CHAPTER 16

American visitors to London often attain to quite remarkable familiarity with many of its features. But their accomplishments in this respect do not usually extend to an acquaintance with its intimate geography. The reason is simple enough. He who would know London, or any other great city, in the complete and intimate fashion characteristic of the genuine Town Sparrow, must habituate himself to the use of that old fashioned conveyance known as "shank's mare"...

Now, the American visitor is not usually a pedestrian. As time appears to him more valuable than his money, he tends to cut the Gordian knot of geographical difficulties by hailing a taxi; whereby he makes a swift passage at the sacrifice of everything between his starting-point and his destination.

> ...R. AUSTIN FREEMAN Dr. Thorndyke Intervenes

While the two preceding analysis techniques have been rather dissimilar, they have had one thing in common. The content analysis through aggregation and the pseudograph analysis by abstraction have removed us greatly from the maps themselves. In the light of our discussion of Chapter 13, it might be noted that in the last two chapters, our event of interest has become the map, not the trip, and our trace events have ceased being the maps to become the results of the particular analysis technique employed. In this chapter, we shall look at parts of the maps themselves, and shall consequently be studying as the event of interest certain aspects of the trip experience itself.

The particular analysis technique employed in this chapter grew out of a hypothesis made in the predeparture phase of the project. At that time we were laboring under the assumption that there was in fact a real world that, under certain assumptions, could be seen by anybody. This real world was represented on certain maps that we considered to be veridical, that, in other words, represented the real world as it actually was. In this instance, it was meaningful to ask how close the sketch maps of the kids approximated a veridical image, and it likewise seemed reasonable to postulate that the maps of the kids would become increasingly proximate to this veridical image through time, with their increasing experience. Since we expected to be able to make remarks about the degree of veridicality of the maps, we termed this analysis the veridicality analysis. This analysis has been undertaken from two directions, one in the following chapter, and the subject matter of the chapter in hand.

The question of establishing the degree of veridicality on a given map is hedged about with the most immense difficulties. Many investigators have declared the issue to be of absolutely no interest, or have skirted or otherwise avoided the issue. For example, Lynch writes:

> To compare with these subjective pictures of the city, such data as air photos, maps, and diagrams of density, use, or building shape might seem to be the proper "objective" description of the physical form of the city. Consideration of their objectivity aside, such things are entirely inadequate for the purpose, being both too superficial and yet not generalized enough. The variety of factors which might be evaluated is infinite, and it was found that the best comparisons to the interviews was the record of another subjective response, but in this case a

Ι

systematic and observant one, using categories which had proven significant in the analysis of earlier pilot interviews. While it was clear that the interviewees were responding to a common physical reality, the best way to define that reality was not through any quantitative, "factual" method but through the perception and evaluation of a few field observers, trained to look carefully, and with a prior set toward the kind of urban element that has so far seemed to be significant. (Lynch, 1960, 143)

This passage is extremely important for a variety of reasons. In the first place, we have not pushed aside the question of the objectivity of maps, air photos and the like; we know them to be no more objective than any other depiction of reality, though perhaps vastly more consensual. Lynch, with his use of quote marks around the world objective, would seem to subscribe, to one degree or another, to this point of view. Nonetheless, Lynch feels compelled to compare his sketch maps and other information about the city with something. One might, obviously, ask why it is necessary to compare them with ahything at all, and it is certainly worthwhile to ask why, if we must compare them with something, we use what can be readily characterized as elitist subjective responses.

The answer is at once simple and complex. In the first place, one is impelled to investigate mental images only because it is suspected that the deviance of the mental image from the veridical image has important behavioral consequences. As we noted in the Introduction, it is the consideration of the behavior that makes the study of perception and cognition meaningful. In seeking to explain the behavior, Lynch hypothesizes, and finds, variation between the real world and the mental world in which we live. Thus, from the beginning, two worlds are accepted. In the section quoted above, Lynch subsumes the idea of the real world in the phrase "common physical reality." The other, mental, world is subsumed by the phrase "subjective pictures." The necessity in comparing these two worlds arises from the fact that it is the differences between these worlds that is being studied. Lynch states this explicitly: "From the data provided by the comparison of these group images with the visual reality, and from the speculations arising thereon, most of the remainder of this book derives" (Lynch, 1960, 16).

Thus, in the beginning of his book. Lynch knows that it is the comparison of the sketch maps and verbal materials with the real world—the "common physical reality," the "visual reality"—that must be the basis of his book. But toward the end, when he comes face to face with the task of comparing his group images with some objective correlate, he

seems to cop out, to consider the physical reality insusceptible of measurement. And yet, he has no trouble achieving his initial goal throughout the book. For example:

Most people missed the curve in Massachusetts Avenue at Falmouth Street, and confused their total map of Boson as a result. They consider Massachusetts Avenue to be straight, sensed its right-angle intersections with a large number of streets, and assumed these streets to be parallel. (Lynch, 1960, 56)

It is only when he has to consider systematically comparing a group of sketch maps and verbal responses with the visual reality that he decides the task to be inappropriate, the objective descriptions to be both too superficial and not sufficiently generalized. Another strike against the sincerity of his final plea is that his book is crammed with "objective" descriptions: six airphotos, seven objective maps, and twenty-five other photographs.

Thus, in considering the validity of Lynch's claim that comparison of mental images with objective correlates is inappropriate, we must bear in mind that 1) Lynch explicitly contradicts this position at the outset; 2) Lynch expends a great deal of his effort making such comparisons throughout the book; 3) Lynch considers the use of airphotos, maps and other photos of sufficient value that he includes numbers of these while discussing the subjective images.

It is necessary, therefore, to seek another explanation for his failure to make such systematic comparisons as would be needed to bear out his original intentions. Reference to all the other studies enumerated on page 67 of this report which have employed or reported work done using sketch maps, will not help. To an individual author, they have significantly failed to make such comparisons, with one fairly fruitful exception: the imaged extent of neighborhoods, barrios, downtowns and the like have been compared with some "objective" assessment of extent. (See especially: Wood, 1971, Chapters 3 and 5; and Stea and Wood, in press.) With this exception, the failure to make such comparisons is all but universal. Why?

BECAUSE THE TASK IS ENORMOUSLY DIFFICULT. There are many reasons for this. 1) The question of what shall represent the real world is impossible to decide. Lynch accurately points out that many such stand-ins suffer from superficiality and lack of generalization, and that the variety of factors available for comparison is nearly infinite. Further matters causing difficulty here are questions particularly of view point (e.g. your average citizen does not habitually view the world from an airplane; the world varies depending on whether seen on foot or by car and of temporal variation, a fact of life, seldom considered in mapping, et cetera). Thus, the question is: to what shall we compare our sketch maps? 2) Were it possible to determine the previous question, your problems would just begin. How would all your sketch maps be reduced to a comparable scale? 3) More basically, how do you determine the scale of a sketch map? 4) How do you determine the projection used by the sketch mapper? Until these last three questions are answered, you have no basis of comparison. The enormous difficulty of this task boils down to two major issues, the first of which has to do with the nature of the objective correlate, and the second of which has to do with making the sketch maps comparable both one to the other and thence to the objective correlate. The simple reason that no one has performed a veridicality analysis up to now is because it is more difficult than the probable results are worth, and because, as Lynch has shown, it is easy to rationalize not doing such an analysis.

I doubt seriously that such an analysis would be attempted here were our sketch maps and project goals not of such a nature as to demand such an analysis. We have collected maps sequentially through time, and would like to test our hypothesis that increased experience leads to increasingly veridical views of the world. Unfortunately, or as the matter turns out, fortunately, we have been forced to abandon the concept of veridical objective Platonic reality. In the general case this was discussed in the Introduction, and the specific case as regards maps was dealt with in Chapter 2. There you may recall, it was shown that all maps are mental maps, among which classes could be distinguished on the basis of consensuality. We discussed three categories of maps: the individual mental map, the map consensual to a small group, and the standard map, or that map consensual to the greatest number of individuals. Thus in place of the concept of veridicality, we substitute the notion of consensuality. Can this notion help us out of our hole?

Indeed, it might have been designed expressly for the task, for to test our hypothesis it needs only to be shown that the sketch maps become increasingly consensual with increasing experience. That is, that increased environmental experience leads to increasing consensuality among a group of mappers. By the substitution of the notion of consensuality for that of veridicality, we have obviated the difficulty that Lynch discussed: that of deciding what to use as representative of the real world. The real world, in our analysis, will be represented by the consensus of all the sketch maps, and deviance from the real world shall then become a function of individual deviance from the group standard. Thus, Lynch's problem has gone up in smoke along with his notion of some Platonic reality.

The other difficulty remains. That is the question of just in fact how we are to compare the sketch maps with one another to derive the consensual image, given the horrendous obstacles of unknown scales, projections, surficial variation and so on. In approaching these problems I was struck by the fact that even if these issues were resolved, the maps would present certain difficulties of comparison due to the lack of sensible consensuality map to map in terms of nothing but content. Very few things were mapped in common by the entire group. (In point of fact, no specific environmental feature was ever mapped by everyone in Group L, and only one generic feature -- pubs -- was mapped by all the kids at a given mapping session. It is impossible, obviously, to compare the relative location of generic features.) So rather than pursue some theoretic dead end, I decided to ignore the issue of scale in its general aspects, and I concentrated my attention on those few items that appeared on the greatest number of maps. Naturally, some of these were points, some of them lines, and some of them areas. Let us consider them one at a time.

Points. The most frequently mentioned items common to the greatest number of maps were landmark points. How is it possible to compare the relative location of one point to another? Assume for a moment that every kid had mapped The Tower of London and Piccadilly Circus. Can we make any remark about the location of these landmarks relative to one another? Baldly: no! Why not? Well, how would you go about doing it? Were you comparing standard maps it would be a snap. You would be provided with many frames of reference whereby to compare the relative location of these points. In the first place you would have a scale that would allow you to control for scale. In the second place, the standard maps would have orienting coordinates, or at least compass roses to allow you to align the maps to be compared. Neither of these frames of reference is present on a sketch map, and where present raise questions of reliability. Basically, they are not there. In the absence of any frame of reference it is impossible to make any remark about the relative location of two points which would not be tantamount to establishing a frame of reference, and then reintroducing this frame of reference as a control. Furthermore, it would always prove that the two points in question were in relatively identical positions. Dead end.

Consider then the issue were three points mapped in common by the entire group, adding say, Oxford Circus. In this case two of the points could arbitrarily be considered the frame of reference and the relative location of the third point could be established as a function of the first two. This assumes that the two points used as a frame of reference are in fact in identical positions, which is preposterous, but unavoidable. At least we would have the ability to say something about the relative locations of the three points. But it must be clear that at least three points are demanded to make such an analysis. Did we have three such points? No.

Lines. A line by its nature constitutes the same sort of reference provided by two points. Thus we could take a frequently mentioned line, say Euston, and bring all the exempla of Euston to assume a constant length and bearing, and then examine the behavior of any other commonly mapped point, line or area. Or, rather than make the length of the line constant, home in on a closely associated and frequently mentioned point, line or area. Could any of these conditions be met with our data set? Yes, several of them were there.

Areas. Areas could be the potentially most useful anchor for our aggregation were it not for the ugly problem of shape. If an area, say Hyde Park, showed up on all our maps, and it assumed a common shape such that the areas all could be superimposed on one another after being controlled for scale, then a single area could provide a frame of reference for any other commonly mapped item. Unfortunately, Hyde Park, which was mapped by nearly everyone, assumed the most fantastic variations of shape that its use as an anchor was impossible. (To compare areas otherwise demands the use of a frame of reference such as two points or a line or a system of orienting coordinates. In other studies where areas are compared, these have been mapped onto a standard base map which provides this frame of reference.)

There is another set of reasons than the pragmatic one above set forth that insists on our zeroing in on lines in preference to the other choices. In The Child's Conception of the World, Jean Piaget discusses the varying reliability character of verbal responses made by children from his perspective as a clinical psychologist. He states that verbal responses can be placed each into one of five classes. These five classes are: 1) Answers at random; 2) Romancing; 3) Suggested Conviction; 4) Liberated Conviction; 5) Spontaneous Conviction. An Answer at Random occurs when "the child appears uninterested in the question," and the child "replies at random with whatever first comes into his head." Romancing is when "the child, without further reflection, replies to the question by inventing an answer in which he does not really believe." However, "when the child makes an effort to reply to the question but either the question is suggestive or the child is simply trying to satisfy the examiner without attempting to think for himself, we shall use the term suggested conviction." Liberated Conviction is when "the child replies after reflection, drawing

502

the answer from the stores of his own mind, without suggestion, although the question is new to him." Finally, Spontaneous Conviction occurs when the "child has no need of reasoning to answer the question, but can give an answer forthwith because already formulated" (Piaget, 1969a, 10-11). Piaget's schema has great potential value for the study in hand, and could easily have been brought into play in the last chapter. For example, Class 5 mappers might have been said to have been exhibiting Spontaneous Conviction, while Class 1 might have been said as displaying Answers at Random, and, in fact, it might be interesting to speculate whether all our sketch maps weren't in reality examples of Suggested Conviction and so on. But Piaget's schema is not our concern here, whereas his approach is. He used the schema to separate the dross from the gold, rejecting as useless all responses that were not either Liberated or Spontaneous. I have no intention of adopting his schema, but I do wish to adopt his approach.

Thus, I argue that lines are more appropriate features on which to build a consensual image for the same sorts of reasons that Piaget relies on Spontaneous and Liberated Convictions. In this argument, we must turn our minds back to the preceding chapter and consider what turned out to have been involved in the location of points, versus lines, versus trailing and actual subgraphs—of which the commonly mentioned lines are generally a part. We saw that points demanded the minimal input from the mapper, and in the specific case of Erica Cruz that the location of points was in fact a sort of romancing answer-at-random affair, with suggestion being provided by our List of Places. We also saw that as she progressed from map to map that the number of points displayed atrophied glaringly, and that the number of lines increased markedly, absolutely, but especially as a relative function of all things mapped. Arguing from her specific case, and from the conclusions of the last chapter generally, I concluded that such elements of randomness operated in respect to the location of points on the map generally as to make them unfit—in isolation—as anchors for the sort of analysis we have in hand at the moment. That is, the three points needed for a pointilistic analysis are not only not available, but were they so, we would not choose to employ them for the reasons just sketched.

To a substantial extent, the same is true with respect to areas. Not that they don't demand enormous input from the kids, both in the act of areal recognition initially, and in the process of drawing them on the map overlays, but that because they make such demands, and because areal boundaries are subject to so many interpretations (see Wood, 1971, Chapter II for an exhaustive discussion of boundary problems), and because many areas are entirely matters of subjective response, that, for these reasons, areas would likewise provide poor anchors for the analysis here contemplated.

Which leaves us with lines. The definition of a linear item in the environment is not usually susceptible of the sorts of problems that plague areas. Their edges are definite and have obvious consequences. Violation of the edge of the Thames in a similar manner can result in death by drowning. In this respect, lines are superior anchors to areas. On the other hand they demand much more from the student than do points, and are less likely to be randomly places on a map. Points are, and can comfortably nestle on a ground of white. Lines go somewhere, and are not comfortable located in empty space. (This observation does not apply to point-like streets, say Carnaby Street. Carnaby Street didn't really go someplace as much as it was experienced in the sense of a large open-air market. And on many maps Carnaby Street appears as mere words floating freely. Id est, this line was really a point. Nor will it appear in this analysis in the guise of a line.) To sum up, lines seem to be less infected with randomness than points, and less liable to subjective interference than areas. Hence, lines would seem to be the anointed elements for this analysis. But-always a but-pragmatically, lines will be sharing the glory of anchordom with points, simply because we use what we've got, not what we want.

As reference to the content analysis showed, there were lines available for this analysis. In London, the Thames, Euston Road and Oxford Street were mentioned with admirable frequency, always by at least 50% of the mappers, and often by more than 75%. In Rome, the only line mentioned frequently was the Tiber, and yet lines could be constructed through the most frequently mentioned points. In Paris we had the Seine and the Boulevard Jourdan. What is suggested is that one line can be held constant, locking the maps into conformality in one dimension. A point (or points) frequently associated with this line will lock the maps into conformality in the remaining dimension. The study element can then be traced from the map onto a sheet of tracing paper. Gradually, the study elements from all pertinent maps will appear on this sheet of tracing paper. To concretize our hypothesis, we anticipate that a study element, say Oxford Street, will form a clot of lines on the first tracing. The streets will exhibit no consensus relative to the locked (or reference) line, say Euston. On the next set of maps, we anticipate that Oxford will be drawn with an enhanced degree of consensuality. On the succeeding set with an even greater degree of consensuality. Thus set 1 will show us Oxford , while set 2 will display , and set 3 look like

What do we have in these tracings? A lot more than I at first realized. In the first place we can consider the bearing of Oxford, or any

other study line, to Euston, or any reference line. Second we can consider the varying lengths and forms of Oxford at a glance. True, we can say nothing about relative length, because of the uncontrolled scale, but, if the lengths become increasingly uniform, we begin to understand something about the issue of scale changes through time. (This also applies to the distance between reference and study lines.) Then, in regard specifically to the rivers, we can take in the intriguing question of variations in width and shape.

The technique is simple, effective and dramatic. It doesn't answer all the questions raised at the beginning of this chapter but it marks a step in the right direction, a step that is followed up in the next chapter.

II

Figures 16.0 through 16.3 show Oxford Street as it appears on the London maps. In the first case we find twenty different ideas about the bearing, shape, length and location of Oxford vis-a-vis Euston Road. As to bearing, these representations can be divided into three classes, those running essentially north-south, those running east-west and those at some oblique angle. Five of them are oblique, five tend north-south and ten run east-west. That is, only half the maps have shown Oxford in its true bearing vis-a-vis Euston. With regard to the issue of shape, 19 of the 20 maps agree that Oxford is straight, and the one curved example is not radically curved. With regard to length there is no agreement, which can be taken in one of three ways: either all the maps have been drawn to the same scale and Oxford is varying in length, or none of the maps have been drawn to the same scale and Oxford is the same length in all instances subject to scale correction or some combination of the foregoing two. Actually, it doesn't matter which of these explanations we accept, since we are looking for increasing consensuality which will include a tendency to draw the maps of London at similar scales. It would be simply noted that the variation in length is enormous and ranges from a quarter of an inch to nearly three. With respect to location we can make remarks about only a few of the maps. Those drawing Oxford to the north of Euston and to the east of our stabilizing point are substantially confused, as are those who show Oxford intersecting Euston or as an extension of Euston. These amount to half of the drawings. In conclusion: half the drawings show Oxford with the wrong bearing; half the drawings show Oxford ill-located with respect to Euston; there is extensive variation in length; there is consensus about the shape.

The situation with regard to the second set of maps is totally



Figure 16.0 Oxford Street, maps held constant on Euston Road and Cartwright Gardens, from first London maps.



U

0

Figure 16.1 Oxford Street, maps held constant on Euston Road and Cartwright Gardens, from second London maps.



Figure 16.2 Oxford Street, maps held constant on Euston Road and Cartwright Gardens, from third London maps.



Figure 16.3

0

Oxford Street, maps held constant on Euston Road and Cartwright Gardens, from fourth London maps.

different as can be seen at a glance. Of the twelve Oxfords shown, nine of them agree on the issue of bearing, making it east-west. There is total agreement with respect to the shape, all being straight lines. Furthermore, variation in length has also been reduced. Finally, only two of the drawings show a total lack of sensibility vis-a-vis location. Both are shown north of Euston and one of these is also shown east of the reference point. In conclusion: 75% of the drawings now show Oxford at the correct bearing; 83% of the drawings show Oxford correctly located with respect to the standard; there is decreased variation in length; there is total agreement on shape.

The third map confirms this trend. Of the thirteen drawings shown, ten agree on bearing and location. There is great consensus of shape and length, particularly among those showing correct bearing. Although the three miscreants stand out, there is actually an impressive amount of agreement on this third map, especially with respect to the length of Oxford, an area in which agreement has not been terribly strong up until now. This is the one real area of change between the second and third maps. There is another difference that has to do with north-south scale. On the second map Oxford lies on top of Oxford in great proximity, whereas on the third all the Oxfords have spread apart some. It would seem that on the second map in addition to other agreements that there was a strong consensus about the scale with which to represent the north-south dimension, at least in this portion of the map surface. While the greater variation in north-south scale that shows up on the third map is within limits, and is substantially less than on the first map, it is greater than that on the second map. But on the other hand, there seems to be greater east-west scale consistency of the third map than on the first or second. This would seem to suggest the possibility that scale was dealt with one dimension at a time in the sequence of map creation. We shall watch for this in the rivers which follow.

The final figure in the Oxford series shows only three representations of Oxford Street, all wildly disparate vis-a-vis bearing, shape, length and location. The one interesting thing about this is to see how this information showed up in the content analysis. Recall that Oxford Street there showed up as Oxford Street, correct in every respect. It is this sort of geographic harum-scarum that is totally obscured by content analysis.

Our conclusions from the Oxford series can be succinctly stated: consensuality (and in this case veridicality in the primitive sense) increases with respect to bearing, shape, length and location for the first three map sets; concomitantly, scale would seem to become increasingly consensual generally, with stronger agreement in the north-south dimension on the second set, and in the east-west dimension on the third set.

Figure 16.4 through 16.7 show the same thing as we have seen for Oxford Street for the Thames. In addition to bearing, shape, length, and location, we shall consider the question of fatness. It will be noted in Figure 16.4 that four of the drawings show this last quality. These four kids violated the point-line-area method when it came to drawing the river. We have already discussed the difficulty of restraining oneself to a line when it comes to drawing something as "areal" as the Thames. Now we shall be able to see how this issue is dealt with by the kids through time. On their first attempt at drawing the Thames the kids were able to come to no agreement about the river except to note that it was south of Euston Road. Otherwise the river is shown with any wildness of shape, bearing, and a certain variation in length, though many of the maps show the river crossing its entire surface from east to west.

Figure 16.5 shows the kids' second attempt at drawing the Thames. I don't think I have to point out the great increase in consensuality with respect to bearing (commencing in the south-west, curving north, and wandering due east off the map), shape, length and location. Furthermore, most kids are drawing the river fat, five instead of four. Without question, these are drawings of the same river. Given the complexity of the Thames, this is no mean feat. It might be further noted that there is increased agreement on the distance between the Thames and Euston Road. This would bear out what we learned on Oxford Street about the increased consensuality of scale in the north-south dimension on the second map.

Figure 16.6 shows the third attempt. This is a simple reaffirmation of what we saw on the second set. There are still five fat rivers, but they now comprise half of the rivers drawn.

Turning to the last of the Thames collections, we see that if our final four mappers could come to no agreement about Oxford Street, they could agree about the location and length of the Thames but not about its shape and bearing, though the disparities shown are not enormous. There is remarkable stability in the north-south scale, especially if you remember what was happening to Oxford Street.

Our conclusions about the Thames series are repetitions of our conclusions about Oxford. There is increasing consensuality (and veridicality in the primitive sense) from the first attempt to the second,

511



Figure 16.4 The Thames River, maps held constant on Euston Road and Cartwright Gardens, from first London maps.



i.

0

Figure 16.5 The Thames River, maps held constant on Euston Road and Cartwright Gardens, from second London maps.



Figure 16.6 The Thames River, maps held constant on Euston Road and Cartwright Gardens, from third London maps.



Figure 16.7 The Thames River, maps held constant on Euston Road and Cartwright Gardens, from fourth London maps.

and in this case the consensuality is retained through maps three and four. Likewise there is strong agreement in regard to the north-south dimension appearing on the second set. It might be noted that the north-south variation that appears on the third Oxford set is swallowed up by the consistency in the Thames set in this dimension on the third set. That is, the kids agree on the third set about the north-south scale for London as a whole (since the Thames is the south boundary of most of our maps while Euston Road is the north boundary) but that within this consensual scale for all of London there are local variations in the vicinity of Oxford Street (of elsewhere we are not in a position to speak). An additional remark must be made about river fatness: drawings of the fat river occupy an increasing large part of the drawings of the river altogether.

All of these conclusions are confirmed in Rome. Figures 16.8 through 16.10 show the Tiber and its transformations. The first attempt to draw the Tiber resulted in what can only be called a mare's nest. The Tiber is going in any and all directions, is drawn at any length, with any shape, and appears just about anywhere. With one exception, whenever the Tiber crosses the reference line or an extension of that line it means that our reference points appear on the wrong side of the Tiber with regard to the majority of map elements or with regard to an orientation system drawn on the map. That single exception is the case of a student who showed the westward trend of the river in its northern extremity. Notice as well the enormous number of fat rivers. This is especially noteworthy since the Tiber is a narrow stream compared with the Thames. But this time, the compelling desire to draw rivers fat has seized a large number of our students. To characterize this compage as a mare's nest says it all.

In comparison the second attempt at the Tiber is order and consensus personified. Most of the rivers are now heading north and south. Whereas twelve rivers crossed the reference line on the first attempt, only five do so now. Whereas eight rivers ran in a predominantly east-west direction on the first attempt, only one really does so now. There is a marked increase in consensuality. Note that in London on this second attempt we noted an increase in agreement about the northsouth scale to be used in drawing the map. We can't speak to this issue here except to note that there is certainly no consensus about east-west scale on this map.

The third attempt is not only more consensual in all respects, but shows an increased agreement about the nature of east-west scale. This agreement in east-west scale on the third map was noted in regard to Oxford Street in London.



Figure 16.8

-3

The Tiber River, maps held constant on a line drawn between two of: Trevi Fountain, Spanish Steps, Piazza Venezia, Vittorio Emanuele Monument; from first Rome maps.



Figure 16.9 The Tiber River, maps held constant on a line drawn between two of: Trevi Fountain, Spanish Steps, Piazza Venezia, Vittorio Emanuele Monument; from second Rome maps.



Figure 16.10

The Tiber River, maps held constant on a line drawn between two of: Trevi Fountain, Spanish Steps,Piazza Venezia, Vittorio Emanuele Monument; from third Rome maps. In conclusion with respect to the Tiber series we note that representations of the river are generally fatter than those of the Thames in spite of the fact that the Tiber is narrower than the Thames; we note an increase in consensuality with respect to bearing on all three maps; we note an increase in consensuality with respect to location from first to second (fewer cross the reference line) but especially from second to third (still fewer cross the reference line and most are in the center of the paper); we note an increase in agreement, not with respect to actual length, but with respect to the amount of paper scribed; we note increased agreement with respect to east-west scale on the third map; we note increased consensuality with respect to shape, but this needs explication.

There is no agreement as to the shape of the Tiber. There is no idea in the minds of the kids in Group L as to the shape of the Tiber even on an individual basis, with the sole exception of Bob Watson, who had, of course previously spent time in Rome. But this lack of knowledge can take several forms. Absolute ignorance would result in as many straight representations as wildly curved and this is exactly where it becomes possible to speak of increasing agreement about the shape of the Tiber through time. On the first attempt there were in fact several straight rivers, and a number which resembled the Thames in number and character of bends. On the second attempt the number of straight and Thames-like rivers has decreased, and they have further decreased on the third attempt. That is, there is growing agreement about the Tiber as a river with a large number of wild curves.

This perception of the Tiber has consequences. How do you draw a river that is composed of a series of wild and uncognizable curves? Figure 16.11 shows Vittoria Palazzo's second attempt at drawing the Tiber. But can't we see what she's done? She's taken her pencil and waved it down the page. This says the wildness of the river is beyond her comprehension and that she is simply capable of indicating—not the shape—but the fact of its incomprehensibility. Further, the drawing of the Tiber becomes a sensual delight. Try tracing Vittoria's river. Feel the wonderful ease and freedom and flexibility of that movement? She put her pencil down and let go. Of everything.

Figure 16.12 shows Miss Bloch's third attempt to draw the Tiber. Though you can't see them in the reproduction, her river consists of three connected fragments. The first fragment consists of the top three curves. Then she has lifted her pencil and drawn that magnificent sweep toward the "teatro Marcellus Finally she has done a Vittoria Palazzo down to the Mediterranean. If you try to trace this river, you will find it a delight as well. The insanity of the Tiber has been the occasion for unleashing those drawing tendencies that the





Figure 16.12 Third Rome map: Germaine Bloch

522

point-line-area method was designed to inhibit, that free and easy destruction of any hope of drawing a decent map. Fortunately the Tiber's insanity causes little necessary displacement of most features, as long as it runs north-south and is placed in the center of the paper. But, see what I mean about shape. The agreement that comes with experience in Rome is that the Tiber is beyond taming.

The more restrained approach to the Tiber is shown in Figure 16.13, Marina Giaconda's third map. It is a nice map that I would like to dwell on, but we're here on riverine business. Marina has not let it all hang out with respect to the Tiber. In the first place she shows us less of the river than do the others. For her, Rome is to the east of the river to begin with, and its northern and southern extensions are of little interest to her. But within these confines she has drawn a sensuous river as well. It took no tongue-biting concentration to draw that river. Its two banks were swept out in single smooth strokes. Try tracing them. You'll succeed most readily if you approach the task with a loose wrist and relaxed fist.

The differences between the Tiber and the Thames are easy to summarize. The Thames had vast, slow, cognizable shifts in orientation that were vital to the arrangement of the rest of the city. The Thames was a relaxed, areal giant. Not so the Tiber. It scurries back and forth across the landscape in a hurried, frenetic manner but without wandering too far in any of its wanderings from a straight line that could be drawn through it. And these differences were readily communicated to the kids who displayed them on their maps, in London by trying to get the exact shape down pat, in Rome by merely suggesting what was going on. This difference between the Tiber and the Thames drives home and underscores the fact that these maps are the results of interactions between the kids and the world; neither the world, nor the kids, but both.

*

The case is made best in Paris. Here is a river that plays an absolutely vital role in any map of the city. Here is a river that makes one huge easy curve through the heart of the city. Figures 16.14 through 16.17 display the drawings of the Seine. In the first case we see that the river is fairly well represented right off the bat. Most of the time the Seine is heading in the right directions, basically east-west, though with terminal curves to the south. These curves are not well understood at this point. But this is only generally true. There are two cases of the river drawn totally out of whack, and many instances of gratuitous curves where none exist. There is little consensus about its location except that all the drawings are north of the reference line.

*



Figure 16.13 Third Rome map by Marina Giaconda

And most of the rivers are fat now.

The second set of drawings shows incredible consensus. With a single exception, the rivers are the same shape, in the same place. We have never seen such agreement up 'til now. And all the rivers are now fat. This amazing consensus continues to be displayed through maps three and four. As opposed to the Tiber, this is a tame river, crucial to know, and easy to know. And so we see consensus. The drawings speak for themselves. I have nothing to add.

The conclusions reached from this analysis are easy to formulate and would seem fairly definitive. Environmental knowledge increases with experience for any individual. For a group this increase in knowledge shows up in growing agreement about what has been experienced and this agreement grows along a variety of dimensions: bearing, shape, length, location and mode of representation. Thus in each city we have seen the rivers drawn chaotically on the first attempt in all respects. On the second attempt we have seen growing agreement about bearing, shape, and location and have noticed stabilization of the north-south scale. On the third attempt we have seen still greater agreement with respect to bearing, shape and location, and have seen growing agreement in regard to the east-west scale dimension. The issue of length has been somewhat difficult to assess for the rivers, but length became increasing consensual for Oxford Street from the first to the third maps. The fat representation of rivers has increased from a mere handful of kids on the first London map to all of them on the second Paris map. A subsidiary conclusion is that rivers are more properly described as areas than as lines, particularly in the absence of the utilization of the river in its functional character (i.e., the kids in Group L did not use the rivers for travel in the cities).

What this all adds up to is that map creation proceeds along well-defined genetic lines with regard to our map typologies developed in Chapter 2. First maps, no matter the strategy employed, will tend to be more personal than third maps. Mappers move from being creators of individual mental maps to being creators of consensual mental maps. Given time and inclination they move to being creators of standard mental maps. The sequence was also shown to be true with regard to content, the third map always showing greater consensuality in this respect than the first. Thus both content and form become increasing consensual through time. But in the content analysis this development was shown to be related closely to the use and cognition of point, line and area phenomena. Combining the results of the two analytic techniques leads to the following conclusions:



Figure 16.14 The Seine River, maps held constant on the Boulevard Jourdan and the Cite Universitaire, from the first Paris maps.





Figure 16.16 The Seine River, maps held constant on the Boulevard Jourdan and the Cite Universitaire, from the third Paris maps.



Figure 16.17

The Seine River, maps held constant on the Boulevard Jourdan and the Cite Universitaire, from the fourth Paris maps.

- Personal mental maps, genetically the first type to appear, are characterized by low consensuality in content and are pointilistic in nature. There would seem to be a connection between point consciousness and the most personal of mental maps. This could be stated: personal mental maps are point oriented; or conversely, point oriented maps are most likely to be only personally useful.
- 2) Consensual mental maps, genetically the second type to appear, are characterized by higher consensuality in content and are more linear in nature. There would seem to be a connection between consensual images and linear orientation. This could be stated: consensual mental maps are line oriented; or conversely, line oriented maps are likely to be more widely useful than point oriented maps.
- 3) Standard mental maps, genetically the last type to appear, are characterized by nearly total consensuality in content, and show areas better than the two preceding types. There would seem to be some connection between the standard mental map and areal orientation. This could be restated: standard mental maps are areally oriented; or conversely, areally oriented maps are likely to be the most widely useful of all mental maps.