

Decoration/Intensification/Collage
as
Definition/Form in Building
a Built-Form Exploration

by

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Bachelor of Science in Art and Design
Massachusetts Institute of Technology
1975

submitted in partial fulfillment of the requirements
for the degree Master of Architecture
at the
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September 1977

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June 15, 1977~~

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Professor of Architecture~~

Accepted by

~~Wayne V. Andersen, Chairman,
Departmental Committee for
Graduate Students~~

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DEDICATION

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I dedicate this work to -

- my parents, with love and thanksgiving for their Christian love, care, support, and sacrifice for me;
- Linda, with love and in joyful anticipation of our life and love together with Christ;
- and God the Father, the Lord Jesus Christ, and the Holy Spirit, with love, praise, and thanksgiving for my parents, Linda, my strengths, weaknesses, and abilities, His power to work in and through me, and His promise of Eternal Life with Him.

ACKNOWLEDGEMENTS

I gratefully acknowledge Maurice Smith, Kyu Sung Woo, Imre Halasz, and Robert Slattery for their ideas and help.

I also gratefully acknowledge The Graham Foundation for funds to travel to Chicago.

ABSTRACT

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Decoration/Intensification/Collage as Definition/Form
in Building a Built-Form Exploration

Taylor True Dueker

submitted to the Department of Architecture on June 15, 1977
in partial fulfillment of the requirements for the degree of
Master of Architecture.

The thesis is an expansion of the notion of decoration
in building into becoming part of the additive process of
design. This is accomplished by suggesting the notion of
intensification, the ability to choose from an assortment of
architectural elements ranging in intensity (form, material,
dimension, decoration,....) which can be interchanged or
collaged within a basic design scheme according to program-
matic or geographic considerations within the scheme.

Thesis Supervisor

Maurice Smith

Title: Professor of Architecture

INTRODUCTION

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The thesis is a result of the author's experience and direction in architectural design, that direction having been originated in graphics, an interest in decoration, and a rejection of the apparent sterility in current architecture. The desire to incorporate these notions into current architectural design and practice resulted in the need to look at how at least some of the world's designers, known and unknown, have approached decoration in building and what forms were generated and where decoration generally occurred.

The word 'decoration' has acquired a negative connotation on recent years since it tends to refer to an artistic treatment of surfaces, which is not in any way a total process of designing spatially or architecturally. It may tend to become stylistic, as in the case of the Art Nouveau and Art Deco periods as well as others. The desire here is to explore and eventually establish an actual way, process, or method of seeing and working, realizing that what is represented in the thesis is just a beginning. Therefore, the word which will be used is 'intensification' which hopefully will represent aspects of decoration as well as space, structure, and form. The word implies, at two extremes, the option to intensify or not to intensify.

This notion, the options and the choices which range between the two extremes, seemingly could express itself as an actual design process in a collaging concept, or the ability to choose elements ranging in intensity for particular loca-

INTRODUCTION

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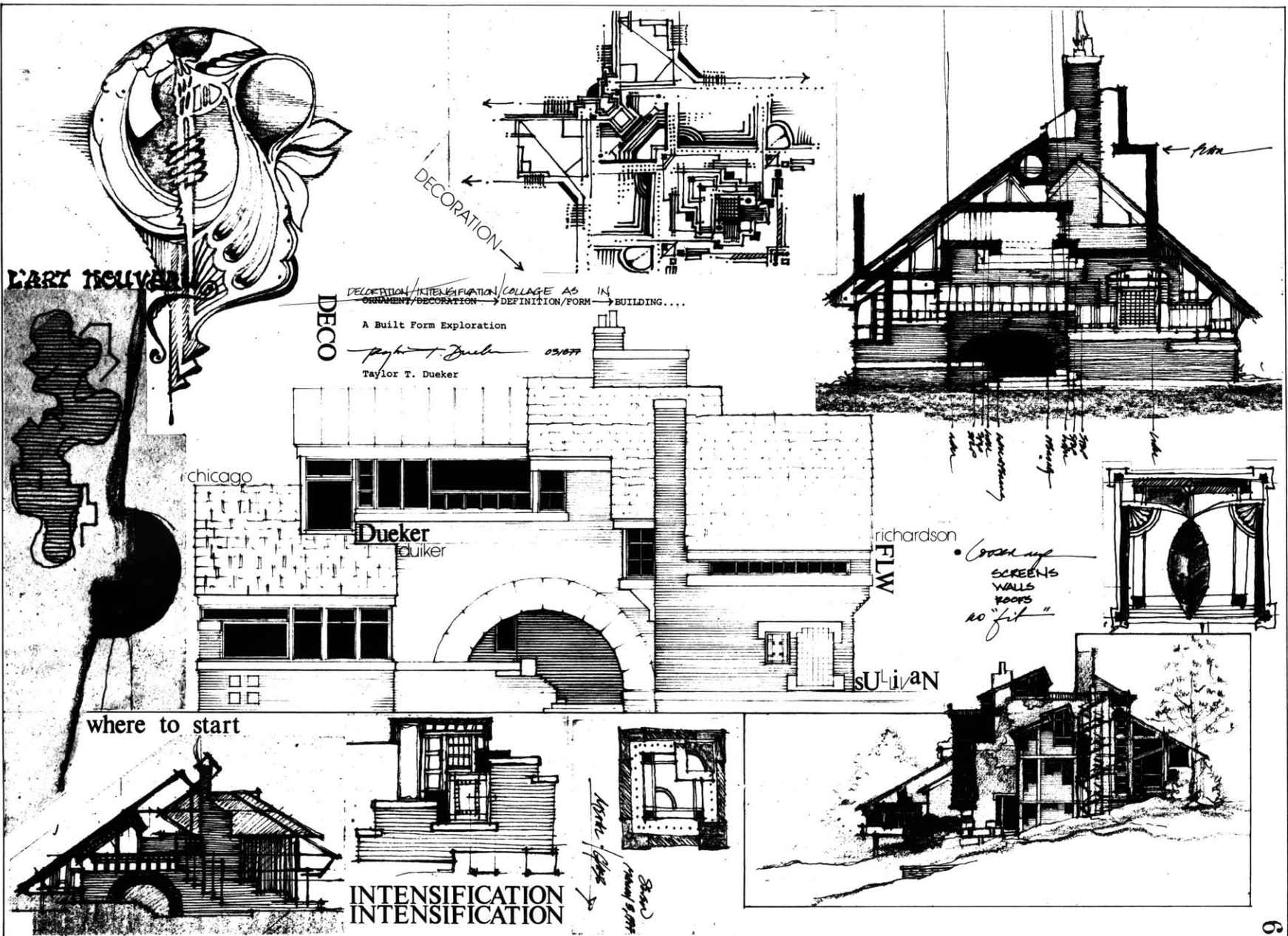
tions in a design according to the programmatic and contextual considerations of those locations within a certain scheme.

The thesis also includes an original design incorporating these concepts, an alteration/intensification of an existing building, and a short discussion of the possibilities for construction within the current economic and technological restraints that are imposed on design.

The decision to look at work by a few designers which are commonly known to have designed with a sense for decoration was a first step in trying to understand where the development of the thesis was to be directed. Richardson, Sullivan, and Wright were a few American architects whose works were products and assimilations of classical, European, oriental, and other indigenous references. Modernists, such as Corbussier and Mies (and the Bauhaus) believed in functionalism and the stripping away of most if not all decoration in building.

Thanks to the Graham Foundation for funding a trip to Chicago, many buildings designed by these architects were able to be experienced in person and the individual perceptions of decoration by these architects could be readily seen.

The next two pages are mostly examples of early studies in trying to establish a foundation for a design process from the notion of decoration. Much of the material is influenced by the work and/or styles of these architects. The problem of decoration/art versus architectural design seems to be ex-



L'ART NOUVEAU

DECORATION

DECORATION / INTENSIFICATION / COLLAGE AS ORNAMENT / DECORATION → DEFINITION / FORM → BUILDING....

DECO

A Built Form Exploration

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Taylor T. Dueker

chicago

Dueker
duiker

richardson

FLW

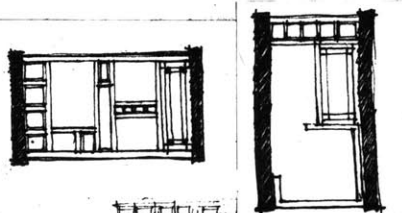
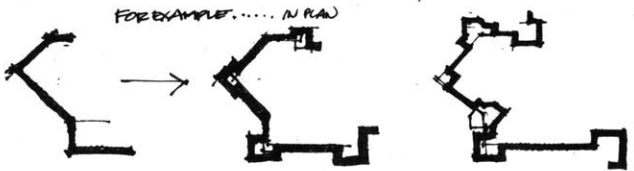
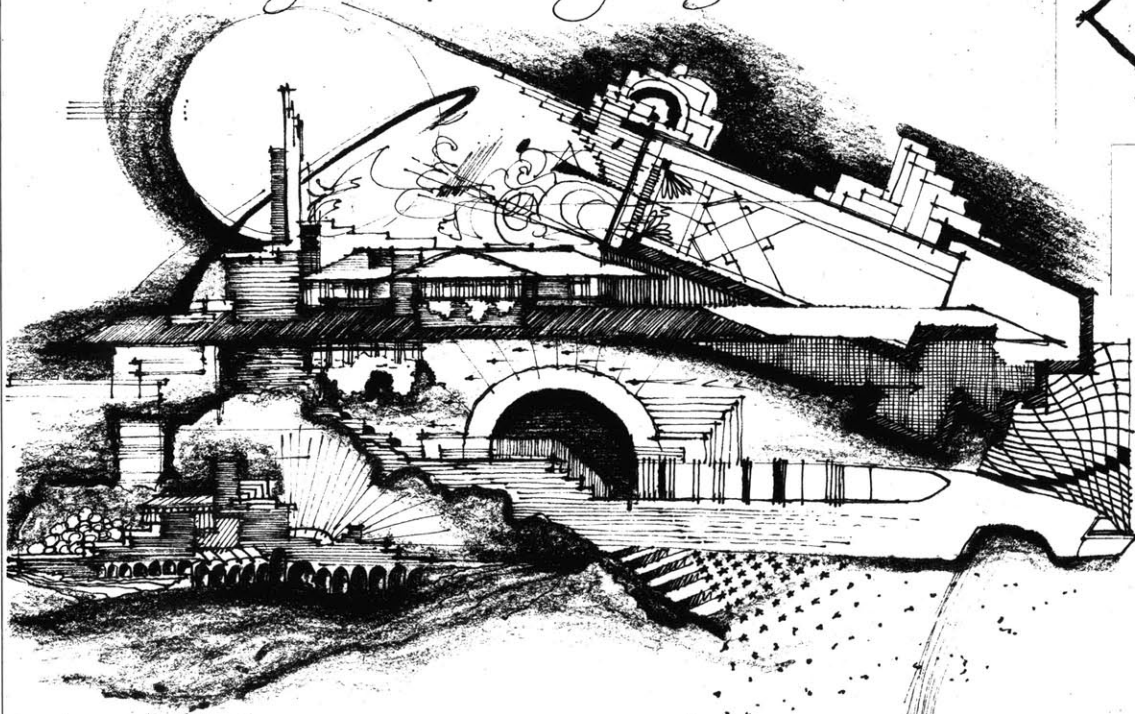
• *looking*
SCREENS
WALLS
ROOFS
no "fit"

sU-i-vAN

where to start

INTENSIFICATION
INTENSIFICATION

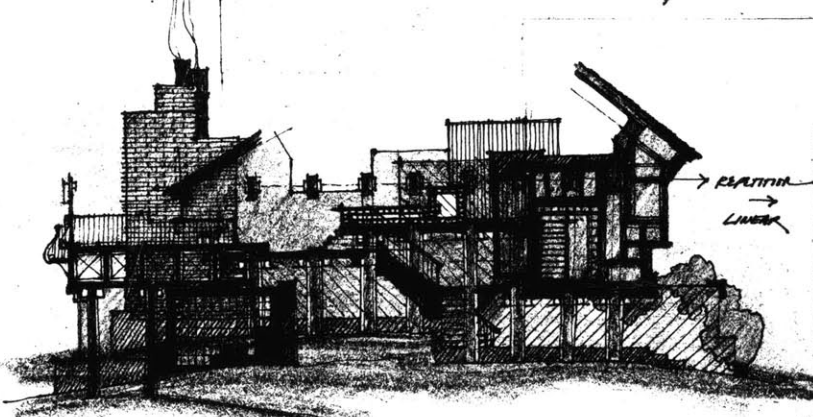
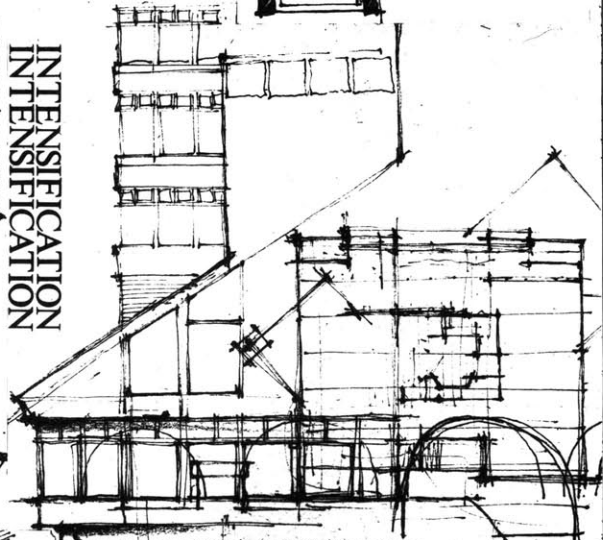
Structure - Chicago - Frank Lloyd Wright



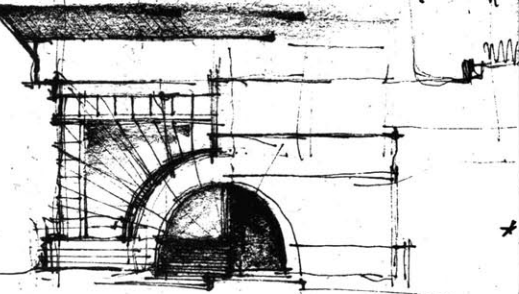
PANES
- SOLID
- GLAZED
- PARTIALLY SOLID

INTENSIFICATION
INTENSIFICATION

24
February 26, 1917



→ ELASTIC
→ LINEAR



INTRODUCTION

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emplified in these drawings. How does one integrate the two? A building cannot be just an art form because a building is for people; and surely a building cannot be just the minimal definition of shelter, a monolith, a cube. Throughout history humanity has "decorated" its environs. Where does the need to decorate originate? Perhaps no definite answer is available. It does seem as if there should be some way of resolving the conflict and perhaps the notion of intensification/collage is a start.

DEFINITION / DISCUSSION OF INTENSIFICATION

As mentioned before, the word 'intensification' immediately implies 'intense' and 'not intense', and any degree in between the two extremes. The next step is to determine where, historically, decoration in a building has taken place, for decoration is an aspect of intensification. This provides the first link between decoration and architecture. Decoration may be applied to an existing surface, or it may be built. Some of the places that it occurs in a building is where there is a change of direction, the end of a linear segment, a linear segment, an opening, a plane, a change of material, a change or transition of structural elements (beam to column-classical tripartite rule), or even just a point or certain location in a building. These locations will be discussed later in an effort to think through the relationships and similari-

DEFINITION

ities of simple architectural elements. If one is to then gather good references or ideas of how these elements have been handled, designed, added to, or used previously, a range, with respect to intensity, of elements could be developed to be used as possibilities for intensification in a scheme or basic diagram. For example, if one had before her or him an array of columns, walls, etc. ranging in intensity, several selections could be made for a certain location in a design tested, and determined whether or not it would be proper, useful, or beneficial to intensify that place if indeed it needs intensifying at all. This concept is intended to work in plan and in section and is what is called here the 'collage' which becomes an integral part of the additive process of design.

Intensification itself depends on several factors. Personal preferences or values could be involved if different individuals are using this concept in their own work and in custom designing their own elements. However, it seems as if there are a few characteristics of the process of intensification involved which should be considered. Form, material, dimension, and decoration of the elements are involved in classifying or categorizing them into a gradation of intensification. A problem that one could encounter though is the one which in one instance, a certain element is not as "intense" as another but in a different situation it becomes more intense than the other.

DEFINITION

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Intensification can be extended to include not only structural architectural elements but furniture, glazing, lighting, material, and color, as well as others. Therefore, dimensions become important, and yet the notion can be incorporated into all scales of design even within one project. What is dealt with in the thesis work is a first partial definition established in **two fields of parallel lines crossing at a 45° angle**. There will be more on this later. Then a range of elements was developed from the discussion of the form families, to then be applied in collage to a basic zoning diagram that was developed from the first partial definition that was established by choosing one combination or orientation of the four primary definitions out of an infinite (seemingly) number of possible combinations.

To briefly summarize: the idea of developing elements to be collaged onto a basic design, and even the larger elements used in establishing the first partial definition could be seen to be substitute or "surrogate" pieces of building which could be used in collage as a design tool, thereby establishing possibilities for a range of intensifications to occur.

As a note: the word 'intensification' itself may not be the best word to choose to name what is trying to be done here, but it is probably the best word to be found at the present. Many thanks go to Maurice Smith, however, for the choice, as well as the suggestion of surrogate building as a design tool.

**SOME FORM
FAMILIES
FOR INTENSIFICATION**

POINT

+ COLUMN- PLAN



-round- no direction, singular- tends not to want to be added to....



-square- four growth directions but has no direction in itself....



-cruciform- has possibilities to have growth in four directions from the column....



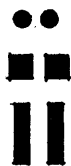
-oblong- has a predominant direction implying directional growth which in turn becomes a piece in an additive collection or collage....



-I-section has direction also with possible partial small use space....

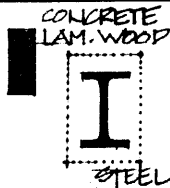


-related to the round and square simpler columns, however, depending on dimensioning, as in the I-beam, a variety of possibilities for potential uses can emerge....

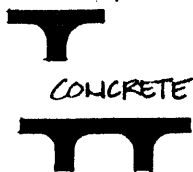


-doubling columns to carry/share a load creates differences in spaces, or a range of spaces which is intensifying the whole space, providing more definition within the space....

+ BEAM- SECTION



-the nature(physical static properties) of beams necessitate a directional form, that being in the vertical direction to resist bending moment. Depending on the properties of the material involved, the forms of particular beams are dictated, not because they are the only possible solutions, but because, in part, industry produces them this way....



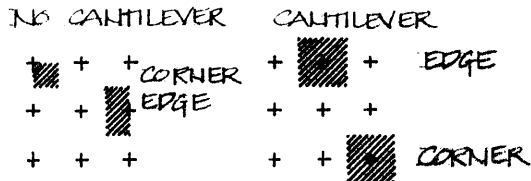
POINT

+ TERRITORIALITY

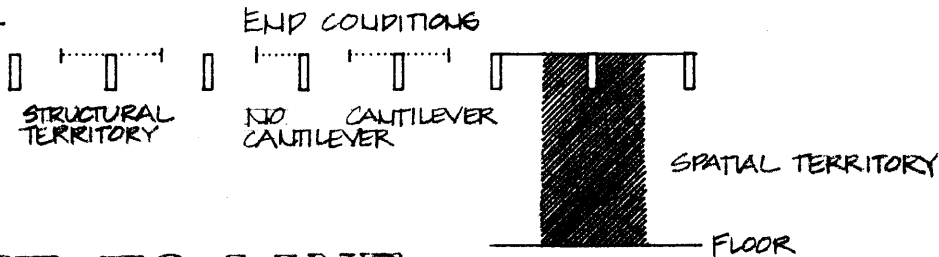
COLUMN



Structurally, the column's territory for supporting beams or a slab is what is shown.



BEAM



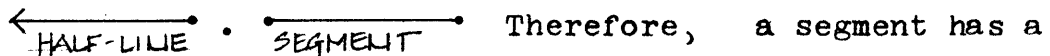
POINT TO LINE

LINE


In strictly geometric (mathematical) terms, a line is a composition of infinite points and is, and can only be in one direction.

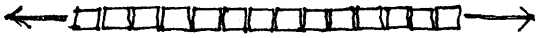
As a collection of points (infinite), a line is solid and may continue endlessly in the direction it is defining both positively and negatively (180°).

A half a line starts from a point (specific) and proceeds in one direction endlessly (unless stopped at another point)



Therefore, a segment has a beginning, middle, and end- three parts. Digressing from a

strictly mathematical explanation/definition of a line to a notion of linearity in architecture/building, linear elements are made of actual material. If a "line" appears to be solid, the association that one makes is that the material is physically continuous, or it establishes the continuity by the simple continuing of material over a distance. 

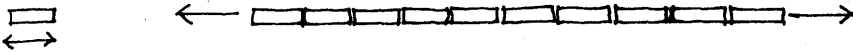
However, linearity may be maintained by the repetition of pieces along a linear path, or axis, which in essence is a process of growth. 

NON-DIRECTIONAL ELEMENTS ON AN AXIS

Non-directional elements (such as a square) may be added along an established axis which has direction, thus forming from a collection of non-directional elements a single directional element. (see discussion of 'Corners'...)

A line can be made from directional elements as well.

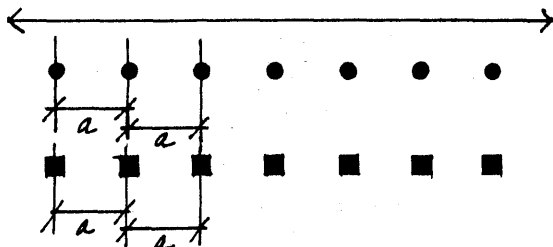
-direction of parts parallel to the direction of growth



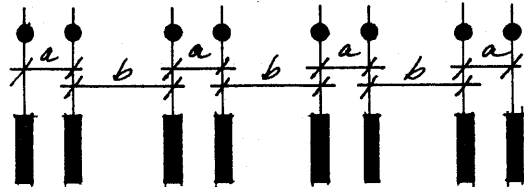
-direction of parts perpendicular to the direction of growth



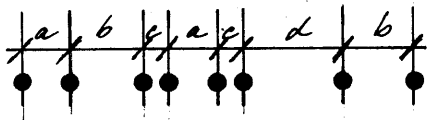
When the elements are separated but maintained along the established axis and space is introduced to the notion of a linear element, a rhythm or a range of spaces results. The forms bear direct similarity to the discussion of the point (column in plan). (see also the discussion of openings in 'Planes')



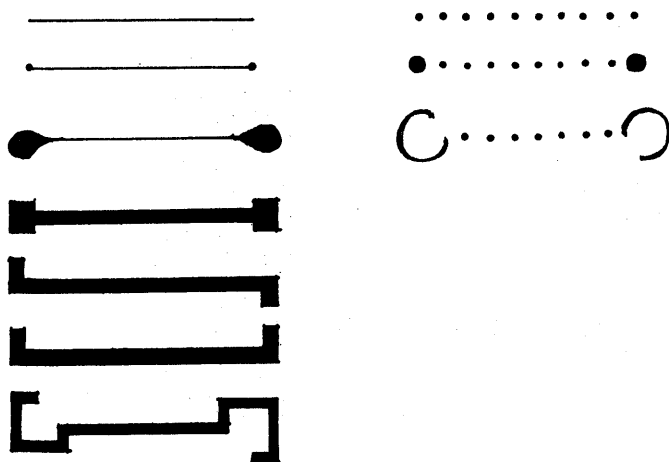
When the double column is used, a new rhythm or spatial arrangement occurs which is an "intensification", a degree beyond the regular intervals previously described.



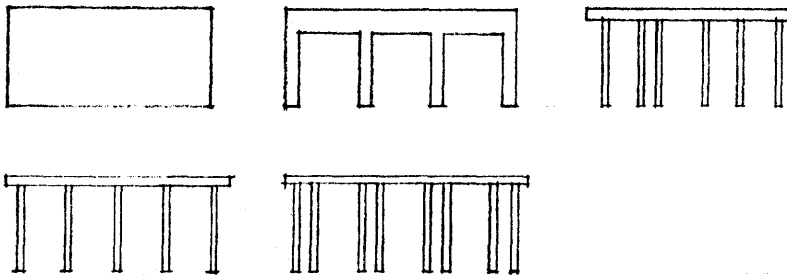
A further step beyond the a-b-a rhythm would be any random arrangement such as an a-b-c-a-c-d-b sort of arrangement, etc.



Whatever rhythm has been established, the pieces making the linear element could be continued along the given axis indefinitely unless they are terminated at some point or points. The points of termination are significant in that they are what defines the segment between them. They are two of the three parts of a segment, and therefore are important enough to be recognized (the beginning and end).

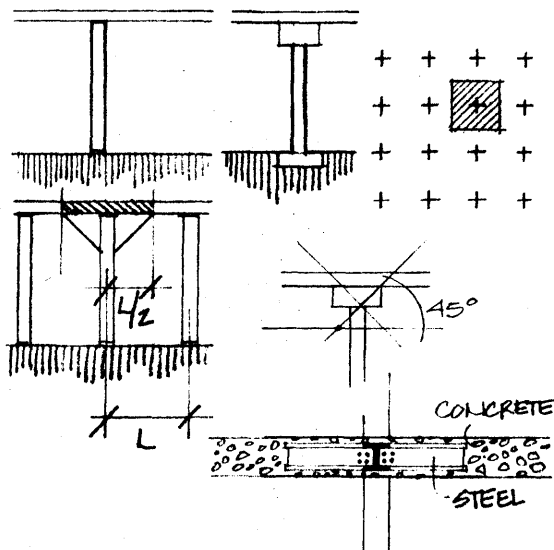


When these elements or segments are examined in section or elevation (until now viewed in plan), one sees that a plane, or two-dimensional surface appears (see section on 'Plane'). Three ways of seeing the plane, as will be further discussed later, are as a solid (wall) or a solid with openings (which is the case for the repeated elements along an axis as previously discussed), or as a partial screen or an arcade.



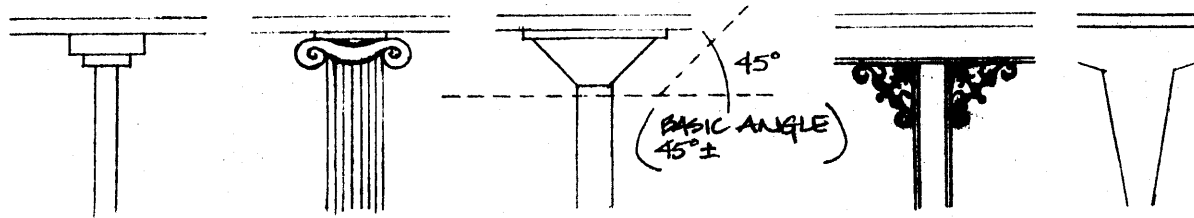
The column, in section, is also a linear segment which has a beginning, middle, and an end because of its structural properties. Historical design of columns has recognized those properties through the years.

The basic form for a column/slab system is as follows:

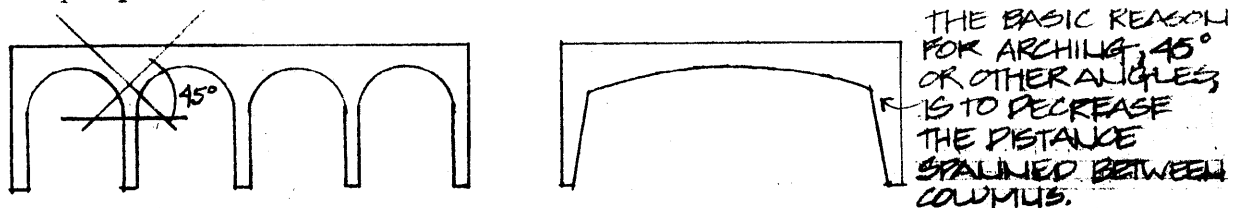


The columns have to carry shear load from supported slab and then be able to disperse the load carried through the column itself over a broader floor area than the section of the column.

The shear has been carried through a 45° angle from the slab or beam to the column usually by means of extra material in that region (capital). More recently, the shear has been carried sometimes by technological manipulation of materials.



This short discussion of columns and the way they carry shear forces from slabs or beams is intended to explain the structural properties, at least in part, of the arch.

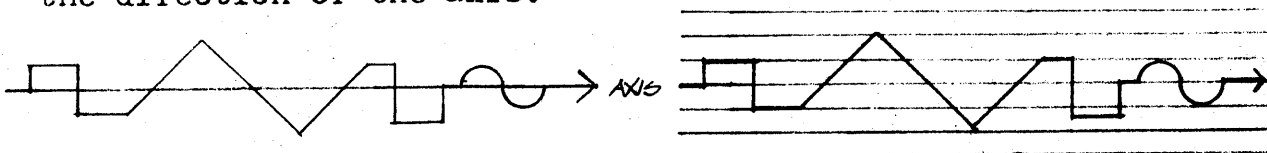


When the arches are arranged lineally along an axis (straight or curved), an arcade is the result. This is, therefore, a plane or wall with openings as previously discussed.

LINE TO PLANE

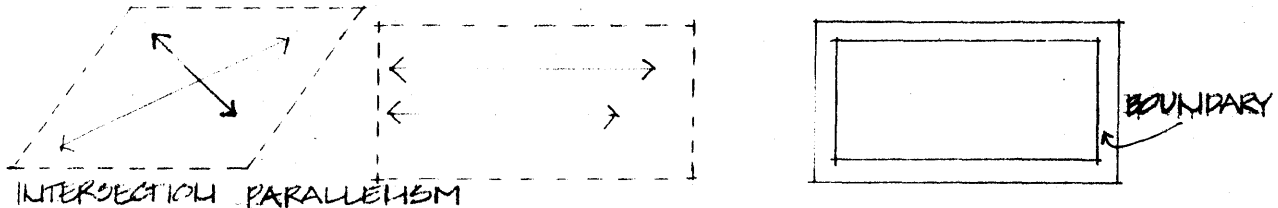
PLANE

Linear integrity or continuity may be maintained if an axis is a constant reference for 'activity' in the territory and the direction of the axis.


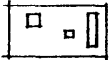



A plane is defined geometrically by two intersecting lines or two parallel lines. Directionality is maintained by parallelism. Therefore, the aforementioned 'activity' along a linear

axis defines a plane with the 'movement' in the direction of the axis. This plane can be seen as an array or field of parallel lines, also. If a plane is established, its bounds must be recognized if they exist as in the case for a linear segment.



Three categories or treatments of a plane seem possible from an architectural standpoint. (there could probably be others, also) These categories would include:

- 1.) the simple solid 
- 2.) openings 
- 3.) complexity or activity in the parallel field of the plane 

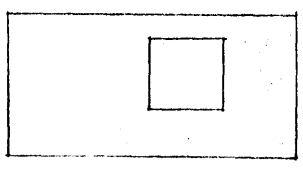
or any combination of all three.

OPENINGS DISCONTINUITIES

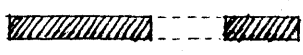
Openings are, in actuality, discontinuities in a line or a surface. A local discontinuity, or a 'hole', may be viewed as where a piece of material ~~which~~ has been 'punched out' of the otherwise continuous surface of a plane. If a total discontinuity occurs, a location where some other definition may be established has appeared. The discontinuity could be one where the linear continuity itself would be maintained and the material establishes the discontinuity, or where the material and the linear continuities are both interrupted or offset.

Common examples of openings are doors and windows, which are and could be subjects for further research.

OPENINGS DISCONTINUITIES



'HOLE' IN SURFACE - LOCAL DISCONTINUITY



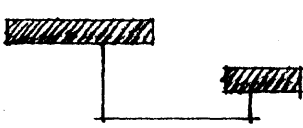
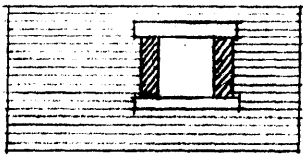
LINEAR CONTINUITY IS MAINTAINED



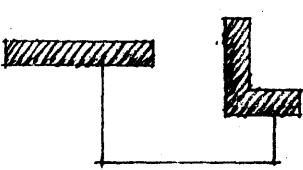
TWO LINEAR SEGMENTS



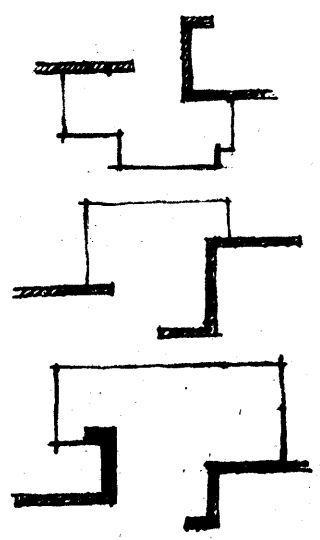
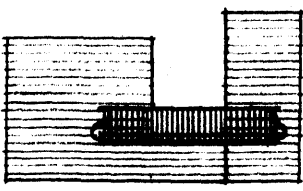
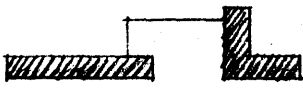
ENDS OF THE LINE SEGMENTS



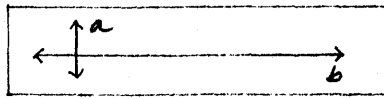
LINEAR & MATERIAL CONTINUITY BROKEN/OFFSET



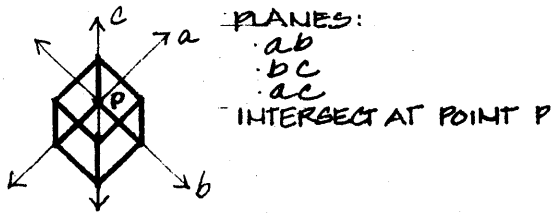
OTHER MATERIAL BUILT FROM PARTIAL DEFINITION PROVIDED BY DISCONTINUITY



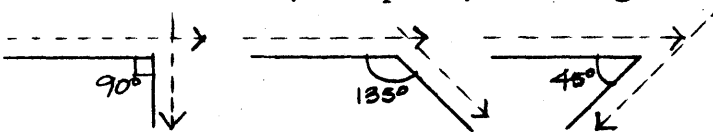
PLANE TO CORNER (VOLUME) 20



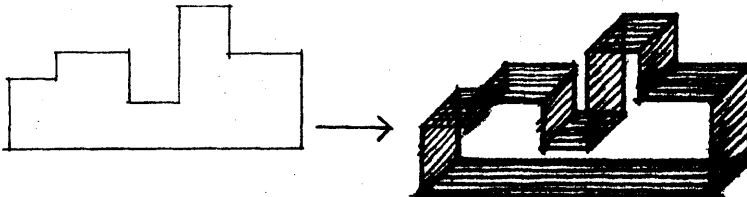
As two intersecting lines define a plane, a third line intersecting the previous intersection, but not in the same plane defined by the first two, now defines two more planes, thus establishing volume, an intersection of three planes.



When a plane intersects a plane, the intersection is a line and is a corner; in plan, a change of direction.



Therefore, if in a plane other planes intersect it, corners are formed and space becomes enclosed or partially enclosed.



CORNER

Most of what is said about corners in two dimensions can be extrapolated and understood in three dimensions. Therefore, for ease of discussion, the two-dimensional case will be used.

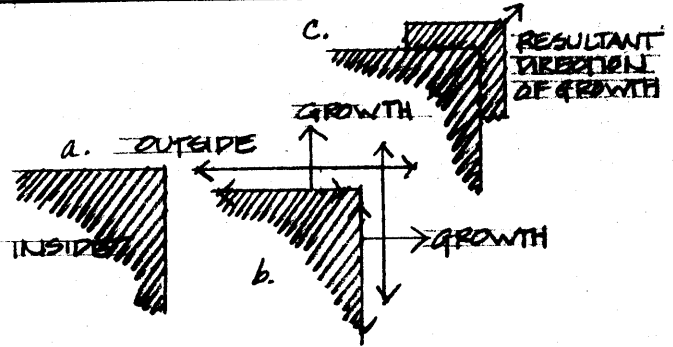
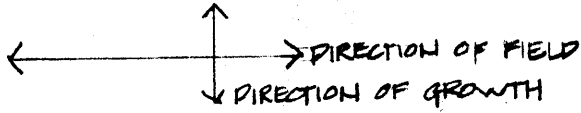
POSITIVE & NEGATIVE. ADDITIVE & SUBTRACTIVE.

Both attitudes create more corners from the simple, basic corner within the definition of intensification.

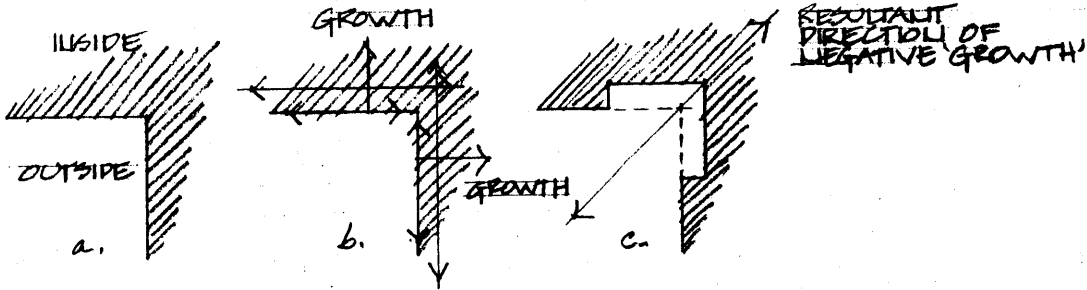
CORNER

ADDITIVE - CONVEX/EXTERNAL

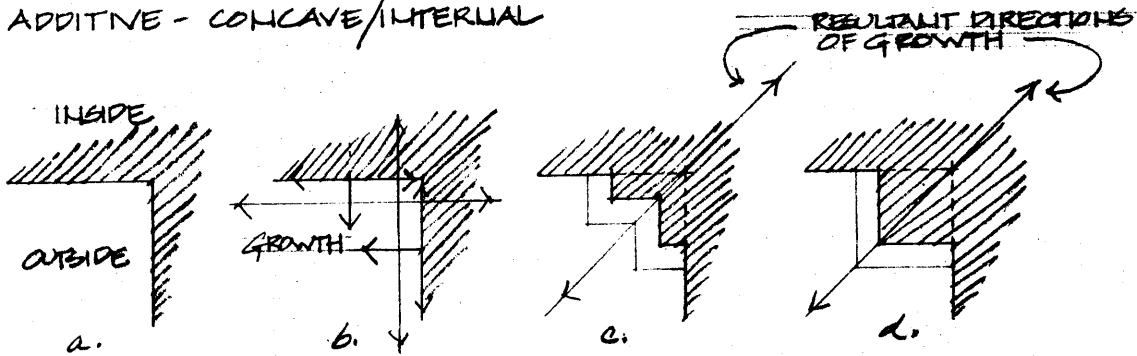
DIRECTION OF GROWTH IS PERPENDICULAR TO MAIN DIRECTION OF A PARALLEL FIELD



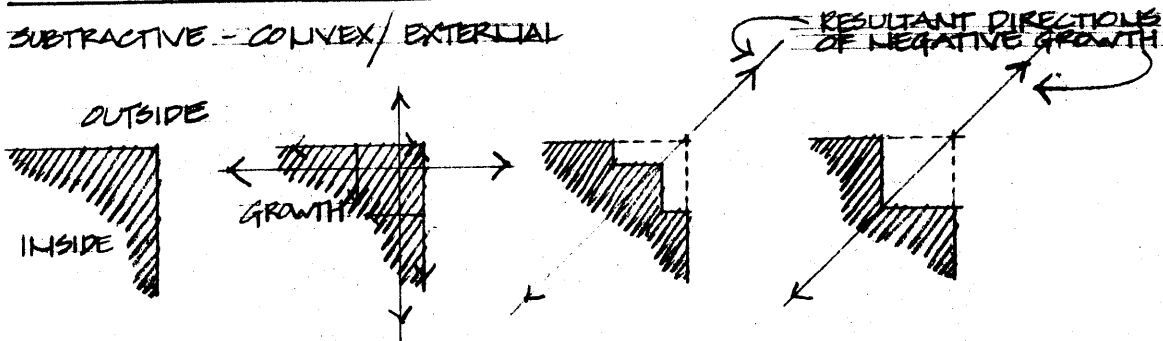
SUBTRACTIVE - CONCAVE/INTERNAL



ADDITIVE - CONCAVE/INTERNAL



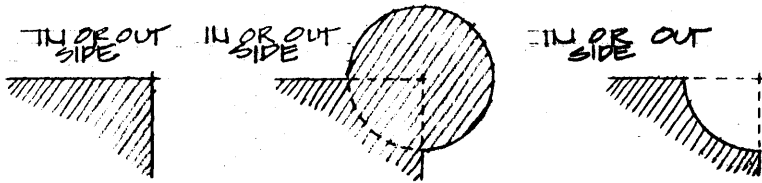
SUBTRACTIVE - CONVEX/EXTERNAL



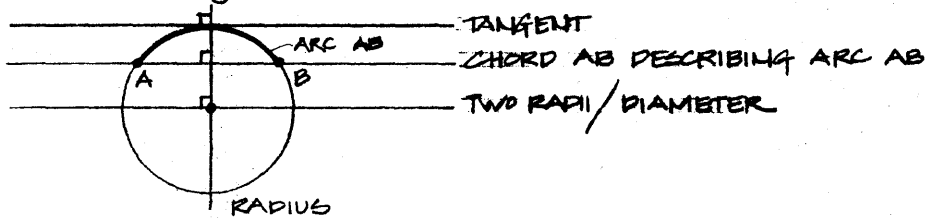
CORNER

To this point, intensification of the corner has been strictly orthogonal and parallel to the given or basic form.

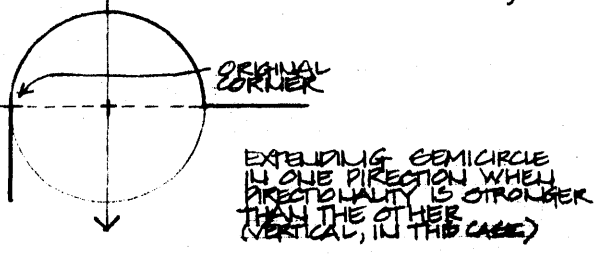
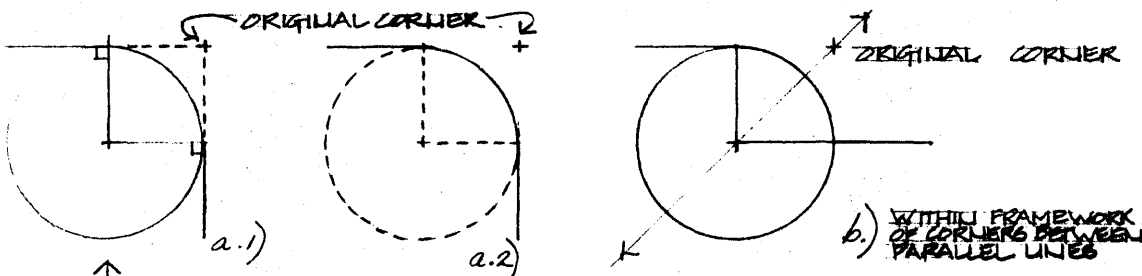
The point at which two lines intersect perpendicularly (corner) can be seen as a centerpoint or focus of a circle with the two segments describing either 3/4 or 1/4 of the circle as radii of that circle.



The radial geometry of the circle is described by the radii, however, lines perpendicular to radii describe arcs of the circle or tangents to the circle.



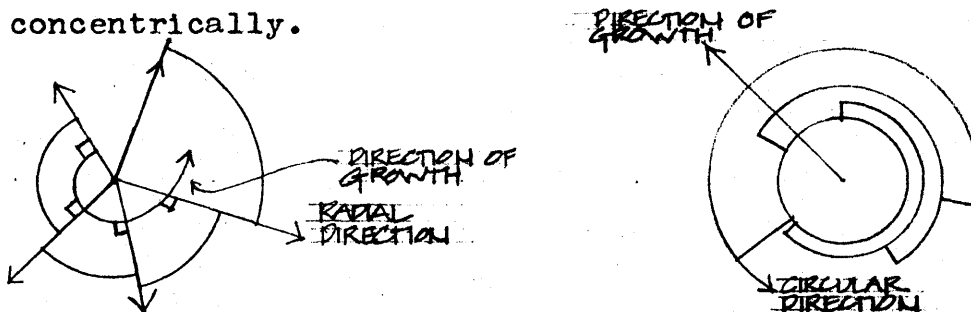
If the two segments forming a corner become tangents to a circle, a 'rounded' corner is the result.



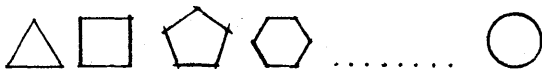
(THE CIRCULAR FORM, IF IT IS TO BE USED AS A USE "CONTAINER" MUST BE AT LEAST A SEMI-CIRCLE.)

CORNER

There are two ways in which circular growth can happen; radially and concentrically.



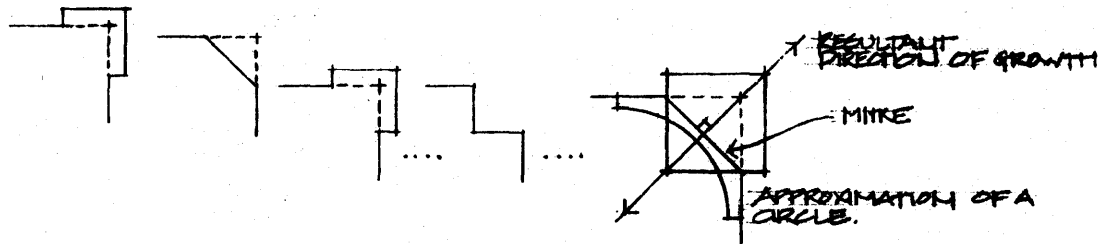
A circle is a form which also can be seen as a polygon with an infinite number of sides. In other words, a polygon with an infinite number of sides approximates a circle.



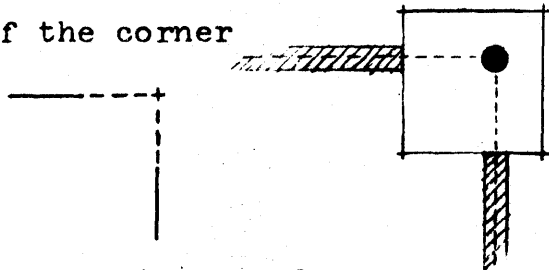
To regress a bit, the shortest distance between two points is a line, thus the shortest distance between three points is the total of three lines which is the simplest two dimensional form and thusly the simplest or basic polygon.

If the basic orthogonal corner that is being discussed is terminated (the segments making the corner) short of the intersection, as if the intensification or growth were to take place at that location and those two points are connected by a segment, a mitring has taken place and a circular form (partial) has been approximated at least one step beyond that of the orthogonal corner. This line is perpendicular to the resultant direction of growth if the corner had been intensified according to the aforementioned concepts.

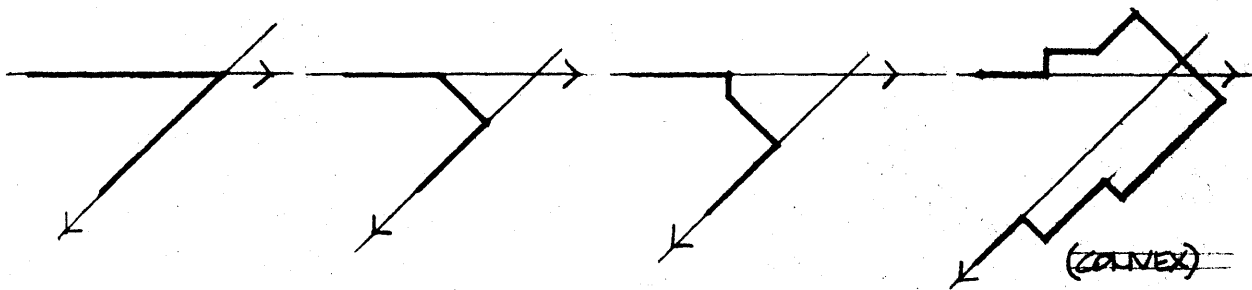
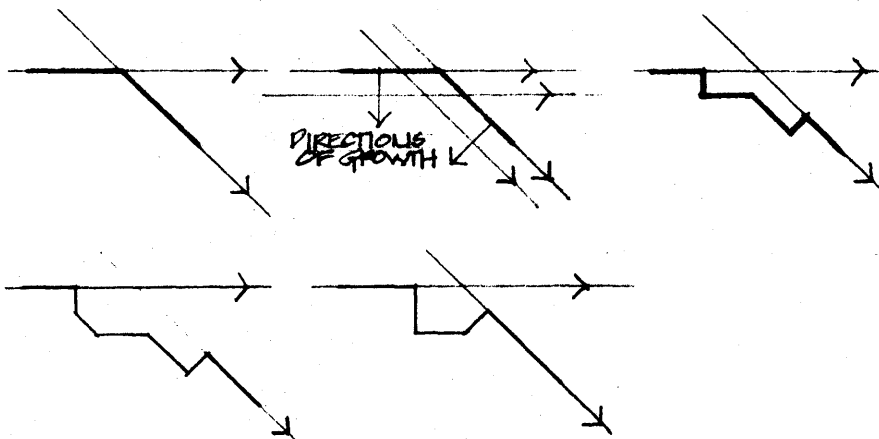
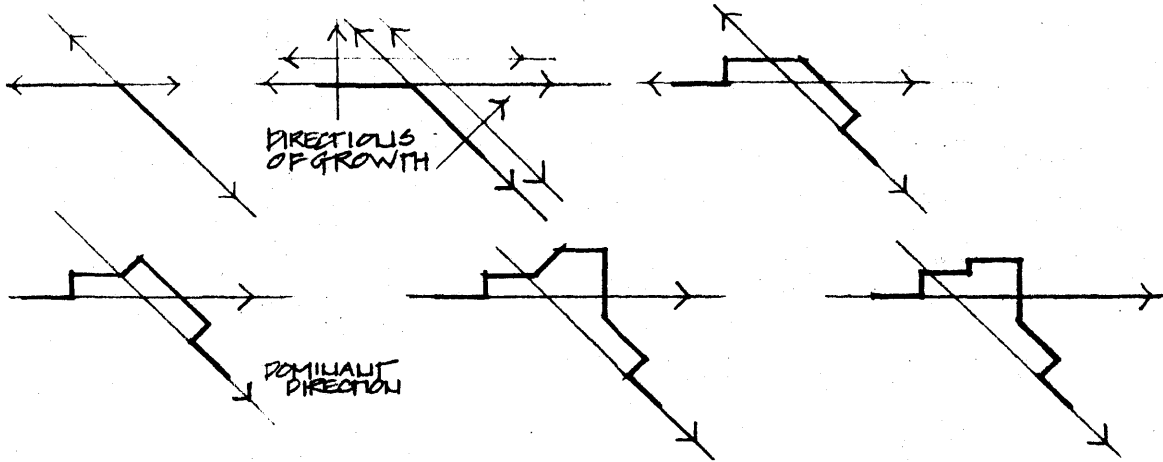
CORNER



Another attitude towards intensification of the corner, as in the case of the plane, is to have openings, solids and voids, and the possibility of incorporating points or columns at or near the intersection of the two planes making the corner. Additive or subtractive intensification then also may be combined to produce further possibilities for the intensification of the corner



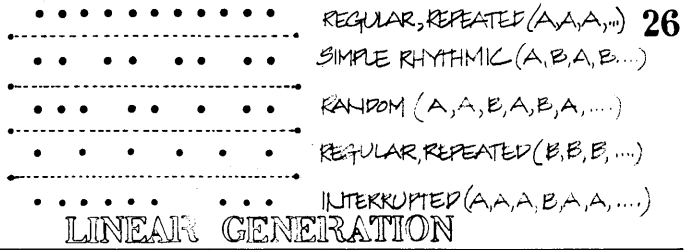
For a 45° or 135° corner, growth/intensification occurs in a similar manner to the orthogonal system, however some differences are evident. No matter what the angle of intersection is in a given situation, the rules for additive (convex) and subtractive (concave) growth are true; the direction of growth is perpendicular to the direction of the field in which the segments of interest are located, and the resultant direction of growth around a corner is the resultant or common direction shared by the segments defining the corner.



This discussion in no way is intended to be exhaustive, but rather a beginning to understanding the forms and a basis for analyzing existing forms and one's own design work. More possibilities may be found in the Range of Elements for Collage.

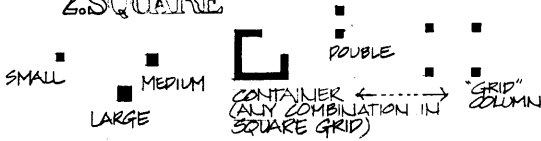
COLUMNS (IN PLAN)

1. CYLINDRICAL



LINEAR GENERATION

2. SQUARE

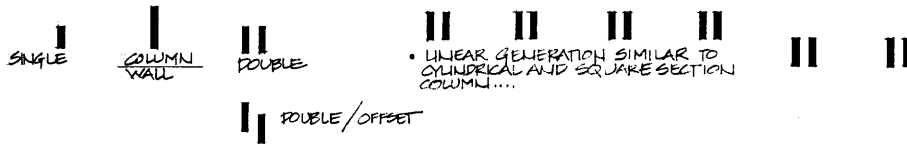


• LINEAR GENERATION THE SAME AS FOR A CYLINDRICAL COLUMN....

3. CRUCIFORM - CORNER

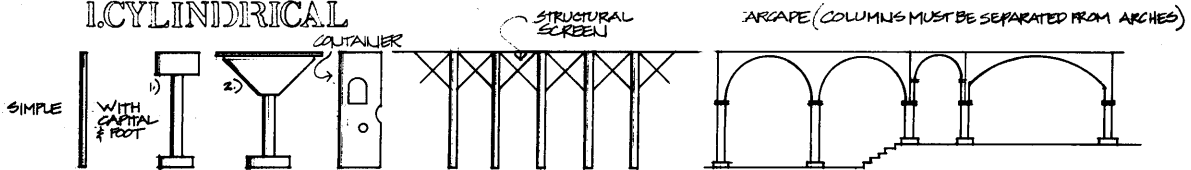


4. DIRECTIONAL

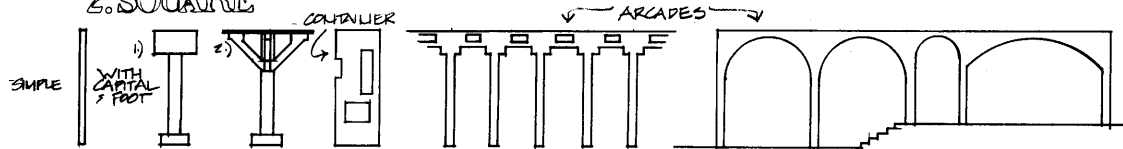


COLUMNS (IN SECTION, ELEVATION)

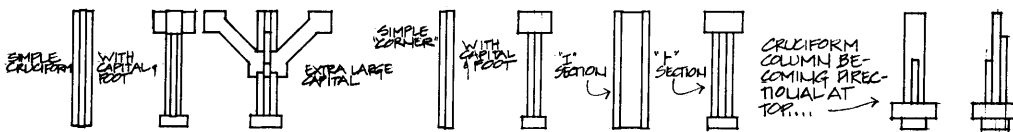
1. CYLINDRICAL



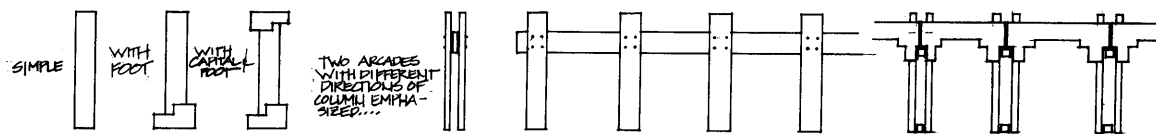
2. SQUARE



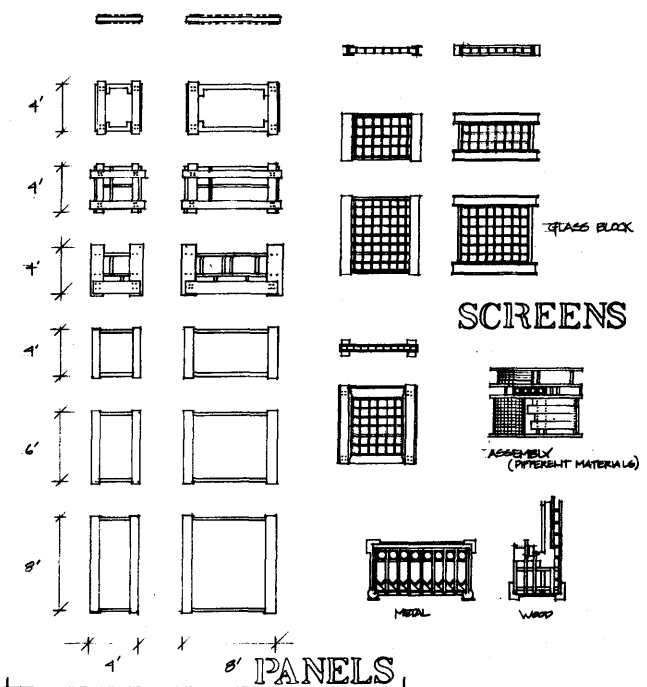
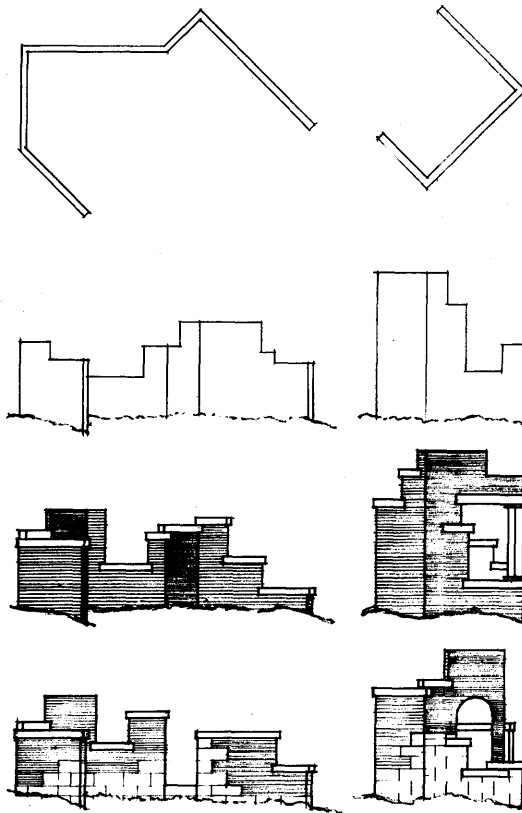
3. CRUCIFORM - CORNER



4. DIRECTIONAL



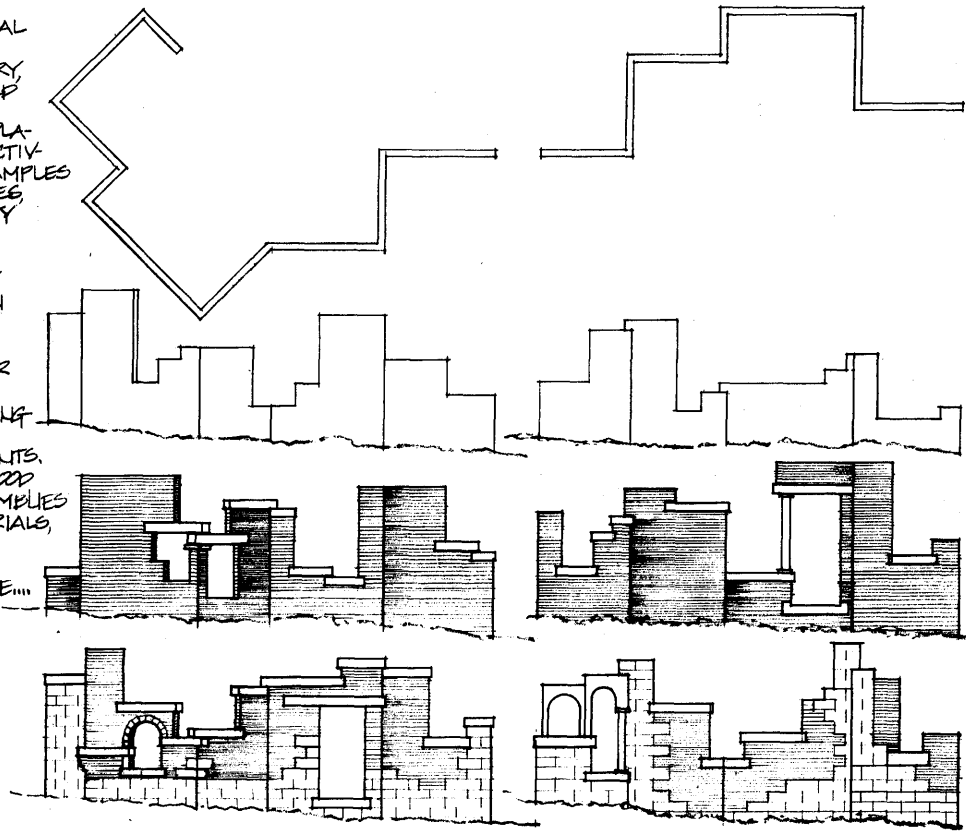
RANGE OF ELEMENTS FOR COLLAGE



RANGE OF ELEMENTS FOR COLLAGE

THE FIRST ORDER PARTIAL DEFINITIONS WOULD GENERALLY BE MASONRY. INTELSIFICATION WOULD RANGE FROM SIMPLE CONCRETE - SMOOTH, FLAT, WITH LITTLE ACTIVITY.... THESE FEW EXAMPLES ARE SOME POSSIBILITIES, RANGING IN INTELSITY FROM TOP TO BOTTOM.

THE PANELS, IN THEORY AND IN PRACTICE, CAN BE MOVED AROUND, ASSEMBLED/ADDED TOGETHER TO FORM OR BUILD THE BUILDING. THIS ADDING/ASSEMBLING IS COLLAGING WITH THE RANGE OF ELEMENTS. THEY RANGE FROM WOOD AND PLASTER TO ASSEMBLIES OF DIFFERENT MATERIALS, WHICH CAN BECOME SCREENS INSTEAD OF SOLID WALLS/OPAQUE....

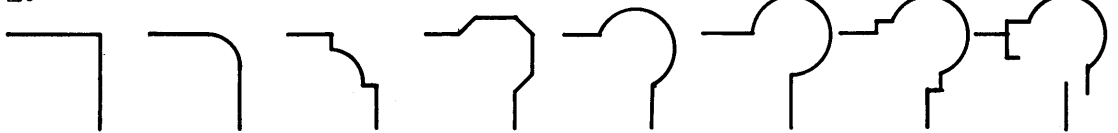


CORNERS

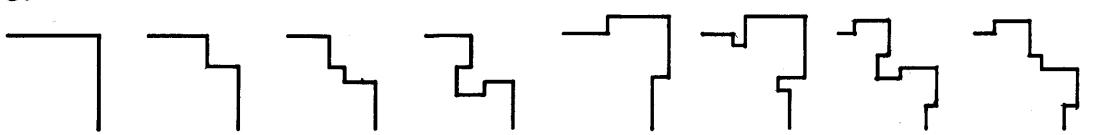
1. MITRE



2. RADIAL



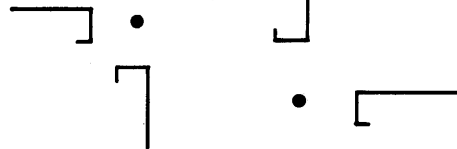
3. CONCAVE → CONVEX → COMBINATIONS



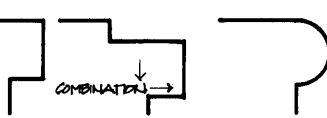
4. DIRECTION SAME - OFFSET



3A. CONCAVE - CONVEX
2A. (POSSIBILITIES FOR ADDITIONAL GROWTH)



5.

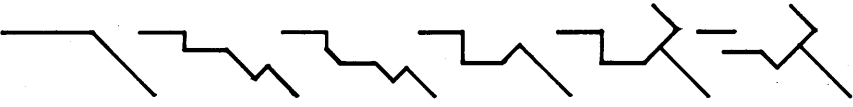


* ONLY ONE DIRECTION ALLOWED TO GROW

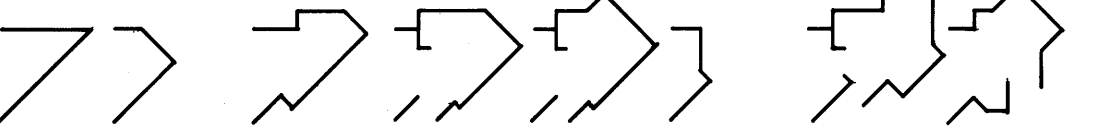
6A. OBTUSE - CONVEX



6B. OBTUSE - CONCAVE



7. ACUTE



RANGE OF ELEMENTS FOR COLLAGE

* RANGING IN INTENSITY FROM LEFT TO RIGHT; LEAST INTENSIFICATION (MINIMAL/NOMINAL FORM) TO MOST INTENSIFICATION OF THE NOMINAL FORM (AT LEAST IN THIS PRESENTATION.).

COLLECT-
ion
of these
elements
in a
field....

IN/OUTSIDE

partial enclosure
... can be
... complete-
ly closed
or left
as par-
tially
closed
outside
space.
.....
...the field
which is
described
by the site.....

rock ruins

permanencies
relative

ELEMENTS

INTENSIFIABLE

PIECES

may be intensi-
fied.....

FOR COLLAGE
FIELD

PRIVACIES

these
elements
are about
1/8"=1'

DIRECTION
sit

FIRST PARTIAL DEFINITION

LARGE/SMALL
MEDIUM.....

range

COLLAGE

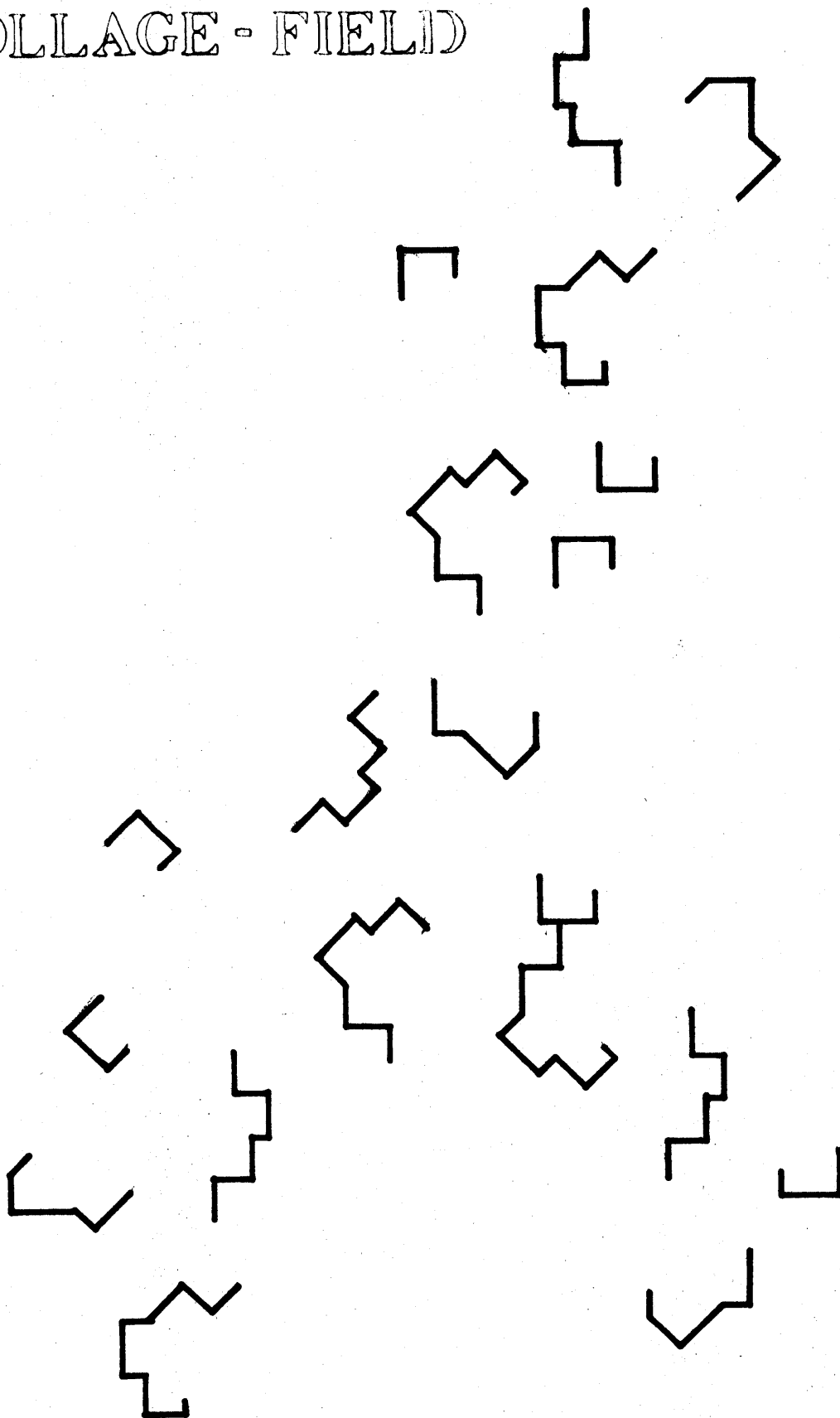
COLLAGE

twenty-one collections
of four were made.....
collection of about 20
was also made..

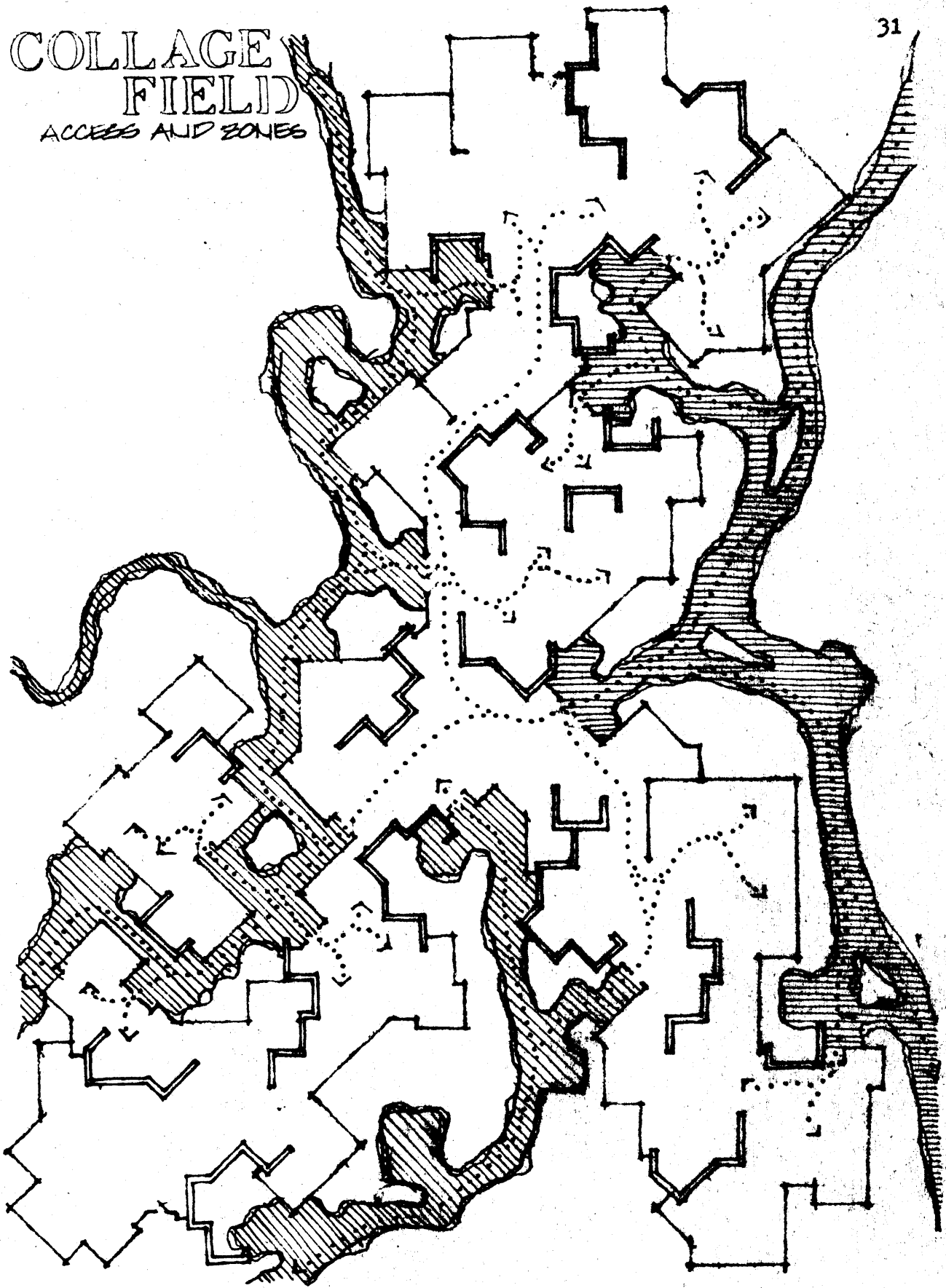
more a random collection, in an established field.

elements printed on clear
acetate can be moved around
in a field to generate
almost an infinite number
of collections with
different relationships
.....:

COLLAGE - FIELD

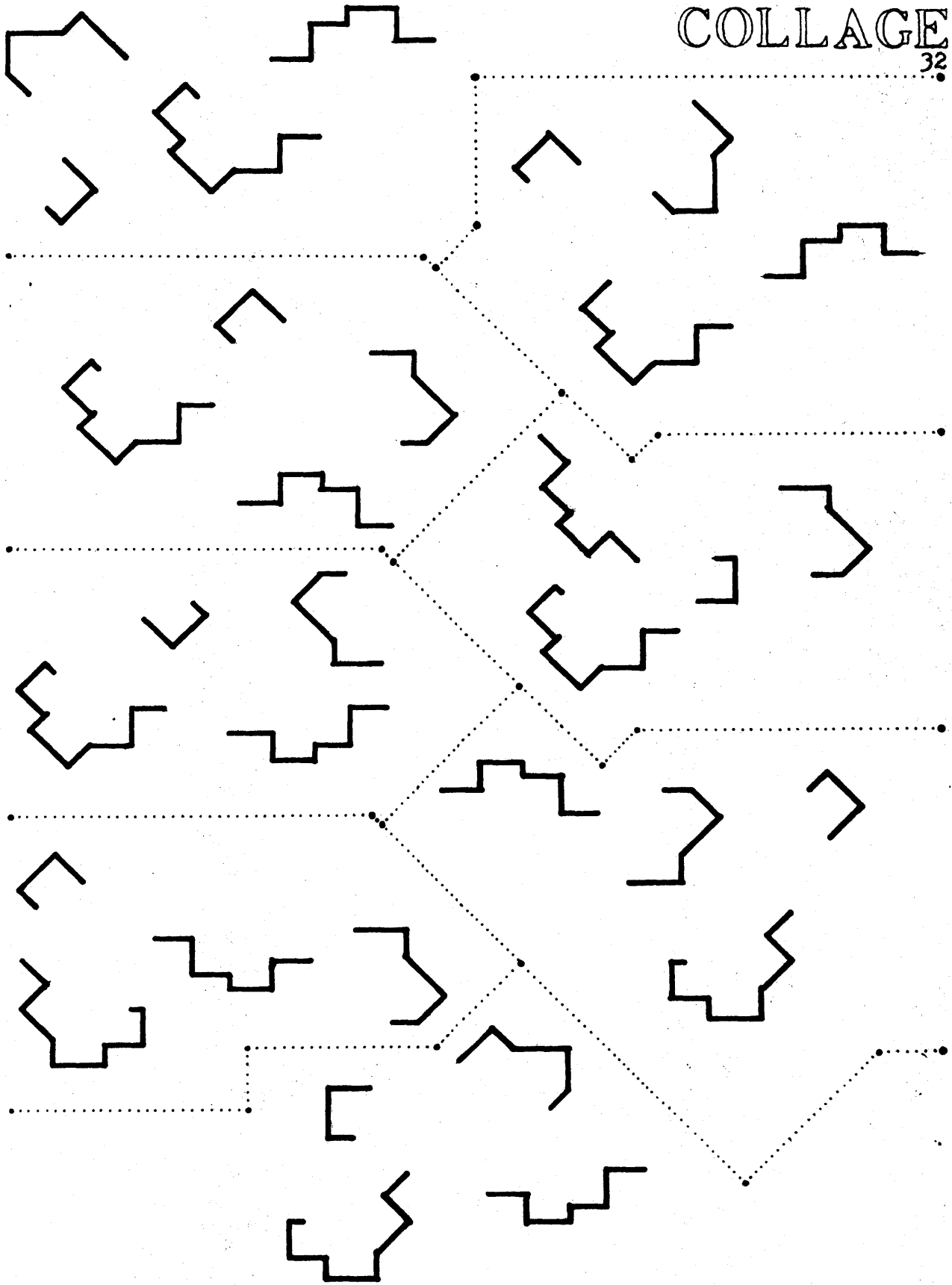


COLLAGE
FIELD
ACCESS AND ZONES



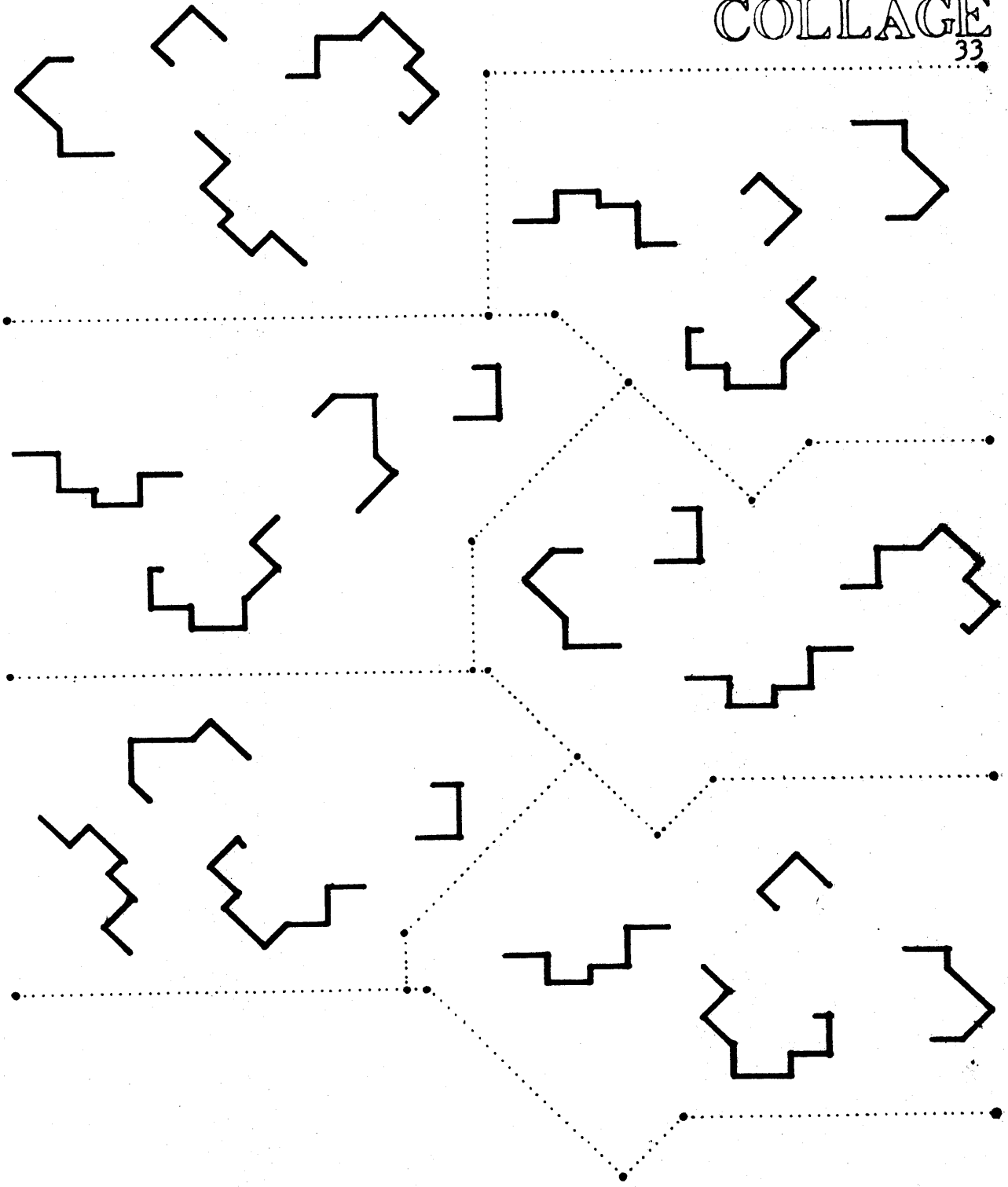
COLLAGE

32



COLLAGE

33

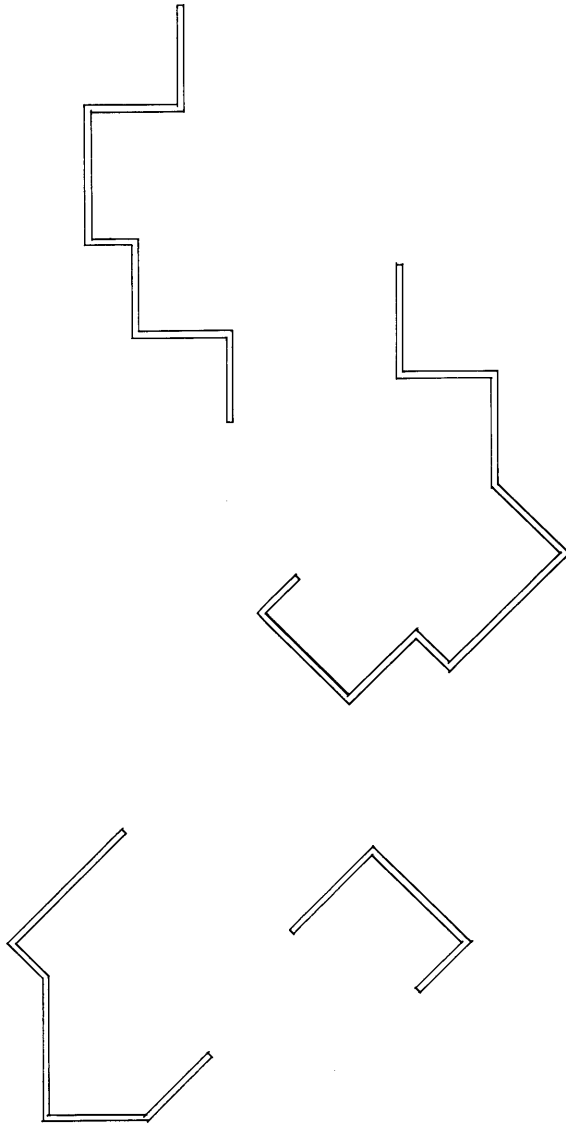


COLLAGE

**FIRST ORDER
PARTIAL DEFINITION**

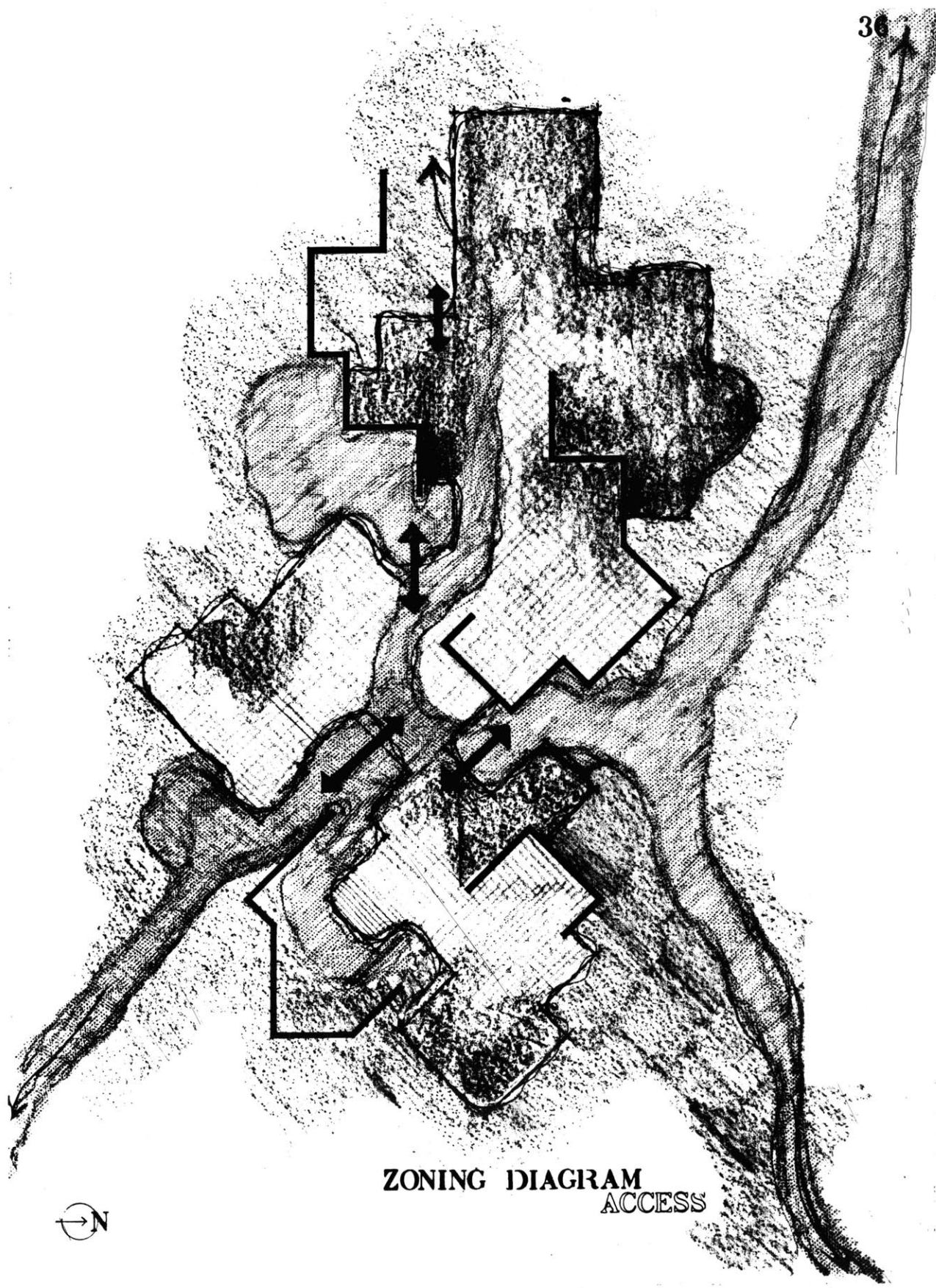
IN SECTION/ELEVATION
• TWO POSSIBILITIES -
IDENTICAL IN PLAN





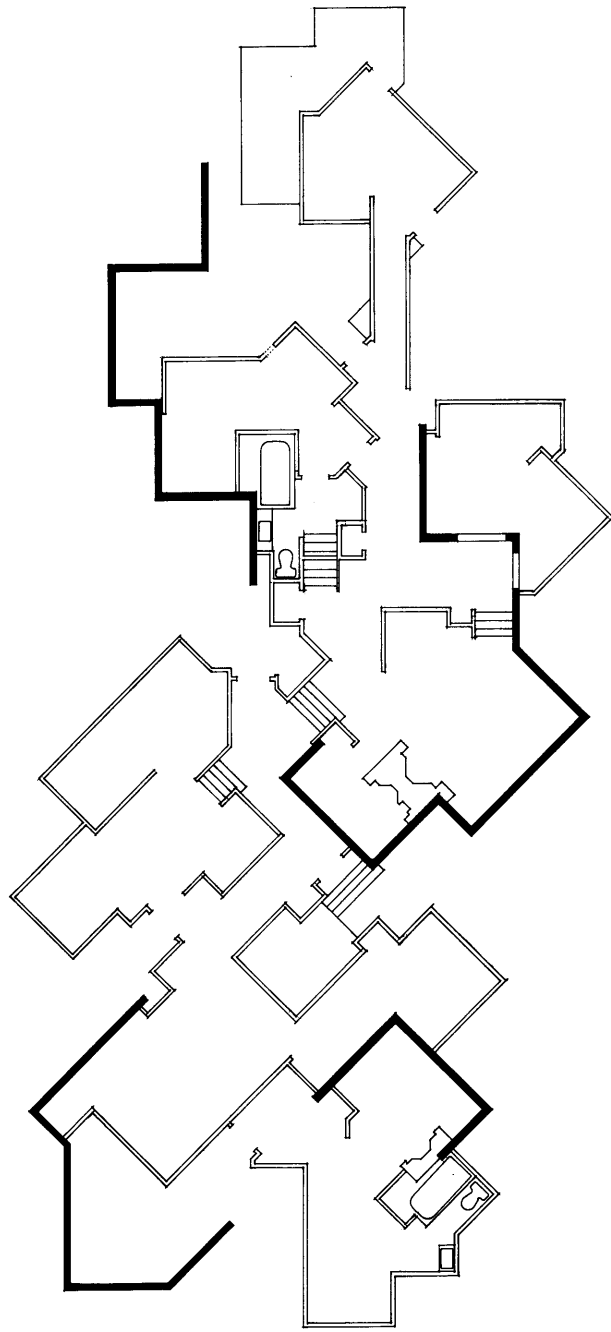
FIRST PARTIAL DEFINITION
FIELD





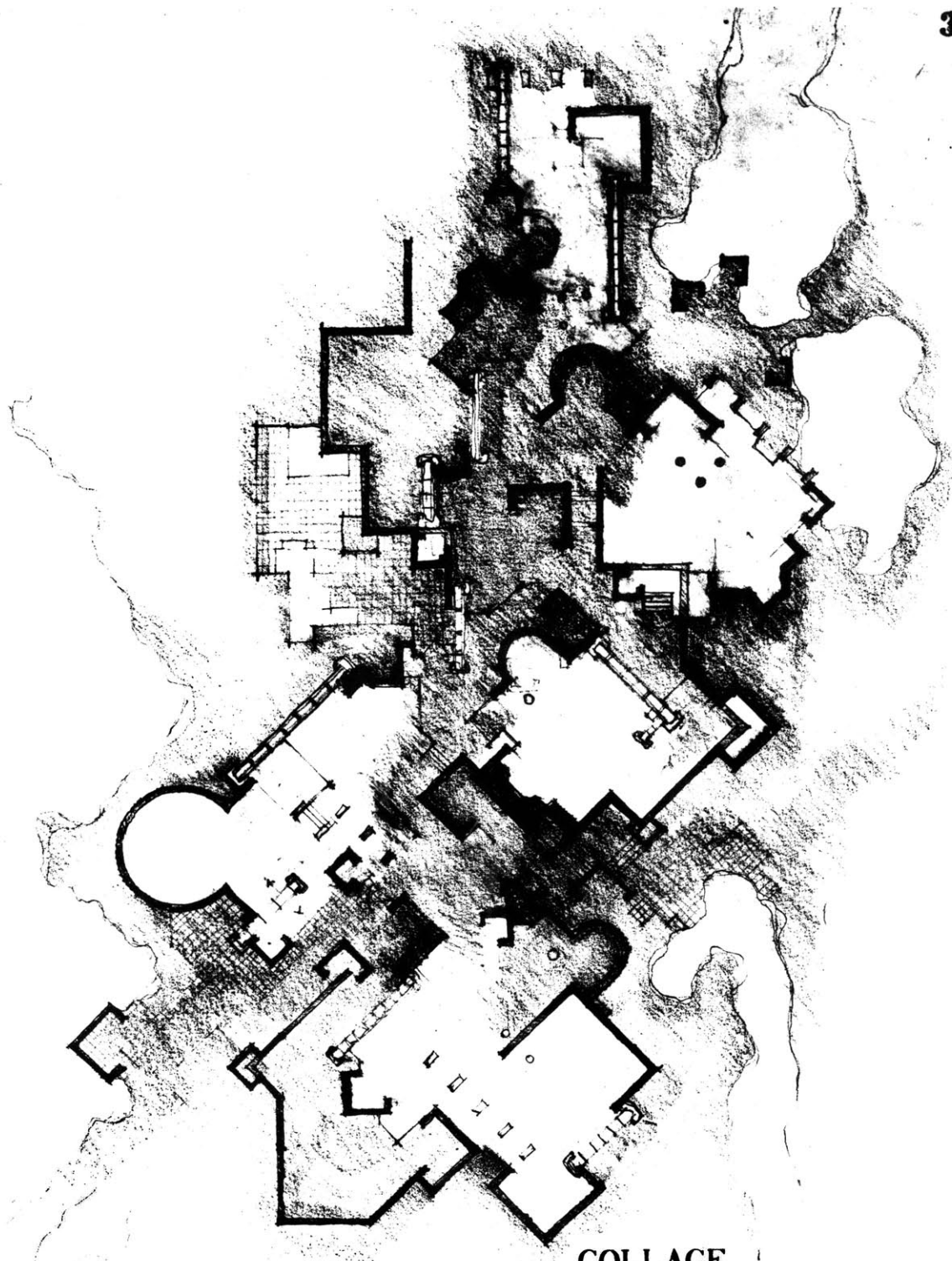
ZONING DIAGRAM
ACCESS





BASIC DESIGN
ZONES

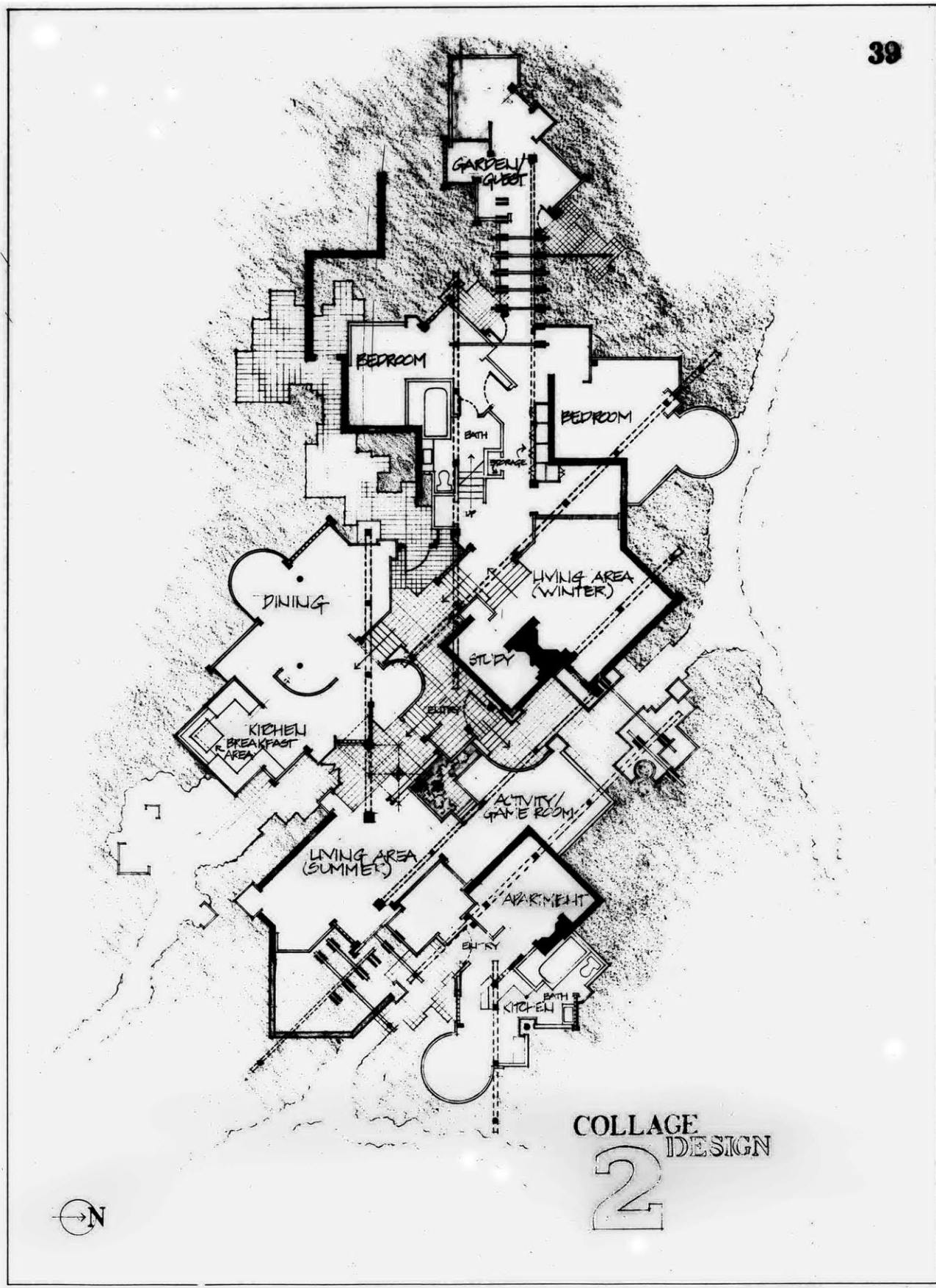




COLLAGE
DESIGN

1

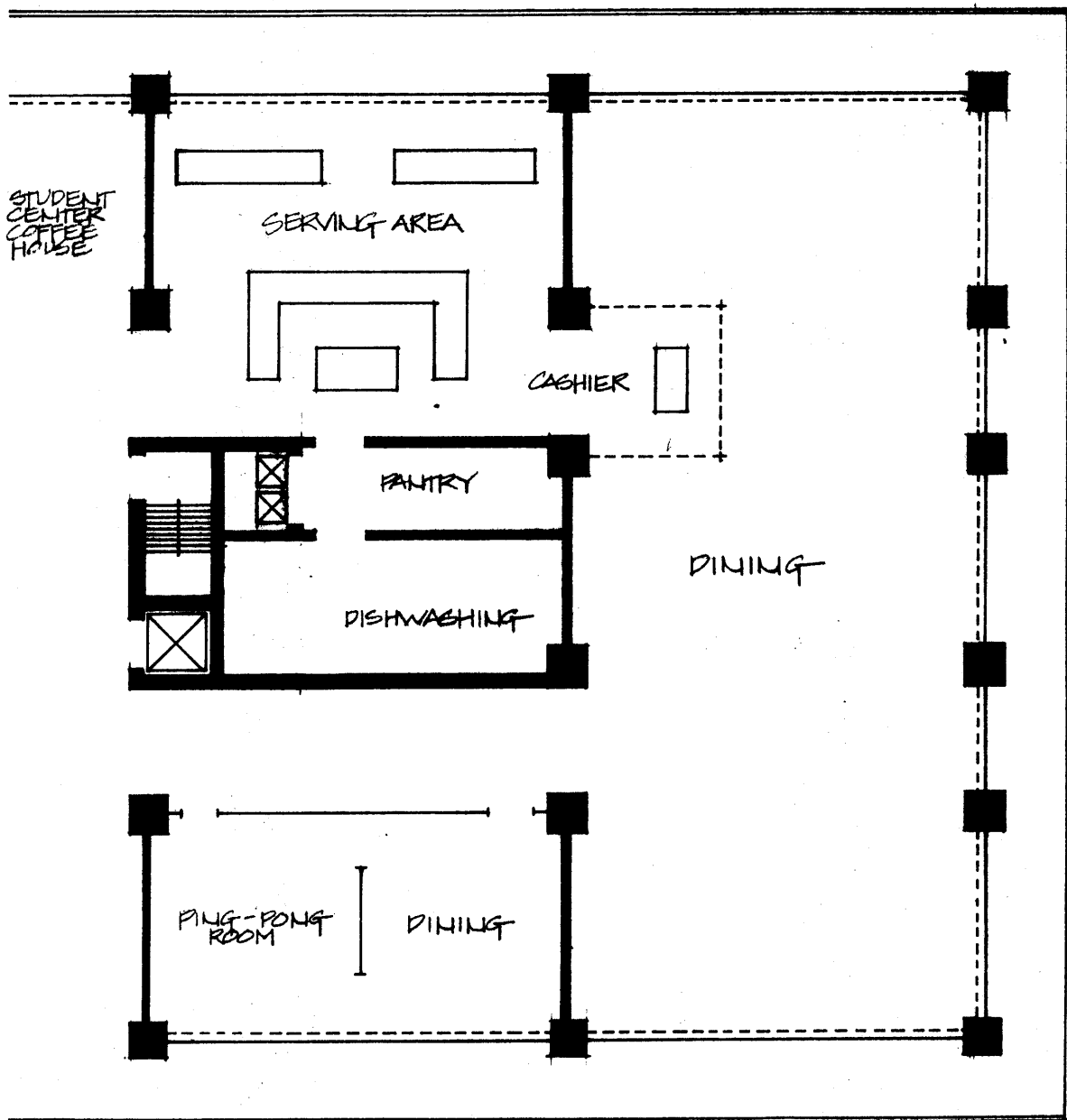




COLLAGE
DESIGN
2

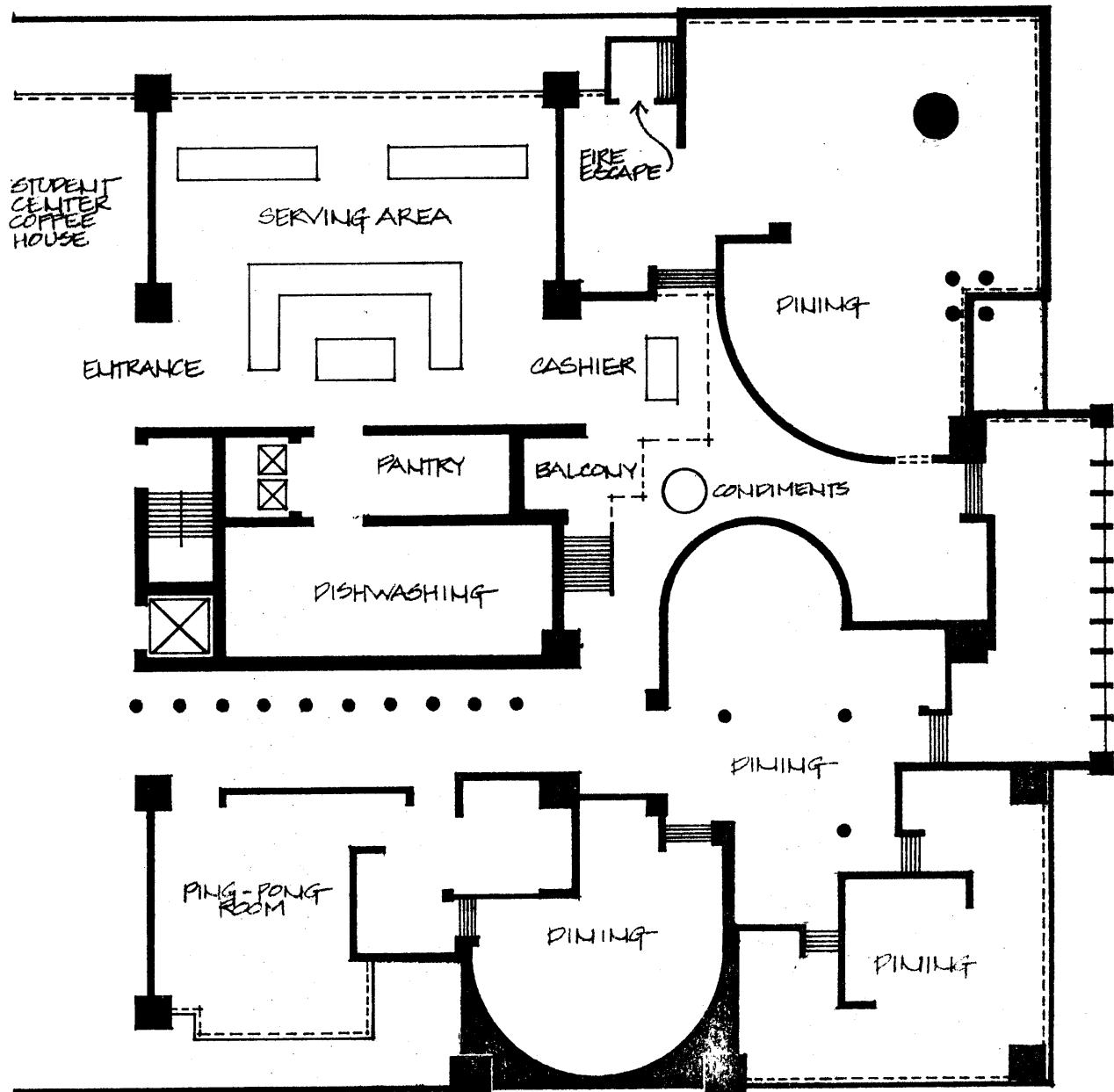
M.I.T. STUDENT CENTER DINING HALL EXISTING

SUGGESTIONS FOR INTENSIFICATION AN EXISTING BUILDING



M.I.T. STUDENT CENTER DINING HALL

SUGGESTIONS FOR INTENSIFICATION OF EXISTING BUILDING



CONSTRUCTION POSSIBILITIES⁴³

As suggested in the Form Families for Intensification, a variety of forms are available and are used for standard elements such as columns, beams, partitions, etc. The cylindrical, square, rectangular, I-section, box-section, etc. columns are examples of standard industrially produced columnar elements. This would lead one to think that if the notion of intensification would be extrapolated to include not only those elements that would be custom designed according to the form families that are being dealt with in a particular design, but to those elements currently being produced by industry, also, that the whole intensification/collage concept would reach a greater potential for becoming the actual design process it is intended to be. If, for example, Sweet's Catalogue became a collection of elements from which to choose according to intensity desired within a design project, an almost infinite range of commonly produced items are at a designer's command. Obviously, that is what a catalogue is, anyway; an array of elements from which to choose. Therefore, the problem left to someone who desires to approach design according to the intensification/collage attitude or method is that of classifying those elements that are desired to be used according to the degree of intensity assigned to each of those elements by the designer.

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