

CHAPTER 2

He stood at the foot of the bed and looked at me with solemn eyes. I sat on the side of the bed and looked at him with whatever kind of eyes I had at the time. We did this for nearly three minutes.

I used part of the time measuring the distance between us, figuring out how, by throwing my body back on the bed and turning on my hip, I could get my heels in his face if he jumped me. He was too close for me to pull the gun. I had just finished this mental map-making when he spoke:

"That lousy ring wasn't worth no grand. I did swell to get two centuries for it."

"Sit down and tell me about it."

. . .DASHIELL HAMMETT
Red Harvest

I

Nothing is so eventual in character as experience. All experience is comprised of a series of events taking place in space and time. As should be clear, the psychogeographic problem is to learn how these events are apprehended, mentally processed and acted upon. As we learned from Bertrand Russell, these space-time events have relations called "intervals" which can be broken down arbitrarily into a space component and a time component. In terms of a study tour experience, these arbitrary components may be seen as the itinerary, or temporal sequence of events, and the map, or the spatial field in which the itinerary is imbedded. As we shall come to see, these distinctions are often purely arbitrary, lacking even the slightest shred of utility. Nevertheless, for our present purposes of discussing the methodology which forms the crux of Project Group L, the distinction is at least temporarily useful and will be pursued.

Itinerary and map may be usefully imaged as the warp and woof of the fabric of our life, or more particularly, of our summer tour. One of the values of this image is that both the warp and woof are substantial threads, but threads that create a fabric only when inextricably combined. Take the warp from the fabric and you are left with a skein of threads, nothing more, and yet in weaving, the warp is set out on the loom first, by itself, without a single woof thread, held in place by the loom. Subsequently the shuttle carries the woof thread back and forth across the warp creating a fabric. The warp is the spatial context in which the shuttle of a summer tourist weaves the woof of his itinerary. In the process of weaving, or traveling, the warp and woof disappear and a fabric takes its place. Referring once again to the Introduction, we know that this warp, this skein of spatial threads, is the individual mental map. Furthermore, we must realize that as the fabric is woven, as the shuttle of the tourist carries the woof of time over and under the warp of space, of the mental map, this map is changed constantly by new events, new experiences. The research problem is simply stated: how to discover the initial shape and character of the warp, and then to observe it constantly changing in response to time, to new events, new experiences.

II

Since the spatial component of eventual experience has often been conceived or imaged as a map, it is perhaps not surprising that the map has become the principal medium for the study of this component of experience. In the long run this may come to be seen as less than satisfactory, but we are not in the long run yet. Now the investigation of maps seems to hold great promise. What I'd like to do at this point

is run through a history of this activity as it has developed, principally in the last decade. That way, you'll see where we are and where we're bound.

In the Introduction we described three types of maps: first, there was the individual mental map; second, there was the consensual image, the consensual mental map, combining the images of a given group of people; finally, there was the standard map, or that map generally useful to anyone capable of reading it. I now want to describe this trio of map types in slightly different terms, beginning with the individual mental map.

Up to this point, this individual mental map has been something in a person's head, some cortical ordering of information of essentially unknown nature. This entity has been called by a variety of names: spatial representation (Shemyakin, 1962, 190), cognitive representation (Hart and Moore, 1971, 2), cognitive map (Blaut, McCleary and Blaut, 1970, passim), mental map (Gould, 1966, 1 et passim), spatial image (Gould, 1966, 1) and so on. These terms describe the internal representation of space as understood by the authors in question. The variety of terms has resulted from a desire to distinguish the size and nature of the internally represented space. The foregoing terms refer either to space in general (whatever that is) or to small spaces (on some unspecified scale). To refer to the internal representations "specifically of large-scale environments" they generate another set of terms: imaginary map, field map, cognitive map, schema, and the entirely cumbersome and ultimately misleading topographical representation (Hart and Moore, 1971, 45). Here topographical "clearly refers to... the physical environment," though why this should be so is never made clear. In any event, none of these terms were meant to describe the external representation of space made by individuals on pieces of paper or drawn in the sand or otherwise manifested, as in, for example, drawings and paintings and photographs and movies and the like, not to mention verbal descriptions and the like.

Clearly there are two basic types of individual spatial representations: internal and external, the internal of unknown character, basically inferred from some external manifestations. The question arises as to whether my other two classes of maps, the consensual image and the standard map, likewise have internal and external representations. For the time being we shall say yes, noting that the internal manifestation of the consensual image is what allows a person to recognize an external image as his own, the same applying to the standard map: the internal representation of a standard map is that which allows a person to accept the standard map as useful. Let us make a chart of these things:

FIGURE 2.0 MAP TYPES

TYPE	EXTERNAL	INTERNAL
INDIVIDUAL MENTAL MAP	1. That external manifestation of the internal representation in the form of sketches, drawings <u>et cetera</u> .	1. That material in a person's head relating in any way to the spatial component of experience.
CONSENSUAL MAP	2. That map revealing a consensus of behavior, attitudes, beliefs, regarding space among a specified group and compiled from (1) above or other sources.	2. That material in a person's head which allows him to find an external consensual image personally useful or relevant.
STANDARD MAP	3. That map universally regarded as useful at a given point in time and space.	3. That material in a person's head allowing him to find a standard map personally useful or relevant.

THREAD ONE: THE STANDARD MAP

The standard map is what we are used to calling a map. It can be acquired at any gas station free or purchased in book stores or found bound in atlases. One reason for calling this a standard map rather than a map of the real world has to do with the historical evolution of this particular type of map. Had you gone into a book store three or four hundred years ago to purchase such a map, you would have obtained a map that bears little, and in some regards no, relation to the same sort of map today. Maps have changed as man's relations to his world have changed.

What does this mean? First of all it implies that whatever the real world may look like, the way in which we represent it, is a function of the way in which we see it. At different times, men have seen the world in drastically different ways — thus a standard map of the eighth century shows a world unrecognizable in the twentieth. Our arrogance makes us say that in the eighth century people were ignorant and did not know what the world looked like. That today we do. But what will men be saying about us two hundred years from today? It doesn't do to be complacent about these things.

To drive this point home examine three images of the world.



Figure 2.1 Image Number One



Figure 2.2 Image Number Two



Figure 2.3 Image Number Three

All claim to be maps of the world, of that entity called earth. At a given time each had claims for being the true map. Can you tell which was made first? Can you guess when each was made?

Figure 2.1 is an "Orbis Terrarum" of the Romans. This map of the world as the Romans saw it (Raisz, 1962, 4), was probably drawn in the second or third century, A.D. Figure 2.2, drawn sixteen or seventeen centuries later, is called the "Islands and Continents of Mankind." It is the brainchild of William Bunge (Warren *et alia*, 1971, cover). Bunge's point in drawing this map is a good one. He feels that the majority of maps of the world show the wrong things, like mountains, rivers, and so on. His is a map of the people of the earth. But we know that selection of events from the environment is part of the overall thing we're studying in psychogeography. What is it about a man that drives him to map the world in terms of people? What is it about the world that drives a man to map it in terms of people?

The third map shows Martin Waldseemuller's 1507 map of the world (Raisz, 1962, 7). Of the three maps shown, this is probably closest to what we think of as being a map of the world, and yet, what a strange place is America! All three figures are standard maps of the same place, earth. It is hard to believe that, looking at them.

This all adds up to one very simple thing: standard maps are mental maps after all. They are not individual mental maps, but

consensual mental maps; the group for which they represent the consensual image is very large. The Roman "Orbis Terrarum" is similar in all but some fine details to the consensual image of the world held by the Greeks in Homer's day (Brown, 1949, 22-24; Dicks, 1970, 27-39) and by literate Europeans during the Middle Ages (Brown, 1949, 81-113). Obviously, the Orbis Terrarum was the consensual image for an enormous number of people for a long, long time. The image of the world in Waldseemuller's map is, in everything but details, the consensual view of the world of a majority of the people who read maps today: that is, they would recognize it as an image of the world.

From these three examples alone we see that standard maps of the world have varied drastically through history. Were further examples of standard maps to be examined, commencing with the maps of primitive peoples and moving on through the maps of the ancients and so on up to today, and covering perspectives not exclusively Western, the variations would appear even far more drastic. The study of these varying images of the world has been to date the province of study of a field called the history of cartography. Obviously there are at least two ways to approach the variations in standard maps that have taken place over time. One of them is to assume the existence of a real and relatively unchanging world external to the map-maker and to study the degree to which a given standard map approaches veridicality in its portrayal. The study of the history of cartography has followed this road (see, for examples: Wright, 1924; Brown, 1949; Tooley, 1949; Skelton, 1952; Lynam, 1953; et cetera). Of course, none of these authors have anywhere alluded to the second assumption that is necessary to make in their position: that since there is no way to compare their maps directly with the real world they assume to exist, they must compare them to a standard map, or image, of the world. What standard do they use? Naturally they use as standard the latest image of the world emanating from their own culture and time. This image of the world they assume to be as veridical as the state of the art allows and hence for all practical purposes, really real. Aside from the obvious ethnocentricity implied by their choice, it also reveals a profound lack of awareness of their own discoveries: none of the maps in their purview have proved to be ultimately successful representations of the world. What, then, gives them the license to assume relative infallibility for the images of their own time?

Further, there appears to have been a profound lack of awareness on the part of historians of cartography that the map is a cultural artifact, a thing produced by and for, an integral part of, a culture. If we discard the real world assumption and accept the various images of the world, not as steps forward, toward our definitive image of the world, nor yet as steps backwards during "dark ages," but as culturally

satisfying and relevant world views, all equally valid in a given cultural context, we can emerge from the antiquarian sterility of the history of cartography into the light of psychogeography and discover that **STANDARD MAPS ARE MENTAL MAPS.**

There are only mental maps and nothing but mental maps. The difference, as we have had occasion to note, lies simply in the degree of consensuality. A man might draw a map of the world which no one else will admit as a map of the world. Yet this cartographer can find the map personally useful. On the other hand a map might be made which all men can find useful. This last is conveniently called a standard map, while the first remains a personal map. The degree of usefulness says absolutely nothing about veridicality. As will be seen subsequently, personal maps change through time, obviously over a lifespan, but also during a week. The history of cartography shows clearly that standard maps change through time, not only as a result of exploration and change in instrumentation, but also with changes in cultural outlook and need.

The study of the history of cartography has played a minor role in the development of psychogeography. Overtly it has played no role whatsoever, though this will change. Covertly it has had a much greater influence. John K. Wright, inventor of geosophy, was deeply interested in the history of cartography. Maps formed one of the primary datum for his Geographical Lore in the Time of the Crusades (Wright, 1925) and Early Topographical Maps (Wright, 1924), while his monograph The Leardo Map of the World, 1452 or 1453 (Wright, 1928) placed him in the mainstream of the history of cartography. Martyn Bowden overstates his case when he claims that Wright showed by this time (1928) that "the history of cartography was more than the antiquarian study it had been generally considered..." (Bowden, 1970, 397). In fact, Wright was solidly on the antiquarian side of the issue. The remarks quoted by Bowden himself make this clear, as Wright at this point still sees the differences between early cartography and ours as "errors" to be tracked down and eliminated through the progress of the ages. Actually it is not until "Map Makers are Human" (Wright, 1942) that we begin to see the geosopher emerge and the beginning of the end of antiquarianism in the study history of cartography. As Wright's influence on the direction and conception of psychogeography via geosophy is enormous, so too, his involvement in the history of cartography had enormous influence on his invention of geosophy.

Our second example of the covert role of the history of cartography in psychogeography lies in "Appendix A" of Kevin Lynch's Image of the City (Lynch, 1960). Lynch is concerned with primitive mapping systems and, although most of his information is drawn from anthropology, anthropology is whence most historians draw their information about

primitive cartography. Here are no less than twenty-six references to primitive maps. Lynch is searching for clues regarding environmental images, and naturally he finds early cartography, or more precisely, non-mainstream non-Western cartography, filled with them. His role in the inception of psychogeography cannot be minimized (see Wood, 1971) nor can the role of this particular appendix be slighted. In an anthology of psychogeographic readings entitled Cognitive Mapping: Images of Man's Spatial Environment (Stea and Downs, 1972), of all of Lynch's work only Appendix A has been included.

In summary, the study of the history of cartography has in fact played a highly formative though covert role in the work of the precursors of psychogeography. It should also be noted that the history of cartography should be a central concern of psychogeography, and that, when it is, it will be sheer dynamite.

THREAD TWO: THE CONSENSUAL MAP

The second thread in the history of using maps to investigate the spatial component of eventual experience is more a study in public relations than anything else. As is true daily on Madison Avenue, some campaigns make it, while others do not. The reasons for failure are many, but the most common is that of coming before the times are ripe for whatever it is you're selling. Another, addressing the wrong audience.

The career of John E. Dornbach exemplifies both reasons. Who has ever heard of John E. Dornbach? More to the point, how many remember a paper he delivered at the Pittsburgh meeting of the Association of American Geographers? A paper entitled "The Mental Map?" In 1959. The date is interesting. It comes a year before Kevin Lynch hit the market with The Image of the City (Lynch, 1960). It comes seven years before Peter Gould's "On Mental Maps" (Gould, 1966). "The Mental Map" is probably the earliest effort in geography and its most closely allied fields to deal explicitly with the mental map per se. Titles, of course, can be misleading. In this case the title is to the point. Dornbach deals in his paper with essentially what I am dealing with in this report, with mental images that people hold of the spatial relations of things. He discusses these images for sighted and blind and moves on from this point to discuss the relevance of the mental map to the cartographer involved with the design of standard maps. "The Mental Map" is loaded with insight.

So why isn't Dornbach's name sung in praise? He came too early — the world simply was not ready to listen to what he had to say. It would not be ready for another three or four years. He also addressed

his remarks to the very worst audience in all of geography, particularly given what he had to say. In 1959 cartographers were still embedded in a somnambulistic world of Leroy lettering and negative scribing. The thrust of Dornbach's argument was too simple: drafting is fine, but the maps are not getting the message across. Rather than disturb their tidy, if expanding, universe, cartographers found it more convenient to ignore him.

Nonetheless Erwin Raisz, in the revised edition of his cartography text, tossed Dornbach a bone: a footnote citing "The Mental Map" and two paragraphs of text. Raisz got Dornbach's point loud and clear, but made no effort to modify his point of view when it came to the design of maps:

When we explain to a stranger how to get to the railway station, we translate into words the map which is in our minds. We are likely to accompany our words with gestures similar to drawing a map...The map was formed by personal experience synthesizing hundreds of impressions of distances, directions, turns and landmarks into a mental image. There are big differences between people in their ability to form mental maps...When we have to form a mental map of large regions mostly outside our experience, the process is more complex. (Raisz, 1962, 112)

The mental map point is made loudly and clearly, in 1962! That makes Raisz a pioneer in his own right, for no one but Lynch and Dornbach beat him to the punch. Why isn't Raisz's name sung to the skies? Probably for the same reason that Dornbach's wasn't, although the emphasis is different. The time was almost ripe, but the people taking up the scent were not reading cartography texts.

The crushing blow is that if you were interested in mental maps in 1963, you could read as much about them as a child of seven or eight as you could a professional geographer. In 1963, Susan Marsh came out with a children's book called All About Maps. She opens her discussion of maps with a few well chosen words on mental images: "We all have maps in our heads" (Marsh, 1963, 1). It was all here, beginning with Dornbach. Yet nothing happened. It was too early and addressed to the wrong audiences.

BUT, in 1960 The Image of the City had hit the reviewers' desks. The history of this book will be detailed in the following section. Suffice it to say that it made a splash in the right pond. The ripples are

still washing up to shore. Many took up Lynch's lead and work on mental images was in the air. Then, in 1966, John K. Wright's Human Nature in Geography: Fourteen Papers, 1925-1965 made his work on geosophy widely available for the first time. The growing number of Wright admirers saw connections between mental maps and geosophy. "Perception" was everywhere. The air was rife with a new view. The time was right.

In this atmosphere in 1966 Peter Gould came out with a discussion paper, On Mental Maps (Gould, 1966). It created a stir that has yet to die down. Gould was alot luckier than Dornbach, for Gould had impact. Not so much as a result of anything inherent in the work itself, but rather as a function of its title and its appearance at a certain point in time. Peter Gould is an amazing example of the fortuitous in the academic world. For a few years his name was on all lips. What did Gould do? Saarinen's summary is adequate:

Samples of students from different universities were asked to provide rank order listings of their preferences for states of the United States, countries in Europe, and administrative districts within certain African countries. The scores derived from a principal components analysis of these data were used to construct maps which reflect relative residential desirability of various areas. (Saarinen, 1969, 22)

The maps constructed by Gould were displayed in endless number in his discussion paper. Figure 2.4 shows a typical Gouldian map. It looks alot like a weather map, and in his text Gould exploits this similarity, speaking of highs and lows over various areas. What it actually shows is the residential preference of a group of college students.

Although in his text Gould no where refers to these maps as mental maps, that is just what many people took them to be. But everybody realized that a mental map was something people had in their heads. Therefore, the map had to be maps people carried around in their heads, i.e. mental maps. It seemed that Gould had been able to open heads and see what was inside and show us. For a couple of years everybody made Gouldian maps, thinking that these were mental maps. Sad to say, no one had read Gould, and the confusion as to whether a mental map was a Gouldian map or something inside a person's head became increasingly acute.

The confusion became so acute that in 1971 Roger Hart and

Gary Moore moved to set the record straight:

Another area of research closely allied to the (non-formal and non-structural components of space), is that on environmental dispositions and preferences. Unfortunately, this latter area was at one time entitled "mental maps" (e.g. Gould, 1966), thus causing others to believe it a part of spatial cognition. (Hart and Moore, 1971, 4)

Thus, neatly, do Hart and Moore excise Gould from the field of spatial cognition. While it is possible to sympathize with their anguish over the confusion, it is impossible to sympathize with their actions. Gould was, and is, solidly in the field of spatial cognition, and that is where he belongs. The problem is simple, and revolves around the internal-external distinction raised in the beginning of this chapter, as well as a more complicated confusion over the nature of space itself. What was Gould talking about anyhow?

In his preliminary discussion, Gould obviously referred to individual internal representations of space:

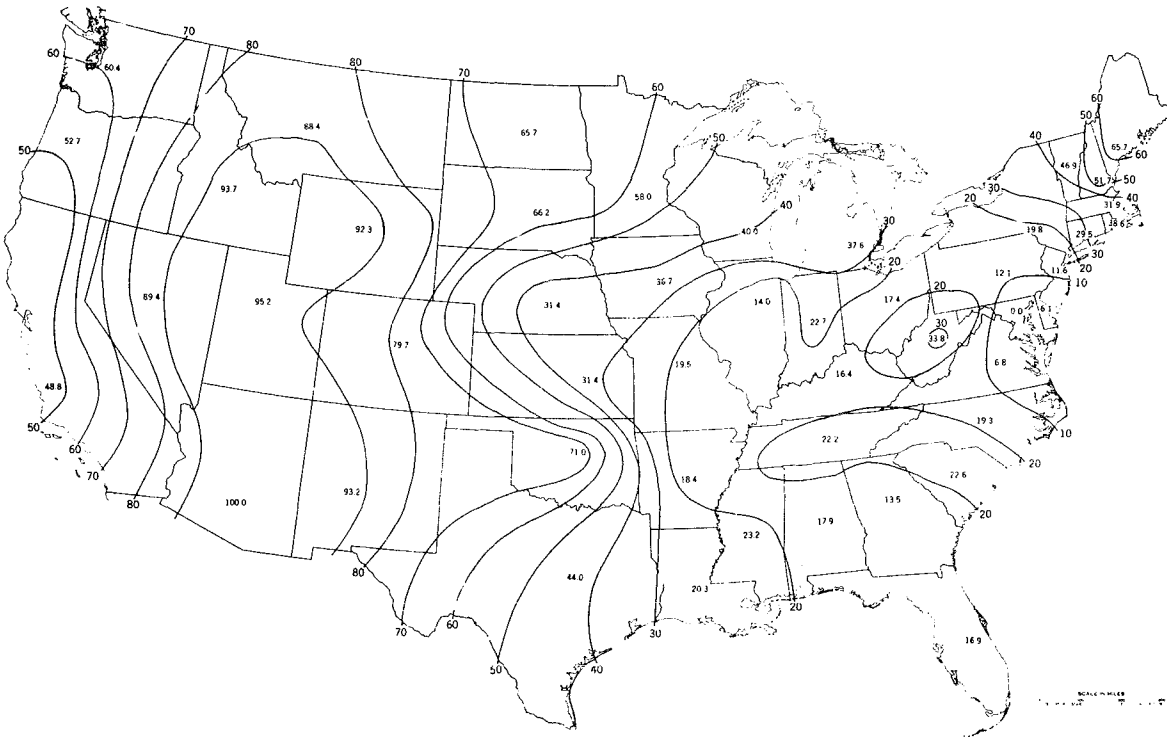


Figure 2.4 A Gouldian Image (Gould, 1966)

We know so very little about the spatial images, the mental maps, that are in the minds of men. We know even less about how they are formed, the degree to which they are unique or general, and the way they impinge upon, and are reflected in the decisions that men make. (Gould, 1966, 1)

Just what did Gould mean when he used the word "spatial?" He makes this quite clear in an extended discussion in his original essay (Gould, 1966, 4-6). He discusses the sorts of components making up his space: "Thus, the political, social, cultural and economic values held by a man blend into an overall image about the space around him, an image whose components may be particular to him or held in common by many" (Gould, 1966, 4-5). He makes explicit the fact that his concern is with space containing more than distance, size, shape and direction: "For example, Tobler explicitly raised the question of the mental images that people have of their environment, but his basic concern was for the mental transformations of distances that people make" (page 5). Gould's concern is with much more. He bewails the narrow outlook of the psychologists, noting that "the psychologists in their concern for 'perception,' have barely touched upon the investigation of mental pictures of geographic space" (page 6), adding that even Piaget's work "does not deal with the essentially geographic images that children hold or the way they learn about them" (page 7). He might have also noted the miniscule size of the sample and the unusual conditions under which most psychological work has been conducted. Gould was interested in space, not the form and structure of space alone, but with the experience of space, of mythical conceptions far more wide-reaching than Cassirer (Cassirer, 1944), with the content of space, the meanings and values assigned to space, and so on. Basically, Gould was interested in the cognition of space. Gould was a psychogeographer and one of the very first.

It is possible that Gould is not concerned with the cognition of space? Hart and Moore think so. Obviously the disagreement concerns the definition of the cognition of space. For Hart and Moore, and the psychologists of whom they are so enamoured, cognition of space refers exclusively to the form and structure of space, to the abilities to judge distances, sizes, shapes, and directions. And in a vacuum, as though these abilities were somehow pure and untainted by emotions and feelings and beliefs, and, yes, even preferences; as though space was no thing but some abstract medium; as though Hart and Moore operate in the space of the nineteenth century, pervaded by universal ether; as though Einstein had never lived. Cognition of space for them is laboratory sterile, untrammelled by love and hate and fear and security. Since they

are unfortunately good in their area of competence, I must consider their review somewhat dangerous and insidious in its timid, clean and parochial outlook on space, and in its nasty references to "lay definitions."

In the field of spatial cognition, Gould's work is important. He was among the first to construct consensual images of space, the first to deal with the variable of preference, and the first to use verbal information to do so. He also used the quantitatively most sophisticated technique that has been focused on the problem. His major contribution was to point out that there are things, concepts, attitudes, and beliefs bearing on the cognition of space that are of themselves non-spatial in character, and to show at least one profitable way to go about investigating them. In the construction of an exciting psychogeography, his methods show promise of great power and greater excitement.

His sin, if such is the proper turn of phrase, was to not explicitly point out that the consensual images displaying his results were not individual mental maps. Some sin. It is a common ploy to throw the burden of explanation on the author, but communication is a two-way street. There is an equal burden of understanding thrown upon the reader. If an author has the responsibility of writing as clearly as possible, a reader has an equal responsibility to read as carefully as possible. Both are arts requiring great effort. Gould's readers abdicated their responsibility. His sin was their sin and their's alone.

THREAD THREE: THE INDIVIDUAL MENTAL MAP

There are other threads than the three I shall discuss, but they play many tangential roles and bear little fruit today. They are dealt with adequately by Hart and Moore, Saarinen, Craik and others. Included in this category is the early work of Muchow and Muchow, Trowbridge, and so on.

What we wish to deal with here is the flood of work that appeared subsequent to the publication of Kevin Lynch's The Image of the City. Lynch followed much the same approach as Gould, publishing his work in 1960. It was not a narrowly circulated discussion paper, but an attractively packaged hardback aggressively marketed. It remains the most widely read work in the various fields of mental mapping, perception of the environment, and the cognition of space. Its impact has been enormous, not only because of its availability but also because the techniques Lynch used to construct his consensual maps were simple to master (nothing at all like Gould's principal components analysis) and, further, he used as his basic data a magical substance: individually generated sketch maps. The magic of the ensemble was potent indeed.

His followers embrace the diverse fields of geography, psychology, sociology, architecture, education, and planning. It is primarily because of his work that psychogeography exists today. While his motives and aims are interesting, they have been exhaustively dealt with elsewhere (Krim, 1968; Wood, 1971), and here only a fleeting glimpse will be tossed in their direction.

Krim, in a fascinating paper, places Lynch in three contexts: artist, planner and geographer. As an artist, Krim claims that Lynch is essentially a philosophic disciple of Frank Lloyd Wright, under whom he served shortly as an apprentice. Krim positions Lynch as a planner in the mainstream of Renaissance rationalism leavened with a little Romantic pragmatism. In this vein Krim makes a trenchant observation:

Either because no American city is in Europe, or because no American city was founded during the late Roman Empire, the American planning profession has developed a disdain for its own urban environment which manifests itself in such concepts as "urban renewal," a horror of suburban development, commercial activity, expressways and television antennas. (Krim, 1968, 4)

It is certainly out of this disdain, or as I have called it, fear, that The Image of the City resulted (Wood, 1971, 38-45, and 211-220). Lynch was interested in showing misfits between what people need/want and what they get in the American city today. His method for discovering these misfits was beautifully adapted to his problem, but as we shall see, the misfits could very easily have arisen, not from any real misfit, but as a result of his method.

Basically what he suggested doing was as follows: collect a representative sample of the city population and set them the task of describing the city. Although Lynch used a variety of descriptive techniques (drawing maps, answering questions, giving directions, photo recognition tests, walks through the city recording the conversation, and so on) it was the drawing of the maps that was most exciting, and it was the drawing of the maps that was so appealing to others. These sketches were the magical mental map...maybe.

After collecting all this information, Lynch subjected it to a form of content analysis, and in The Image of the City displayed the results of this analysis in two consensual images, one from the verbal information and the other from the sketch maps. Using these maps as data, Lynch proceeded to discuss the problems of orientation, navigation and symbolization in the organization of three American cities; to

show how they could be "cleaned up" to resemble the more ideal city of clarity and light perfected during the Italian Renaissance. In our framework his maps were consensual maps compiled onto a standard base map using verbal descriptions and external representations of individual internal mental maps. The difference between his work and that of Gould hinged, first, on the use of content analysis instead of the more laborious principal components analysis, and, second, in that he supplemented his verbal manifestations with sketch maps. This latter was the most important for future work.

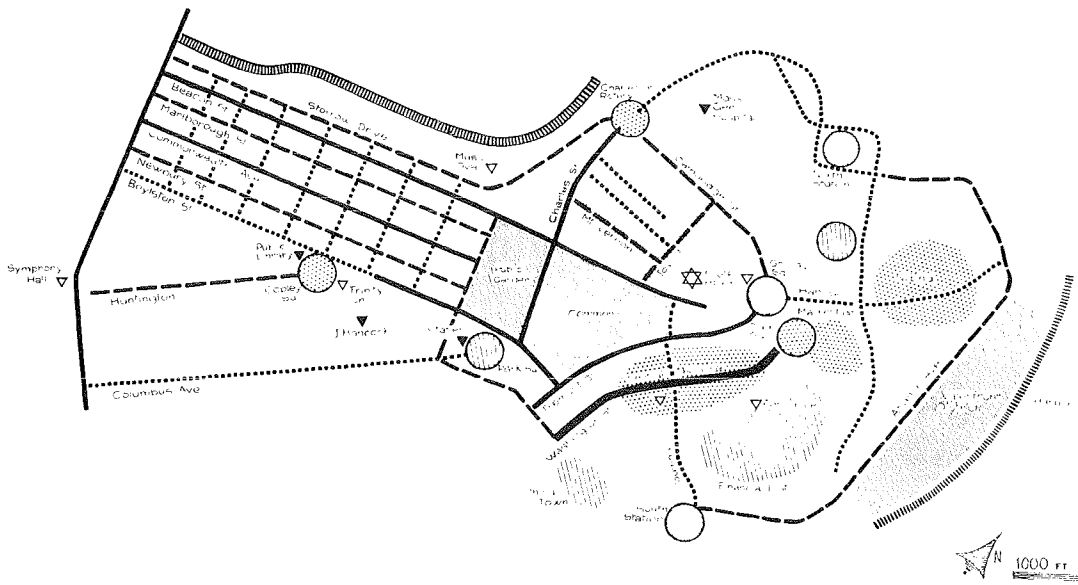


Figure 2.5 A Lynchian Image (Lynch, 1960)

Lynch's method for collecting and analyzing maps was never fully explained in The Image of the City, but, after all, he wasn't writing a research manual. Nonetheless, the problem that was to plague all future dabblers in the area was apparent from the beginning. The study of personal maps breaks down into two methodological problems: 1) The manner in which they are collected, i.e. drawn; and 2) The manner in which they are analyzed. The real problem is that the second stage of investigation is inextricably chained to the first. Both parts of the problem merit detailed exposition.

Put yourself for a moment in the position of a concerned social scientist asking a group of people without not only prior disposition but prior practice to draw a map of as complex an entity as a large American city. What do you ask them to do? You do what Kevin Lynch did, you ask them to draw a map. Period. You don't really know what you're looking for. You want the maps to be as free as possible. You carefully

monitor the way in which the maps are drawn, noting the sequence in which the elements of the map appear on the paper. And you end up with an incredible array of maps drawn in every conceivable manner and style, drawn with every conceivable degree of detail, generalized according to any number of personally satisfying systems, and personalized to either potential extreme.

In the beginning stage of an unknown research journey, such an approach is a great aid in the formulation of research routes. Faced with the range of produced maps, it becomes possible to ask meaningful questions: Are there an infinitude, or merely a few, personal mapping strategies? Are maps projective psychological tests alone, or are they also communication channels for information about the environment? Or both? Which side of the issue, the psychological or the geographic, is more interesting to an investigator, and which is most fruitfully pursued using the mapping technique? From the beginning there are any number of such questions that might be asked, and depending on the answers, new approaches to the question of map collection will be formulated. You might think that that would have been what happened, but you'd be wrong: that's not what happened at all. Without being overly critical of others in the field, it is impossible to be honest and accurate without noting that subsequent researchers held fiercely to what seems to be best characterized as the sacred-cowness of the freely drawn map. A list of these researchers is very long, and continues to grow longer (de Jonge, 1962; Gulick, 1963; Saarinen, 1964, Carr, 1965; Dart and Pradham, 1967; Saarinen, 1967; Shelton, 1967; Dowd and Faido, 1968; Eaton and Lawrence, 1968; Gittens, 1968; Lennon, 1968; Orleans, 1968; Rand, 1968; Stea, 1968; Appleyard, 1969a; Appleyard, 1969b; Blaut and Stea, 1969; Garside and Soergal, 1969; Porteous, 1969; Stea, 1969; Wood, 1969; Appleyard, 1970; Ladd, 1970; Blaut and Stea, 1971; Wood, 1971; Beck, Cohen, Craik, Dwyer, McCleary, and Wapner, in press; Francescato and Mebane, in press; Stea and Wood, in press).

To participate in a typical mapping session is an education for the instructions are usually as follows: "Please draw me a map of the City." Those are the usual instructions, and to questions from the mappers as to more exactly what is required, the response is always and inevitably, "Those are the entire instructions: Please draw me a map of the City." These instructions are nearly uniform regardless of whether the investigator is concerned with attributes of the environment (imagibility, complexity, legibility, social character, existence of centers, neighborhoods, what have you) or with attributes of the subjects (in the traditional psychological sense).

Let's see what is happening at this point on the other side of the instructions. I would ask you to put yourself in the position of a ninth

grade Mexican boy, or a thirty year old Boston matron, or an undergraduate at Clark University. None of you have ever drawn a map before, and quite possibly you've not drawn anything at all since seventh grade art class, if you were so lucky. Faced with a blank sheet of paper, a pencil and the vast complexity of some specified environment, how do you proceed? First of all, how is your confidence about drawing anything? Do you draw a line or two and then sigh that since you never could draw at all, how can you map? And hand your paper in mostly blank? Or do you proceed to draw a main street, add a couple of cross streets, put in a couple of landmarks, and then — "Oh, my! I've forgotten all of the Neighborhood which goes in there between...but I don't have room..." and start to struggle valiantly with the eraser on the end of the pencil? Or do you exert yourself desperately only to be crushed in the end by problems of varying scale ("This part is bigger than it should be.") or inadequate symbolism ("I couldn't think of a symbol for the Building, so I left it off.") or orientation ("I never could figure out where north was, so think the map is o.k., but you may have to turn it.") or any of the endless problems that confront and often baffle even the professional cartographer? Any of these responses may be of interest to a given investigator, but I can think of only one meaningful research program which could be interested in all of these responses, and that would be one designed to investigate the problems confronting the average human being trying to draw a map, and no such program has ever been undertaken.

What is our hypothetical, but all too real, investigator investigating with this approach to the drawing of maps: drawing inequalities among the sample population? Body images? On-the-spot symbol creation? Varying abilities and strategies in dealing with scale? What? Certainly this is not the ideal way of collecting maps as a way of getting at the environment, since there are too many extraneous variables between the environment and the map! In support of this, I would draw your attention to the infrequency with which the actual drawn maps of such instructed subjects are reproduced. I have reproduced a couple (Wood, 1971, 76) to illustrate the difficulty inherent in analyzing them, but there are few such instances in the bulk of the literature dealing with freely drawn maps. The major exception to this generalization is provided by those dealing with young children, who are wont to reproduce maps in endless quantities, secure in the fact that the youngsters drew maps at all! (For example, see Dart and Pradham; Hart, 1971; Ladd, 1970; Muir and Blaut, 1969-70).

How does one deal with endless variety? What single analytic technique is capable of extracting information from the entire various range? Well, frankly, there is no such technique. Long, and still favored by some, is the original technique employed by Lynch, content analysis. Unfortunately, this technique is quintessentially of a verbal

character and must of its nature ignore the cartographic problems of map creation. It is incapable of dealing with anything but the content as non-spatial phenomena. It cannot deal with questions of orientation, veridicality of location (relative or absolute), scale variation, degree of connectivity of mapped parts, questions of simple direction or distance, and so on. It is scarcely capable of handling content in an interesting manner. (An exhaustive treatment of the insufficiency of content analysis as a technique for dealing with maps is provided in Wood, 1971, Chapter II.) The major analytic efforts of another group of researchers in the area have been to categorize their array of maps into a variety of more or less internally consistent groups (especially Appleyard, 1969b; Appleyard, 1970; Ladd, 1970; but the first hint of this is in Lynch, 1960, Appendix B). These researchers have been unable to proceed interestingly beyond this point for the simple reason that the free drawing of maps has left them with a real paucity of data, relative to anything but the mappers themselves. The attempts to apply metrics to freely drawn maps have been either highly speculative (Stea, 1969a; Stea, 1969b; Stea, 1969c; Blaut and Stea, 1971), or sporadic and ultimately fruitless (Stea, 1968; Blaut and stea, 1969; Lee, 1970; and Beck, Cohen, Craik, Dwyer, McCleary and Wapner, in press), not because of a lack of effort on the investigator's parts, but because of the liabilities of the freely drawn map.

The central problem for the geographer concerned with seeing the world through a lens not his own, that is, through maps drawn by real people, has been the nature of the methodology employed in eliciting maps. All of the problems of analysis follow hard on the heels of the collection technique. My interest, as should be clear, is to see the world as communicated to me by others; to see the world as it is rotating in the mind of the beholder; to see the shape of our glorious globe, not as the astronauts see it, but as it is seen by that vast majority of people living and breathing out there who will have no opportunity to see the earth from eight miles high. This mental world cannot be communicated to me as long as the channels for communication remain blocked, choked, with the extraneous matters of shyness, drawing inadequacies, motor skill inabilities, lack of symbols, unawareness of the problems of scale and all the rest of the pitfalls befalling the human being faced with the world, a blank sheet of paper and a pencil.

* * *

Such is the history of the utilization of maps in the investigation of the spatial component of eventual experience. It is a short history, in its bulk not much over a dozen years old, and in its greatest extent, not quite making it back into the last century. For all of its shortcomings the work sketched out in our three threads indicates something: a new

focus is being attempted. If nothing else, that is heartening.

And where do we go from here? In many directions.

I I I

If you will for a moment recall Chapter I, you will remember that there were six instruments designed for the Group L Project, of which two dealt with the spatial component of the trip experience. One of these was Kenneth Craik's Landscape Adjective Checklist. The other was what we ended up calling Environmental A, a mapping language that could be taught to our Group L kids and one which we hoped might obviate or seriously reduce some of the problems associated with the freely drawn map.

Environmental A was born in the room that Beck and I had locked ourselves into. Realizing that the utilization of freely drawn maps was out of the question (frankly, I had refused to analyse a single one), Beck and I sat and drew maps and invited others to come in and draw maps for us. We sat and noted the stage at which our maps soured. Let me give you an example. Beck has spent considerable time in London. He commenced mapping with Heathrow Airport, locating the airport at the left extremity of the sheet of paper. The road coming into London from the airport was a single thin line covering half the greatest length of the paper. At the termination of this line, Beck found himself deep in London, in fact at Russell Square. Although, given the scale representing the airport and the road from it, Russell Square should have been scarcely larger than a dot, it occupied a square inch. Proceeding from Russell Square through Trafalgar, Picadilly and Leicester Square, Beck found himself drawing a bridge crossing the Thames. As this bridge increased in length I glanced up from the paper to Beck's face. It was obvious that he was no longer in the same room with me. He was on this bridge crossing the Thames. The Thames was beneath him and it was a huge river and it seemed an eternity before the bridge ended. At the scale of the airport road, this bridge was some ten miles long, yet at the Trafalgar Square scale the bridge wasn't sufficiently long to cross the Thames. Furthermore, the terminus of the bridge brought Beck to the other edge of the paper. Intriguingly, he had been able to include only half of London on his sheet.

Beck's attempt at drawing a map of London was not at all atypical of people faced with the task of drawing large areas. What typical problems have we just met? 1) The initial orienting figure is drawn against a blank background. With nothing to gauge it against for scale, it becomes the scale-setter for the rest of the map. Whether a major street or a central landmark, it is frequently drawn too large.

2) The effect of the traveling pencil is somewhat hypnotic. That is, once a person has set a pencil in motion he is loath to stop. Thus the bridge over the Thames continues in sheer joy of moving the pencil on the paper. 3) The mapper becomes lost in only part of the problem. Thus Beck, drawing the airport road and the bridge, was immersed in the problem of drawing these two figures. He has forgotten temporarily the overall objective of a map of London. Other problems in subsequent mappings became immediately apparent. 4) Fear of making mistakes in the city at large caused mappers to concentrate on the area best known, usually around the home, place of work, or hotel when traveling. No mistakes in the small area thus mapped was considered preferable to mistakes on a map of the larger area specified. 5) Shifts in scale as drastic as those described were responsible for much of the symbol inconsistency. Thus Beck's airport road was a single line, whereas his bridge consisted of two parallel lines, as did the streets connecting the squares. 6) Corrections were easier to make when building the map from the center out rather than from the edges in. 7) Attempts at connecting landmarks over short distances were more likely to succeed than were attempts to connect landmarks over longer distances. 8) People feel map symbols to be sacred and unknowable and hesitate to desecrate the map surface with unusual symbols. "And that was all you recall of Paris?" "Oh, no! There were a lot of parks and churches." "Well, why didn't you include them?" "Well, I don't know how to show a park." 9) symbols used by people tend to be unique to the mapper. Among the handful of experimental mappers investigated there was a wide range of symbols used for even such simple things as streets. Without asking, it was in many cases impossible to guess the nature of the item symbolized. 10) Once a mapper is satisfied with his beginning, there is a tendency to load the map with detailed information. The map surface becomes cluttered, difficult to interpret and impossible for the mapper to change should correction be discovered necessary.

We set out to systematically devise a method of creating a sketch map that could be used by the kids on the tour which would get us around the ten difficulties listed above. To take the last point first, we decided to avoid the problem of cluttering by dividing the mapping operation into parts. On a sheet of white paper the mapper would draw the skeleton of his map, the basic network of communication channels. Additional information was to be added, not directly on this skeleton, but rather on separate sheets of tracing paper. Thus not only did the mapper avoid the cluttering problem, but for purposes of analysis the map could be peeled into layers like an onion and analysed layer by layer. That problem out of the way, we turned our attention to the remaining issues.

Since so many of the issues dealt with the problem of the first marks made, it was this issue that we tackled first. We realized

immediately that the entire problem revolved around the issue of scale and it was borne in upon us that we should, if possible, alert our mappers to the difficulties involved with scale. The only thing that seemed intelligent to us was to instruct the kids in the art of drawing maps. Obviously this instruction would have to take place prior to departure for Europe so that once there, no time would be lost with trials and errors. Thus it was that we settled on teaching the kids how to make maps. This decision made many of the following easier. Once in the position of instructors we could alert the kids not only to the problem of scale, but to others as well. Actually it dawned upon us that we could teach them a mapping language in its entirety.

Our experiments, as well as the entire literature on the collection of personal maps, convinced us that the first mark on the paper should be as inconsequential as possible. Obviously one should commence mapping with a dot. The location of this first dot was the second item on the agenda. We were thoroughly convinced that better maps resulted when working from the center to the edge, so the first dot must therefore be placed in the center of the page. Now what? Still worried by the potentially disastrous effect of drawing lines we felt that it would be judicious for the mappers to locate the terminus of any line before proceeding to draw the line itself. This would rob line drawing of most of its hypnotic effect. At this point we commenced drawing maps ourselves. We discovered that it took serious will-power to place a dot, place a second dot, and then connect them with the line. I found that at the first wavering of attention that I would commence with a dot, draw a line, and add a dot at the end so as to conform with the appearance of the act, if not with the act itself. Others asked to draw maps in a similar fashion experienced similar difficulties. However it became apparent that part of this difficulty resulted from the nature of the environment being drawn. Thus people drawing familiar environments experienced great difficulty in using the approach, whereas the same people sketching less well-known environments experienced substantially less difficulty. Since our kids were going to be mapping unknown places, we decided that we were on the right track.

We prepared and reproduced a set of simple instructions for using the system. Mappers were to commence mapping with a dot, representing the center of the environment in question (the definition of this location was dealt with subsequently), and were to place this dot in the center of the paper. They were to transport themselves mentally to this spot and attempt to visualize a landmark not too distant from this spot. Considering carefully the question of scale, and fully aware that this first line would in some way determine the scale of all that they would later draw, they were asked to locate a second dot, and connect the two dots with lines. They were to then repeat the operation, commencing from



The establishment of points in space may be for emotional or spiritual associations with pre-existing monuments or structures... Equally they may be points of production in regional economy, or centers of social regeneration in blighted areas. The concept of connecting these points by channels of energy, or lines of force, as demonstrated in the lower Klee drawing, may not only create an aesthetic physical entity... but produce an awareness of the structural relation of functions in what appeared to be a chaotic distribution of independent functions (upper diagram).

Both the aesthetic design entity and the concept of a system of functional interrelationships are manifestations of the same underlying order, and the integration of the two is required if we are to solve contemporary problems on an urban scale. The fashion in contemporary architectural and planning thought of separating them by a "no-man's-land" to assure their continued individual identity... has meant serious damage to efforts to solve the problems of the modern city.

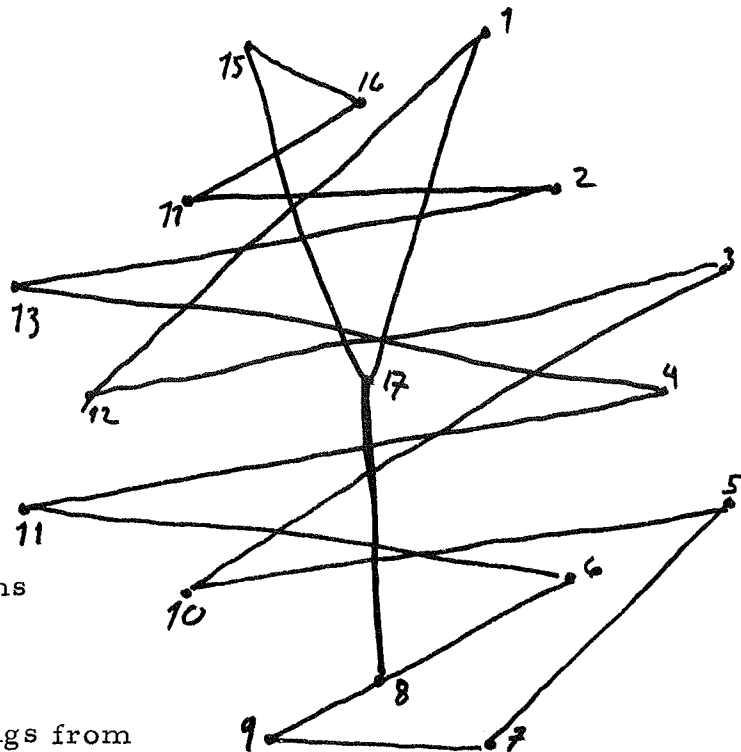


Figure 2.6 Text and drawings from Bacon, 1967, 125. Drawings after Paul Klee.

either dot, and they were to continue repeating the operation until the map was completed to the mapper's satisfaction. They were permitted to add additional sorts of information (such as regions and areas of one sort or another) only after this point-line network was completed. Each point was to be identified and all the lines were to be numbered. In this way we could recreate the sequence in which the map had been created. Furthermore it was felt that if the instructions explicitly recognized the possibility of error, or at least of an insufficiency of knowledge, mappers would be less anxious and less distraught when faced with a portion of the environment unknown and hence un-mappable. Thus it was that we decided to include instructions covering this eventuality. Question marks were to be used whenever the length or bearing of a given street was unknown or when the actual position of a given landmark was open to doubt. This pilot system was administered to a couple of groups with resounding success and completion of the entire scheme required only a symbol system with which to decorate the tracing paper overlays.

Varieties of map symbol systems were consulted and, utilizing the best of them with additions of our own, we completed our symbol system in short order. The entire mapping language was tested and pronounced a success. The materials were organized into mailings for the kids on the tour and the first results to return convinced us that we had in fact overcome many of the difficulties involved in drawing freehand maps. The relevant materials are included in the body of the text as the following chapter. So critical is an understanding of their nature that it is hoped that these materials will not be skipped by the anxious reader.

Two issues remain to be considered. The first has to do with the definition of the location of that point first to be placed on the piece of paper. One of the main objectives of the system was to eliminate the possibility of drawing egocentric or domocentric maps. We were less interested in the kids' viewpoint of the world than in some way assessing their knowledge of it, particularly as it may well be true that egocentric and domocentric maps are a function of an unwillingness to make mistakes rather than a function of egocentric or domocentric personalities. Consequently, we have not sought maps of their world (probably centered on their own home) but of the world (centered on some sort of consensual node). The distinction is not so appalling. Most residents of a given city are likely to agree on a city center. For example, the center of Worcester is the Commons, City Hall, or Worcester Center. Of course these differences are interesting, and likely revealing, but they are all sufficiently close to be equally valid. The issue is, of course, far from closed, but considerable evidence toward resolving the issue is provided by our experiences with the kids in Europe, and will be presented further on. Suffice it to say that our system as presented in the following

materials encourages the use of a consensual node as the starting point in the mapping exercise.

One problem remains, and while it has been discussed in the previous chapter, I would like to review it here. The question is what in fact we are studying? The paucity of instructions that has traditionally been associated with this sort of work ("Draw me a map.") did in fact have some sort of rationale. This had to do with the issue of development versus education. The assumption was that the minimum of instruction would result in the most meaningful data. Thus when the question was "Draw me a map of the center of the city," it was hoped that by not detailing what was meant by "the center of the city," it would be possible to learn what the mappers, as opposed to the investigator, held to be the city center. Wishing to keep investigator bias to a minimum, instructions were minimized. Unfortunately with the lack of instructions, particularly regarding the means of mapping, mappers have had so many problems as to render much such data difficult to use, if not entirely useless. Consequently, we decided to focus on education: could we, by teaching the kids this mapping system, enhance their ability to navigate in the foreign spaces they were about to encounter? Thus, instead of using an instrument designed to register changes in levels of comprehension and integration, we found ourselves employing an instrument designed to teach and differentiate. This is what, reassuringly, we said outloud to each other. Deep inside we still harbored the suspicion that it would also be possible to learn a great deal about their untutored development in handling novel environments. The outcome, as will be seen, proved that our deeper intuitions were, in point of fact, well founded.

IV

In this chapter we have briefly examined the history of the use of maps to investigate the involvement of man and space with one another. We discussed three types of maps (standard, consensual, and individual), and noted that for each type there was an internal and an external manifestation. It was shown what sort of role the investigation of the history of standard maps has played to date, and the hope expressed that this role will be expanding. It was also shown that standard maps are not pictures of the real world, but rather highly consensual mental maps. Consensual maps of the model pioneered by Peter Gould were then examined. These maps employed verbal data, but obviously there is a whole range of other sorts of data that could profitably be exploited in this way. The work of Kevin Lynch was dealt with in the section on individual mental maps. This was done, not because Lynch's final product was easy to distinguish from Gould's, but rather because he was the first to employ individually generated sketch maps as base data. The work of his followers and the liabilities of the method they utilized was gone into as well.

Finally we presented a short discussion of our attempts to overcome these liabilities.

But all this is only part of a larger whole, both conceptually and actually as part of the Group L Project. I would finally return to the image of the loom, where warp and woof are woven into this fabric called life. This image is scarcely original with me. At the root of many mythologic approaches to the ordering of life stand a trio of weavers. These weavers stand as the ultimate foundations of life, more powerful than any God. Sometimes, rather than weavers, they were more simply spinners of threads subsequently woven into life. The Greeks called them the Moirae, the Romans the Parcae, the Norse the Norns. The Norns were named individually Urdhr (present), Verdandi (past) and Skuld (future). And such was fate.

But what is fate? "1. The supposed force, principle, or power that predetermines events. 2. The inevitable event or events predestined by this force" (American Heritage Dictionary, 1969, 478). And so we return to the event, the weaving together of space and time into an unalterable fabric, into an unalterable existence, into being. In the light of this, then, let us not forget what our maps are showing us. They are showing us fate, event, not space at all. For as the Greeks and the Norse and we as well must know, there is no space alone, but only space in time inextricably woven together. The zero-grade root in Indo-European for the word "fate" is bha-, and its meaning is simple: to admit (American Heritage Dictionary, 1969, 1508). And what is there to admit? Well, that's up to you in the end, but I offer a suggestion: that we are, and that we are what we are in space and time. The map? Simply a trace of where we've been.