STUDY OF LARGE SCALE ORGANIZATIONS
FOR A MASTER PLAN FOR
HAMPshire COLLEge

by

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ABSTRACT

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The conditions of the urban fabric today require both the understanding of large physical organizations and ways of making connections between the large and small scale decisions. Examination of organizing principles in many different specific circumstances can lead to a better understanding of the issues involved, just as it is profitable to look at the wide range of local decisions that exist in built form to establish a vocabulary at that scale. An exploration of this type must recognize that what has been done represents both the formal attitudes of the implementor(s) and his (their) rationalization of the necessary relationships between functions. It is of primary importance that these two aspects be seen as inseparable yet distinct enough so that they can be held to be, in certain cases, mutually responsive.

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Hampshire College in Amherst, Massachusetts is a newly created small college, founded by the active cooperation of the four colleges in the area: Amherst College, a small private men's college of the "little Ivy League," Smith College in Northampton and Mt. Holyoke in South Hadley, both of the "seven sisters,"
and the University of Massachusetts at Amherst, the main part of the state university. The four colleges over the past fifteen years have established cooperation on a cross-circulating library system and cross-registration for courses between the schools. The next step was Hampshire, an attempt to set up an independent, small, coed, liberal arts college which could exist as a separate entity on a low initial expenditure by taking advantage of the specialized facilities available at the other colleges. Consequently, the school relies heavily on the transportation between colleges; there is already a bus system that runs between schools. Figure 1 shows the diagrammatic relationship between the Hampshire site and the four colleges, and Plate I indicates the location of the site in the Amherst area.

The college itself is to be a residential school of moderate size; although the initial projections are for only 1400 students, it is hoped that eventually the college will grow to 3600 students. Kenneth Rosenthal, of Hampshire's present administration, in an interview with the author, admitted that there has been some "erosion" of the residential college idea. Apparently the students who have applied to the college would like to attend a residential college, but not reside there.
It is obvious that in an urban situation, with its intense interaction on many different social planes, the young person might rather live in the fabric of the city itself than in a one-sided college residence. In fact, in many cases the urban institutions encourage this to take some of the housing pressures off their limited resources. It remains curious that in a rural situation, lacking this high concentration as an alternative, the desire to live off campus still persists. The town of Amherst doesn't provide that much of an "urban quality," and it certainly lacks housing facilities in the center. New developments are appearing in the manner of the suburban subdivisions as noted in figure 2, and even north of the University of Massachusetts, the area along the main road has already been developed.

The new subdivisions, however, only provide a certain freedom from the in locis parentis institution. They certainly do not provide the urban alternative, although the students who were questioned who lived there enjoyed the type of life they had had in their parents suburban homes. The students are looking for some sort of more dense fabric of social activity: UMass has 8000 meal
contracts on week-days and 800 on weekends, an estimate given by Mr. Rosenthal. He further recalled that the fraternities at Amherst College expected to be big drawing cards for the beer-drinkers at UMass on weekends, but that never materialized. Everyone, or most everyone, apparently leaves town on the weekends; the mobility of the New England student can take him from Amherst to Springfield, Worcester, Boston, Poughkeepsie, Troy, New Haven, New York, Albany, etc. It is very likely that nothing short of moving one of these cities to Amherst would stop the constant migration.

The founders of Hampshire College recognize this difficulty in their initial decision to locate in a rural area, and suggest that the College should have some part to it which has the intensity that can begin to give the entire College some identity of its own, instead of just a collection of buildings. In The Making of a College, the authors, Patterson and Longsworth, suggest a diagram for the College (figure 3) which includes the residential houses (along the same lines as Harvard and Yale, except with more academic facilities—see figure 4), the schools for more specialized work areas, and the Library and College Center, a "multi-level, multi-purpose complex." Although the diagram is not intended to show
design or scale, and only to test the concept of centralization or de-centralization (so they say), the problems which seem immediately evident are:

1) the centralized diagram limits the growth of the college center, and 2) the essential connection is between the houses and the college center if the desire is for some sort of urban fabric, and the schools are obviously in the way of this. Patterson and Longsworth write about the center as "an inner city core" and one suspects that the same problems of strangulation might exist within the college center as do in the inner core.

The master plan for Hampshire College has been prepared, and the first two houses are nearing completion as of this writing. Figure 5 is an aerial view of the site from the northeast corner, and figure 6 is a diagram of the site, showing its three most important characteristics, according to the master planners. The plan was arrived at with the decisions not to build on slope greater than 8% and to preserve as much tree coverage as possible. It should be added that the niche along

figure 6

APPENDICES

MAJOR ELEMENTS OF THE SITE

HAMPShIRE COLLEGE

AMHERST, MASSACHUSETTS

figure 7
West Street has been purchased, as well as some land across the road, as can be seen in plate II. The resulting master plan, in figure 7, can be sited by locating the library on the word "highland" and the "you are here" intersection on the heavy broken line to the right in figure 6. The entrance road runs east from the loop through the acquired niche to intersect with West Street.

Figures 8, 9, and 10 show the approach to the Hampshire College site south along West Street from Amherst. Figure 8 includes a view of the type of subdivision now being built in the Amherst area. The photographs illustrate the range of development along West Street. Figure 11 is at the intersection of the entrance road with West Street. The entrance road and the view east showing how far the land rises above West Street are included in figures 13-15, and figure 16 is a view along the loop road from the "you are here" intersection. This is the area for development proposed later in the paper.

The master plan has proceeded to duplicate the Hampshire College diagram that was initially presented. All the inherent problems mentioned are not necessarily removed by spacing out the college center, which includes the library, and in fact it actually heightens the problem
of connecting the center to the residential sectors of the campus. The problem can be approached with many different conditions on it; specifically the plan proposed here will include an approach for developing the rest of the college after 1971, which means more residential space and academic space, Houses 1 and 2 having been completed by then.

The implication in the introduction was that the examination of town organization, or of any organization of human habitation can lead to the suggestion of prototypes and possible organizational attitudes for other types of use, i.e., that town organization can be directly applied to the problems of the college. This has to be an assumption at this point. The use analogies for town and college that are specifically programmatic may be few, but certainly the major activity ranges such as residential, office, small gatherings, large gatherings, activities that need heavy servicing, and the relationships these have to the road are appropriate to both the town and the college. A square footage analysis of Hampshire College shows that in the House program 87% of the space is designated for use dimensions
of 100-500 sq. ft., and the rest is for space over 1500 sq. ft. In the analysis of the four departments, an average of 73% of the space in each was designated for over 1500 S.F. This type of information can be compared to the way a small town, or a large city, distributes itself over the range of dimensions. The results, however, would not adequately indicate whether or not formal analogies were possible. They could suggest building systems.

How to make a strong physical definition providing qualities which can be associated with the habitation of the rural site by an aggregate of social groups is an issue that holds for both a town and the College. This issue must be resolved on both formal and use grounds, and these two aspects of the organization are assumed to have equivalences in town and College. It is this which enables one to look at the picture of Blanchland, England, figure 17, and speculate as to how it might be used if it were a college.

The cities and towns to be looked at in the next few pages have two characteristics in common that are to be examined. The response to some natural site exists in almost all aggregations of habitation. Certainly the towns that locate on rivers, seashores, mountains, valleys,
cliffs, passes, islands, and even in plains, respond to the morphology of the surrounds. Some of this is directly for survival, and some is for amelioration of the negative characteristics of the site. For example, Romsdal in Norway, figure 18, is built on the four interior corners of the islands in the harbor. The response of the town's layout is primarily to the intersection of the waterways, a T-intersection, for most of the houses are built on the low seafront, and very few on high ground. This would seem to suggest that the circulation provided by the intersection is fairly important; it should be emphasized that this is one town on four islands. The T-intersection of waterways might not allow for the same strong sense of place as if it were a street unless the waterway freezes in the winter. Then one could imagine the traffic of goods taking place much the same as in a town square. In fact, town life might be stronger in the winter than in the summer, contrary to what one might expect.

The location of a town on a large plain often produces a response of similar intensity, if not kind. Figures 19-21, respectively Breunsdorf, Schützen am Gebirge, and Kirchberg, demonstrate the high concentration of definition within the inhabited section of the
to be a minor set of fortifications. The form also suggests that the river edge plays an important part in the life of the town, whether it is for actual use of the waterway for transportation, or for the positive qualities associated with being at the water's edge. The same sort of junction that existed at Kirschberg is accentuated here, where instead of a pond, the element is the direction of travel of the bridge itself. A road enters from the northwest along the river edge, but apparently does not pass clear through the town. It would not be inaccurate to say that the road bends at the bridge street for through traffic, although there are roads going to the eastern end of the town. Another point worth noting is that the two circulation paths, road and river, parallel each other for a certain distance, and then the water edge is left for habitation. In Mellingen, and in Laufenberg, figure 24, the bridge occurs at a narrowing and turning of the river (in the latter case) which indicates a directional change in the edge has some advantages for placing a path of a different direction. In these cases the river is narrower at this point and the buildings along the edge get more edge at the curve than they would at a straight line.
town. The use of trees and, in Breunsdorf, the encircling road apparently for servicing makes clear the definition of the town. In Breunsdorf and Shützen am Gebirge there is a network of sorts between the main street and the service road. The road responds to the high use quality by becoming wider, a rational response dictated by the parking necessity of wagons, etc. All three towns show a definite change in direction of the road as well. The choice of approach is handled at the direction change and this intersection increases in importance in Breunsdorf and Shützen Am Gebirge. In Kirschberg, the bend in the road occurs in the town center, and the relationship between the road, the tower buildings, and the pond, while not clear as to which caused which, can be a part of some vocabulary for making a decision point as a response to a direction change and a site condition. The decision point is the major space in the town.

The response to a major direction of circulation, or a major built element in the circulation, can also provide an organization to the town fabric. Mellingen, in figures 22 and 23, was apparently built as a major security element for the bridge; the south bank appears
The relationship between the street pattern within the city and the direction of a major entrance is illustrated in figures 25-28, respectively Stein am Rhein, Estavayer, Lucern, and Zurich. In the first two illustrations, both the bridge and the jetty have some relationship to the public open space within the town. This is, of course, the rational answer to the collection and distribution points from the traffic of goods entering the town by several different means. The town center in Stein am Rhein is on the direct entrance route from the north, through the tower gate in the lower part of the picture.

The same issues of bridge, street, square are apparent in the engravings of Lucern and Zurich, figures 27 and 28. In the latter, especially, the two bridges in close proximity establish an area of large public gatherings, if the scale of the drawings are at all correct. Direction seems to be very significant here, as the town's entrances run through the walls to the river's edge. This direction is important for circulation and the direction parallel to the river for the growth of the town.

The vocabulary of larger orders includes within it some reference to the quality of continuity and connection,
as well as direction. For examining this, especially with reference to the connection between college and town, one can look at the town of Amherst itself. Plate III is a map of Amherst College which includes the town center with its green. The road from the south is Route 116 along which is situated Hampshire College, as described previously. Arriving in the town from the south suggests a possible continuity from the open countryside to the town green. Figure 29 is south of the town with the rise in the road before Rte. 9 just visible in the distance. Figure 30 is just before, and figures 31 and 32 are a panorama just after the intersection at the bottom of plate III. The rise of the land on the right side of the road, while acting as a barrier between the college and the road, also acts as a continuous element which leads into the town green, seen in figure 34. Route 9 makes an intersection and division in terms of use, but for the driver, the experience develops some continuity.

The dotted line in plate III is a possible pre-existing road that went past the buildings on the top of the hill. No other information was available on this possibility. The five buildings are the oldest on the
campus. The apparent rationale for the original site planning of Amherst was a decision, in 1821, to keep the ridge for the formal buildings. It does seem possible, indeed reasonable that there was a road going by these early buildings that then continued on to the town, and the probable route that this might take has been indicated. The continuity then was made, to a certain degree, by the extension of the frontage greenery of the college into the town green.

The traditional New England town was in most instances organized around the town green. The sites for house lots were normally selected near the center of town. These were grouped around an open space, on or fronting which the meeting house was erected.\(^2\) The town green at Amherst is somewhat unusual in terms of its narrow rectangularity, and if it were seen as a green walkway, part of which was fronted on by the college, a linear rather than centralized pattern is evident. (Figures 36 and 37, taken from next to the octagon, figure 35, taken looking south from the town hall.)

With the building of Route 116 below the hill, the through traffic was taken away from the college, and the

college "on the hill" became isolated from the town below. The pedestrian continuity, and the connection which resulted from the fairly clear development of the major circulation direction would have remained if the college had not developed its own green (figure 38). This element, which centralizes the college, tends to break the physical linkage through the green space at the formal front of the college. It is possible that that is what the directors of Amherst College wanted; that is what they got. If at any point the continuity was desirable to reestablish, it could be done by strengthening the connection between the college green and the town green, probably involving developing the area where the octagon is. The later development of the campus has used the green as an idiom for organization, but the greens are meaningless because they are unconnected.

There is another kind of New England town, based not on the centralized green notion, but on the linear pattern. Deerfield, Mass., shown in plate V, was one of the earliest linear towns, and has been preserved in what must be very close to its original condition. Reps has written about Deerfield that a small green was located
MAP OF VILLAGE STREET SHOWING LOCATION OF HOUSES

- Dots near houses indicate they are open to the public.

Dotted line indicates approximate location of 1704 stockade.
on one side of the street to provide a commons of sorts to the elongated community. This is perhaps what Amherst was originally. Both the map and figures 39-41 indicate there was a specific response to the direction of the street in the organization of the houses. The main part of the house, the formal "head" was built almost always with its ridge line parallel to the street. The service stalls for the carriages, and the storage space was run perpendicular to the street, and occasionally, as shown in figure 41, there was another section of possibly residential space running parallel to the road again at the end. There seems to be a very strong implication here that the direction of the street, and the distance back from it, is critical for organizing the house. This, in truth, is only a logical response to the necessities of 1) properly using the road as transportation and service, and 2) presenting the formal face of the house to the town. The former idea suggests a way of describing a "use field" in doing a master plan; figure 42 could be used to specify the way places are organized without defining their formal qualities too specifically. The latter idea would probably vary with the times.

Ibid., p. 173.
Such a "field diagram," responding to the direction of the street, could be interpreted like this...

...or much differently.

**figure 42**

**figure 43**

**figure 44**

Prototype Variation
From house on lot idea because steep drop to rear.
New England farms follow the same general pattern as the Deerfield houses, except that they often tend to make a bend, instead of continually receding from the main road, and thereby forming a space which is both directly associated with the road for servicing, and, if the orientation has been right, protected from the major winter wind direction. Another feature that often occurs is the ownership of both sides of the road by the same farmer, and the consequent erection of buildings by the same owner, on both sides of a through road. Modern urban land patterns don't often allow for this; consequently the advantages of controlling both sides of a road (possible realignment being one) may not apply to the urban fabric at this time. Owning both sides may provide more freedom to determine the total quality of place. Figure 43 shows the two prototypes which have been mentioned, and figure 44, a variation on the farm house organization previously described. Such a farm house is illustrated in figures 45-47. The apparent reason for locating everything on the road was that the ground dropped steeply away to the rear, leaving no room to develop a barnyard. There was also the shifting of the main axis of the formal front to perpendicular to the road, presumably because the owner felt a certain importance in
the direction looking down the road. It is interesting to note that, although the diagram has been almost entirely held intact while it was rotated 90° to the road, there was still the necessity of building the entrance facing the road, and even detailing it so that it maintains somewhat of a formal appearance.

The preceding few pages have discussed two aspects of organization: 1) Development of continuity between a college and a town, especially in a location where there is a lot of green space to manipulate, and 2) the possible ways in which the organization of structures can respond to the direction of the roads that service and perhaps go through them. Based on this examination, it is possible to set up a diagram attempting to manipulate the various elements of the college in some way using the attitudes that were present in the examples. This approach, a somewhat eclectic method of putting together ideas from various sources, resulted in the diagram in figure 48. It is, in a sense, a working principle, not a master plan, nor a diagram similar to figure 3. It is less specific than the former, and more specific than the latter. It brings together some of the ideas involved in the effect of the road and direction on the large organization, and
"College Walk" Pedestrian Zones passing through Commons of each House.

THE DIAGRAM

Figure 48

Organizing along the through route (Pt. 116) - minimal definition of place.

Figure 49
it also includes some precepts about the effect of the road on the organization of the individual elements.

There is another assumption that stems from the study of the relationship between the college and the town in Amherst. The decision to make the college and the town well linked is up to the board of trustees. It appears, however, especially from the opinions expressed in the early part of the paper that this kind of intersection is vital to Hampshire's ability to make itself a real place, having the positive qualities of definition in the rural landscape that the European towns had. Consequently, the working premise begins with developing the area on the road for the new houses.

The direction of the road and the intersection with the general direction of the college are shown in figure 49. The buildings existing at the present time are in the middle of the site, and consequently, if some development is to take place on West Street, the perpendicular becomes another direction. As is noted, the problem of making a real place at the intersection seems paramount. The fact that some response should develop between directions, and that this response should be in terms of aggregation of public place, can be reinforced
by the application of the observations in figures 50 and 51. The simple bend in the road accomplishes both the coordination of two directions, and the increased quality of place. Figure 52 and plate VI illustrate how this might be accomplished, and also how the same principles of relating to the direction of the road and to the intersection could be extended in the immediate vicinity. The green space that is fronting the two intersections and which includes land not owned by the college takes on the quality that the connections of greens in Amherst might have accomplished. The development plan relies heavily on Hampshire owning both sides of the road for that distance.

Another principle that is only sketchily demonstrated here is the provision for heavy servicing of the new special facilities buildings at the west end of the campus. The concept was illustrated in Schützam am Gebirge (figure 20). The provision for roads on both sides, one a through road and one a dead end, is a rational response to the servicing problem, and consequently should be considered as a necessary part of the formal vocabulary.

At one point a major concern in doing the master
CHAMPLAIN VALLEY, QUEBEC
PROVINCIAL HIGHWAYS RT. 3 T
& 9: BEND OF MAIN HIGHWAY AT TOWN CENTER'S INTERSECTION WITH SECONDARY ROAD.

BEND IN ROAD ON ENTERING TOWN INCREASES DEFINITION OF TOWN.

EVENTUAL GROWTH CAN RESPOND TO DIRECTION AND INTERSECTIONS.
plan was the ability to communicate the concepts without totally describing the formal definitions. Assuming that one designer prepares a master plan which dictates certain decisions to others, it seemed important to communicate the organization without severely limiting the range of definitions that can be used in the actual design. The master plan for Government Center in Boston was a detailed specification of building profile, in plan and section; the master plan for NASA in Cambridge was to a large extent the establishing of site lines within a system of pavilion buildings. In the plan for Hampshire College, one element could be the original field diagram shown in figure 42. Another part would be the collection of examples describing how certain relationships are established by specific physical forms, such as illustrations of the type of figures 53 and 54.

The master plan has traditionally come to be building envelopes, because this is the most exact way to describe the relationships. Unfortunately, this often results in building the diagram. De Carlo's plan for the University of Dublin, figure 55, includes diagrammatic plans and sections, and the illustration shown is the roof plan. De Carlo himself says that the forms are not
meant to be the delineation of the buildings, but only the relationships of private, semi-private, and public. The orthogonal geometry is not mandatory, but the small housing units extending off to the side must be directed so as not to "interfere" with the other buildings.

Plates VII and VIII are an attempt to describe some of the relationships involved in the new houses along West Street, without trying to give specific form. The diagrams are an extension of figure 48. The pedestrian way must provide the links between activities shown in plate VII. When correlated with plate VIII pedestrian overpasses are needed as means of connecting over the road. One purpose which was not achieved in these diagrams was the indication of which commons areas should be through ways between Houses and which act as end points. The width of the pedestrian zone does not indicate the intensity of the pedestrian-supported activity, but rather the fact that the zone must have that wide a defined dimension, in other words be a continuous zone between all four of the points on the western edge. Plate VIII refers to the vehicular passage, giving service points and demonstrates the diffusion of parking in the main road and the larger parking lots within the college roads.
The next step in the process, illustrated in plates IX-XII, develops both a more detailed concept of the organization, and also makes an initial exploration of actual formal qualities of part of the pedestrian way and the building edge. The formal concepts of direction and intersection are used at the small scale too. It was only at this level that certain elements more related to the master plan became clear. The commons area on West Street at the northern end acts as a barrier between the "college walk" and the two service points. The stairs indicated in plates X and XI extend the pedestrian zone above these points, and over the road. Servicing was designated as interfering with pedestrian activity, and was more of a road-oriented activity. Consequently, pedestrian movement is routed around the above servicing.

The work beyond the first few decisions of placing the houses on West Street and establishing the diagram in figure 47 and plates VII and VIII became a mixture of many scales of decisions. The buildings' responses to the diagram were determined, to a great extent, as profile. The decisions were made at various levels of precision, and the exactness of the line detail in plates IX and X reflects these levels. In the building along West Street drawn to some detail, certain basic elements were left
out because it was felt that one could not draw a stair system (for example) unless the implications for the residential section were understood. The diagram of the building in plate XI explains some of the arrangement, and one must keep in mind figure 42, which implies that entries to the residential areas would be located in the columnar section furthest away from the road.

The test of the master diagrams can take place at the large scale; questions about the feasibility of the servicing and the throughway patterns can be discussed without the formal results being known. Plates VII and VIII are only the first steps in developing a design for that site. The formal issues, which can only partially be separated from the functional questions, must be examined in their consequences for the local decisions. It is perhaps desirable in the long range to show the relation between the larger formal issues and the more localized ones in order to see if there is a direct influence by the large-scale decision on the quality of the small scale. The operational considerations may perhaps be the same. As a subject for investigation, it requires perhaps an examination of more conscious urban
design, historically occurring during periods of concentrated power, and interest in expressing this power physically. This area of investigation, and the issues mentioned at the beginning of this work would comprise one way of using highly skilled analytical ability to develop more knowledge about the organization of the man-made natural landscape.
BIBLIOGRAPHY


