the beaten path; centrality in relation to major population flow is crucial.

The second major factor seems to be the overall architectural or social

TABLE 7.1
PERCENT OF CORRECT BOROUGH, NEIGHBORHOOD, AND STREET PLACEMENT BY BOROUGH OF RESIDENCE

Borough of residence	Bronx *B*	*N*	*S**	Brooklyn *B*	*N*	*S*	Manhattan *B*	*N*	*S*	Queens *B*	*N*	*S*	Staten Island *B*	*N*	*S*
Bronx	40.94	14.40	6.58	21.99	5.78	0.69	69.93	34.77	18.24	33.66	7.72	1.51	18.88	4.44	0.28
Brooklyn	18.63	2.27	1.32	49.19	19.89	5.37	67.41	26.18	11.57	37.15	8.70	1.46	28.87	5.32	0.32
Manhattan	25.58	5.55	2.19	28.97	7.95	2.46	65.09	38.03	21.04	34.71	8.81	2.48	27.95	5.00	0.91
Queens	25.67	5.18	2.52	34.50	8.50	1.17	66.43	31.71	15.00	54.54	15.15	3.76	20.00	2.40	0.20
Staten Island	12.04	0.92	0.0	36.46	9.62	3.85	59.38	24.11	8.93	18.18	3.79	1.52	61.25	30.00	3.75

*B = borough; N = neighborhood; S = street.

TABLE 7.2
MATRIX OF CLASSIFICATIONS SHOWING CORRECT PERCENTAGES AS WELL AS MISCLASSIFICATIONS, BY BOROUGH

When the borough was:	*Bx*	*B*	*M*	*Q*	*S.I.*	*Combined errors*	*Don't know*
	Percent of subjects who identified scenes as:						
Bronx	**25.96**	14.89	6.92	17.33	3.48	42.62	31.51
Brooklyn	10.33	**35.79**	8.08	18.17	2.94	39.12	25.00
Manhattan	7.81	8.17	**64.12**	3.44	0.49	19.88	15.89
Queens	8.82	14.76	2.94	**39.64**	4.94	31.46	28.52
Staten Island	11.45	10.15	1.50	21.70	**26.00**	44.80	29.05

distinctiveness of the area. Columbus Circle and Rockefeller Center impress themselves because of their unique configuration of spaces and buildings. Chinatown and Little Italy communicate themselves through cultural and racial features of their respective neighborhoods. The degree to which a scene in the city will be recognized can be summarized by the formula

$$R = f\,(C \times D)$$

in which *R* is recognition, *C* stands for centrality to population flow, and *D* represents social or architectural distinctiveness.

We have seen that New York City, as a psychological space, is very uneven. It is not at all clear that such world cities as London, Paris, Tokyo, and Moscow have comparably uneven psychological textures. It would be extremely interesting to construct a similar psychological map of other major cities of the world to determine how successfully each city, in all its parts, communicates to the resident a specific sense of place which locates him in the city, assuages the panic of disorientation, and allows him to build up an articulated image of the city as a whole. Contours could be drawn around the psychological core of the city to show whether it is compressed or coextensive with the city around it. My guess is that Paris holds together better than New York because it has focal points that are more successfully distributed

TABLE 7.3
AVERAGE PERCENT CORRECT (OVER ALL BOROUGHS) ACCORDING TO WHERE SUBJECT LIVES

Borough of residence	*Borough*	*Neighborhood*	*Street*
Bronx	37.08	13.42	5.46
Brooklyn	40.25	12.47	4.01
Manhattan	36.46	13.07	5.82
Queens	40.23	12.59	4.53
Staten Island	37.46	13.69	3.61
All subjects combined	38.30	13.08	4.64

throughout the city. In addition, if only out of a sense of scientific duty, we ought to take the psychological map to the drearier cities of the world. It would probably turn out that their index of recognizability is about on a par with that of Queens or the Bronx. The deeper misfortune of their inhabitants is that they cannot take a subway into a vibrant and highly imagible core.

There is a moral here for the outlying boroughs. The construction of identifiable monuments in their neighborhoods, the addition of distinctive decorative touches to their houses, and emphasis on local color would help them emerge from the gray, nondescript character they now possess into more vivid and exciting locales.

NOTE

1. This research would not have been possible without the public-spirited assistance of *New York Magazine* and its executive editor, Sheldon Zalaznick. Over a thousand volunteers were recruited through its advertising pages. Thanks are also due to Pacy Markman for his talent in recruiting subjects and to Lynne Goodstein for assistance in graphics.

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8 PSYCHOLOGICAL MAPS OF PARIS[1]

In this report we shall explore the way in which Parisians mentally represent their city. It is not an examination of Paris as a geographic reality, but rather of the way that reality is mirrored in the minds of its inhabitants. And the first principle is that reality and image are imperfectly linked. The Seine may course a great arc in Paris, almost forming a half circle, but Parisians imagine it a much gentler curve, and some think the river a straight line as it flows through the city.

Paris, the city of stone, is the template from which the mental map draws its structure, but it is not the same as the map. The person harboring a mental model of Paris may die, but the city endures. The city may vanish through flood or nuclear holocaust, but the maps encoded in millions of human brains are not thereby destroyed.

The main problem in investigating a mental entity is to learn how to render it observable. The person's mental image of Paris is not like his driver's license, something he can pull out for inspection. Rather, we shall have to tease the information from the subject, using whatever means psychology can offer to inspect the contents of the mind (Downs and Stea, 1973).

It is not quite as easy as simply asking the person. First, many of the concepts people have about cities are nonverbal, spatial ideas. They are not easily translated into words, particularly on the part of subjects of limited education. Moreover, Parisians are all exposed to stereotypes about their city, readily available clichés, which do not so much tap their personal ideas of the city, as their immersion in a world of prepackaged platitudes. We want to get at something more personal and more closely tied to direct experience.

HANDDRAWN MAPS

To begin, our 218 subjects, drawn from each of the 20 *arrondissements* (i.e., administrative sectors) of Paris in proportion to their numbers, were asked to draw a

This paper was written in collaboration with Mme. Denise Jodelet. The research was supported by a fellowship to the senior author from the John Simon Guggenheim Memorial Foundation, and by a grant from the Délégation Générale à la Recherche Scientifique, an agency of the French Government. It was first published in *Environmental Psychology: People and Their Physical Settings* (second edition), H. M. Proshansky, W. H. Ittelson, & L. G. Rivlin (eds.), New York: Holt, Rinehart and Winston, 1976.